Town of Manlius
Planning Board Agenda
December 28, 2020
6:30PM

1. Zoom Meeting Instructions

   Documents:

   ZOOM PLANNING BOARD MEETING INSTRUCTIONS DECEMBER 28, 2020.PDF

2. Pledge Of Allegiance

3. Approval Of Minutes - December 14, 2020

4. Brolex Properties - 5912 North Burdick Street, East Syracuse, NY 13057 -12-Lot Subdivision & Site Plan- Freeman Estates - 7430 Highbridge Road, Fayetteville, NY 13066 Tax Map #101.-02-02.1

   Documents:

   7430 HIGHBRIDGE ROAD - FREEMAN ESTATES HOUSING (1).PDF
   7430 HIGHBRIDGE ROAD - SWPPP REPORT FREEMAN ESTATES HOUSING 12-17-2020.PDF

5. Abundant Solar - 700 W. Metro Park, Rochester, NY 14623 - Initial Presentation - Site Plan And Special Use Permit - Solar Array - 5701 Bowman Road East Syracuse, NY 13057 Tax Map # 074.-01-06.1

   Documents:

   5701 BOWMAN ROAD - SOLAR ARRAY - APPLICATION AND DISCLOSURE AFFIDAVIT.PDF
   5701 BOWMAN ROAD - SOLAR ARRAY - COVER LETTER.PDF
   5701 BOWMAN ROAD - SOLAR ARRAY - DELINEATED WETLANDS MAP AND SITE CONDITION PLAN.PDF
   5701 BOWMAN ROAD - SOLAR ARRAY - LETTER TO CHAIRMAN.PDF
   5701 BOWMAN ROAD - SOLAR ARRAY - PRELIMINARY SITE PLAN.PDF
   5701 BOWMAN ROAD - SOLAR ARRAY - SHORT EAF.PDF
   5701 BOWMAN ROAD - SOLAR ARRAY - USGS MAP ONONDAGA QUAD.PDF

6. Woodland Hills Subdivision (Hoag Lane), 201 Solar Street, Syracuse, NY 13204 Continued Site Plan - 21-Lot Subdivision - 5290-5320 Hoag Lane, Fayetteville, NY 13066 Tax Map # 104.-01-39.2

   Documents:

   2020_11_19-WOODLAND HILLS DEIS BASE.PDF
   EX-1-FINAL DESIGN - SITE PLANS.PDF
   EX-2-2020_10_12-USGS_SOIL_REPORT.PDF
   EX-3-HISTORIC AERIAL PHOTOGRAPHY.PDF
   EX-4-ER-WETLAND REPORT-06.13.19.PDF
   EX-5-SHPO LETTER-03.26.18.PDF
   EX-6-NYNHP-LONG EARED BAT LETTER 04.06.18.PDF
   EX-7-USFW LETTER 03.16.18.PDF
   EX-8-OCWA LETTER-07.06.17.PDF
   EX-9-OCWEP LETTER-04.02.18.PDF

EX-10-TRAFFIC IMPACT STUDY-08.15.19.PDF
EX-11-TOWN ZONING REGULATIONS.PDF
EX-12-LONG FORM EAF-PART 2.PDF
EX-13-INFORMATION REQUEST EMAIL-04.10.20.PDF
EX-14-COMMENT LETTER_SUTPHEN-04.28.20.PDF
EX-15-SWPPP_17061 HOAG LANE.PDF
EX-16-COMMENT LETTER_MILLER-07.28.2020.PDF
EX-17-FOIL REQUEST_TOWN-08.17.20.PDF
EX-18-COMMENT LETTER_MILLER-07.18.19.PDF
EX-19-TOBIN EARTHWORK LETTER-06.15.20.PDF
EX-20-HOAG LANE EARTHWORK REPORT.PDF
EX-21-SLOPE STABILITY ANALYSES HOAG LANE BERM.PDF
EX-22-SAMPLE DCCRS.PDF
EX-23-TREE REMOVAL EMAIL-03.07.19.PDF
EX-24- EARTHWORK INSPECTION SUMMARY.PDF
EX-25-SEQRA RESOLUTION.PDF
EX-26-HIGHWAY SPECIFICATIONS 2012 WITH DRAWINGS.PDF
EX-27- TREE REMOVAL SERVICES.PDF
EX-28-RESPONSE LETTER_MILLER-03.29.18.PDF
EX-29-ALTERNATIVES-GRADING PLANS.PDF
EX-30-MANLIUS_MEETING_MINUTES.PDF
EX-31-COUNTY _COMMENTS.PDF
EX-32-RESPONSE LETTER_MILLER-12.31.19.PDF
EX-33-FM SCHOOL ENROLLMENT.PDF
EX-34-ADDITIONAL SUBSURFACE INVESTIGATION REPORT HOAG LANE.PDF

7. Other Business

8. Adjournment

Town of
MANLIUS
New York

December 28, 2020

Virtual Planning Board Meeting

Instructions to attend the December 28th virtual Planning Board meeting:

The easiest way to join is to go to our website www.TownOfManlius.org and click on the link that is located on the homepage. You can also watch on our Facebook page by searching for "Town of Manlius"

Enter the meeting url web address as listed below:

https://us02web.zoom.us/j/83371682257?

Password to join when prompted:

Password: 774272

Enter your email address and name and join the meeting!

Join by telephone by dialing the number below:

1-(929) -436-2866

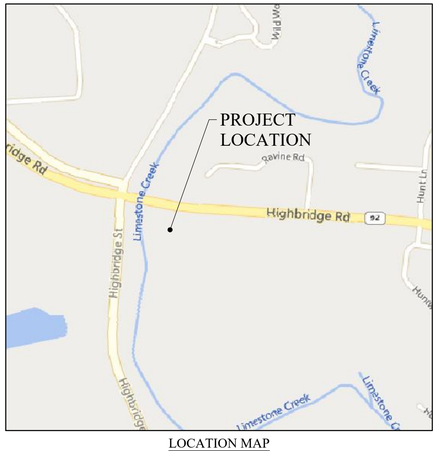
When prompted to enter the Webinar ID, use the number below followed by #

Webinar ID: 833 7168 2257

Press # again to skip the personal id and enter the password below followed by #

Password: 774272

FREEMAN ESTATES HOUSING
7430 HIGHBRIDGE ROAD
TOWN OF MANLIUS
SITE DEVELOPMENT PLANS



LOCATION MAP
NOT TO SCALE



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FREEMAN ESTATES HOUSING
7430 HIGHBRIDGE ROAD
TOWN OF MANLIUS
COUNTY OF ONONDAGA, STATE OF NEW YORK

GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

DECEMBER 15, 2020

GA001 - COVER SHEET
SHEET 1 OF 11

© 2020 - GZA GeoEnvironmental, Inc. GZA-J:\31.01803\49.00 FREEMAN EST ATES SUBDIVISION DESIGN\31.01803\49.00 FREEMAN EST ATES HOUSING.DWG GA001 DECEMBER 16, 2020 8:04PM COREY MCWILLIAMS

SITE DATA

1. OWNER: BROLEX PROPERTIES, LLC
   5912 NORTH BURDICK STREET
   EAST SYRACUSE, NEW YORK 13057
2. TAX ID #: 101.-02-02.1
3. PARCEL SIZE: 22.17± ACRES (3.5± ACRES DISTURBANCE)
4. ZONING CLASSIFICATION: RESIDENTIAL (R-3)
5. BUILDING SETBACK REQUIREMENTS: FRONT: 30'
   SIDE: 15'
   REAR: 25'

PROJECT INFORMATION

THIS PROJECT CONSISTS OF CLEARING OF LAND FOR THE PROPOSED CONSTRUCTION OF TWELVE (12) PATIO HOMES WITH ASSOCIATED UTILITIES, STORMWATER FACILITIES AND DRIVEWAYS. THE ESTIMATED TIME FOR COMPLETION IS WITHIN ONE (1) YEAR OF RECEIVING ALL NECESSARY PERMITS AND APPROVALS.

SURVEY DATA

FIELD SURVEY WAS COMPLETED BY CT MALE IN JUNE 2020.

NOTE:
THE LOCATION, SIZES, AND ELEVATIONS OF EXISTING UTILITIES ARE BASED ON INFORMATION COMPILED BY THE SURVEYOR AND ENGINEER FROM FIELD WORK, RECORD DRAWINGS AND INFORMATION FURNISHED BY VARIOUS UTILITY COMPANIES WITH FIELD EDITING WHERE NECESSARY AND POSSIBLE. THE ACCURACY OF THIS INFORMATION IS NOT GUARANTEED AND SHALL BE VERIFIED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

1. MOBILIZE ALL NECESSARY EQUIPMENT, PERSONNEL AND MATERIAL TO THE SITE. PROCEED WITH INSTALLATION OF EROSION & SEDIMENT CONTROL PRACTICES INCLUDING STABILIZED CONSTRUCTION ENTRANCE. EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO BEGINNING ANY EARTHWORK OPERATIONS. SCHEDULE AND CONDUCT SITE WALK TO INSPECT SEDIMENT AND EROSION CONTROL MEASURES WITH ENGINEER. MODIFY SEDIMENT AND EROSION CONTROL MEASURES AS NEEDED.
2. PROTECT EXISTING INSTRUMENTS, STRUCTURES, VEGETATION AND UTILITIES TO REMAIN.
3. INSTALL SILT FENCE, STABILIZED CONSTRUCTION ENTRANCE AND ANY OTHER PERTINENT EROSION AND SEDIMENT CONTROL MEASURES.
4. PERFORM CLEARING & GRUBBING OPERATIONS.
5. MASS EARTHWORK OPERATIONS.
6. INSTALL STORMWATER, SANITARY SEWER, AND OTHER UTILITIES. INSTALL FILTER DROP INLET PROTECTION AT ALL DRAINAGE INLETS.
7. CONSTRUCTION OF ROADWAYS. INSTALL SILT FENCING BEHIND ASPHALT CURBING.
8. FINAL GRADING.
9. PERMANENT STABILIZATION WITH TOPSOIL, SEED AND MULCH AS SPECIFIED.
10. INSTALLATION OF LANDSCAPING.
11. IN ADDITION TO THESE MEASURES, THE CONTRACTOR SHALL COMPLY WITH WHATEVER ADDITIONAL MEASURES MAY BE REQUIRED AS ORDERED BY THE VILLAGE OF MINOA.
12. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES MUST REMAIN IN PLACE UNTIL 80% GERMINATION OF THE SITE HAS BEEN ESTABLISHED. CONTACT ENGINEER TO SCHEDULE FINAL INSPECTION.

SANITARY SEWER NOTES:

APPLICABLE DETAILS AND NOTES PERTAIN TO THIS PROJECT UNLESS OTHERWISE NOTED:

1. SANITARY SEWER MAIN PIPE SHALL BE 8" ASTM D-3034 SDR-35 PVC WITH RUBBER RING GASKETS UNLESS OTHERWISE NOTED.
2. SANITARY SEWER LATERALS TO BE SDR-35 PVC WITH RUBBER RING GASKET, UNLESS OTHERWISE NOTED.
3. ALL SANITARY SEWER STRUCTURES, TEMPORARY STUBBED ENDS AND LATERAL ENDS SHALL BE MARKED WITH 2X4'S EXTENDING 3' ABOVE FINISHED GRADE WITH TOPS PAINTED GREEN.
4. EACH LOT TO HAVE 1 SANITARY SEWER LATERAL INSTALLED FROM THE MAIN TO R.O.W. LINE AT A MIN. SLOPE OF 1%. LATERALS TO BE LOCATED 5 FEET DOWNSTREAM FROM THE CENTER OF THE LOT UNLESS OTHERWISE SHOWN OR NOTED.
5. COMPACTION OF ALL BACKFILLED MATERIALS REQUIRED IN AREAS UNDER PROPOSED PAVEMENT.
6. LINING MATERIAL TO BE N.Y.S.D.O.T. ITEM NO. 304.05 TYPE 4 R.O.C. OR R.O.B.
7. LEAKAGE AND DEFLECTION TESTS REQUIRED ON ALL SEWER MAINS IN ACCORDANCE WITH LOCAL REGULATIONS.
8. SANITARY SEWERS SHALL BE TESTED AFTER THE INSTALLATION OF WATER MAINS AND SERVICES. EXFILTRATION TEST SHALL BE PERFORMED ON ALL SANITARY MANHOLES.
9. CONTRACTOR SHALL RECORD AND PROVIDE ENGINEER WITH AS-BUILT LOCATIONS AND DEPTHS OF ALL SANITARY SEWER LATERAL ENDS AND MANHOLE RIMS & INVERTS.
10. SEWERS SHALL BE LAID AT LEAST 10' (3.0 m) HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A 10' SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE BY CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND THE ELEVATION OF THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46 cm) ABOVE THE TOP OF SEWER. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46 CM) BETWEEN THE OUTSIDE OF THE WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHEN THE WATERMAIN IS ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THE JOINTS OF THE SEWER PIPE WILL BE EQUIDISTANT FROM AND AS FAR AWAY FROM THE WATERMAIN JOINTS AS POSSIBLE. WHERE THE WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATERMAIN.

WATERMAIN NOTES

ALL WATERMAINS SHALL HAVE A MINIMUM 5.0' OF COVER FROM THE TOP OF THE MAIN TO FINISHED GRADE. THE CONTRACTOR SHALL CHECK ALL CUT STAKED BEFORE TRENCHING TO INSURE THAT ALL INSTALLED WATERMAINS WILL HAVE THE REQUIRED COVER.

811
Know what's below.
Call before you dig.

GENERAL NOTES

1. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS. THE CONTRACTOR SHALL PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH WITH THE SAME, AND COORDINATE WITH THE ENGINEER AND ARCHITECT AS REQUIRED.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY AND ALL CONSTRUCTION MEANS AND METHODS.
3. ANY ALTERATIONS TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTION SHALL BE RECORDED BY THE CONTRACTOR ON RECORD DOCUMENTS.
4. THE CONTRACTOR'S PROFESSIONAL LAND SURVEYOR SHALL CHECK ALL HORIZONTAL AND VERTICAL CONTROLS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL PROMPTLY BE BROUGHT TO THE ATTENTION OF THE ENGINEER. CONTRACTOR IS TO SUBMIT A QUALIFICATIONS PACKAGE OF SURVEYOR TO ENGINEER FOR APPROVAL.
5. THE CONTRACTOR SHALL LIMIT OPERATIONS TO THE AREAS DESIGNATED ON THE CONTRACT DOCUMENTS.
6. ALL DAMAGE TO PRIVATE PROPERTY OR UTILITIES (UNDER OR ABOVE GROUND) SHALL BE RESTORED TO ORIGINAL CONDITION AT NO COST TO THE OWNER.
7. SAFE AND CONTINUOUS THROUGH TRAFFIC, INGRESS AND EGRESS FOR ADJACENT OWNERS DRIVEWAYS, SERVICE ROADS, PUBLIC STREETS, AND SIDEWALKS SHALL BE MAINTAINED THROUGHOUT THE PERIOD OF CONSTRUCTION.
8. STREET DRAINAGE, SWALES, DITCHES, AND OTHER EXISTING DRAINAGE FACILITIES SHALL BE PROTECTED AND MAINTAINED IN ADEQUATE WORKING CONDITION DURING CONSTRUCTION. THE CONTRACTOR SHALL RESTORE ANY OF SUCH FACILITIES THAT ARE DAMAGED DURING CONSTRUCTION.
9. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS NOT TO DISTURB AND/ OR DAMAGE PROPERTY CORNERS (IRON PINS, HUBS, ETC.). ANY DISTURBED OR DAMAGED PROPERTY CORNERS SHALL BE REPLACED BY THE CONTRACTOR'S LICENSED SURVEYOR AT THE CONTRACTOR'S EXPENSE.
10. ALL EXISTING UTILITIES SUCH AS ELECTRIC, GAS MAINS, AND TELEPHONE SHALL BE STAKED OUT BY THE UTILITY COMPANY PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY NEW YORK DIG SAFELY (1-800-962-7962) 72 HOURS, (3 WORKING DAYS) PRIOR TO CONSTRUCTION AND NOTIFY UTILITY COMPANIES FOR STAKEOUT.
11. IN AREAS WHERE THE CONTRACTOR IS EXCAVATING NEAR ANY UTILITY POLES, THE CONTRACTOR SHALL BRACE AND/ OR HOLD IN PLACE UNTIL THE EXCAVATED AREA IS BACKFILLED AND COMPACTED.
12. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE DEWATERING SYSTEM THAT WILL DRAW DOWN AND HAVE CONTROL ON THE GROUNDWATER TABLE AT ALL TIMES DURING CONSTRUCTION IF NECESSARY.
13. THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER DISPOSAL OF ALL REMOVED VEGETATION, SOIL AND OTHER DISTURBED AREAS.
14. THE CONTRACTOR SHALL CONDUCT ACTIVITIES IN THE VICINITY OF TREES AND BUSHES WITH CARE. ANY TREE REMOVAL SHALL BE LIMITED TO THE DIRECT PATH OF CONSTRUCTION.
15. THE CONTRACTOR SHALL OBSERVE O.S.H.A. AND OTHER APPLICABLE SAFETY REQUIREMENTS. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR CONSTRUCTION SAFETY AT ALL TIMES.
16. FOR DRAWING LEGIBILITY, ALL EXISTING TOPOGRAPHIC FEATURES, EXISTING UTILITIES, PROPERTY BOUNDARIES, EASEMENTS, ETC. MAY NOT BE SHOWN ON ALL DRAWINGS. REFER TO REFERENCED DRAWINGS AND OTHER DRAWINGS IN THIS SET FOR ADDITIONAL INFORMATION.
17. CONTRACTOR SHALL REPORT SIGNIFICANT CONFLICTS OR DISCREPANCIES TO THE OWNER AND ENGINEER BEFORE PROCEEDING WITH ANY PORTION OF SITE WORK WHICH MAY BE AFFECTED SO THAT PROPER ADJUSTMENTS CAN BE MADE IF NECESSARY.
18. UNDERGROUND UTILITIES WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND PUBLIC AGENCIES, ARE APPROXIMATE AND ASSUMED. BEFORE COMMENCING SITE WORK IN ANY AREA, CONTACT "DIG SAFE" AT 1-888-344-7233 AND THE OWNER TO ACCURATELY LOCATE UNDERGROUND UTILITIES. ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES SHALL BE THE CONTRACTORS RESPONSIBILITY. NO EXCAVATION SHALL BE DONE UNTIL UTILITY COMPANIES AND THE OWNER ARE PROPERLY NOTIFIED IN ADVANCE.
19. ALL SITE WORK SHALL MEET OR EXCEED THE SITE WORK SPECIFICATIONS TO BE PREPARED FOR THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
20. ALL WORK PERFORMED AND ALL MATERIALS SHALL CONFORM WITH THE LINES, GRADES AND OTHER SPECIFIC REQUIREMENTS OR SPECIFICATIONS FOR THE PROJECT AS SHOWN ON THE PLANS.
21. THE CONTRACTOR SHALL VERIFY EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT AS REQUIRED. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE OWNER AND ENGINEER FOR RESOLUTION.
22. INSTALL ALL UTILITIES (INCLUDING CONCRETE PADS) PER UTILITY COMPANY STANDARDS.
23. CONTRACTOR SHALL PROTECT ALL UNDERGROUND DRAINAGE, SEWER AND UTILITY FACILITIES FROM EXCESSIVE VEHICULAR LOADS DURING CONSTRUCTION. ANY DAMAGE TO THESE FACILITIES RESULTING FROM CONSTRUCTION LOADS WILL BE RESTORED TO ORIGINAL CONDITION.
24. CONTRACTOR TO PROVIDE VILLAGE ENGINEER WITH RIMS AND INVERTS OF ALL INSTALLED SANITARY SEWER MANHOLES AND DRAINAGE STRUCTURES ALONG WITH LOCATIONS AND INVERTS OF ALL SEWER LATERAL ENDS AND SUMP PUMP/ ROOF DRAIN CONNECTIONS. VILLAGE ENGINEER WILL USE INFORMATION TO CREATE RECORD DRAWINGS.

EROSION CONTROL NOTES

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TEMPORARY SOIL EROSION CONTROL AND WATER POLLUTION CONTROL.
2. THE CONTRACTOR SHALL CONTROL SURFACE RUNOFF WHICH MAY CONTAIN SUSPENDED SOLIDS FROM ONTO EXISTING PAVEMENT SERVICES IN USE. THIS SHALL BE ACCOMPLISHED BY STAKED BALES OF STRAW OR DIVERSION CHANNELS TO SEDIMENTATION BASINS.
3. THE CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS OF THE N.Y.S. DEPARTMENT OF ENVIRONMENTAL CONSERVATION SPDES GENERAL PERMIT, WATER QUALITY CERTIFICATION AND/ OR FRESH WATER WETLANDS PERMIT AND/ OR ARMY CORPS OF ENGINEERS PERMIT (IF APPLICABLE).
4. DURING CONSTRUCTION, NO WET OR FRESH CONCRETE OR LEACHATE SHALL BE ALLOWED TO ESCAPE INTO THE WATERS OF THE UNITED STATES, NOR SHALL WASHINGS FROM CONCRETE TRUCKS, MIXERS, OR OTHER DEVICES BE ALLOWED TO ENTER ANY WETLAND OR WATERS. A CONCRETE WASHOUT SHALL BE USED.
5. ALL AREAS OF SOIL DISTURBANCE RESULTING FROM THIS PROJECT SHALL BE SEEDED WITH AN APPROPRIATE PERENNIAL GRASS SEED AND MULCHED WITH STRAW WITHIN ONE WEEK OF FINAL GRADING. MULCH SHALL BE MAINTAINED UNTIL A SUITABLE VEGETATIVE COVER IS ESTABLISHED.
6. PERIODIC CLEANING, INSPECTION AND REPLACEMENT OF TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL DEVICES SHALL BE NECESSARY.
7. ALL CONTROLS SHALL BE PLACED PRIOR TO STARTING EARTHWORK OPERATIONS AND SHALL REMAIN IN PLACE UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/ OR SLOPE PROTECTION.
8. WHERE SILT FENCE IS USED IN AREAS OF CONCENTRATED FLOW, THE ENGINEER IN CHARGE MAY CALL FOR BACKING THE FENCE WITH STRAW BALES.
9. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED DUE TO VARIATIONS IN SITE CONDITIONS.
10. IF THERE IS SOME REASON THAT CUT OR FILL CANNOT BE BROUGHT TO FINAL GRADE AND MUST REMAIN UNCOMPLETED FOR A PERIOD OF TIME, IT SHALL BE TEMPORARILY SEEDED AND MULCHED WITHIN 7 DAYS.
20. REQUIRED INSPECTIONS SHALL OCCUR AND AS OUTLINED WITHIN THE SWPPP AND GENERAL SPDES PERMIT (ONE (1) INSPECTION PER SEVEN (7) DAYS SHALL BE COMPLETED).

MAINTENANCE AND REPAIR OF EROSION AND SEDIMENT POLLUTION CONTROL FACILITIES

1. PROPER MAINTENANCE AND REPAIR OF EROSION AND SEDIMENT CONTROL FACILITIES ARE NECESSARY TO THE EFFECTIVENESS OF THE EROSION AND SEDIMENT POLLUTION CONTROL FACILITIES.
2. DISTURBED GROUND SURFACES SHALL BE SPRINKLED WITH WATER, AS NEEDED, TO LIMIT THE FORMATION AND MIGRATION OF AIRBORNE DUST.
3. OPERATIONAL MEASURES SHALL BE EMPLOYED DURING CONSTRUCTION TO PREVENT THE SPILLS OF FUELS AND LUBRICANTS. IF A SPILL OCCURS, IT SHALL BE CONTROLLED IMMEDIATELY TO PREVENT ITS ENTRY INTO OFF-SITE AREAS INCLUDING ADJACENT STORM WATER FACILITIES.
4. ANY TEMPORARY EROSION CONTROL FACILITY SHALL REMAIN FUNCTIONAL UNTIL VEGETATIVE COVER IS SUFFICIENTLY ESTABLISHED WITHIN THE RESPECTIVE TRIBUTARY DRAINAGE AREA.
5. ANY DEBRIS ACCUMULATED IN EROSION AND SEDIMENT CONTROL SHALL BE REMOVED AND PROPERLY DISPOSED. THESE FACILITIES SHALL BE CHECKED DAILY AND AFTER RAINFALL EVENTS, AND REALIGNED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN IT REACHES THE FOLLOWING DEPTHS:

   SILT FENCE: 1/2 HEIGHT
   STONE CHECKDAMS: 1/2 HEIGHT
   INLET/ OUTLET PROTECTION: 1 INCH

   NOTE: DISTURBED AREAS SHALL BE CONSIDERED PERMANENTLY STABILIZED WHEN A MINIMUM COVER OF 80% HAS BEEN ESTABLISHED.

EROSION & SEDIMENT POLLUTION CONTROL NOTES

1. EROSION & SEDIMENT POLLUTION CONTROL FACILITIES AND PRACTICES, UTILIZED IN CONSTRUCTION OF THE PROJECT, SHALL BE CONSISTENT WITH THE LATEST EDITIONS OF THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL, AND THE NEW YORK STATE SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES.
2. NATURAL VEGETATION SHALL BE RETAINED, PROTECTED, AND SUPPLEMENTED AS FEASIBLE PRIOR TO AND DURING CONSTRUCTION.
3. CUT AND FILL SLOPES SHALL BE BROUGHT TO FINAL PROPOSED GRADES AS SOON AS POSSIBLE IN THE CONSTRUCTION SEQUENCE, AND SEEDED AND MULCHED.
4. EROSION AND SEDIMENT POLLUTION CONTROL FACILITIES (CHECK DAMS, SILT FENCING, STABILIZED CONSTRUCTION ENTRANCES, SEDIMENT TRAPS, AND OTHER ACCEPTABLE IMPLEMENTED FACILITIES), SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION UNTIL COMPLETE SITE STABILIZATION.
5. GRADE ALL AREAS TO DRAIN.
6. HEAVY CONSTRUCTION EQUIPMENT SHALL BE KEPT AS CLOSE TO THE WORK AREA AS PRACTICAL TO MINIMIZE DISTURBANCE OF SOIL ALREADY STABILIZED OR UNDISTURBED.
7. TOPSOIL AND OTHER SOIL REMOVED DURING CONSTRUCTION SHALL BE STOCKPILED IN A SUITABLE LOCATION CLEAR FROM ANY STORMATWATER DRAINAGE COURSES. STOCKPILES SHALL BE STABILIZED TO PREVENT EROSION.
8. VEGETATIVE STABILIZATION SHALL BE PERIODICALLY INSPECTED FOR SUFFICIENT GROWTH AND PROGRESS. AREAS NOT RESPONDING SHALL BE PROMPTLY RESEEDED AND REMULCHED AS SOON AS POSSIBLE. AREAS SHOWING SIGNS OF EROSION PRIOR TO STABILIZATION SHALL BE GRADED, RESEEDED, AND REMULCHED AS SOON AS POSSIBLE. SOD OR EROSION CONTROL FABRIC SHALL BE UTILIZED WHERE ADEQUATE STABILIZATION IS NOT OCCURRING.
9. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED BEGINNING EARTH MOVING ACTIVITIES, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
10. A STABILIZED CONSTRUCTION ENTRANCE PAD WITH CLEAN STONE WILL BE PLACED AT ALL CONSTRUCTION DRIVEWAYS IMMEDIATELY AFTER INITIAL SITE DISTURBANCE.
11. ANY DISTURBED AREAS THAT WILL LEFT EXPOSED FOR MORE THAN 5 DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW OR EQUIVALENT MATERIAL, AT A RATE OF 2.0 TONS PER ACRE, ACCORDING TO STANDARDS.
12. PERMANENT VEGETATION TO BE SEEDED ON ALL EXPOSED AREAS WITHIN FIVE (5) DAYS AFTER FINAL GRADING. MULCH TO BE USED AS NECESSARY FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
13. THE APPLICATION OF TOPSOIL, SEEDING, AND MULCHING FOR DISTURBED AREAS SHALL BE CONSISTENT WITH THE STANDARD GENERAL PRACTICES FOR CONSTRUCTION.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES UNTIL ALL AREAS HAVE BEEN PERMANENTLY STABILIZED.
15. ANY SEDIMENT TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE CLEANED IMMEDIATELY.
16. ALL DEBRIS GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE LEGALLY DISPOSED OF OFF SITE.
17. ADDITIONAL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AS CONDITIONS WARRANT OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
18. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ON A DAILY BASIS DURING CONSTRUCTION TO ENSURE THEIR CONTINUED FUNCTION.
19. DUST SHALL BE CONTROLLED BY SPRINKLING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
20. REQUIRED INSPECTIONS SHALL OCCUR AS OUTLINED WITHIN THE SWPPP AND SPDES PERMIT.

DRAINAGE SYSTEM NOTES:

1. CATCH BASINS AND MANHOLE DIAMETERS SHALL BE AS FOLLOWS:

LARGEST PIPE SIZE IN STRUCTURE	INSIDE DIAMETER OF STRUCTURE
UP TO 24"	4'
25" TO 36"	5'
LARGER THAN 36"	SPECIAL STRUCTURE

2. STORM SEWER PIPE SHALL BE ADS N-12 POLYETHYLENE UNLESS OTHERWISE NOTED. PIPE SHALL HAVE BANDED JOINTS AND RUBBER GASKETS.
3. LINING MATERIALS AND SPECIAL BACKFILL TO BE N.Y.S.D.O.T. ITEM NO. 304.05 TYPE 4 R.O.C. OR R.O.B..
4. GRANULAR FILTER MATERIAL TO BE (NYS DOT SECTION 605-2.02 TYPE 1) MEETING THE FOLLOWING GRADATIONS:

% PASSING BY WEIGHT	SIEVE SIZE
100	1-1/2"
30-100	1"
0-30	1/4"
0-10	NO.-10
0-5	NO.-20

5. RIP-RAP TO BE HARD, DURABLE, ANGULAR IN SHAPE, AND A MINIMUM OF 1 FT. THICK, AND MEETING THE FOLLOWING GRADATIONS:

PERCENT OF TOTAL WEIGHT SMALLER THAN GIVEN SIZE	WEIGHT OF STONE
100	100 LB.
80	60 LB.
50	25 LB.
<10	2 LB.

6. AL DRAINAGE STRUCTURES, INLETS, OUTLETS AND TEMPORARY PIPE ENDS SHALL BE MARKED WITH 2 x 4'S EXTENDING 3' ABOVE FINISHED GRADE. THE TOP 1' SHALL BE PAINTED SILVER.
7. CHANNEL SLOPE TO BE GRASS LINED UNLESS OTHERWISE SHOWN OR DIRECTED.
8. ALL BRICK USED TO RAISE THE CATCH BASIN FRAME AND GRATES TO BE RED NO. 1, 8000 PSI.
9. COMPACTION OF ALL BACKFILL MATERIALS REQUIRED IN AREAS UNDER PROPOSED PAVEMENT. COMPACT IN 8" LIFTS TO 95% DENSITY.
10. CONTRACTOR SHALL RECORD AND PROVIDE VILLAGE ENGINEER WITH ASBUILT LOCATIONS AND ELEVATIONS OF ALL CATCH BASIN RIMS AND INVERTS, INLET AND OUTLET PIPE INVERTS, AND SUMP PUMP/ ROOF DRAIN DRAIN CONNECTIONS.

NEW YORK STATE DOT SPECIFICATIONS

GENERAL NOTES:

1. THE CONTRACTOR MUST NOTIFY THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 3 ENGINEER, AT (315) 435-3176, THREE (3) WORKING DAYS PRIOR TO WORKING IN THE RIGHT-OF-WAY.
2. THE CONTRACTOR MUST NOTIFY DIG SAFELY NEW YORK THREE (3) WORK DAYS PRIOR TO DIGGING, DRILLING OR BLASTING AT 1-800-962-7962 FOR A UTILITY STAKE OUT.
3. ALL WORK CONTEMPLATED AND MATERIALS USED WITHIN THE STATE RIGHT-OF-WAY MUST COMPLY WITH THE LATEST VERSION OF THE NYSDOT STANDARD SPECIFICATIONS AND ALL CURRENT ADDENDAS, ALONG WITH ANY APPROPRIATE CURRENT NYSDOT STANDARD SHEETS.
4. NO NIGHT WORK WILL BE ALLOWED UNLESS PRIOR APPROVAL IS GIVEN BY THE NYSDOT. ADDITIONAL WORK ZONE TRAFFIC CONTROL WILL BE REQUIRED INCLUDING THE ADDITION OF REFLECTIVE MATERIALS AND LIGHTING.
5. STOP SIGNS SHALL BE (R1-1) ON BREAK-AWAY POSTS.
6. STOP LINES SHALL BE NYSDOT ITEM NO. 685.11.
7. ALL LAWN AREAS DISTURBED WITHIN R.O.W. SHALL RECEIVE TOPSOIL, SEED AND STRAW. NYSDOT ITEM NO. 610.1402.
8. A UTILITY PERMIT IS REQUIRED FOR ANY UTILITY WORK WITHIN THE NYSDOT RIGHT-OF-WAY.
9. HAZARDOUS WASTE NOTIFICATION - THE PERMITTEE ACCEPTS THE RIGHT-OF-WAY OF THE STATE HIGHWAY IN ITS 'AS IS' CONDITION. THE DOT MAKES NO REPRESENTATION AS TO THE ABSENCE OF UNDERGROUND TANKS, STRUCTURES, FEATURES OR SIMILAR IMPEDIMENTS TO THE COMPLETION OF THE WORK PERMITTED HEREUNDER, SHOULD PERMITTEE FIND SOME PREVIOUSLY UNKNOWN UNDERGROUND OBLIGATION TO CURE, REMOVE, REMEDY OR OTHERWISE DEAL WITH SUCH UNDERGROUND TANKS, STRUCTURE, FEATURE OR IMPEDIMENT IF SUCH IS DONE IN A MANNER WHICH MEETS ACCEPTABLE ENGINEERING PRACTICE IS PRE-APPROVED BY THE DOT. SHOULD PERMITTEE DETERMINE THAT SUCH UNFORESEEN UNDERGROUND IMPEDIMENT RENDERS PERMITTEE'S WORK AS AUTHORIZED BY THIS PERMIT UNFEASIBLE, PERMITTEE SHALL HAVE THE OPTION OF RESTORING THE HIGHWAY TO ITS ORIGINAL CONDITION AND NOT PERFOMING SUCH WORK.

WORK ZONE TRAFFIC CONTROL:
THE CONTRACT SHALL ADHERE TO THE FOLLOWING STANDARD SHEETS:
619-11, 619-20, 619-30, 619-60

EXISTING BUILDING
PROPERTY LINE
EXISTING ASPHALT
TREE LINE, EVERGREEN TREE, DECIDUOUS TREE, SHRUB
GUARD RAIL
RIGHT-OF-WAY LINE
100 EXISTING CONTOUR
100 PROPOSED CONTOUR
S.F. SILT FENCE
L.O.D. PROPOSED LIMIT OF DISTURBANCE
C.F.S. COMPOST FILTER SOCK
O.C.F. ORANGE CONSTRUCTION FENCE
SWALE/ DITCH, FLOW ARROW, CHECK DAM
ROCK WALL
X X X X BARBED WIRE FENCE
OH OVERHEAD UTILITIES, UTILITY POLE
D DRAINAGE PIPE, CATCH BASIN, END SECTION
S SANITARY PIPE, MANHOLE
FM FM FORCEMAIN
PROPOSED BUILDING
GV G GM GAS LINE/ VALVE/ METER
T TELCO VAULT TELCO LINE/ PEDESTAL/ HANDHOLE/ MANHOLE/ VAULT
EM E ELEC VAULT E TRANS ELEC METER/ LINE/ HANDHOLE/ MANHOLE/ VAULT/ TRANSFORMER
HYD WV W W WATER LINE/ HYDRANT/ VALVE/ WELL/ VAULT
C CABLE VAULT CABLE/ PEDESTAL/ HANDHOLE/ VAULT
F FIBER VAULT FIBER PEDESTAL/ HANDHOLE/ VAULT
U.G. U.G. UNDERGROUND UTILITIES
E & T ELECTRIC & TELEPHONE
SETBACK
C.O. TR MH CLEANOUT, TRAFFIC MANHOLE, MANHOLE
ONLY TRAFFIC CONTROL PAVEMENT MARKINGS
TRAFFIC LIGHT TRAFFIC LIGHT/ HANDICAP PARKING SYMBOL
INLET PROTECTION
LIGHT POLE/ WALL PACK
MAILBOX, POST, BOLLARD
BORE/ TEST PIT, DIRECTIONAL FLOW ARROW, FLAGGING
SIGN

LEGEND

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069423
Licensed Professional Engineer

FREEMAN ESTATES HOUSING
7430 HIGHBRIDGE ROAD
TOWN OF MANLIUS, STATE OF NEW YORK

NOTES & LEGEND SHEET

PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
BROLEX PROPERTIES, LLC
5912 NORTH BURDICK STREET
EAST SYRACUSE, NY 13057

PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG GA002
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 2 OF 11

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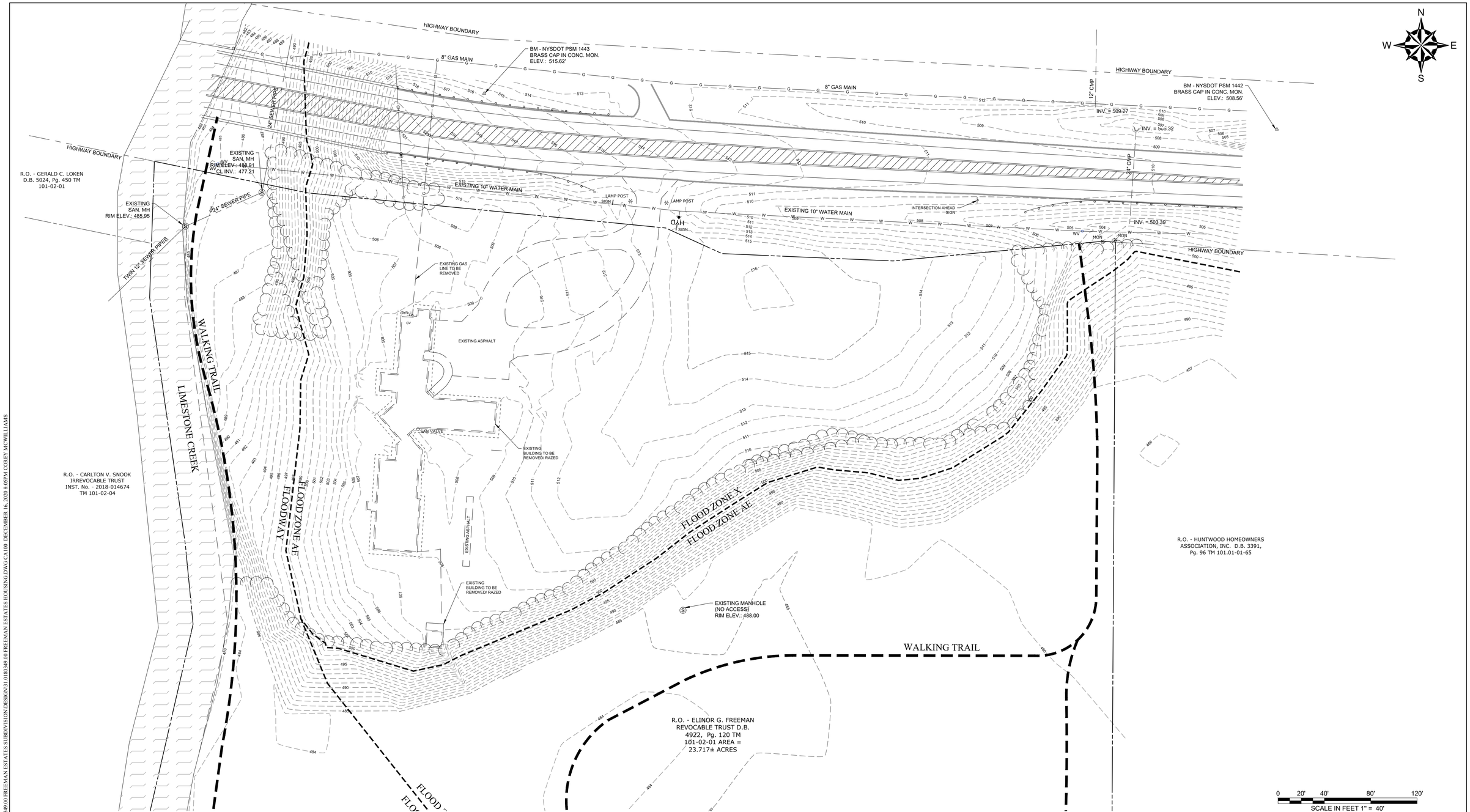

0 20' 40' 80' 120'

SCALE IN FEET 1" = 40'

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EXISTING FEATURES AND DEMOLITION PLAN

PREPARED BY:
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PREPARED FOR:
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EAST SYRACUSE, NY 13057

PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	CA100
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 3 OF 11

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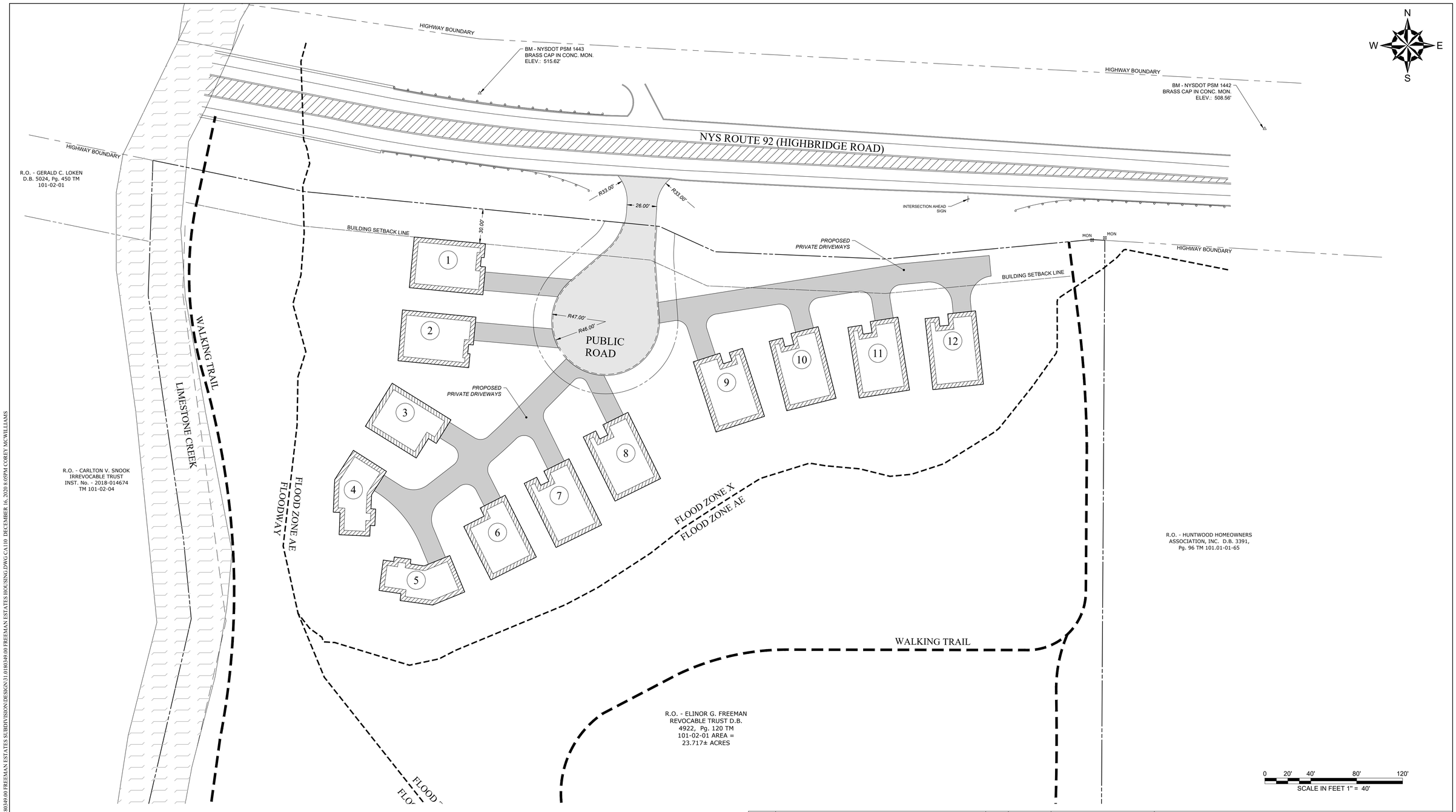

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BART A. KLETT
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Licensed Professional Engineer

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TOWN OF MANLIUS, STATE OF NEW YORK

OVERALL SITE PLAN

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: BROLEX PROPERTIES, LLC 5912 NORTH BURDICK STREET EAST SYRACUSE, NY 13057	
PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG CA110
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	
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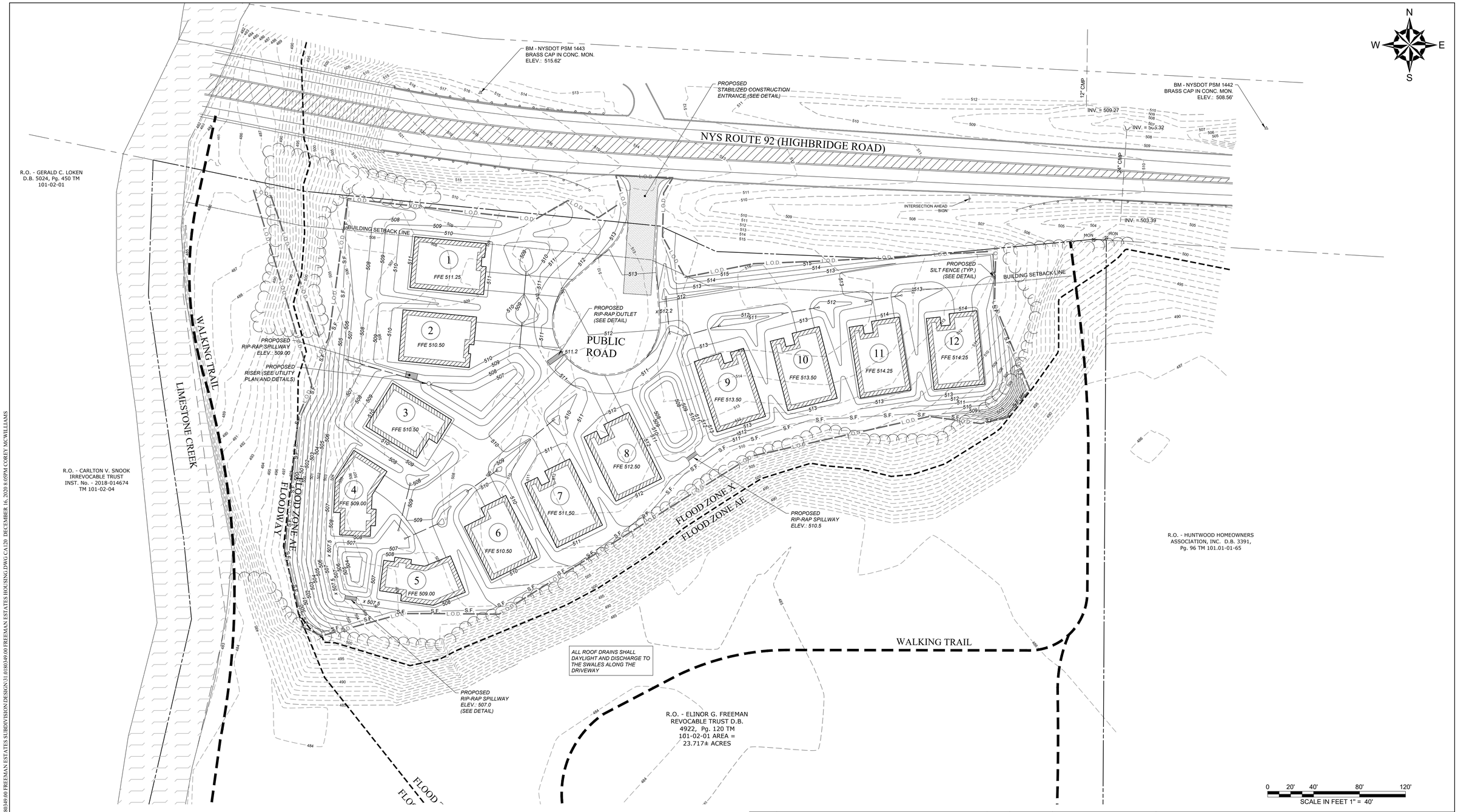

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GRADING & EROSION CONTROL PLAN

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: BROLEX PROPERTIES, LLC 5912 NORTH BURDICK STREET EAST SYRACUSE, NY 13057	
PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG CA120
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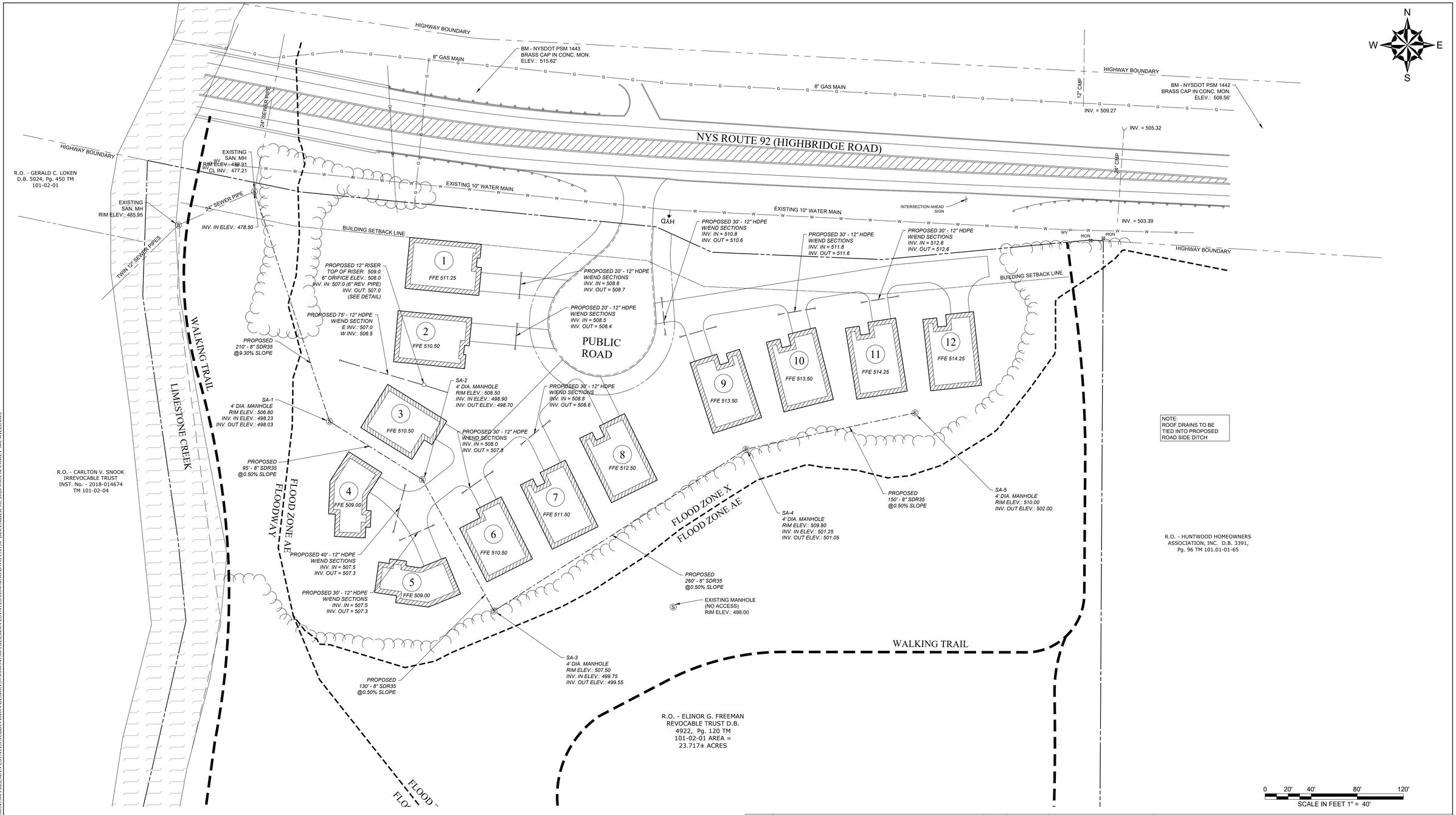

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UTILITY PLAN

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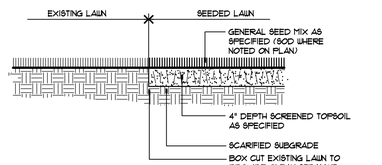
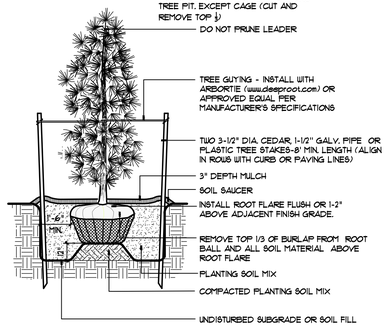


SECTION

3 / L-1 **SEEDED LAWN**

NOT TO SCALE — **FOR SLOPES LESS THAN 1V:4H AS INDICATED ON PLANS** — **32-9200-01A**



SECTION

2 / L-1 **EVERGREEN PLANTING**

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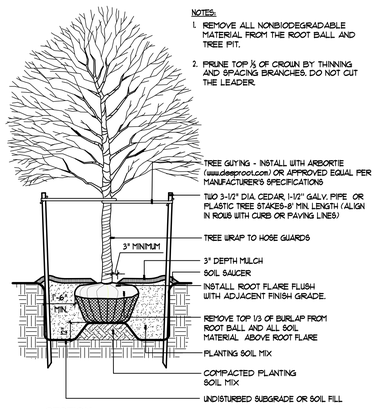
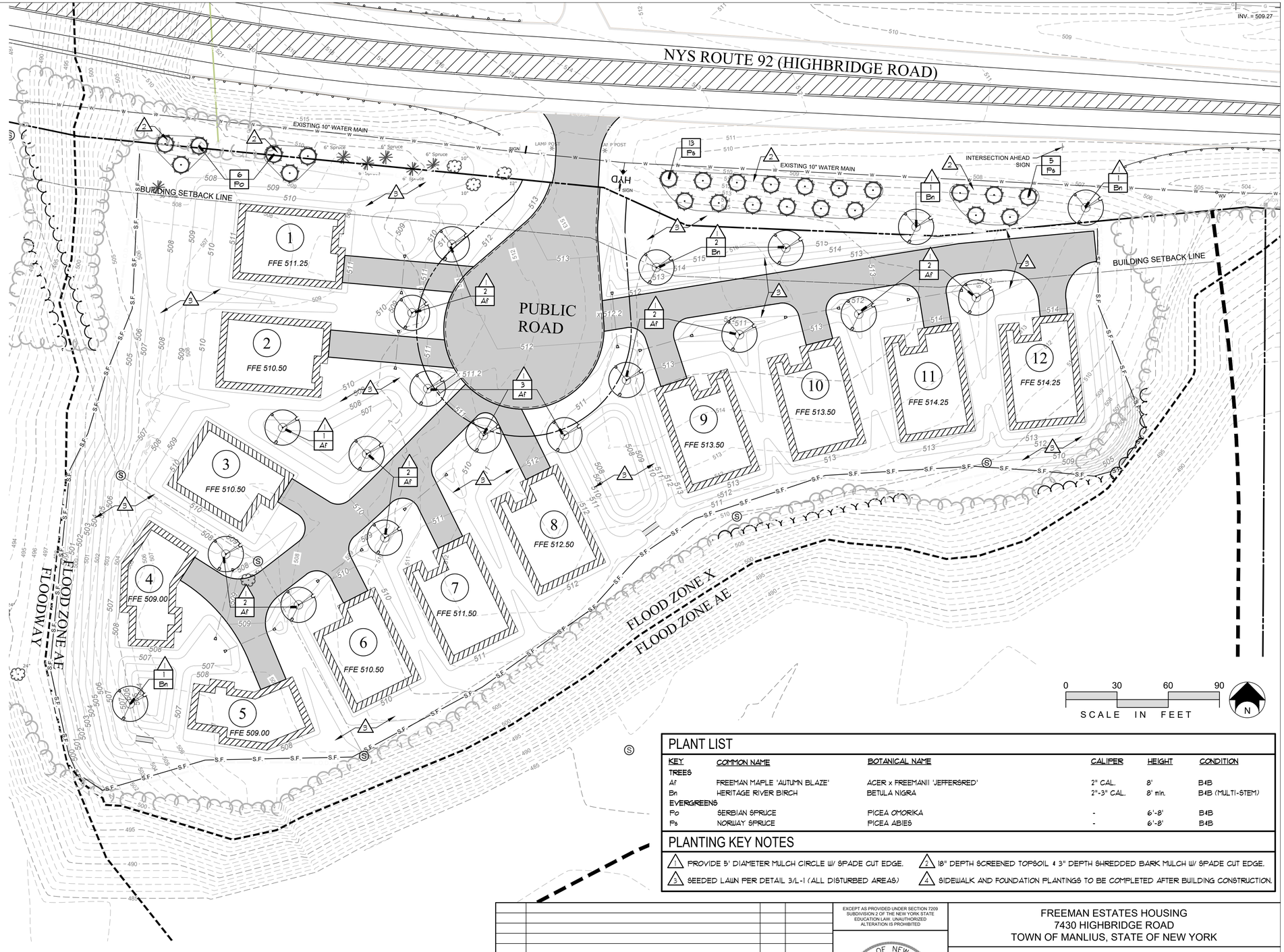


SECTION

1 / L-1 **TREE PLANTING**

NOT TO SCALE — **32-9300-01**



PLANT LIST

KEY	COMMON NAME	BOTANICAL NAME	CALIPER	HEIGHT	CONDITION
TREES					
Af	FREEMAN MAPLE 'AUTUMN BLAZE'	ACER x FREEMANII 'JEFFERSRED'	2" CAL.	8'	B&B
Bn	HERITAGE RIVER BIRCH	BETULA NIGRA	2"-3" CAL.	8' min.	B&B (MULTI-STEM)
EVERGREENS					
Po	SERBIAN SPRUCE	PICEA OMORIKA	-	6'-8'	B&B
Ps	NORWAY SPRUCE	PICEA ABIES	-	6'-8'	B&B

PLANTING KEY NOTES

1. PROVIDE 5' DIAMETER MULCH CIRCLE W/ SPADE CUT EDGE.
2. 18" DEPTH SCREENED TOPSOIL & 3" DEPTH SHREDDED BARK MULCH W/ SPADE CUT EDGE.
3. SEEDED LAWN PER DETAIL 3/L-1 (ALL DISTURBED AREAS)
4. SIDEWALK AND FOUNDATION PLANTINGS TO BE COMPLETED AFTER BUILDING CONSTRUCTION.

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LANDSCAPING PLAN

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PREPARED FOR:
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PROJ MGR: E.K.R.	REVIEWED BY: J.F.F	CHECKED BY: C.J.M.	DWG GA002
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 7 OF 11

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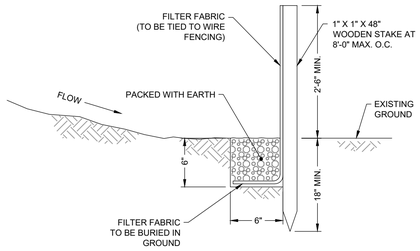

SILT FENCE DETAIL

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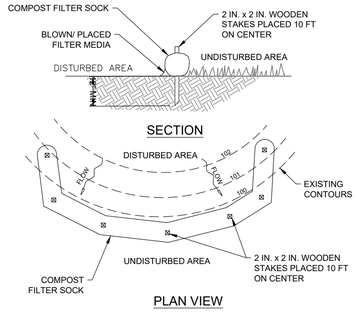
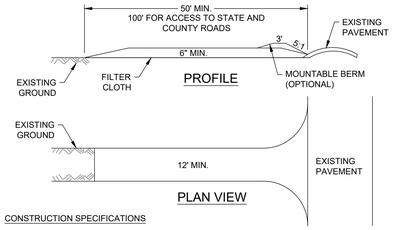


NOTES:

1. SOCK FABRIC SHALL MEET STANDARDS AND SPECIFICATIONS OUTLINED IN NYSDEC STORMWATER MANUAL.
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING ELEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.
3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
5. COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
6. BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

COMPOST FILTER SOCK

NOT TO SCALE

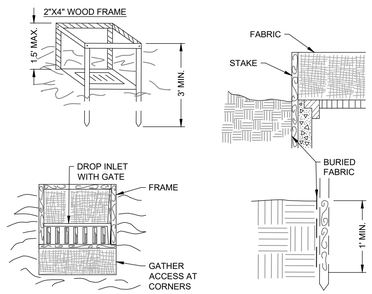


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN FIFTY (50) FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A THIRTY (30) FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRACKING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN EVENT.

STABILIZED CONSTRUCTION ENTRANCE

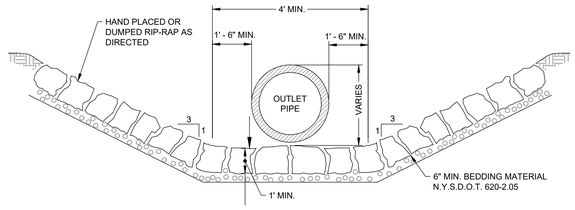
NOT TO SCALE



1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVERFLOW STABILITY.
7. MAXIMUM DRAINAGE AREA 1 ACRE.

FILTER FABRIC INLET PROTECTION

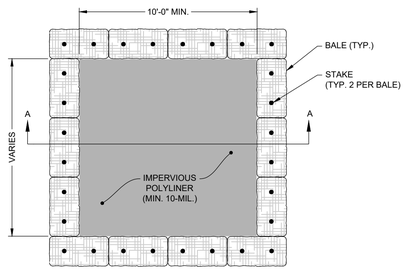
NOT TO SCALE



RIP-RAP DITCH FROM OUTLET PIPE DETAIL

NOT TO SCALE

811 Know what's below. Call before you dig.

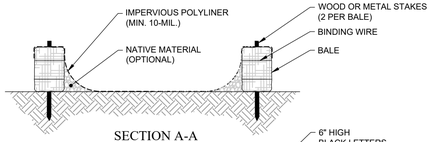


PLAN VIEW

NOT TO SCALE

CONCRETE WASHOUT AREA

(TYP. "ABOVE GRADE" WITH BALES)

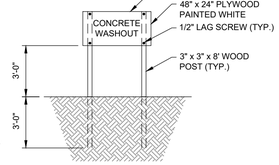


SECTION A-A

NOT TO SCALE

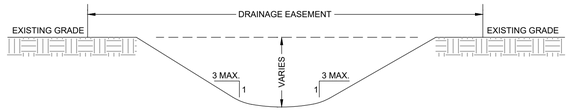
NOTES:

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS.
2. KEEP AS FAR FROM DRAINAGE CHANNELS AND WETLAND AREAS AS PRACTICAL.
3. SUMPS TO BE CLEANED AND WASTE CONCRETE REMOVED AND PROPERLY DISPOSED OF UPON COMPLETION OF WORK.



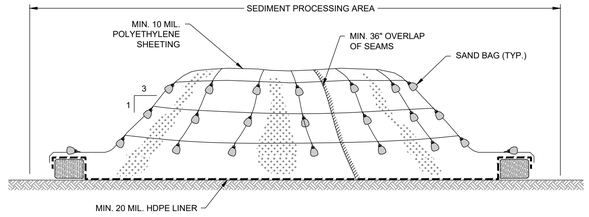
CONCRETE WASHOUT SIGN DETAIL (OR EQUIVALENT)

NOT TO SCALE



TYPICAL SWALE OR CHANNEL DETAIL

NOT TO SCALE



NOTES:

1. STOCKPILES SHALL BE PLACED ON MINIMUM 20 MIL HDPE LINER.
2. STOCKPILES SHALL BE COVERED WITH MINIMUM 10 MIL POLYETHYLENE SHEETING WHENEVER LOADING, STABILIZATION, OR PLACEMENT IS NOT OCCURING.
3. STOCKPILE AREAS SHALL BE SUBJECT TO DUST / ODOR CONTROLS WHENEVER LOADING, STABILIZATION, OR PLACEMENT IS OCCURING AND AS DIRECTED BY ENGINEER. STOCKPILES SHALL BE COVERED WITH POLYETHYLENE WHEN THESE ACTIVITIES ARE NOT BEING PERFORMED.
4. SHEETING COVERING STOCKPILE SHALL BE MAINTAINED TIGHTLY IN PLACE BY USING SAND BAGS ON ROPES WITH A MAXIMUM 10'-0" GRID SPACING IN ALL DIMENSIONS.
5. MINIMUM 36" OVERLAP OF ALL SEAMS REQUIRED.
6. STOCKPILE SIDE SLOPES SHALL BE NO STEEPER THAN 3 (HORIZONTAL) TO 1 (VERTICAL).
7. CONTRACTOR SHALL PLACE STRAW BALE BERMS AS SHOWN ON THE DETAIL ABOVE AROUND STOCKPILES GENERATED OUTSIDE OF THE SEDIMENT PROCESSING AREA. STRAW BALE BERMS, AS SHOWN ON THE DETAIL, ARE NOT REQUIRED FOR STOCKPILES IN THE SEDIMENT PROCESSING AREA.

TYPICAL STOCKPILE DETAIL

NOT TO SCALE

SOIL EXCAVATION AND BACKFILL RECOMMENDATIONS

EXCAVATIONS:

1. MAXIMUM ALLOWABLE SLOPES FOR EXCAVATIONS LESS THAN 20 FEET DEEP SHALL BE DONE IN ACCORDANCE WITH OSHA REGULATIONS, OR ANY APPLICABLE STATE AND OR LOCAL REGULATIONS.
2. SLOPING, BENCHING OR OTHER METHODS OF EXCAVATION SUPPORT FOR EXCAVATIONS GREATER THAN 20 FEET DEEP MUST BE DESIGNED BY A PROFESSIONAL ENGINEER.
3. CONTRACTOR SHALL ORGANIZE THE WORK IN A MANNER THAT EXCAVATIONS ARE OPEN FOR THE SHORTEST PRACTICAL TIME.
4. EXCAVATED OR IMPORTED BACKFILL MATERIALS SHOULD NOT BE STOCKPILED ADJACENT TO OPEN CUT EXCAVATIONS WITHIN A MINIMUM HORIZONTAL DISTANCE EQUAL TO THREE TIMES ITS DEPTH OR GREATER AS NECESSARY FOR SLOPE STABILITY AND ADJACENT TO THE SIDES OF SHEETED AND BRACED EXCAVATIONS WITHIN A MINIMUM HORIZONTAL DISTANCE EQUAL TO THE DEPTH OF THE EXCAVATION UNLESS THE EXCAVATION SUPPORT SYSTEM IS PROPERLY DESIGNED AND CONSTRUCTED FOR THE LOADS. STOCKPILING MATERIAL OVER EXISTING OR CONSTRUCTED UTILITIES MAY INDUCE SETTLEMENT BENEATH THEM AND SHOULD NOT BE PERMITTED.

BACKFILL RECOMMENDATIONS:

5. ORDINARY FILL (I.E. SUITABLE SOIL FROM EXCAVATION OPERATIONS) MAY BE USED FOR BACKFILL, PROVIDED THE MATERIAL IS STABLE, CAN BE COMPACTED TO THE REQUIRED DENSITY AS DESCRIBED BELOW. ORDINARY FILL SHOULD CONSIST OF SUITABLE ON-SITE SOIL, FREE OF ORGANICS, DELETERIOUS MATERIALS, ICE, SNOW, AND WASTE OF ANY KIND.
6. REPRESENTATIVE SAMPLES OF ALL FILLS AND BACKFILLS FOR USE ON THE PROJECT SHOULD BE TESTED USING MODIFIED PROCTOR METHOD (ASTM D1557) TO DETERMINE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT. THE MAXIMUM PARTICLE SIZE SHOULD BE NO GREATER THAN TWO-THIRDS OF THE LIFT THICKNESS. WATER CONTENT BY WEIGHT DURING COMPACTION SHOULD NOT EXCEED ±3 PERCENT OF OPTIMUM MOISTURE AS DETERMINED BY ASTM 1557.
7. IN STRUCTURAL AREAS (BENEATH HOMES, ROADS AND UTILITIES) FOR SOIL FILL SUBGRADE INTERVALS BELOW 3 FEET BELOW STRUCTURE, FILL LOOSE LIFT THICKNESSES SHALL BE NO GREATER THAN 12 INCHES. FOR FILL INTERVALS LESS THAN 3 FEET BELOW STRUCTURE (EXCLUDING SUBBASE STONE REQUIREMENTS), LOOSE LIFT THICKNESSES SHALL BE NO GREATER THAN 8 INCHES THICK. ALL LIFTS SHALL BE COMPACTED WITH A VIBRATORY SHEEPSFOOT COMPACTOR. FIELD COMPACTION SHOULD BE MEASURED PRIOR TO PLACING SUBSEQUENT LIFTS. SOIL SHALL BE COMPACTED TO A MINIMUM 90 PERCENT OF THE MAXIMUM DRY DENSITY FOR SOILS PLACED BELOW 3 FEET BELOW STRUCTURE, AND 95 PERCENT OF THE MAXIMUM DRY DENSITY FOR SOILS PLACED WITHIN 3 FEET BELOW THE STRUCTURE. COMPACTION OF BACKFILLED MATERIAL WITHIN THE ROADWAY WILL BE REQUIRED.
8. ROAD SUBBASE STONE SHALL BE COMPACTED TO A MINIMUM 95 PERCENT OF THE MAXIMUM DRY DENSITY.
9. IN NON-STRUCTURAL AREAS, SOIL FILL SHALL BE PLACED IN MAXIMUM 12-INCH THICK LOOSE LIFTS AND COMPACTED TO A STABLE MATRIX WITH A VIBRATORY SHEEPSFOOT COMPACTOR.
10. IN STRUCTURAL AREAS NOT REQUIRING FILL, THE EXPOSED SUBGRADES SHALL BE PROOF-COMPACTED WITH MULTIPLE PASSES OF A SHEEPSFOOT VIBRATORY COMPACTOR IN STATIC MODE PRIOR TO PLACEMENT OF CONCRETE FOR FOOTINGS OR ROAD SUBBASE STONE. WEAK OR SOFT SPOTS IDENTIFIED DURING PROOF COMPACTION SHALL BE EXCAVATED AND REPLACED WITH COMPACTED FILL. PROOF-ROLLING AND COMPACTION MAY BE WAIVED OR MODIFIED IF, WITH THE PROJECT AND TOWN ENGINEER'S CONCURRENCE, IT IS DETERMINED THAT THIS WILL DISTURB AN OTHERWISE SUITABLE SUBGRADE BASED ON OBSERVED FILED CONDITIONS.

TEMPORARY SEEDING REQUIREMENTS

1. SEEDING:
   - A. APPLY LAWN MIX AT A RATE (SEE SPECIFICATIONS)
   - B. APPLY SEED WITH A MECHANICAL SEEDER. OPTIMUM SETTING IN ONE INCH (EXCEPT SANDY SOILS, 2 INCHES).
   - C. WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTIPAKER TYPE SEEDER OR HYDRO-SEEDER IS USED, THE SEED BED SHALL BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A ROLLER, OR LIGHT DRAG. SEEDING OPERATIONS SHOULD BE ON THE CONTOUR.
2. MULCHING:
   - A. MULCH MATERIALS SHALL BE UN-ROTTED HAY OR STRAW AT A RATE OF 2.0 TO 3.0 TONS PER ACRE, OR 70 TO 90 POUNDS PER 1,000 SQUARE FEET. MULCH SHOULD NOT BE GROUND OR CHOPPED TO SHORT PIECES.
   - B. SPREAD UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 75 PERCENT TO 95 PERCENT OF THE SOIL SURFACE WILL BE COVERED.
   - C. MULCH ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER.

PERMANENT SEED REQUIREMENTS

1. SEEDBED PREPARATION:
   - A. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT (50%) CALCIUM PLUS MAGNESIUM OXIDES) AT A RATE PF 90 POUNDS PER 1,000 SQUARE FEET. APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OR 14 POUNDS PER 1,000 SQUARE FEET USING 10-20-10 OR EQUIVALENT.
   - B. WORK LIME AND FERTILIZER INTO SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM SEEDBED IS PREPARED.
   - C. REMOVE ALL ROCKS AND DEBRIS FROM SOIL SURFACE.
   - D. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACT, THE AREA MUST BE RE-TILLED AS ABOVE.
2. SEEDING:
   - A. PERMANENT SEEDING SHALL BE ERNST SOLAR FARM SEED MIX.
   - B. APPLY SEED WITH MECHANICAL SEEDER. OPTIMUM SEEDING DEPTH IS ONE INCH (EXCEPT SANDY SOILS, 2 INCHES).
   - C. WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTIPAKER TYPE SEEDER OR HYDRO-SEEDER IS USED, THE SEEDBED SHALL BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A ROLLER, OR LIGHT DRAG. SEEDING OPERATIONS SHOULD BE ON THE CONTOUR.
3. MULCHING:
   - A. MULCH MATERIALS SHALL BE UN-ROTTED HAY OR STRAW AT A RATE OF 2.0 TO 3.0 TONS PER ACRE, OR 70 TO 90 POUNDS PER 1,000 SQUARE FEET. MULCH SHOULD NOT BE GROUND OR CHOPPED TO SHORT PIECES.
   - B. SPREAD UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 75 PERCENT TO 95 PERCENT OF THE SOIL SURFACE WILL BE COVERED.
   - C. MULCH ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER.

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STATE OF NEW YORK
BARRY A. KLETT
069423
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FREEMAN ESTATES HOUSING
7430 HIGHBRIDGE ROAD
TOWN OF MANLIUS, STATE OF NEW YORK

DETAIL SHEET (EROSION CONTROL)

PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
BROLEX PROPERTIES, LLC
5912 NORTH BURDICK STREET
EAST SYRACUSE, NY 13057

PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG CA500
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 8 OF 11

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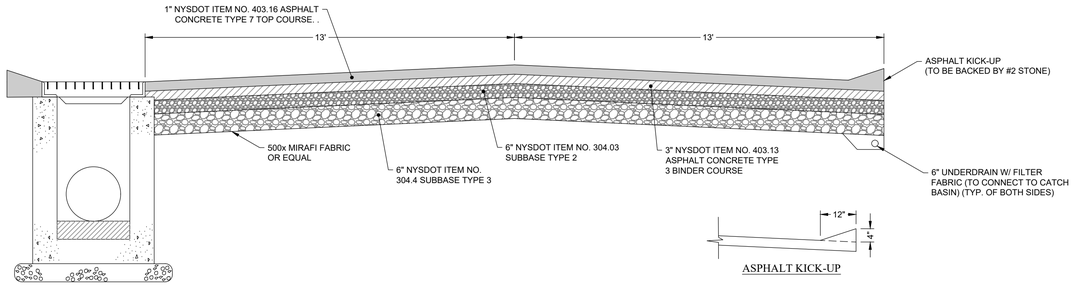
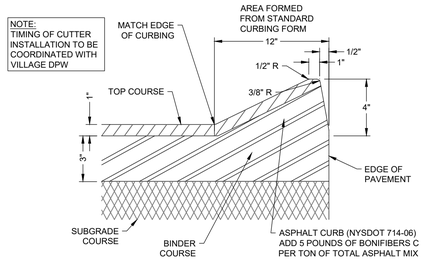


TYPICAL ROAD CROSS-SECTION (OUTSIDE OF NYSDOT RIGHT-OF-WAY)

NOT TO SCALE



ASPHALT CURB DETAIL

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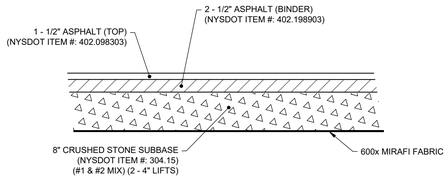
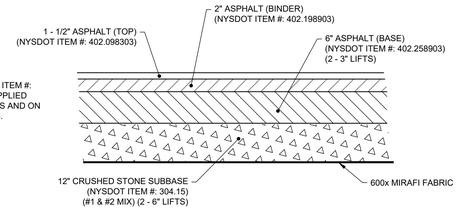


PAVEMENT SECTION WITHIN NYSDOT RIGHT-OF-WAY

NOT TO SCALE

NOTE:
TACK COAT (NYSDOT ITEM #: 407.0102) MUST BE APPLIED BETWEEN ALL LAYERS AND ON VERTICAL SURFACES.



SHOULDER SECTION WITHIN NYSDOT RIGHT-OF-WAY

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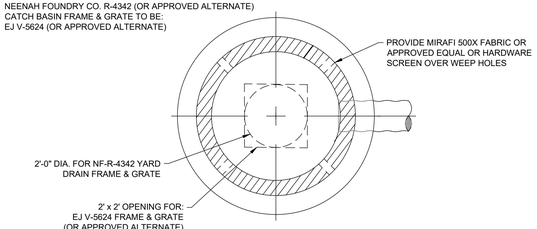
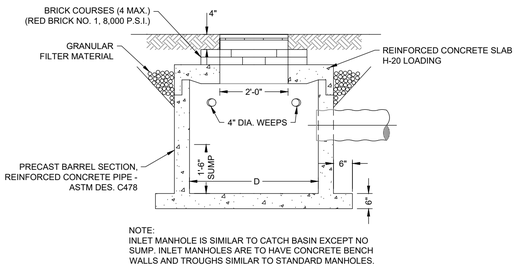
NOTE:
YARD DRAIN FRAME AND GRATE TO BE:
NEENAH FOUNDRY CO. R-4342 (OR APPROVED ALTERNATE)
CATCH BASIN FRAME & GRATE TO BE:
EJ V-5624 (OR APPROVED ALTERNATE)



PLAN SECTION
NOT TO SCALE



NOTE:
INLET MANHOLE IS SIMILAR TO CATCH BASIN EXCEPT NO SUMP. INLET MANHOLES ARE TO HAVE CONCRETE BENCH WALLS AND TROUGHS SIMILAR TO STANDARD MANHOLES.

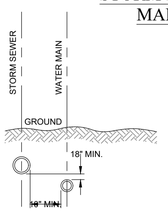
STANDARD PRECAST CONCRETE CATCH BASIN
NOT TO SCALE



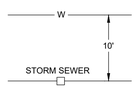
PLAN

SECTION

STORM SEWER & WATER MAIN CROSSING

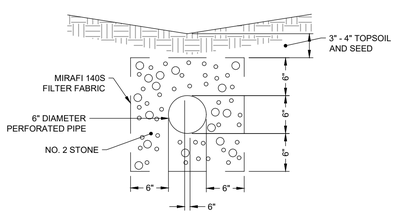


VERTICAL SEPARATION SECTION

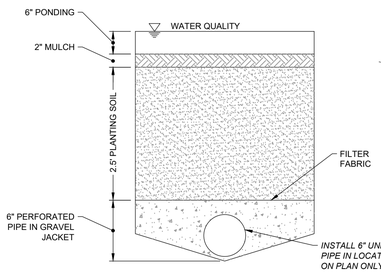


HORIZONTAL SEPARATION PLAN

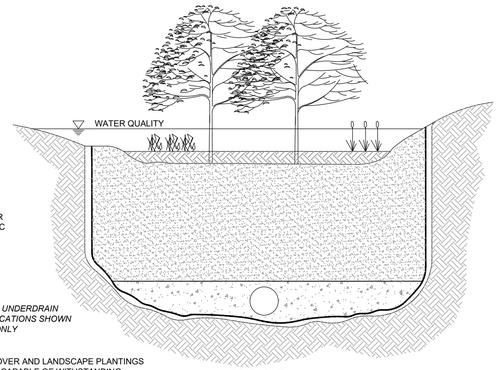
RELATION OF STORM SEWERS TO WATER MAINS
NOT TO SCALE



TYPICAL YARD UNDERDRAIN DETAIL
NOT TO SCALE



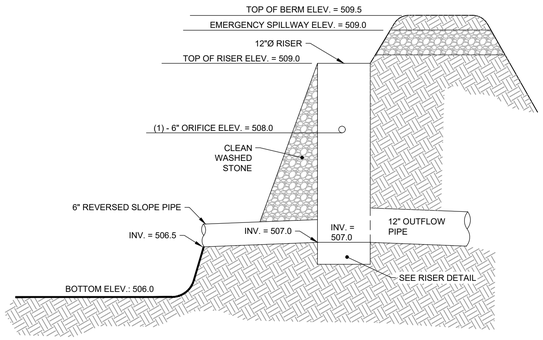
TYPICAL SECTION



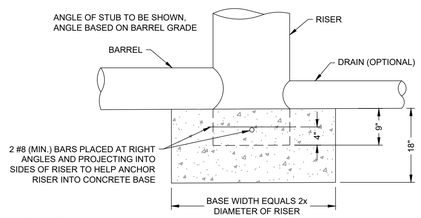
PROFILE

NOTES:
1. GRASS COVER AND LANDSCAPE PLANTINGS SHALL BE CAPABLE OF WITHSTANDING FREQUENT PERIODS OF INUNDATION AND DROUGHT.
2. (1) TREE PER 100 SQUARE FEET IS RECOMMENDED.

BIORETENTION FACILITY DETAIL
NOT TO SCALE



STORMWATER BASIN OUTLET CONTROL STRUCTURE
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. THE CONCRETE BASE SHALL BE POURED IN SUCH A MANNER TO INSURE THAT THE CONCRETE FILLS THE BOTTOM OF THE RISER TO THE INVERT OF THE OUTLET PIPE TO PREVENT THE RISER FROM THE BREAKING AWAY FROM THE BASE.
2. WITH ALUMINUM OR ALUMINIZED PIPE, THE EMBEDDED SECTION MUST BE PAINTED WITH CHROMATE OR EQUIVALENT.
3. RISER BASE MAY BE SIZED AS COMPUTED USING FLOTATION WITH A FACTOR OF SAFETY OF 1.2.

RISER DETAIL
NOT TO SCALE

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STATE OF NEW YORK · BART A. KLETT · 069423 · Licensed Professional Engineer

FREEMAN ESTATES HOUSING
7430 HIGHBRIDGE ROAD
TOWN OF MANLIUS, STATE OF NEW YORK

DETAIL SHEET (STORM)

PREPARED BY:
GZAGeoEnvironmental of NY
Engineers and Scientists
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PREPARED FOR:
BROLEX PROPERTIES, LLC
5912 NORTH BURDICK STREET
EAST SYRACUSE, NY 13057

PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG CA502
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 10 OF 11

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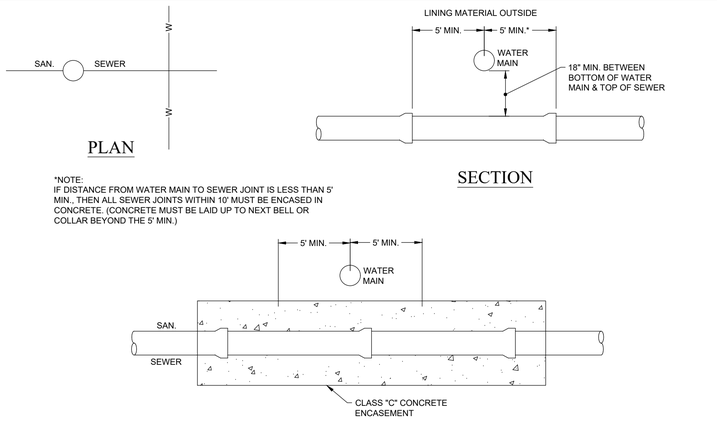


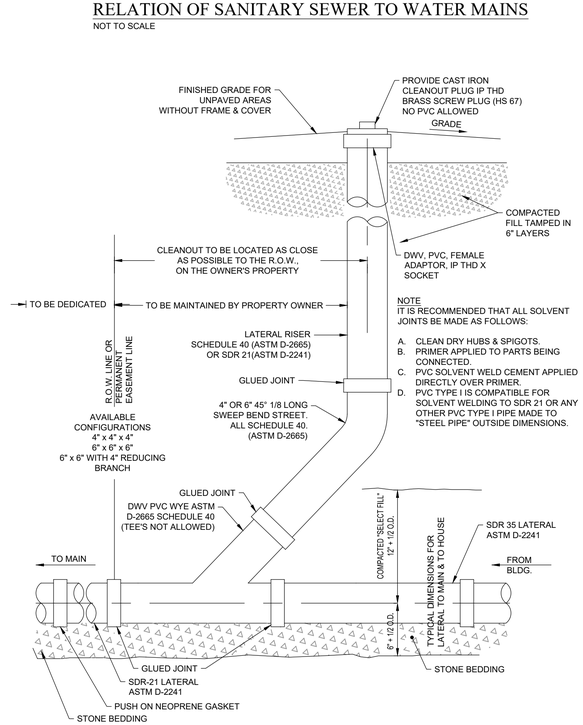
SANITARY SEWER & WATER MAIN CROSSING

NOT TO SCALE



RELATION OF SANITARY SEWER TO WATER MAINS

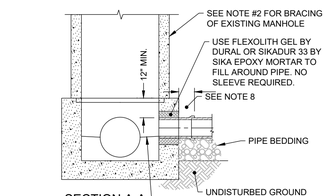
NOT TO SCALE



4" OR 6" P.V.C. CLEANOUT DETAIL FOR LATERAL CONNECTION

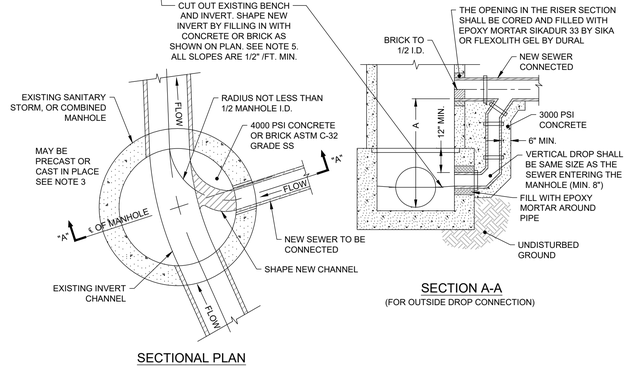
NOT TO SCALE

SPECIAL NOTE:
STORM SEWERS SHALL NOT BE CONNECTED TO SANITARY SEWERS.



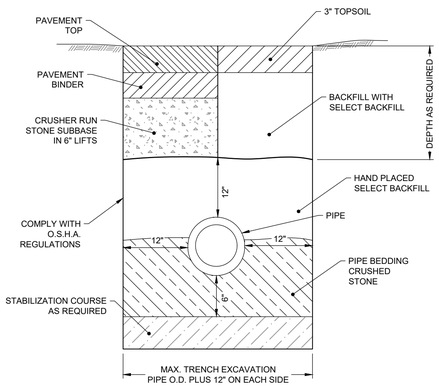
NOTES:

1. THE CROWN OF THE NEW SEWER SHALL NOT BE CONSTRUCTED LOWER THAN THE CROWN OF THE EXISTING MAIN SEWER. THE INVERT OF THE NEW SEWER SHALL BE CONSTRUCTED AT LEAST 3" ABOVE THE EXISTING MAIN SEWER INVERT.
2. EXISTING MANHOLE STRUCTURE SHALL BE SUFFICIENTLY BRACED AND PROTECTED TO PREVENT ANY SHIFTING OR DAMAGE TO THE MANHOLE.
3. THE EXISTING MANHOLE BASE MAY BE ROUND OR SQUARE, DEPENDING ON THE TIME THE MANHOLE WAS CONSTRUCTED.
4. GENERALLY A DROP CONNECTION SHALL BE PROVIDED WHEN DIM. A EXCEEDS 2' IN A SANITARY MANHOLE AND 5' IN A STORM SEWER.
5. CONTRACTOR MUST COAT ALL DISTURBED AREAS OF MANHOLE WITH 2 COATS OF SIKAGARD NO. 62 FOR INTERIOR OF BASE AND 2 COATS OF SUPER SERVICE BLACK FOR ALL OTHER SURFACES.
6. STUB AT MANHOLE SHALL NOT EXCEED 100 DEGREES ALIGNMENT ENTERING AGAINST UPSTREAM SEWER.
7. STUBS 4' MAX. R.C.P. & D.I.P., 1' MAX. ALL OTHER PIPE MATERIALS, FROM OUTSIDE FACE.
8. CORED OPENINGS IN MANHOLE RISER SECTIONS SHALL BE NO LESS THAN 6" FROM A RISER JOINT.
9. CONTRACTOR MAY CORE BORE OR DRILL A NEW OPENING IF REQUIRED. NO IMPACT DEVICES WILL BE ALLOWED TO BE USED FOR MAKING NEW HOLES IN EXISTING MANHOLES OR CHAMBERS.



SEWER CONNECTIONS TO EXISTING MANHOLE

NOT TO SCALE



TYPICAL PIPE TRENCH DETAIL

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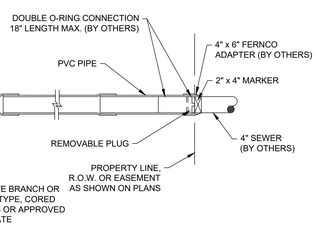
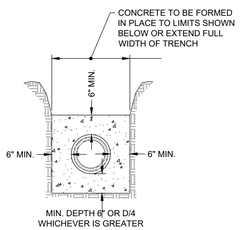


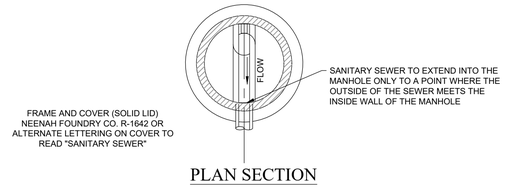
STANDARD PVC HOUSE LATERAL

NOT TO SCALE



TYPICAL ENCASEMENT DETAIL

NOT TO SCALE



STANDARD PRECAST SANITARY SEWER MANHOLE

NOT TO SCALE

FOR SEWERS 8 THRU 12 INCHES IN DIAMETER

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STATE OF NEW YORK
BART A. KLEIN
Lic. No. 069423
Professional Engineer

FREEMAN ESTATES HOUSING
7430 HIGHBRIDGE ROAD
TOWN OF MANLIUS, STATE OF NEW YORK

DETAIL SHEET (SANITARY)

PREPARED BY:
GZAGeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
BROLEX PROPERTIES, LLC
5912 NORTH BURDICK STREET
EAST SYRACUSE, NY 13057

PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG CA503
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 11 OF 11

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STORMWATER POLLUTION PREVENTION PLAN FOR COMPLIANCE WITH NYSDEC GENERAL PERMIT GP-0-20-001 FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

LOCATION:

Freeman Estates Housing
Town of Manlius,
Onondaga County

Owner:

Brolex Properties, LLC
5912 North Burdick Street
East Syracuse, New York 13057

Prepared by:



December 2020

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NOTICE TO OWNER, CONTRACTORS, SUBCONTRACTORS

This Stormwater Pollution Prevention Plan (SWPPP) is a necessary component for obtaining authorization for construction activities under New York's State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities (GP-0-20-001). Construction activities disturbing one or more acres[1] of land are required to obtain a SPDES permit; such projects that comply with the condition of GP-0-20-001 are eligible for authorization under that General Permit. The SPDES is implemented by the New York State Department of Environmental Conservation (NYSDEC) in accordance with Section 402 of the Federal Clean Water Act (CWA) and Article 17 of the New York State Environmental Conservation Law (ECL), and 6 NYCRR Part 750. This document has been prepared in accordance with the GP-0-20-001, Parts III and IV, which are specific to the SWPPP and Inspection and Maintenance Requirements, respectively.

It is expected that erosion and sediment control measures and Best Management Practices (BMPs) specified in this SWPPP and in project plans will be amended and supplemented as construction proceeds. GP-0-20-001 requires that such amendments be recorded and incorporated into the SWPPP; therefore, the SWPPP is a living document which requires consistent maintenance and incorporation of additional information by responsible parties.

In accordance with the General Conditions of GP-0-20-001, parties responsible for compliance with GP-0-20-001 and the SWPPP are:

Owner or Operator: means the person, persons, or legal entity that owns or leases the property on which the construction activity is occurring and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications. The *owner or operator* must comply with all conditions of GP-0-20-001.

The owner or operator shall ensure that the provisions of the SWPPP are implemented from the commencement of construction activity until all areas of disturbance have achieved final stabilization and the Notice of Termination (NOT) has been submitted to the Department in accordance with Part V of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4.

Contractor(s) and Sub-Contractor(s): The party or parties identified by the Owner or Operator which will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion and sediment control practices required in the SWPPP and, if applicable, the party or parties that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP.

Each Contractor and Sub-Contractor shall designate one or more "trained contractors" from their company who will be responsible for implementation of the SWPPP and identifying and implementing appropriate amendments and supplements to controls and BMPs identified in the SWPPP. Trained

[1] Under some circumstances, construction activities disturbing less than one acre of land may also be required to obtain a SPDES permit, and may be eligible for authorization under GP-0-20-001. See GP-0-20-001at: http://www.dec.ny.gov/docs/water_pdf/gp020001.pdf

contractors shall meet training requirements and perform SWPPP duties in accordance with Part III.A.6 of GP-0-20-001.

Prior to initiation of construction activities, authorized representatives of all contractor and sub-contractor companies identified above shall sign a copy of the certification statement presented in **Attachment P**.

In accordance with the GP-0-20-001, the owner or operator must comply with all conditions of GP-0-20-001. All Contractors and Sub-Contractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the CWA and the ECL and is grounds for an enforcement action against the owner or operator and/or the Contractor/Sub-Contractor; permit revocation, suspension, or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Town of Manlius may order an immediate stop to all construction activity at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the owner or operator.

A copy of the SWPPP, Notice of Intent (NOI) and NOI acknowledgement letter shall be maintained on site in accordance with GP-0-20-001 Part II.C.2. The SWPPP, including changes and SWPPP documentation (i.e. inspection reports, corrective action reports) shall be maintained a minimum of five years after final stabilization of all disturbed areas.

At a minimum, and in accordance with GP-0-20-001, documented site inspections conducted at least once every seven (7) calendar will be performed by a qualified inspector to ensure all required erosion and sediment control measures are in place, properly positioned, and in good condition. These inspections will be continual for the duration of the construction phase, or until earth-disturbing construction activities have been discontinued and all disturbed areas have been permanently stabilized.

This SWPPP is meant to address the general requirements of GP-0-20-001 and to present a framework for the owner or operator and contractor(s) and sub-contractor(s) to utilize for compliance. If unanticipated site conditions warrant additional methods of control, the Contractor, in consultation with the project SWPPP Inspector, shall implement those measures in accordance with NYS Standards and Specifications referenced above. GZA GeoEnvironmental of New York (GZA) assumes no responsibility for permit compliance by the applicable parties.

1.0 OVERVIEW

This Stormwater Pollution Prevention Plan (SWPPP) was prepared on behalf of Brolex Properties, LLC by GZA GeoEnvironmental of New York (GZA) for the proposed residential development on Highbridge Road (NYS Route 92) ("Project"). This report details the onsite erosion and sediment control plans designed in accordance with NYSDEC criteria set forth in the "Standards and Specifications for Erosion and Sediment Control", July 2016. The design criteria used for this analysis is based on the "New York State Department of Environmental Conservation's Phase II Stormwater Rules" and the "New York State Stormwater Management Design Manual" (Design Manual), dated January 2015, in association with "SPDES General Permit for Stormwater Discharges from Construction Activity", dated January 29, 2020 (GP-0-20-001).

1.1 PROJECT DESCRIPTION AND SITE LOCATION

The Project site is located on the south side of New York State Route 92 (Highbridge Road), just east of Sweet Road (Highbridge Street) and Limestone Creek in the Town of Manlius, in Onondaga County New York. The Town of Manlius is listed as an MS4.

1.2 WETLANDS AND WATERBODIES

A review of the New York State Department of Environmental Conservation (NYSDEC) Environmental Resource mapping application, indicates that the Project Site is not within a DEC Freshwater Wetland (FWW) or the 100' buffer. The tax parcel is bounded on the western edge by Limestone Creek, a class C stream.

A review of the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps indicate that no wetlands are on Site. Limestone Creek is mapped by the NWI as a riverine perennial system with an unconsolidated bottom (R2UBH).

1.3 CULTURAL RESOURCES

According to the Cultural Resource Information System mapper, the Site falls within an archeologically sensitive area. The Site was submitted to the State Historic Preservation Office as project number 20PR01417. At the time of this submission it has been assumed that no cultural resources will be impacted by the proposed project.

1.4 RARE AND ENDANGERED SPECIES

A review of the NYSDEC Environmental Resource Mapper indicates that the Site is located within the vicinity of bats listed as endangered or threatened. According to the New York Nature Explorer endangered or threatened bats are not present in the Town of Manlius.

1.5 DESCRIPTION OF PROPOSED WORK

The project consists of clearing land for the proposed construction of twelve (12) residential buildings with associated utilities, driveways, and stormwater management facilities. The estimated time for completion is within one year of receiving all necessary permits and approvals.

The proposed project consists of approximately 3.5 acre of disturbance. Project disturbance on site will be the result of rutting from tracked or rubber wheeled vehicles, vegetation clearing where necessary, earthwork/grading activities, and the installation of erosion control measures. Silt fence and/or compost filter socks and a stabilized construction entrances shall be installed where erosion or disturbance is occurring and is a direct cause of the project. A stabilized construction entrance shall be installed only when sediment tracking is occurring within the public rights-of-way. See **Attachment R** for the stabilized entrance location (if necessary). Brush mowing will be performed only as necessary in areas where right-of-way maintenance has not been recently performed.

1.6 DESCRIPTION OF SOILS

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey 2.0, the predominant soils present onsite are classified as Hydrological Soil Group (HSG) Type A, B, C, and B/D. The soils within the area of disturbance are HSG Type A. The soils within the parcel boundary are listed as the Hamlin silt loam (Hb), Honeoye silt loam (HnB), Palmyra gravelly loam (PgB), Teel silt loam (Te), and Wayland soils complex (Wn) Series.

Refer to **Attachment F** for additional soil information and NRCS soil map for the site vicinity.

2.0 EXISTING CONDITIONS

The existing Project Site consists of a residential/commercial lot including a residential/commercial building, two (2) sheds, an asphalt loop driveway, grass landscaping and mature trees. The site is surrounded by a wooded area on a slope leading down to a FEMA Zone AE floodplain with mature trees, dense underbrush and some scrub/shrub areas. Limestone Creek runs north and south on the west side of the parcel boundary.

Stormwater from the Project Site ultimately flows offsite via overland flow to the south and west. Stormwater flowing to the west discharges directly into Limestone Creek. Stormwater flowing to the south enters the FEMA Zone AE floodplain which discharges into Limestone creek to the west.

The existing drainage areas to be analyzed in this report are the areas that will be affected by the proposed construction activities. Three drainage areas totaling approximately 7.23± acres were determined to be hydrologically impacted by the construction of the proposed development.

Drainage area (E-1) consists of 4.81± acres and was calculated to have a time of concentration (Tc) of 14.4 minutes and a curve number (CN) of 55. This area is mostly comprised of grass landscaping, roof area, asphalt paving, woods, and woods/brush floodplain. Runoff from this drainage area generally flows from east to west via overland flow into Limestone Creek.

Drainage area (E-2) consists of 2.32± acres and was calculated to have a time of concentration (Tc) of 14.1 minutes and a curve number (CN) of 44. This area is mostly comprised of grass landscaping, woods, and woods/brush floodplain. Runoff from this drainage area generally flows from north to south via overland flow into the FEMA Zone AE floodplain.

Drainage area (O-1) consists of 0.1± acres and was calculated to have a time of concentration (Tc) of 7.5 minutes and a curve number (CN) of 39. This small offsite area is comprised of grass landscaping. Runoff from this drainage area generally flows offsite to the north into the New York State Route 92 (Highbridge Road) right of way.

Please refer to **Attachment G** Existing Drainage Area Map for details. Table 1 provides a summary of predeveloped peak flow rates.

TABLE 1 – PRE-DEVELOPED PEAK FLOW RATES (7.23± Acres)

Area Designation	Q_1 (cfs)	Q_2 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
E-1 (4.81 acres)	0.01	0.03	0.88	7.44
E-2 (2.32 acres)	0.00	0.00	0.01	1.07
O-1 (0.1 acres)	0.00	0.00	0.00	0.02
Total = 7.23 acres	0.01	0.03	0.89	8.51

All supporting data and calculations used to derive these results can be found in **Attachment H.**

2.1 DURATION OF CONSTRUCTION ACTIVITY

Construction activities are scheduled to begin Winter/Spring 2021 and be completed within one year.

3.0 DEVELOPED CONDITIONS

The developed drainage area is comprised of the same 7.23-acre drainage area as existing conditions. The proposed overall drainage area is divided up into five (5) sub areas. The Developed Drainage Area Map can be found in **Attachment I**.

The first drainage area (D-1) consists of 0.77 acres. This area includes the asphalt entrance and cul-de-sac and two (2) of the proposed housing units (buildings '1' and '2'). This area also includes the asphalt driveways for each building, as well as a bioretention basin. Runoff from this drainage area generally flows from northeast to southwest from the asphalt cul-de-sac, through a curb cut, into a bioretention area, and discharges to the west towards Limestone Creek. This drainage area is routed to Limestone Creek in the HydroCAD model via Reach-1. The runoff area has a curve number CN=68 and a time of concentration of 5.0 minutes.

The second drainage area (D-2) consists of 0.85 acres. This area includes six (6) of the proposed housing units (buildings '3' through '8'). This area also includes the asphalt driveways for each building, as well as a bioretention basin. Runoff from this drainage area generally flows from northeast to southwest from the south side of the asphalt cul-de-sac, into a bioretention area, and discharges to the southwest towards

the FEMA Zone AE floodplain. This drainage area is routed to Limestone Creek in the HydroCAD model via Reach-2. This runoff area has a curve number CN=75 and a time of concentration of 5.0 minutes.

The third drainage area (D-3) consists of 0.99 acres. This area includes four (4) of the proposed housing units (buildings '9' through '12'). This area also includes the asphalt driveways for each building, as well as a bioretention basin. Runoff from this drainage area generally flows from north to south, into a bioretention area, and discharges to the south towards the FEMA Zone AE floodplain. This drainage area is routed to Limestone Creek in the HydroCAD model via Reach-3 and Reach-4. This runoff area has a curve number CN=62 and a time of concentration of 5.0 minutes.

The fourth drainage area (BYPASS-1) consists of 3.01 acres. This area consists of the western portion of the existing wooded slope and a portion of the FEMA Zone AE floodplain. Runoff from this area is downstream of the proposed development (thus bypass) and flows overland to the south and west into the FEMA Zone AE floodplain, and discharges into Limestone Creek. This runoff area has a curve number CN=56 and a time of concentration of 19.0 minutes.

The fifth drainage area (BYPASS-2) consists of 1.61 acres. This area consists of the eastern portion of the existing wooded slope and a portion of the FEMA Zone AE floodplain. Runoff from this area is downstream of the proposed development (thus bypass) and flows overland to the south and west into the FEMA Zone AE floodplain, and discharges into Limestone Creek. This drainage area is routed to Limestone Creek in the HydroCAD model via Reach-4. This runoff area has a curve number CN=47 and a time of concentration of 18.2 minutes.

Table 2 summarizes the post-developed peak flow rates for the drainage areas prior to detention.

TABLE 2 - DEVELOPED PEAK FLOW RATES (7.23 ± Acres)

Area Designation	Q_1 (cfs)	Q_2 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
D-1 (0.77 acres)	0.18	0.37	1.13	3.36
D-2 (0.85 acres)	0.55	0.85	1.90	4.67
D-3 (0.99 acres)	0.02	0.14	0.88	3.38
BYPASS-1 (3.01 acres)	0.01	0.03	0.57	4.28
BYPASS-2 (1.61 acres)	0.00	0.00	0.02	1.00
Total = 7.23 acres	0.76	1.39	4.50	16.69

All supporting data and calculations used to derive the post-developed peak flow rates can be found in **Attachment J**.

3.1 ROUTED OUTFLOWS

The three (3) proposed bioretention areas are designed to accommodate the proposed development to reduce the developed peak flow rates to less than the existing rates. The flows from the development will flow to a bioretention area in each drainage area (D-1, D-2, D-3) via overland flow and underground

drainage piping. The bioretention area in drainage area D-1 includes a standpipe outlet structure with and orifice to restrict flows below those of pre-developed conditions while ensuring positive drainage due to lose proximity the building '2' and '3'. An emergency spillway is also included in the D-1 bioretention area at the west side of the basin. Discharge from the bioretention area, including the emergency spillway, will be directed west through drainage area BYPASS-1 towards Limestone Creek via Reach-1 in the HydroCAD model. The bioretention area in drainage area D-2 includes a spillway at the south side of the basin. The spillway will restrict flows below those of pre-developed conditions. Discharge from the bioretention area will be directed south and west through drainage area BYPASS-1 towards Limestone Creek via Reach-2 in the HydroCAD model. The bioretention area in drainage area D-3 includes a spillway at the south side of the basin. The spillway will restrict flows below those of pre-developed conditions. Discharge from the bioretention area will be directed south and west through drainage area BYPASS-2 towards Limestone Creek via Reach-3 and Reach-4 in the HydroCAD model. The "Reach" node feature is used to accurately detail the connection of the drainage areas as depicted on the Developed Drainage Area Map, **Attachment I**.

3.2 SUMMARY OF PEAK FLOW RATES

Table 3 compares the existing vs. developed peak flow rates for the overall development after routing.

TABLE 3 - EXISTING VS. DEVELOPED PEAK FLOW RATES (OVERALL 7.23± ACRES)

Storm Frequency	$Q_{Existing}$ (cfs)	$Q_{Developed}$ (cfs)	% Change
1	0.01	0.01	0%
2	0.03	0.03	0%
10	0.89	0.57	-35.9%
100	8.51	7.41	-12.9%

These results show a reduction in overall peak rate discharge from the site is achieved.

4.0 WATER QUALITY, CHANNEL PROTECTION AND RUNOFF REDUCTION VOLUME

In keeping with the goals of the NYSDEC Stormwater Pollution Prevention Control and SPDES General Permit GP-0-20-001 associated with long term development, in order to meet pollutant removal goals, Runoff Reduction and Source Control practices have been implemented to provide the required Runoff Reduction volume (RRv). Water Quality volume (WQv) and Stream Channel Protection volume (CPv) have been fully reduced by RRv standard practices. This is being provided by the three (3) bioretention areas in each of the drainage areas (D-1, D-2, D-3). Table 4 below shows the required and provided Water Quality, Channel Protection, and Runoff reduction volumes for the development.

TABLE 4 - WATER QUALITY, CHANNEL PROTECTION, AND RUNOFF REDUCTION VOLUME

Water Quality		*Channel Protection*		*Runoff Reduction*	
WQv Req'd	**WQv Provided**	**CPv Req'd**	**CPv Provided**	**Min RRv Req'd**	**RRv Provided**
(ac-ft)	*(ac-ft)*	*(ac-ft)*	*(ac-ft)*	*(ac-ft)*	*(ac-ft)*
0.11	0.22	0.03	Fully Reduced by RRv	0.056	0.17

5.0 STORMWATER MANAGEMENT PLANNING

The NYS Stormwater Design Manual has created a five-step planning process for addressing stormwater management in new developments. This process is intended to guide the designer through steps that maintain pre-construction hydrologic conditions of the site.

The five steps include:

1. Site planning to preserve natural features and reduce impervious cover;
2. Calculations of the water quality volume for the site;
3. Incorporation of green infrastructure techniques and standard SMP's with Runoff Reduction Volume (RRv) capacity;
4. Use of standard SMP's where applicable, to treat the portion of Water Quality volume not addressed by green infrastructure techniques and standard SMP's with RRv capacity; and
5. Design of volume and peak rate control practices where required.

The five-step process has been applied to the site as follows:

1. As best as possible, the site has been developed in the less sensitive areas of the subject property;
2. Calculations for Water Quality volume can be found in **Attachment K**;
3. Green Infrastructure Planning practices have been incorporated into the design of the project. Reduction of clearing and grading, and soil restoration are two examples of planning practices used in this development;
4. Bioretention areas have been designed to treat the required Water Quality volume for the development (see **attachment I**); and
5. The bioretention areas have also been designed to control the balance of the peak flows (see **attachment J**).

5.1 TECHNICAL JUSTIFICATION FOR RUNOFF REDUCTION REQUIREMENTS (PER NYS SWDM CH. 5)

- **Preservation of Undisturbed Areas:** Undisturbed areas will be conserved during and after construction.

- **Preservation of Buffers:** All buffers will be conserved during and after construction.
- **Reduction of Clearing and Grading:** Clearing and grading limits shall be the minimum necessary to build the cul-de-sac, driveways, foundations, utilities and stormwater management facilities.
- **Locating Development in Less Sensitive Areas:** The development has been located in areas that will create the least impact to sensitive areas.
- **Open Space Design:** Open space design techniques have been utilized to the greatest extent practical.
- **Soil Restoration:** Deep ripping and decompaction will be done in grass areas; where practical, following construction. Soil amendments (profile or approved equal) will be added to the hydro seed mix.

5.2 PLANNING PRACTICES FOR REDUCTION OF IMPERVIOUS COVER

- **Roadway Reduction:** Minimum roadway widths and lengths have been utilized. The proposed width is the minimum necessary to allow fire apparatus to the proposed development.
- **Sidewalk Reduction:** N/A.
- **Driveway Reduction:** Driveway lengths and widths have been minimized as much as possible. The proposed width is the minimum necessary to allow fire apparatus to the proposed development.
- **Cul-de-sac Reduction:** The proposed geometry is the minimum necessary to allow fire apparatus to the proposed development.
- **Building Footprint Reduction:** The proposed building footprints depicted within the project plans are believed to the minimum sizes to provide adequate housing.
- **Parking Reduction:** N/A.

5.3 TECHNIQUES FOR RUNOFF REDUCTION

- **Conservation of Natural Areas:** Undisturbed areas will be conserved during and after construction, these areas will not be placed into a permanent easement.
- **Sheet flow to Riparian Buffers or Filter Strips:** Stormwater flows will be treated through stormwater management areas and grass filter strips prior to discharging offsite.
- **Vegetated swale:** Proposed storm sewers and vegetated swales are proposed to convey runoff to the stormwater management facilities.
- **Tree planting:** Trees will be planted in accordance with the landscaping plan.
- **Rooftop disconnection:** The roof leaders from each building will daylight to bioretention area in each drainage area.
- **Stream Daylighting:** N/A.
- **Rain Gardens:** Rain gardens are not practical in this development due to size of the project. Bioretention facilities are proposed.

- **Green Roofs:** Green roofs will not be used to treat runoff from the proposed buildings. Rooftop runoff will be directed to the bioretention areas.
- **Stormwater planters:** Stormwater planters are not proposed to treat runoff from the proposed buildings due to space limitations/ constraints.
- **Rain Barrels/ Cisterns:** Rain barrels/ cisterns will not be used to treat stormwater runoff from the proposed buildings. Infrequent use of the collection system by the property owner could cause unintended discharge of the collected water.
- **Porous Pavement:** Porous pavement will not be used to treat runoff.

5.4 DURATION OF CONSTRUCTION ACTIVITY

Earth moving activities including the construction of the cul-de-sac, driveways, utilities, building foundations, and stormwater management facilities, to begin after all necessary local and state approvals have been granted and to be completed within 1 year.

6.0 POLLUTION PREVENTION CONTROL MEASURES

Temporary stabilization practices for this site include siltation fence, Compost Filter Socks, check dams and a stabilized construction entrance where necessary. See drawings “Erosion and Sediment Control Plans” and “NYSSESC Guidance for Erosion and Sediment Control Practice Installation” for additional Erosion and Sediment Control Details and Notes.

6.1 ONSITE CONSTRUCTION MATERIAL STORAGE

Adequate supplies of spill kit materials and equipment shall be kept in the hazardous material storage area and any on-site fueling and maintenance areas. Spill kit equipment and materials shall include, but not be limited to spill pads, absorbent booms, brooms, dust pans, mops, rags, gloves, goggles, Speedi-Dri, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.

Should a spill occur, the National Grid Environmental Engineer identified in **Attachment A** must be notified to ensure proper reporting and clean up. The Environmental Engineer will proceed as appropriate in accordance with National Grid Environmental Policies and NYSDEC notification requirements.

All site work shall be performed in accordance with Title 29 of the Federal Regulations, Part 1926 Safety Health Regulations for Construction (OSHA). In addition, the site Sub-Contractor shall follow all material management practices that will reduce the risk of exposure of any material to stormwater runoff. The site subcontractor shall adhere to all the following construction practices regarding material storage:

- All materials shall be stored in an orderly manner with their appropriate manufacture’s labels and storage recommendations visible, and where possible, spillable materials will be stored under a roof or in a storage container;
- Materials should not be mixed with one another unless recommended by the manufacturer. All materials, mixed or not mixed, shall be sealed properly when not being used;

- Contractor and Sub-Contractor shall follow manufacturer's storage recommendations for proper storage of all materials and a regular inspection shall be made.
- Every vehicle shall be checked for leakage regularly and stored in the designated area. Any containers used to store petroleum or other liquids for vehicles shall be stored in proper containers and in a place protected from spilling or mixing with other liquids and placed in secondary containment.
- Contractor and/or Sub-Contractor shall provide proper storage for fertilizers, herbicides, pesticides, and paints with manufacturer's labels and storage recommendations visible. All fertilizers, herbicides, pesticides, and paints shall be applied using the minimum amount recommended by the manufacturer.

In addition to the standard management practices to be followed above, the site Contractor and Subcontractor shall also follow the following spill clean-up procedures:

- Spills of petroleum, toxins, or other hazardous materials will be reported to the New York State health Department and NYSDEC.
- Manufacturer's recommended methods of spill cleanup will be clearly posted and site personnel will be made aware of the procedures and location of clean up supplies.
- Materials and equipment necessary for cleanup will kept in a material storage area onsite to be identified by the site Contractor and/or Subcontractor.
- Equipment and materials will include, but not limited to brooms, dust pans, mops, rags, gloves, goggles, Speedi-Dri, sand, sawdust, and trash containers.
- Spills will be cleaned up immediately upon discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from and contact with the spilled substance.
- A spill report will be completed and filed on site.
- Follow manufacturers' recommendations for proper use and disposal of materials.
- Perform fueling of roadway vehicles and barges under the supervision of Contractor and Sub-Contractor personnel and keep a spill kit nearby and easily accessible.
- Work applied fertilizer into the soil to limit exposure to storm water and store partially used bags of fertilizer in sealable plastic bins.
- Use drip pans or absorbents under and around leaky vehicles.
- Potential pollutants of concern based on the proposed construction activities are indicated in the tables below. With BMPs, erosion and sedimentation controls, good housekeeping, careful material storage, and preventive maintenance, the pollution potential from these constituents will be reduced. Storm water BMPs will provide for continued sediment trapping and removal, as well as the uptake of some dissolved pollutants by vegetation.

POTENTIAL POLLUTION AREAS

AREA/ACTIVITY	POTENTIAL POLLUTANTS	POTENTIAL PROBLEM/SOLUTION
Cleared and graded areas	Sediment, fertilizer	Erosion of soils from cleared and graded areas have the potential to discharge to wetlands. Sediment and erosion controls to address. Fertilizer use shall be minimized.
Portable toilets	Sewage	Accidental spills of contents. Portable toilets shall be maintained and emptied as needed. Spills/leaks shall be reported to owner of unit(s).
Fuel tanks	Fuel oil, gasoline, and other fuels	Accidental spills. Follow procedures for spill prevention and response as detailed in Section 4.4.
Staging areas	Sediment, fuel oil, gasoline, asphalt, concrete, vehicle fluids, paints, solvents, pesticides, fertilizer, plaster, cleaning solvents, glue, adhesives, curing compounds, wood preservatives, antifreeze/coolant, hydraulic oil/fluids, etc.	Accidental releases/spills. To be addressed by good housekeeping and careful material storage, handling, and disposal, as detailed in Section 4.4. Spill prevention kits shall be provided by the Contractor or Sub-Contractor.
Waste containers	Construction demolition debris, trash	Accidental releases of contents. To be addressed by good housekeeping practices in Section 4.4. Any contents released shall be collected to avoid entrance into wetlands/ water bodies or transport off-site.
Chemical storage areas	Asphalt, concrete, vehicle fluids, paints, solvents, pesticides, fertilizer, plaster, cleaning solvents, glue, adhesives, curing compounds, wood preservatives, antifreeze/coolant, hydraulic oil/fluids, etc.	Generally, storage of excess chemicals on-site shall not be permitted. To be addressed by good housekeeping and careful material storage, handling, and disposal, as detailed in Section 4.4.

AREA/ACTIVITY	POTENTIAL POLLUTANTS	POTENTIAL PROBLEM/SOLUTION
Dewatering operations	Sediment	Erosion of soils and turbid water from dewatering operations have the potential to discharge to wetlands. Discharge from dewatering operations, if necessary, will be passed through appropriate measures to remove suspended sediment and reduce turbidity to required levels prior to discharge to wetlands and/or surface waterbodies.

6.1.1 Application of Fertilizers Containing Nitrogen and Phosphorus

Discharges of fertilizers containing nitrogen or phosphorus shall be minimized as follows:

- Apply at a rate and in amounts consistent with manufacturers' specifications;
- Apply at the appropriate time of year for the site's location and to coincide as closely as possible to the period of maximum vegetation uptake and growth;
- Avoid applying before heavy rains that could wash away the fertilizer;
- Never apply to frozen ground;
- Never apply to stormwater conveyance channels that contain flowing water; and
- Follow all federal, state, tribal, and local requirements regarding fertilizer application.

Reasons for departures from the manufacturers' specifications and these guidelines shall be documented in the SWPPP. **Attachment S** includes a form for this purpose.

6.1.2 Vehicle/Equipment Maintenance Area

Discharges of fuels, oils, or other chemicals used in vehicle equipment operation and maintenance are prohibited.

A representative of the Contractor will be present with a spill kit immediately accessible during any on-site re-fueling activities.

The spill kit will be kept in a visible and accessible location. Examples of typical items, which should be included in a spill kit, are provided in this document. Spills or contaminated surfaces shall be cleaned up immediately, using dry clean up measures where possible, and the source of the spill shall be eliminated. Surfaces shall not be cleaned by hosing the area down.

Recycled oil and oily wastes shall be disposed in accordance with all federal, state, tribal, and local requirements. If applicable, the Operator shall comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR 112 and Section 311 of the Clean Water Act.

6.2 GOOD HOUSEKEEPING BMP'S

6.2.1 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes:

Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials: Products shall be stored within a locked container/trailer, covered by plastic sheeting, temporary roofs, or other suitable means to prevent the products from being contacted by rainwater; or an effective means of preventing the discharge of pollutants from areas used to store products shall be provided. Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label.

Diesel Fuel, Oil, Hydraulic Fluids, Petroleum Products, and Other Chemicals: Chemicals shall be stored in watertight containers, which shall be kept in a locked container/trailer, covered by plastic sheeting, temporary roofs, or other suitable means to prevent the products from being contacted by rainwater. These chemicals shall not be stored within 100' of an environmentally sensitive area (i.e. wetlands or streams). If cover is not provided, then secondary containment (e.g., spill berms, decks, spill containment pallets) shall be used, and spill kits shall be readily accessible. Spills shall be cleaned up immediately in accordance with the Contractor-submitted Spill Prevention and Response Plan in Section 3.4 of this SWPPP.

Hazardous or Toxic Wastes: In general, hazardous or toxic wastes containing paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids are not anticipated to be used at the site and shall not be stored overnight on-site. If such wastes are present, they shall be separated from construction and domestic waste and stored in sealed containers constructed of suitable materials to prevent leakage and corrosion and labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other federal, state, tribal, and local requirements. Containers shall be stored under cover or within appropriately sized secondary containment and spill kits shall be readily available. Comply with the manufacturer's recommended disposal method and all federal, state, tribal, and local disposal requirements.

Spills of hazardous or toxic wastes shall be cleaned up immediately in accordance with the Spill Prevention and Response Plan in Section 3.4.6 of this SWPPP. For additional information and procedures for addressing hazardous or toxic wastes, refer to the Contractor-submitted site-specific Health and Safety Plan.

Construction and Domestic Waste: All waste materials shall be collected and stored in a manner that will prevent materials from entering watercourses, wetlands, or other offsite areas. Waste containers of sufficient size and number to contain wastes shall be provided. Wastes shall be placed in designated waste containers daily. Material shall be regularly collected and disposed of off-site in a manner consistent with all federal, state, and local regulations. Waste materials for this project may consist of earthen materials, granular materials, vegetative debris, and any surplus non-toxic and non-hazardous materials.

Sanitary Waste: During construction, all sanitary waste shall be collected in portable sanitary units, which shall be positioned so that they are secure and will not be tipped or knocked over. These units shall be emptied as necessary by a qualified contractor and disposed of in accordance with all State and local regulations.

6.2.2 Discharge of Solid Materials to Waters of the U.S.

All waters of the U.S. (as defined at 40 CFR Section 122.2) located on site or adjacent shall be protected from discharge of solid materials, except those as authorized by a permit issued under Section 404 of the CWA; the permit is included in **Attachment L**. Solid materials may include solid waste, building materials, fill, sewage, sediment, or any other solid substance. Structural BMPs located upgradient of waters of the U.S., such as silt fence and compost filter tubes; straw bales, sediment basins, deep sump catch basins, and floating containment booms may act to trap or block solid materials from entering waters of the U.S. Proper waste disposal and sanitary waste collection shall also mitigate the discharge of solid materials to waters of the U.S. The Contractor or Sub-Contractor is responsible for preventing any discharge of solid materials to waters of the U.S.

7.0 EROSION AND SEDIMENTATION CONTROL PLAN AND BEST MANAGAMENT PRACTICES

Erosion and sedimentation control measures to be implemented during the construction phase of this project include a stabilized construction entrance to prevent vehicle tracking in public rights-of-way and silt fence and/or compost filters which will be placed to trap and pool stormwater runoff to allow settlement of sediment before the runoff is allowed to flow downgradient of the controls and exit the work area. In addition, in areas with existing rills or other signs of concentrated flow and erosion, or such that develop during construction, or of other areas where high runoff velocities or high sediment loads may be expected, the silt fence and compost filters are to be maintained or replaced frequently or bolstered or replaced with additional measures as determined during the initial inspection or periodic field inspections.

In addition, it will be the responsibility of the Contractor or Sub-Contractor to implement additional temporary erosion and sedimentation control measures as conditions warrant during the construction period. Such additional measure may include, but not be limited to grading, erosion control matting, plastic coverings, mulching, temporary seeding, riprap, check dams, cross tracking of slopes, sedimentation basins, filtration dams, siltation sumps, silt fences, construction entrances, and other items as necessary to contain sediment and other deleterious material produced from excavation and filling, water control, dewatering, and related contract operations.

7.1.1 Management of Stockpiled Sediment or Soil

Any stockpiles or land clearing debris composed, in whole or in part, of sediment or soil, shall be managed as follows:

- Locate the piles outside of any natural buffers and physically separated from other stormwater controls;

- Protect from contact with stormwater (including run-on) using a temporary perimeter sediment barrier;
- Where practicable, provide cover or appropriate temporary stabilization to avoid direct contact with precipitation or to minimize sediment discharge;
- Do not hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any surface water, storm drain inlet, or stormwater conveyance (unless connected to a sediment basin, sediment trap, or similarly effective control); and
- Contain and securely protect from wind, as feasible.

7.1.2 Preservation of Topsoil

Native topsoil shall be preserved for re-use on the site, unless infeasible.

7.1.3 Soil Compaction by Traffic

In areas of the site where final vegetative stabilization will occur, vehicle and equipment use shall be restricted to avoid unintended soil compaction. Should unintended compaction occur in these areas, techniques to re-condition the soils to support vegetative growth shall be applied prior to seeding or planting areas.

7.1.4 Dewatering

The discharge of turbid groundwater or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation is prohibited, unless such waters are first effectively managed by appropriate controls, including, but not limited to, sediment basins or traps, sediment socks, dewatering tanks, tube settlers, weir tanks, or filtration systems that are designed to remove sediment. The following minimum discharge requirements must also be met:

- Do not discharge visible floating solids or foam;
- Use an oil-water separator or suitable filtration device that is designed to remove oil, grease, or other products if dewatering water is found to contain these materials;
- Infiltrate dewatering water within vegetated, upland areas to the extent feasible;
- Velocity dissipation devices (e.g., check dams, riprap, grouted riprap) shall be used to provide a non-erosive flow velocity at any outlet where dewatering water is discharged;
- Backwash water shall be disposed off-site in accordance will all federal, state, and local requirements, or returned to the beginning of the treatment practice; and
- Filter media used in dewatering devices shall be replaced and/or cleaned in accordance with the manufacturer's specifications, ineffective operating condition, or as directed by the Resident Engineer.

7.1.5 Off-Site Vehicle Tracking and Dust Control

Vehicles shall be inspected for mud, dirt, and debris prior to exiting the site and precautions shall be taken as necessary to prevent tracking of excess materials from the site. Vehicle use shall be restricted to

properly-designated exit points. Anti-tracking pads or turf mats shall be installed to provide sediment removal prior to vehicle exit. Additional controls to remove sediment from vehicle tires, such as wheel washing, rumble strips, and rattle plates shall be used when necessary.

Where sediment track-out has occurred, the deposited sediment must be removed by the end of the same workday by sweeping, shoveling, or vacuuming. Hosing or sweeping sediment into any surface water, storm drain structure, or stormwater conveyance is prohibited, unless the storm drains or stormwater conveyance is connected to a sediment basin, sediment trap, or other sediment control.

Dump trucks hauling material to or from the construction site shall be covered with a tarpaulin. Several materials may be used for dust control, including but not limited to temporary mulch, spray on adhesives such as latex emulsions or resin in water sprayed onto mineral soil, sprinkling water, crushed stone, or wind barrier in the form of sediment fence or snow fence. Dust control and management procedures are discussed in the project Health and Safety plan.

7.2 TEMPORARY AND PERMAMENT EROSION CONTROL MEASURES

All erosion and sediment control measures were designed in accordance with the New York State Standards and Specifications for Erosion and Sediment Control. The site Contractor and Sub-Contractor shall adhere to all erosion and sediment control measures shown on the Storm Water Pollution and Prevention Plan. The following construction sequence must be followed to control any pollutants leaving the construction site.

- Mobilize all necessary equipment, personnel and material to the site. Proceed with Installation of Erosion & Sediment Control Practices including stabilized construction entrance. Erosion and Sediment Control Practices shall be in place prior to beginning any earthwork operations. Schedule and conduct site walk to inspect sediment and erosion control measures with Engineer. Modify sediment and erosion control measures as needed;
- Protect existing instruments, structures, vegetation, wetlands, waterbodies and utilities to remain;
- Perform grading activities and associated drainage improvements;
- Installation of cross culverts and check dams within swales;
- Installation of stormwater mitigation areas including bioretention areas;
- Final grading;
- Permanent stabilization with topsoil, seed and mulch as specified;
- In addition to these measures, the contractor shall comply with whatever additional measures may be required as ordered by the Town of Manlius;
- Provide on-going maintenance and monitoring of newly vegetated and restored areas as per the contract documents; and
- Demobilize from the job site. Remove all temporary structures, trash, debris, and other material from the site. Remove temporary controls and signage. Remove temporary sediment and erosion controls where appropriate once 80% germination has been reached for the entire site. Notify Engineer of final stabilization. Schedule and conduct site walk to inspect site with Engineer.

These activities shall be performed in such a manner that all components of activities will be completed and stabilized with vegetation and compacted stone base on the road proceeding to the next section.

The following permanent stabilization procedures shall be implemented:

- Disturbed portions of the site where construction activities have been completed shall be stabilized with topsoil, permanent seed and covered with straw no later than 14 days after the last construction activity has occurred. Soil amendments shall be added where required; and
- All disturbed areas shall be restored in accordance with Chapter 5, Table 5.3 of the 2015 New York State Stormwater management Design Manual.

7.3 LOCATION OF EROSION CONTROL MEASURES

See Erosion & Sediment Control Plans and NYSSESC Guidance for Erosion & Sediment Control Practice Installation for location, size, lengths and specifications of erosion control measures (**Attachment O & Attachment R**).

7.4 IMPLEMENTATION SCHEDULE

Stabilization measures shall initiate as soon as practicable in portion of the site where construction activities have temporarily or permanently ceased, however, in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

- Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable. Temporary stabilization with straw tracked into the disturbed areas is required.

The onsite construction supervisor shall visually inspect all erosion control measures daily. Any measure that is damaged or becomes inoperative shall be replaced immediately. All erosion/ sediment control measures must remain in place and properly inspected and operable until all disturbed areas have been seeded and germination has been obtained.

7.5 PERMANENT WATER QUALITY AND QUANTITY CONTROLS

Bioretention areas will be constructed per the New York State Stormwater Management Design Manual and the New York Standards and Specifications for Erosion and Sediment Control. Vegetated swales designed as part of the Project will have a depth of 18 inches, provide positive drainage, side slopes that are 3:1, and a bottom width of 4 feet. Swales that have slopes greater than 4% shall be lined with filter blanket to stabilize bottoms and side slopes. Stone check dams will be used as need to maintain appropriate flow velocities in accordance with standards in the New York Standards and Specifications for Erosion and Sediment Control.

7.6 MAINTENANCE AND INSPECTION SCHEDULE

A qualified site supervisor shall assess the site prior to construction beginning and certify in an inspection report that all erosion and sediment control facilities have been completely and properly installed and functional. Once construction begins, an inspection shall be done every seven (7) days. The following should be included in the inspector's report following each visit:

- On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;
- On a site plan, indicate areas that have had temporary or permanent stabilization;
- On a site plan, indicate areas that have not had active site work within the past 14 days;
- All erosion and sediment controls shall be inspected and the approximate percent remaining of silt storage capacity (in the sediment trap basins) shall be reported in the inspection report on a weekly basis;
- Inspection of erosion and sediment control practices and any maintenance requirements should be recorded. Depths of sediment should be measured, and effectiveness should be recorded;
- If any methods of erosion or sediment control are found to be inadequate, a recommendation should be made that would bring all facilities to standards set forth by the NYSDEC;
- When installation of a new erosion/sediment control or a significant repair is needed, work must be completed and operational by no later than seven (7) calendar days from the time of the inspection, or prior to the time of predicated a significant storm event. If this timeframe is infeasible, the reason and the anticipated procedures shall also be documented;
- Repair or replacement of erosion control measures will be at the discretion of the inspector or the Owner or Operator. Determination of the extent of the repair will be made based on the performance of the erosion control measure and the cause of the failure. Failure, repair or replacement, and discussion/decisions shall be documented, with pre and post repair and replacement photographs, in the inspection report;
- An onsite logbook shall be maintained, and weekly inspections should be kept updated and available for permitting authorities upon request. Prior to construction, the site supervisor shall certify in the site logbook that the SWPPP prepared in Accordance with stormwater permit GP-0-15-002 meets all Federal, and State erosion and sediment control requirements; and
- Prior to filing the Notice of Termination or the end of the permit, the site supervisor shall perform a final site inspection. The site supervisor shall report that 80% germination has been completed. The report should also state that all erosion and sediment control methods have been removed.

7.6.1 Temporary Suspension of Work

If soil disturbance activities are temporarily suspended (e.g., winter shutdown), inspections must be continued every 30 days. Weekly inspections shall resume when earthwork activities resume.

7.7 IMPLEMENTATION OF RESPONSIBILITY

Each Contractor(s) and Sub-Contractor(s) shall be responsible for implementing the SWPPP temporary practices, structures and controls. The owner shall be responsible for implementing all permanent operation and maintenance practices and procedures. All Contractor(s) and Sub Contractor(s) and owner shall sign the certification statement. Any new Contractor(s) or Sub-Contractor(s) must likewise be added to the certification. The signed certification can be found in **Attachment P.**

7.8 CORRECTIVE ACTIONS

Corrective actions include actions taken to repair, modify, or replace any stormwater control used at the site, clean up and properly dispose of spills, releases, or other deposits, or remedy a permit violation.

Within one business day of discovery of a condition requiring a corrective, the qualified inspector shall notify the Owner or Operator, Contractor(s), and Sub-Contractor(s) and the corrective actions shall commence, and the corrective action shall be completed within a reasonable timeframe.

7.8.1 Revisions to Stormwater Pollution Prevention Plan

The SWPPP and Sediment and Erosion Control Plan must be amended in response to the following conditions:

- Whenever new operators become active in construction activities on the site;
- Changes are made to the construction plans, stormwater control measures, pollution prevention measures, or other activities at the site that are no longer reflected accurately in the SWPPP;
- Changes are made in response to corrective actions;
- To reflect areas on the site where operational control has been transferred (and the date of transfer) since initiating permit coverage;
- If inspections or investigations by site staff or reviewing/inspecting officials determine that SWPPP modifications are necessary for compliance with GP-0-20-001;
- To reflect any revisions to applicable federal, state, tribal, or local requirements that affect the stormwater control measures implemented at the site;
- If a change in chemical treatment systems or chemically-enhanced stormwater controls is made, including use of a different treatment chemical, dosage rate, or area of application; and
- Where NYSDEC determines that it is necessary to impose additional requirements on the site discharge(s). In this case, a copy of any correspondence describing such requirements and a description of the stormwater control measures that will be used to meet such requirements must be included in the SWPPP.

Changes to the SWPPP and Sediment and Erosion Control Plan shall be implemented within 14 calendar days following the occurrence of the conditions as stated above.

Records showing the date, name of the person authorizing the change, and a brief summary of the change must be maintained with the SWPPP. Hand-written notes and drawings are suitable for this purpose. See **Attachment S** for the SWPPP Amendment Logbook.

All other responsible parties who may be impacted by a change in the SWPPP must be notified.

8.0 CONCLUSION

Erosion and Sediment Control Measures, design and construction criteria conform with the "New York State Department of Environmental Conservation's Phase II Stormwater Rules" and the "New York State Stormwater Management Design Manual", date January 2015 in association with "SPDES General Permit for Stormwater Discharges from Construction Activity", dated January 29, 2020 (GP-0-20-001).

Routine maintenance procedures should be initiated immediately after the need for maintenance is recognized and completed by the close of the next workday. Contractor(s) shall utilize good housekeeping practices to minimize the possibilities of spills or leaks of potential pollutants. Hazardous materials shall be handled with the utmost care in accordance with all regulations and the recommendations of the manufacturer.

ATTACHMENT A

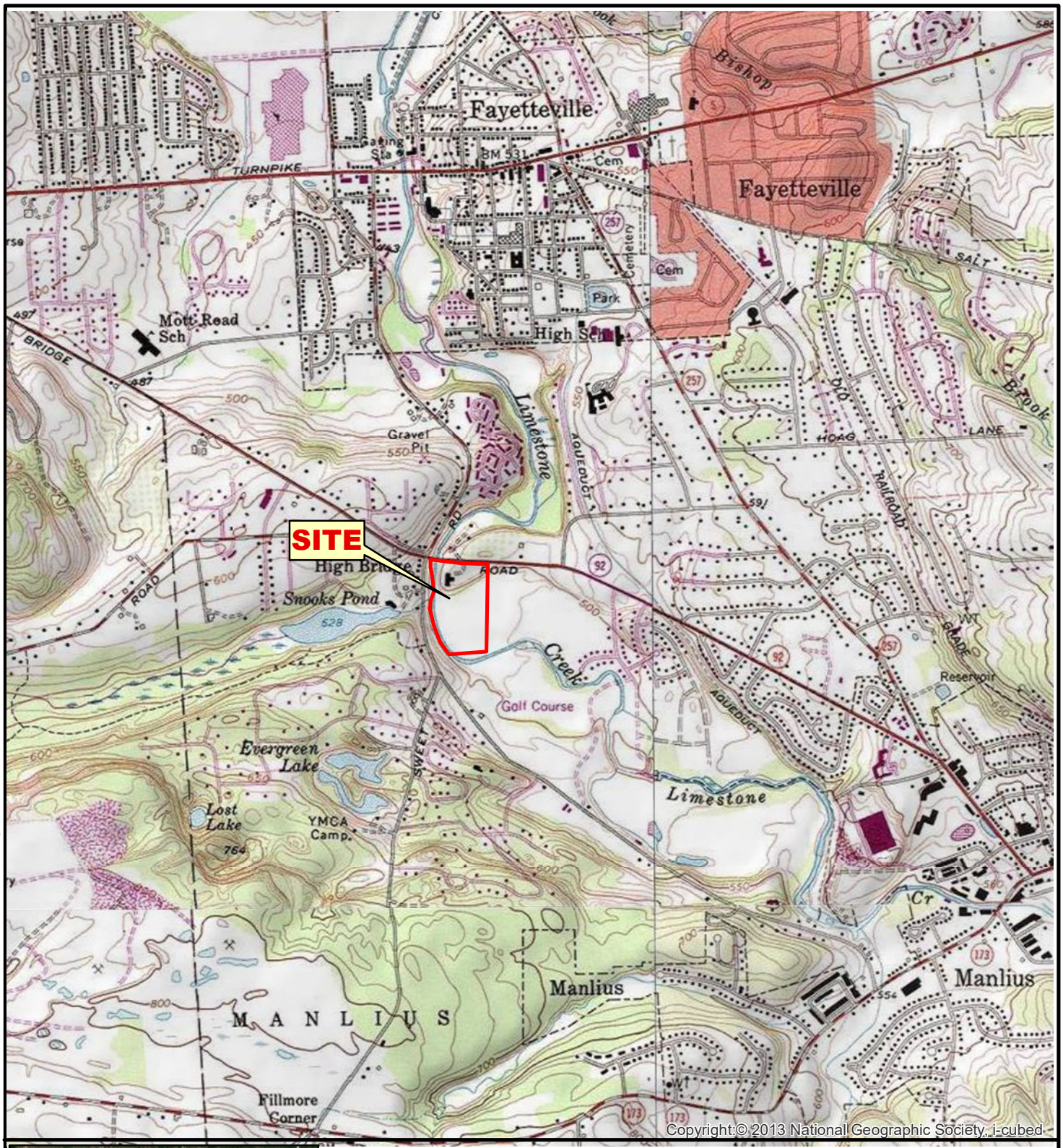
PROJECT CONTACT INFORMATION & SWPPP MEETING SIGN-IN SHEET

The personnel listed below are responsible for compliance with the SWPPP and conditions of GP-0-20-001. Individual responsibilities may include the following:

- SWPPP implementation.
- Maintenance of installed BMPs.
- Inspection and monitoring.
- Identify and address unanticipated erosion, sedimentation, and/or pollution sources that arise during construction.
- Identify and implement modifications that may be necessary to adequate prevent erosion, sedimentation, and pollutant migration.
- Document all activities associated with implementation of this SWPPP and supporting documents.

				Responsibilities	**Weekly Reports Distribution? (Y/N)**
				Notify of any Spills	

ATTACHMENT B
LOCATION MAP





This map presents land cover imagery for the world and detailed topographic maps for the United States. The map includes the National Park Service (NPS) Natural Earth physical map at 1.24km per pixel for the world at small scales, i-cubed eTOPO 1:250,000-scale maps for the contiguous United States at medium scales, and National Geographic TOPO! 1:100,000 and 1:24,000-scale maps (1:250,000 and 1:63,000 in Alaska) for the United States at large scales. The TOPO! maps are seamless, scanned images of United States Geological Survey (USGS) paper topographic maps.

Data Supplied by : esri

0 1,000 2,000 4,000 6,000 Feet

PROJ MGR: EKR	REVIEWED BY: EKR	FREEMAN ESTATES HOUSING HIGHBRIDGE STREET TOWN OF MANLIUS, NEW YORK	JOB NO. 31.0180349.00
DESIGNED BY: RMR	DRAWN BY: RMR		
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	DATE: DECEMBER 2020	SITE LOCUS	FIGURE NO. 1

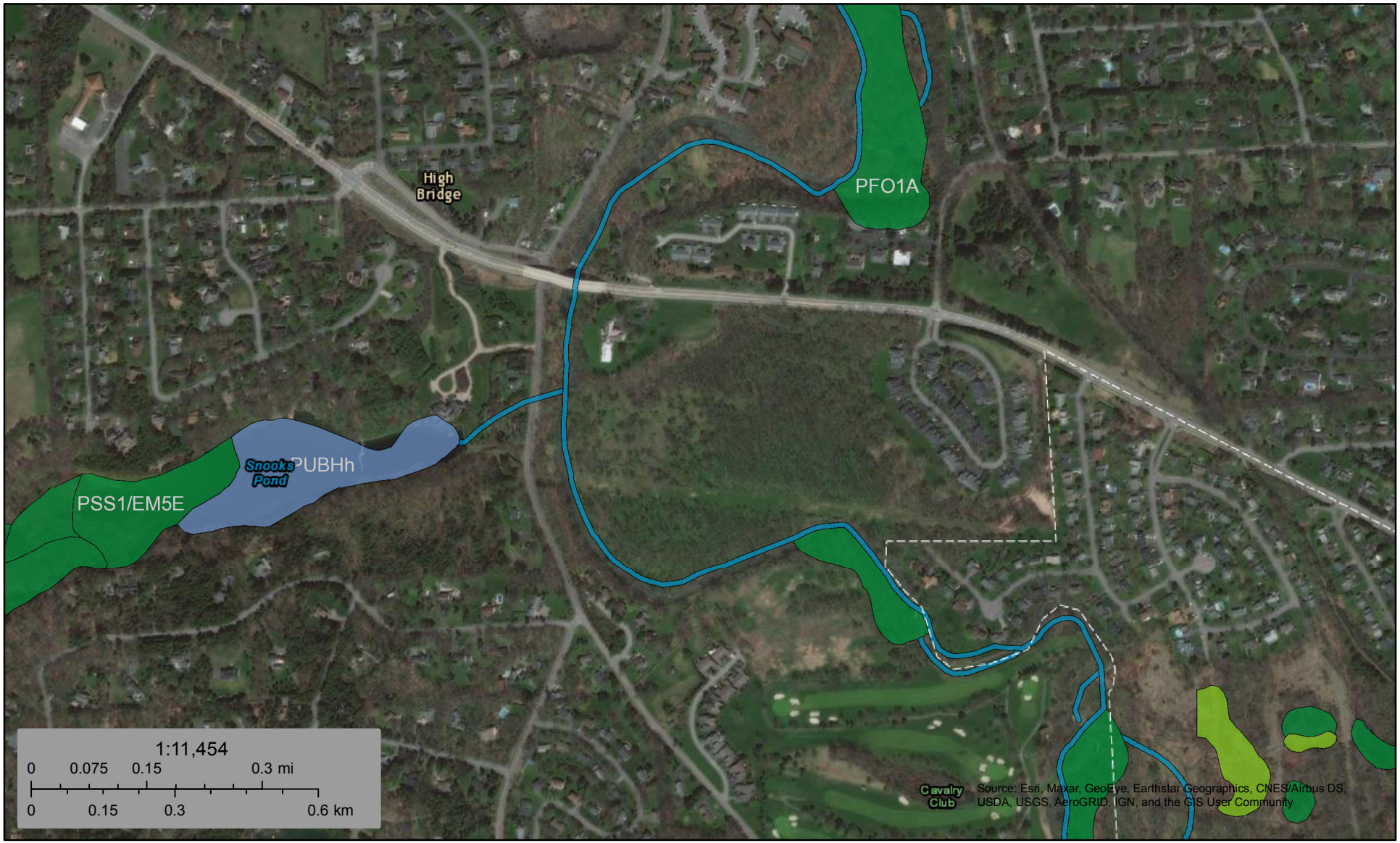
© 2020 GZA GeoEnvironmental, Inc. J:\31.0180349.00 Freeman Estates Subdivision\GIS\Figure_1_Site_Locus.mxd, 12/16/2020, 3:06:23 PM, rachel.radicello

ATTACHMENT C
NATIONAL WETLANDS INVENTORY MAP

U.S. Fish and Wildlife Service

National Wetlands Inventory

Freeman Estates Subdivision



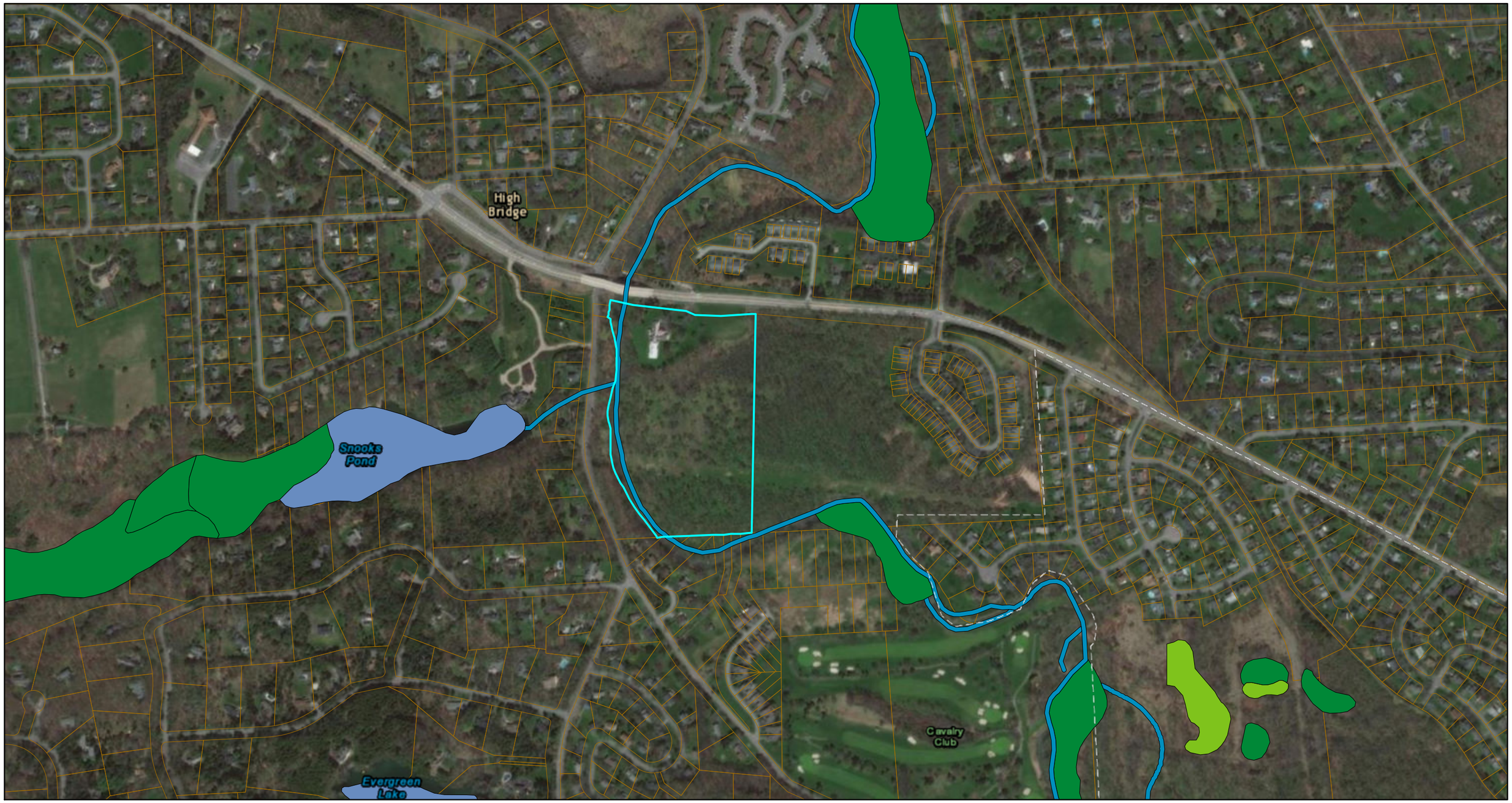
December 16, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Freeman Estates Subdivision



December 16, 2020

1:9,028

0 0.07 0.15 0.3 mi

0 0.13 0.25 0.5 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

NYS Department of Environmental Conservation
Not a legal document

ATTACHMENT D

NYSDEC ENVIRONMENTAL RESOURCE MAP

Freeman Estates Subdivision



December 16, 2020

1:9,028

0 0.07 0.15 0.3 mi

0 0.13 0.25 0.5 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

NYS Department of Environmental Conservation
Not a legal document

ATTACHMENT E
CULTURAL RESOURCE INFORMATION SYSTEM MAP (CRIS)



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ATTACHMENT F
NATIONAL RESOURCES CONSERVATION SERVICE (NRCS) SOIL MAPPING

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Onondaga County, New York



December 16, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

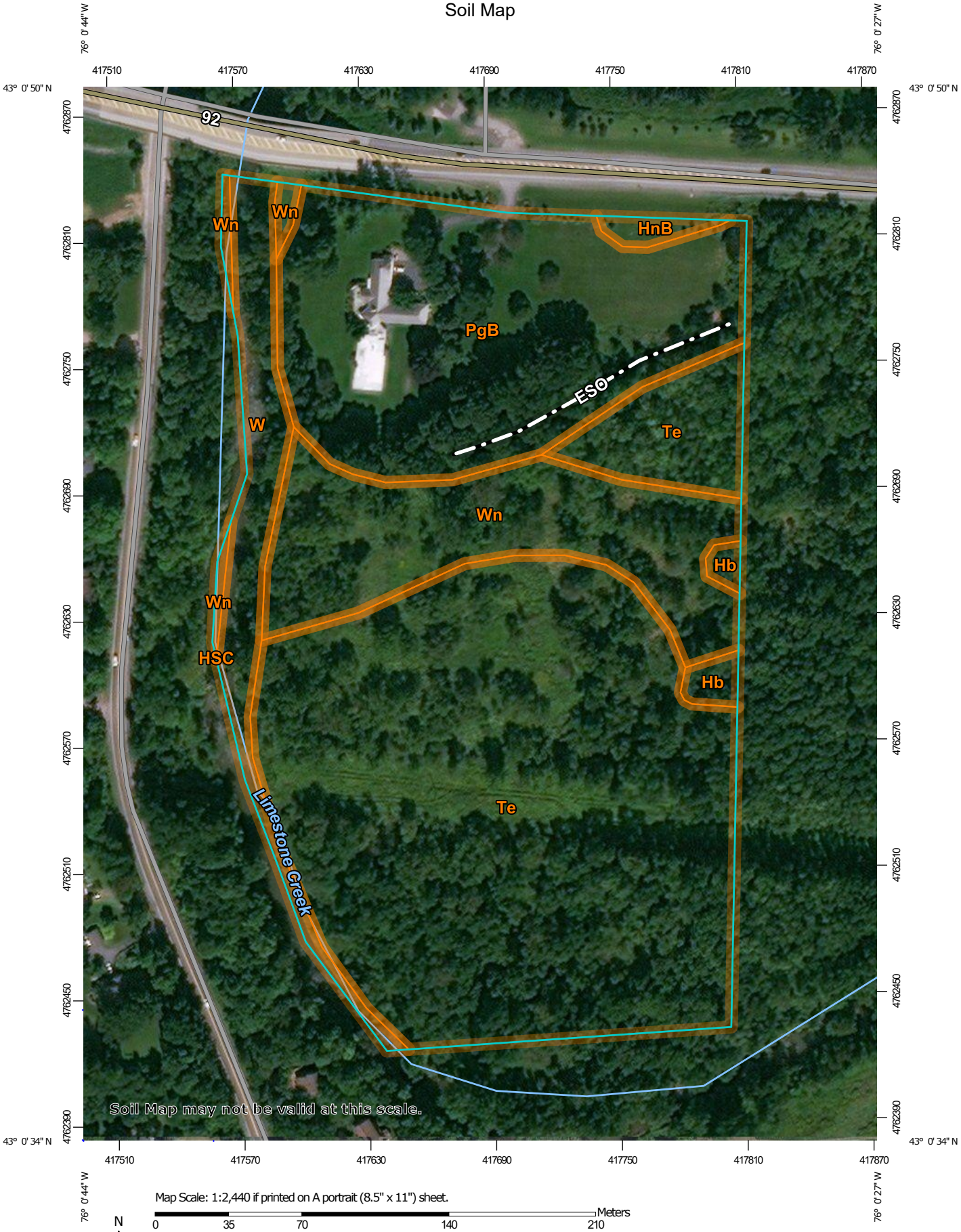
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,440 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Hb	Hamlin silt loam	0.2	0.9%
HnB	Honeoye silt loam, 3 to 8 percent slopes	0.1	0.6%
HSC	Honeoye very stony soils, sloping	0.0	0.0%
PgB	Palmyra gravelly loam, 3 to 8 percent slopes	5.8	25.2%
Te	Teel silt loam	11.9	52.1%
W	Water	1.5	6.5%
Wn	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	3.4	14.7%
Totals for Area of Interest		**22.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Onondaga County, New York

Hb—Hamlin silt loam

Map Unit Setting

National map unit symbol: 9vgz
Elevation: 360 to 1,260 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hamlin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hamlin

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty alluvium mainly from areas of siltstone, shale, and limestone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 16 inches: silt loam
H3 - 16 to 41 inches: silt loam
H4 - 41 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water capacity: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Herkimer

Percent of map unit: 5 percent
Hydric soil rating: No

Teel

Percent of map unit: 5 percent
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

HnB—Honeoye silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w3p2
Elevation: 260 to 1,780 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Honeoye and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Honeoye

Setting

Landform: Drumlins, till plains, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 10 inches: silt loam
Bt/E - 10 to 14 inches: loam
Bt1 - 14 to 23 inches: loam
Bt2 - 23 to 29 inches: gravelly loam
C - 29 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Lima

Percent of map unit: 5 percent
Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Lansing

Percent of map unit: 4 percent
Landform: Drumlins, hills, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Appleton

Percent of map unit: 4 percent
Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Wassaic

Percent of map unit: 2 percent
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

HSC—Honeoye very stony soils, sloping

Map Unit Setting

National map unit symbol: 9vgv
Elevation: 400 to 1,300 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Honeoye and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Honeoye

Setting

Landform: Drumlins, till plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from limestone, dolomite, and calcareous shale, and from lesser amounts of sandstone and siltstone

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 29 inches: loam
H3 - 29 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 25 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kendaia
Percent of map unit: 5 percent
Hydric soil rating: No

Conesus
Percent of map unit: 5 percent
Hydric soil rating: No

Lima
Percent of map unit: 5 percent
Hydric soil rating: No

Aurora
Percent of map unit: 5 percent
Hydric soil rating: No

PgB—Palmyra gravelly loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9vkh
Elevation: 380 to 1,410 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Palmyra and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Palmyra

Setting
Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits, derived mainly from limestone and other sedimentary rocks

Typical profile
H1 - 0 to 14 inches: gravelly loam
H2 - 14 to 31 inches: gravelly loam
H3 - 31 to 60 inches: stratified very gravelly sand

Properties and qualities
Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Phelps

Percent of map unit: 5 percent
Hydric soil rating: No

Arkport

Percent of map unit: 5 percent
Hydric soil rating: No

Schoharie

Percent of map unit: 5 percent
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

Te—Teel silt loam

Map Unit Setting

National map unit symbol: 9vkv
Elevation: 600 to 1,800 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Teel and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Teel

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Silty alluvium

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 28 inches: silt loam
H3 - 28 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water capacity: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

Hamlin

Percent of map unit: 5 percent
Hydric soil rating: No

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Herkimer

Percent of map unit: 5 percent
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: 9vl1
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Wn—Wayland soils complex, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2srgv
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 68 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Wayland and similar soils: 60 percent
Wayland, very poorly drained, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayland

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: silt loam
Bg1 - 6 to 12 inches: silt loam
Bg2 - 12 to 18 inches: silt loam
C1 - 18 to 46 inches: silt loam
C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Very high (about 12.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F139XY009OH - Wet Floodplain
Hydric soil rating: Yes

Description of Wayland, Very Poorly Drained

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: mucky silt loam
Bg1 - 6 to 12 inches: silt loam
Bg2 - 12 to 18 inches: silt loam
C1 - 18 to 46 inches: silt loam
C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: FrequentNone
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Very high (about 12.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F139XY009OH - Wet Floodplain
Hydric soil rating: Yes

Minor Components

Wakeville

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report
Map—Hydric Rating by Map Unit



Map Scale: 1:2,440 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Hb	Hamlin silt loam	0	0.2	0.9%
HnB	Honeoye silt loam, 3 to 8 percent slopes	0	0.1	0.6%
HSC	Honeoye very stony soils, sloping	0	0.0	0.0%
PgB	Palmyra gravelly loam, 3 to 8 percent slopes	0	5.8	25.2%
Te	Teel silt loam	5	11.9	52.1%
W	Water	0	1.5	6.5%
Wn	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	90	3.4	14.7%
Totals for Area of Interest			**22.9**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at

or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:2,440 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Hb	Hamlin silt loam	B	0.2	0.9%
HnB	Honeoye silt loam, 3 to 8 percent slopes	B	0.1	0.6%
HSC	Honeoye very stony soils, sloping	C	0.0	0.0%
PgB	Palmyra gravelly loam, 3 to 8 percent slopes	A	5.8	25.2%
Te	Teel silt loam	B/D	11.9	52.1%
W	Water		1.5	6.5%
Wn	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	B/D	3.4	14.7%
Totals for Area of Interest			**22.9**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

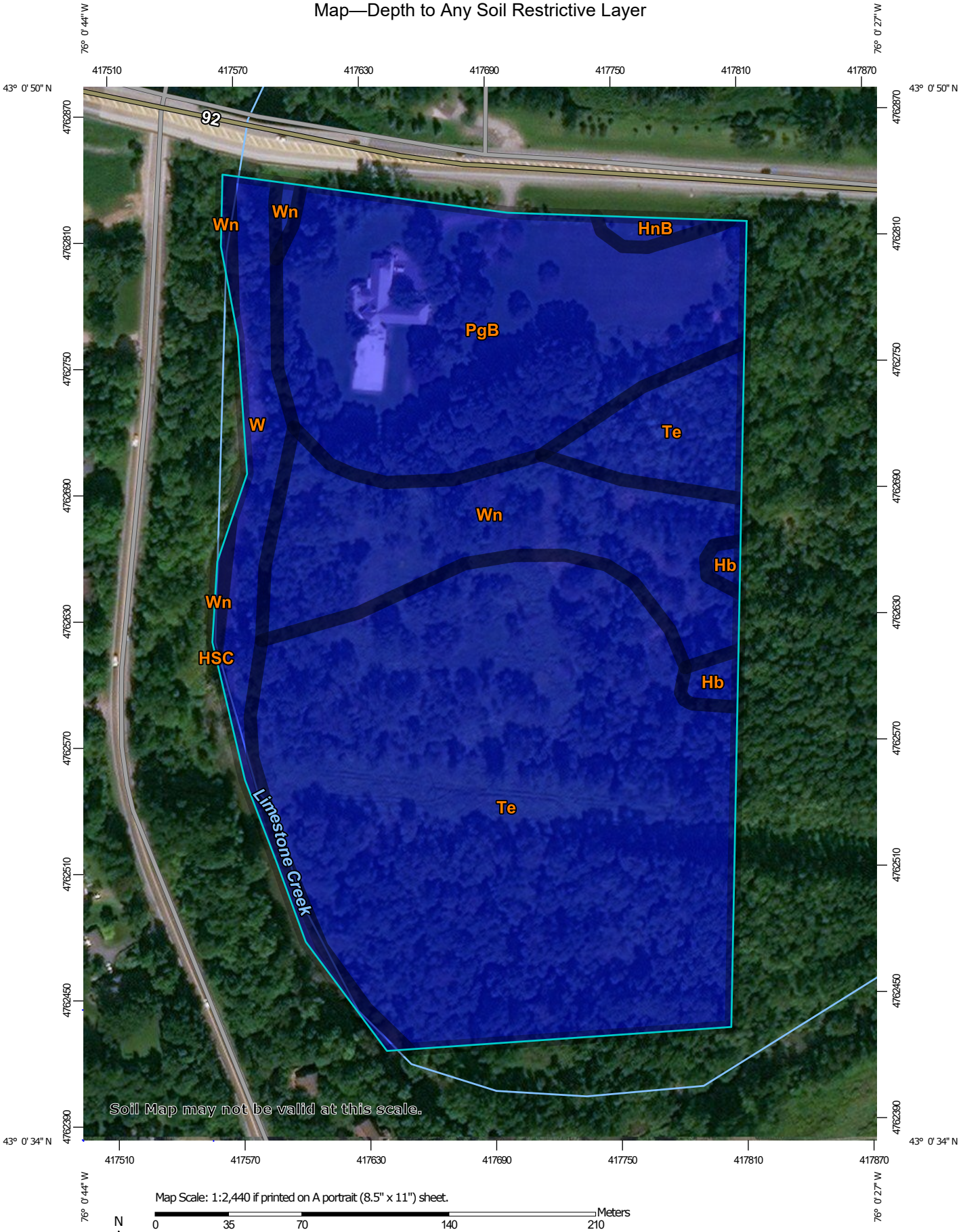
Depth to Any Soil Restrictive Layer

A "restrictive layer" is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers.

This theme presents the depth to any type of restrictive layer that is described for each map unit. If more than one type of restrictive layer is described for an individual soil type, the depth to the shallowest one is presented. If no restrictive layer is described in a map unit, it is represented by the "> 200" depth class.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Any Soil Restrictive Layer



Map Scale: 1:2,440 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Any Soil Restrictive Layer

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
Hb	Hamlin silt loam	>200	0.2	0.9%
HnB	Honeoye silt loam, 3 to 8 percent slopes	>200	0.1	0.6%
HSC	Honeoye very stony soils, sloping	>200	0.0	0.0%
PgB	Palmyra gravelly loam, 3 to 8 percent slopes	>200	5.8	25.2%
Te	Teel silt loam	>200	11.9	52.1%
W	Water	>200	1.5	6.5%
Wn	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	>200	3.4	14.7%
Totals for Area of Interest			**22.9**	**100.0%**

Rating Options—Depth to Any Soil Restrictive Layer

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Custom Soil Resource Report
Map—Drainage Class



Map Scale: 1:2,440 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Lines

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Points

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Drainage Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Hb	Hamlin silt loam	Well drained	0.2	0.9%
HnB	Honeoye silt loam, 3 to 8 percent slopes	Well drained	0.1	0.6%
HSC	Honeoye very stony soils, sloping	Well drained	0.0	0.0%
PgB	Palmyra gravelly loam, 3 to 8 percent slopes	Well drained	5.8	25.2%
Te	Teel silt loam	Moderately well drained	11.9	52.1%
W	Water		1.5	6.5%
Wn	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	Poorly drained	3.4	14.7%
Totals for Area of Interest			**22.9**	**100.0%**

Rating Options—Drainage Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Water Features

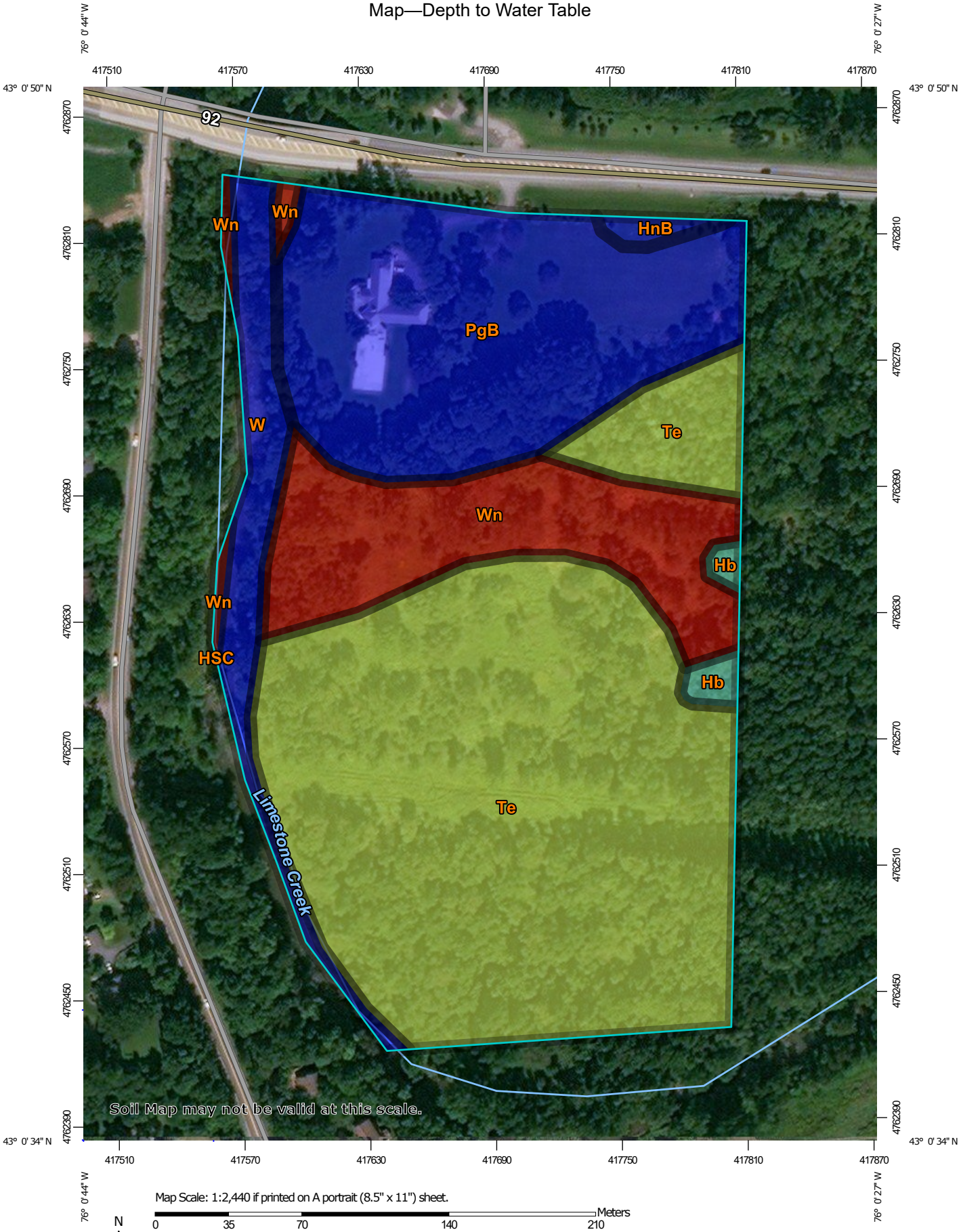
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Water Table



Map Scale: 1:2,440 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 35 70 140 210

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
Hb	Hamlin silt loam	137	0.2	0.9%
HnB	Honeoye silt loam, 3 to 8 percent slopes	>200	0.1	0.6%
HSC	Honeoye very stony soils, sloping	76	0.0	0.0%
PgB	Palmyra gravelly loam, 3 to 8 percent slopes	>200	5.8	25.2%
Te	Teel silt loam	54	11.9	52.1%
W	Water	>200	1.5	6.5%
Wn	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	0	3.4	14.7%
Totals for Area of Interest			**22.9**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

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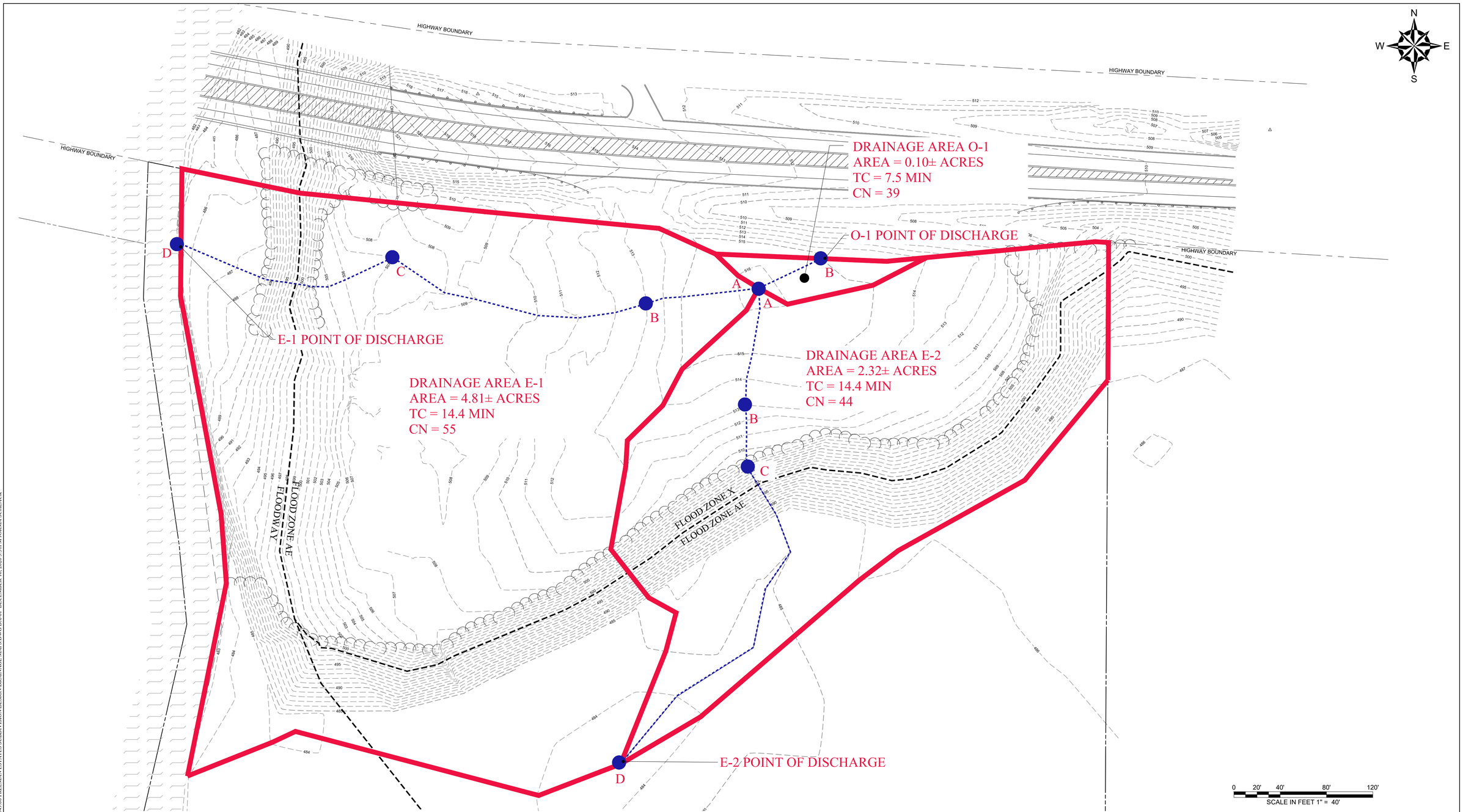
ATTACHMENT G
EXISTING DRAINAGE AREA MAP



© 2020 GZA GeoEnvironmental, Inc. GZA-J:\31\0180349.00 FREEMAN ESTATES SUBDIVISION\DESIGN\DRAINAGE MAPS.DWG DA-01 DECEMBER 16, 2020 3:31PM JORMA SCHLACK

811 Know what's below. Call before you dig.

DRAFT COPY
FOR CLIENT REVIEW

NO.	ISSUE/DESCRIPTION	BY	DATE

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Professional Engineer

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TOWN OF MANLIUS, STATE OF NEW YORK

EXISTING DRAINAGE AREA MAP

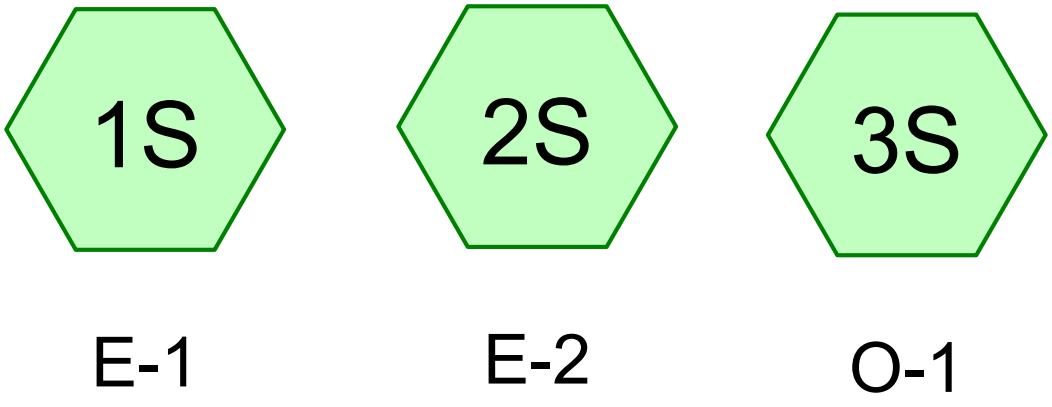
PREPARED BY:
GZAGeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
BROLEX PROPERTIES, LLC
5912 NORTH BURDICK STREET
EAST SYRACUSE, NY 13057

PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	DA-01
DATE: DEC. 16, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 1 OF 2

ATTACHMENT H

EXISTING DRAINAGE AREA CALCULATIONS AND HYDROGRAPHS



Subcat Reach Pond Link

Routing Diagram for Freeman Estates PreDeveloped
Prepared by GZA GeoEnvironmental, Inc., Printed 12/16/2020
HydroCAD® 10.00-25 s/n 11440 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.960	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S)
0.240	98	Paved parking, HSG A (1S)
0.200	98	Roofs, HSG A (1S)
1.860	30	Woods, Good, HSG A (1S, 2S)
1.970	79	Woods/grass comb., Good, HSG D (1S, 2S)
7.230	**51**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.260	HSG A	1S, 2S, 3S
0.000	HSG B	
0.000	HSG C	
1.970	HSG D	1S, 2S
0.000	Other	
7.230		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
2.960	0.000	0.000	0.000	0.000	2.960	>75% Grass cover, Good	1S, 2S, 3S
0.240	0.000	0.000	0.000	0.000	0.240	Paved parking	1S
0.200	0.000	0.000	0.000	0.000	0.200	Roofs	1S
1.860	0.000	0.000	0.000	0.000	1.860	Woods, Good	1S, 2S
0.000	0.000	0.000	1.970	0.000	1.970	Woods/grass comb., Good	1S, 2S
5.260	**0.000**	**0.000**	**1.970**	**0.000**	**7.230**	**TOTAL AREA**	

Time span=0.50-32.00 hrs, dt=0.05 hrs, 631 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: E-1 Runoff Area=4.810 ac 9.15% Impervious Runoff Depth=0.02"
Flow Length=529' Tc=14.4 min CN=55 Runoff=0.01 cfs 0.007 af

Subcatchment 2S: E-2 Runoff Area=2.320 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=482' Tc=14.1 min CN=44 Runoff=0.00 cfs 0.000 af

Subcatchment 3S: O-1 Runoff Area=0.100 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=60' Slope=0.0208 '/' Tc=7.5 min CN=39 Runoff=0.00 cfs 0.000 af

Total Runoff Area = 7.230 ac Runoff Volume = 0.007 af Average Runoff Depth = 0.01"
93.91% Pervious = 6.790 ac 6.09% Impervious = 0.440 ac

Summary for Subcatchment 1S: E-1

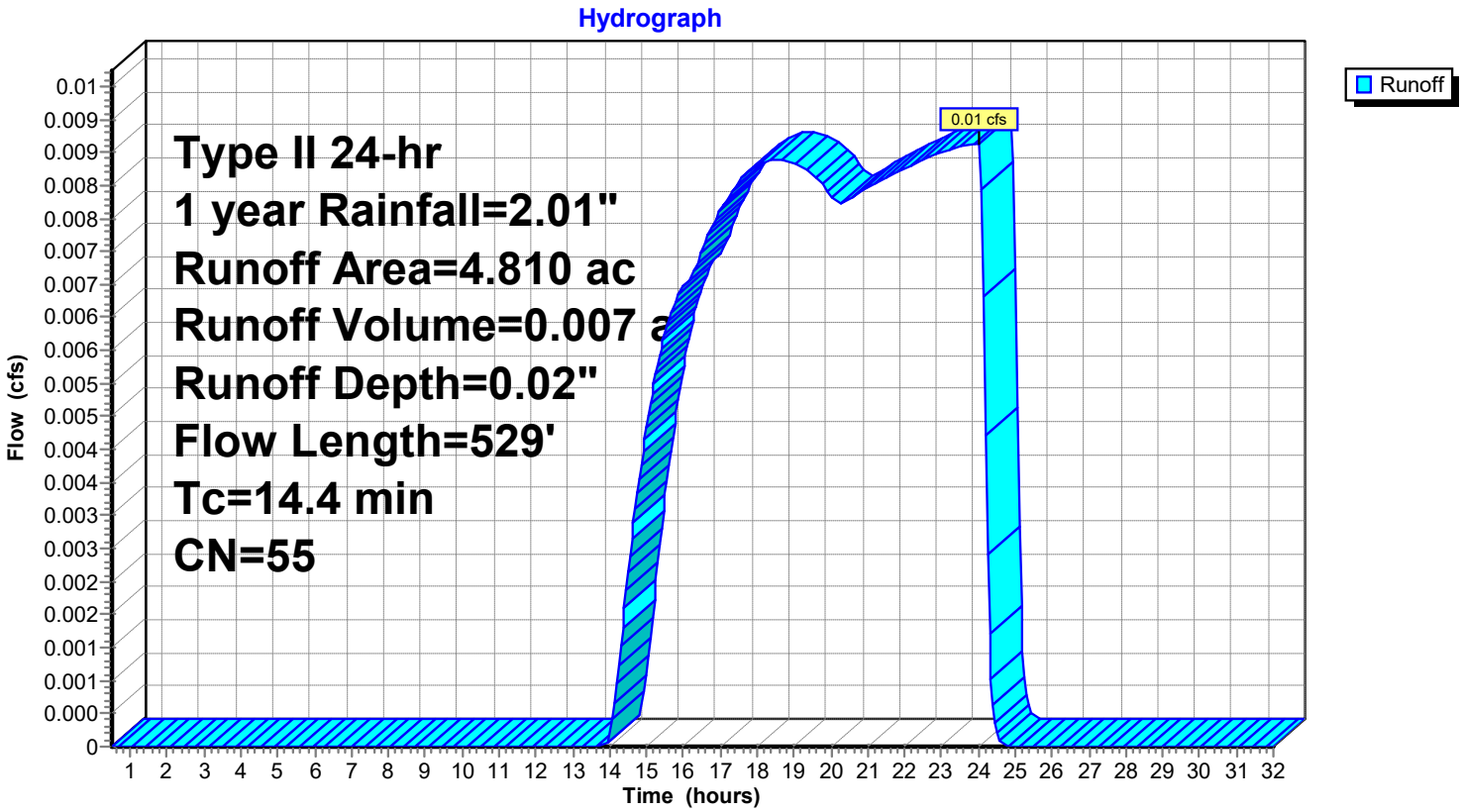
Runoff = 0.01 cfs @ 24.00 hrs, Volume= 0.007 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=2.01"

Area (ac)	CN	Description
1.070	30	Woods, Good, HSG A
1.480	79	Woods/grass comb., Good, HSG D
1.820	39	>75% Grass cover, Good, HSG A
0.240	98	Paved parking, HSG A
0.200	98	Roofs, HSG A
4.810	55	Weighted Average
4.370		90.85% Pervious Area
0.440		9.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0350	0.18		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"
3.5	232	0.0250	1.11		**Shallow Concentrated Flow, B-C Shallow Conc** Short Grass Pasture Kv= 7.0 fps
1.8	197	0.1270	1.78		**Shallow Concentrated Flow, C-D Shallow Conc** Woodland Kv= 5.0 fps
14.4	529	Total			

Subcatchment 1S: E-1



Summary for Subcatchment 2S: E-2

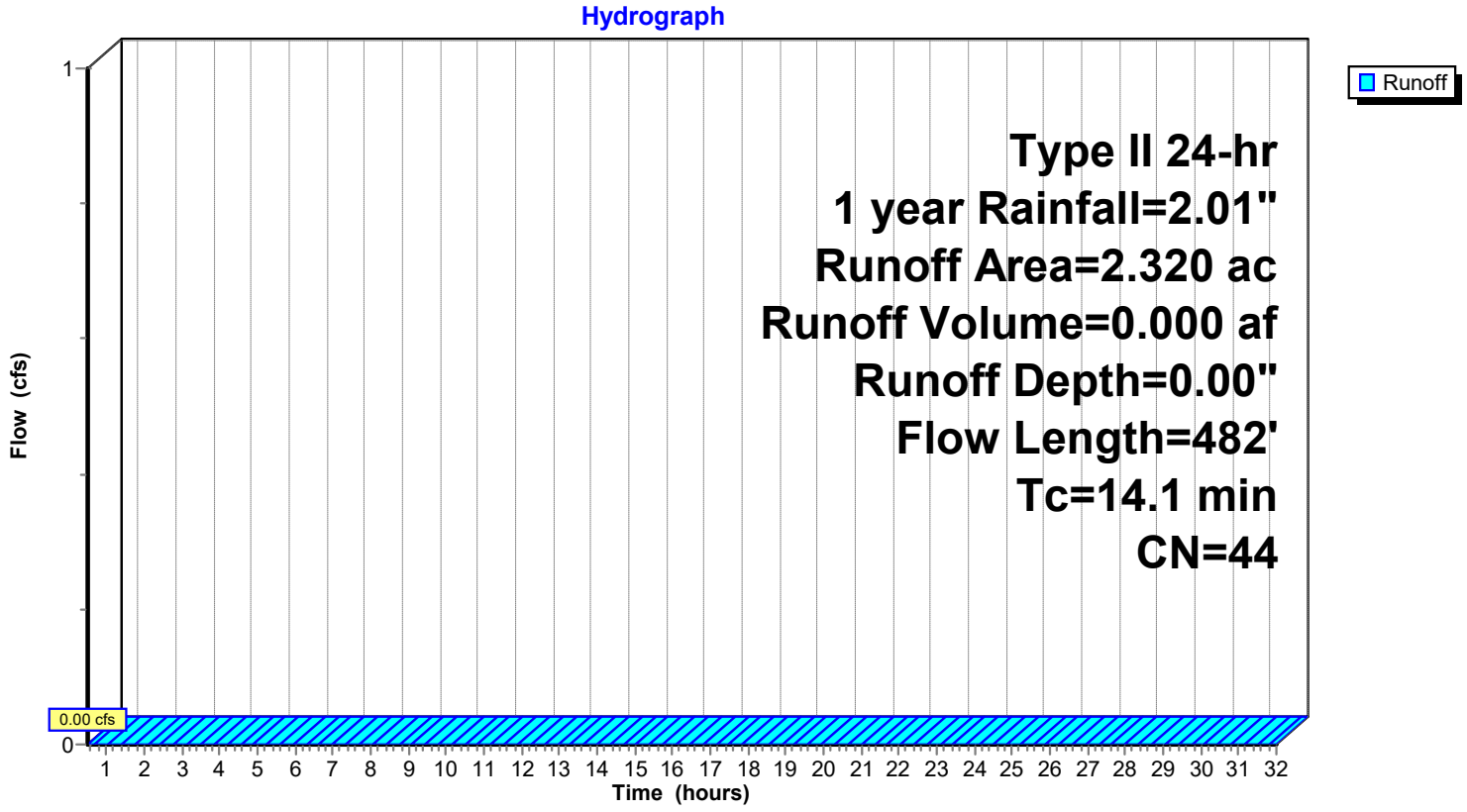
Runoff = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=2.01"

Area (ac)	CN	Description
0.790	30	Woods, Good, HSG A
0.490	79	Woods/grass comb., Good, HSG D
1.040	39	>75% Grass cover, Good, HSG A
2.320	44	Weighted Average
2.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0305	0.17		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"
0.4	55	0.1090	2.31		**Shallow Concentrated Flow, B-C Shallow Conc** Short Grass Pasture Kv= 7.0 fps
4.0	327	0.0730	1.35		**Shallow Concentrated Flow, C-D Shallow Conc** Woodland Kv= 5.0 fps
14.1	482	Total			

Subcatchment 2S: E-2



Summary for Subcatchment 3S: O-1

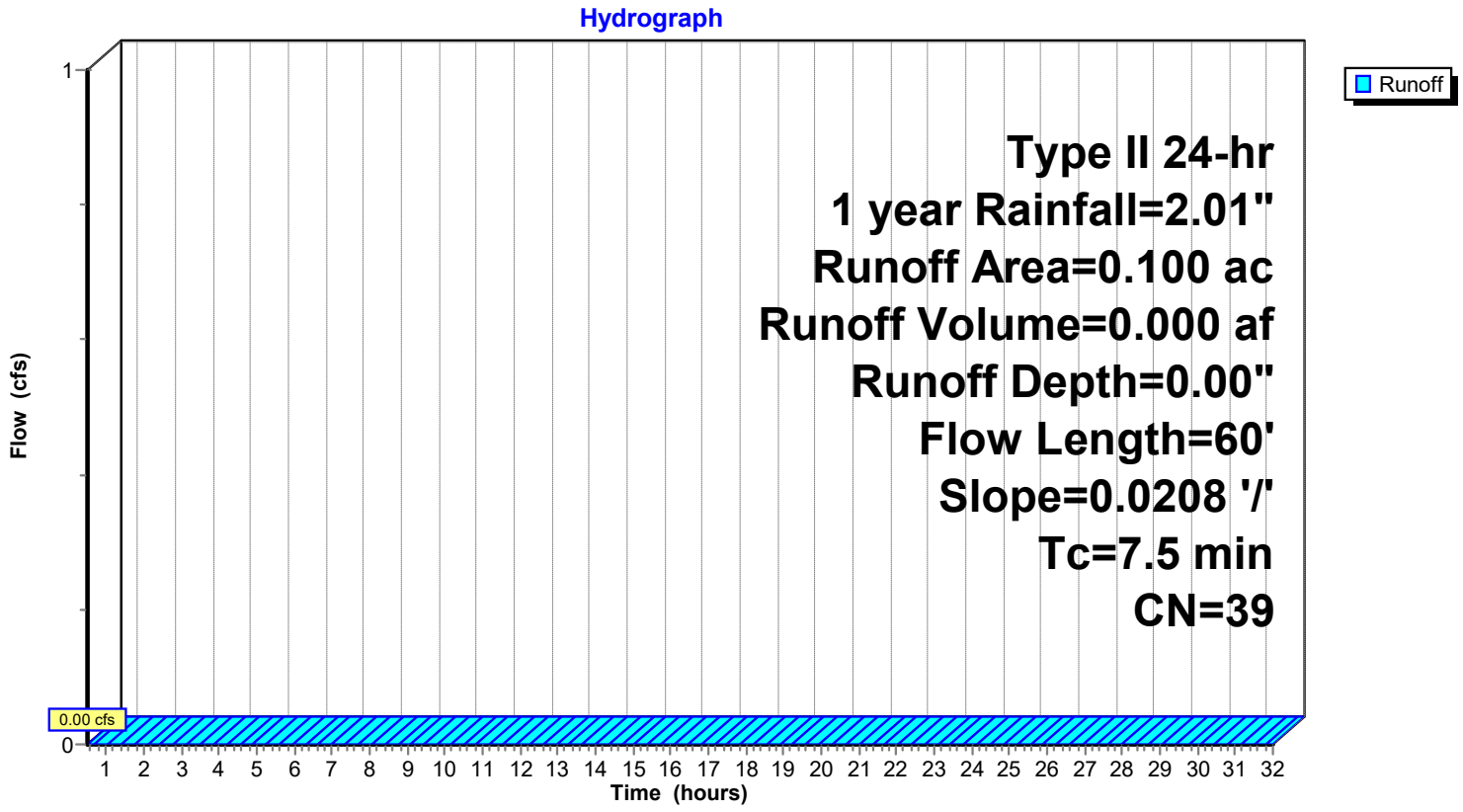
Runoff = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=2.01"

Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	60	0.0208	0.13		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 3S: O-1



Time span=0.50-32.00 hrs, dt=0.05 hrs, 631 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: E-1 Runoff Area=4.810 ac 9.15% Impervious Runoff Depth=0.06"
Flow Length=529' Tc=14.4 min CN=55 Runoff=0.03 cfs 0.023 af

Subcatchment 2S: E-2 Runoff Area=2.320 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=482' Tc=14.1 min CN=44 Runoff=0.00 cfs 0.000 af

Subcatchment 3S: O-1 Runoff Area=0.100 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=60' Slope=0.0208 '/' Tc=7.5 min CN=39 Runoff=0.00 cfs 0.000 af

Total Runoff Area = 7.230 ac Runoff Volume = 0.023 af Average Runoff Depth = 0.04"
93.91% Pervious = 6.790 ac 6.09% Impervious = 0.440 ac

Summary for Subcatchment 1S: E-1

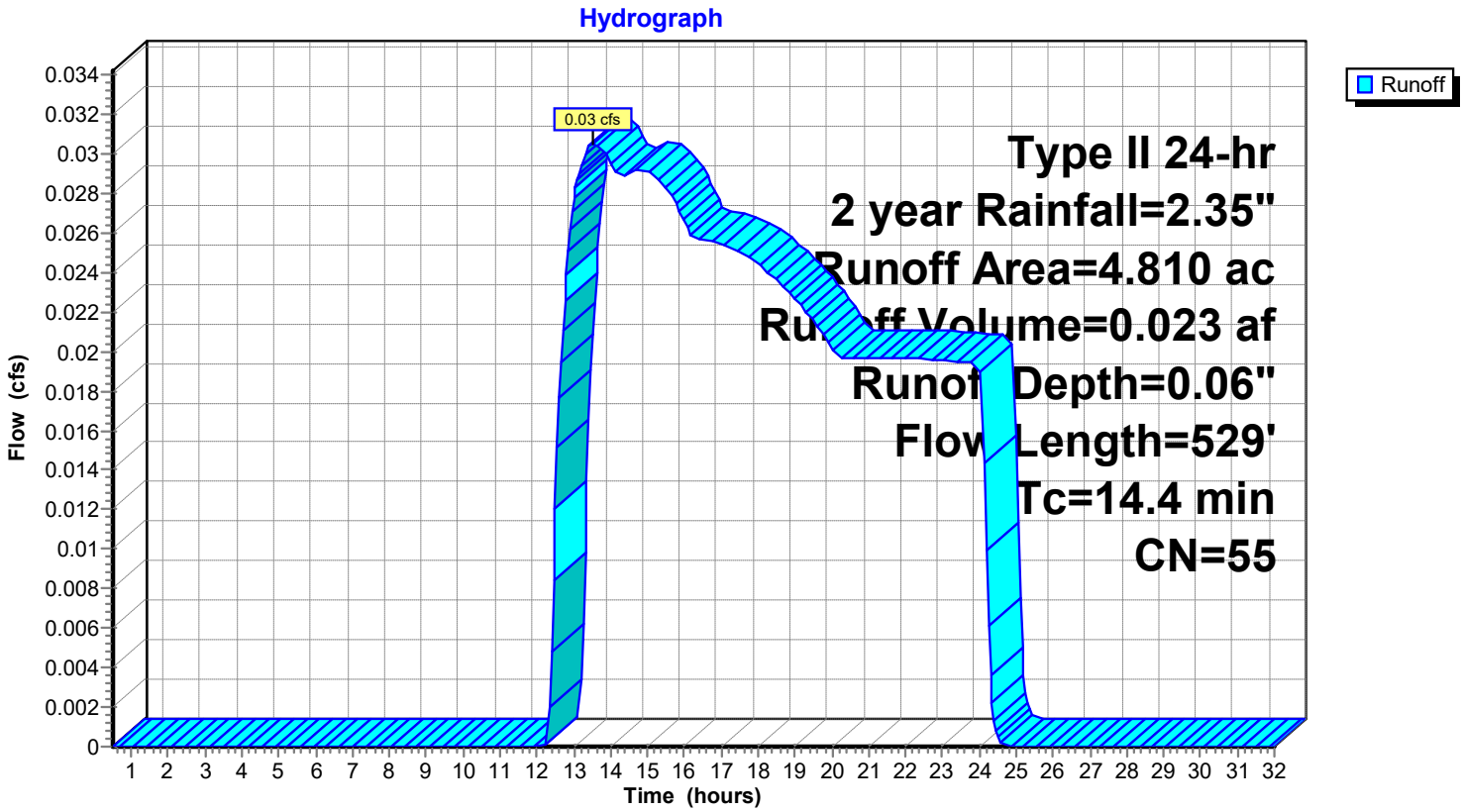
Runoff = 0.03 cfs @ 13.53 hrs, Volume= 0.023 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 year Rainfall=2.35"

Area (ac)	CN	Description
1.070	30	Woods, Good, HSG A
1.480	79	Woods/grass comb., Good, HSG D
1.820	39	>75% Grass cover, Good, HSG A
0.240	98	Paved parking, HSG A
0.200	98	Roofs, HSG A
4.810	55	Weighted Average
4.370		90.85% Pervious Area
0.440		9.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0350	0.18		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"
3.5	232	0.0250	1.11		**Shallow Concentrated Flow, B-C Shallow Conc** Short Grass Pasture Kv= 7.0 fps
1.8	197	0.1270	1.78		**Shallow Concentrated Flow, C-D Shallow Conc** Woodland Kv= 5.0 fps
14.4	529	Total			

Subcatchment 1S: E-1



Summary for Subcatchment 2S: E-2

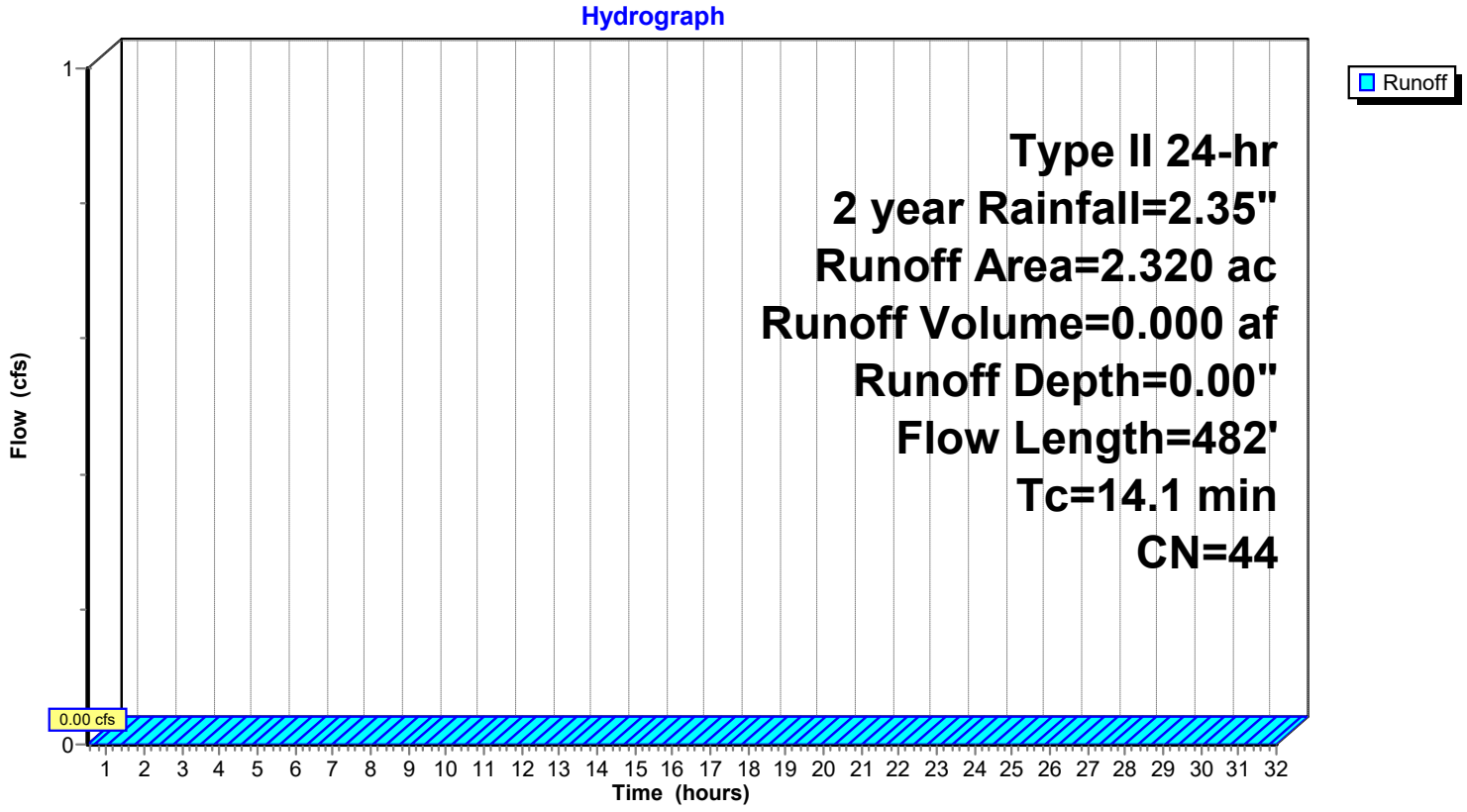
Runoff = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 year Rainfall=2.35"

Area (ac)	CN	Description
0.790	30	Woods, Good, HSG A
0.490	79	Woods/grass comb., Good, HSG D
1.040	39	>75% Grass cover, Good, HSG A
2.320	44	Weighted Average
2.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0305	0.17		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"
0.4	55	0.1090	2.31		**Shallow Concentrated Flow, B-C Shallow Conc** Short Grass Pasture Kv= 7.0 fps
4.0	327	0.0730	1.35		**Shallow Concentrated Flow, C-D Shallow Conc** Woodland Kv= 5.0 fps
14.1	482	Total			

Subcatchment 2S: E-2



Summary for Subcatchment 3S: O-1

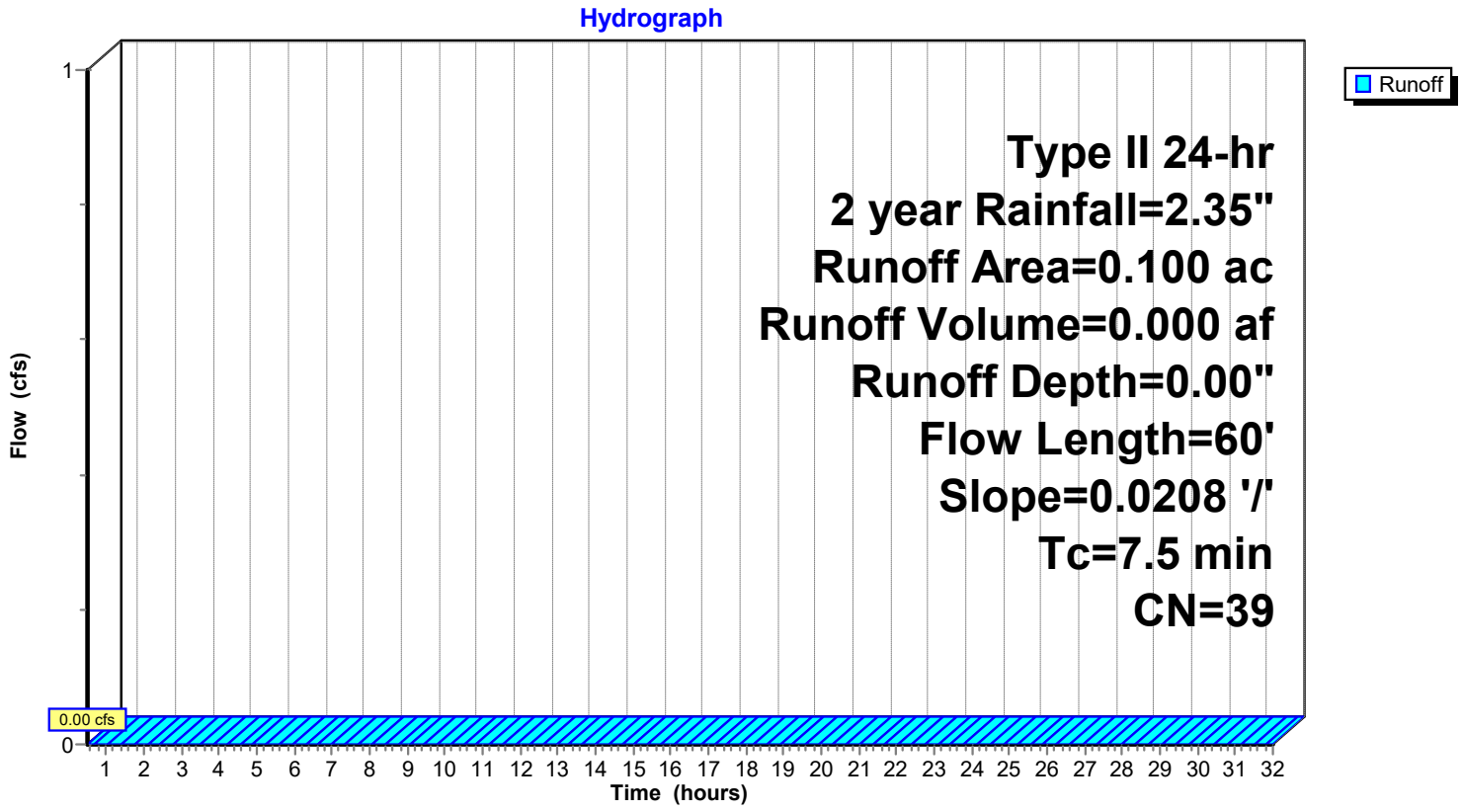
Runoff = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 year Rainfall=2.35"

Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	60	0.0208	0.13		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 3S: O-1



Time span=0.50-32.00 hrs, dt=0.05 hrs, 631 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: E-1 Runoff Area=4.810 ac 9.15% Impervious Runoff Depth=0.30"
Flow Length=529' Tc=14.4 min CN=55 Runoff=0.88 cfs 0.121 af

Subcatchment 2S: E-2 Runoff Area=2.320 ac 0.00% Impervious Runoff Depth=0.05"
Flow Length=482' Tc=14.1 min CN=44 Runoff=0.01 cfs 0.010 af

Subcatchment 3S: O-1 Runoff Area=0.100 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=60' Slope=0.0208 '/' Tc=7.5 min CN=39 Runoff=0.00 cfs 0.000 af

Total Runoff Area = 7.230 ac Runoff Volume = 0.131 af Average Runoff Depth = 0.22"
93.91% Pervious = 6.790 ac 6.09% Impervious = 0.440 ac

Summary for Subcatchment 1S: E-1

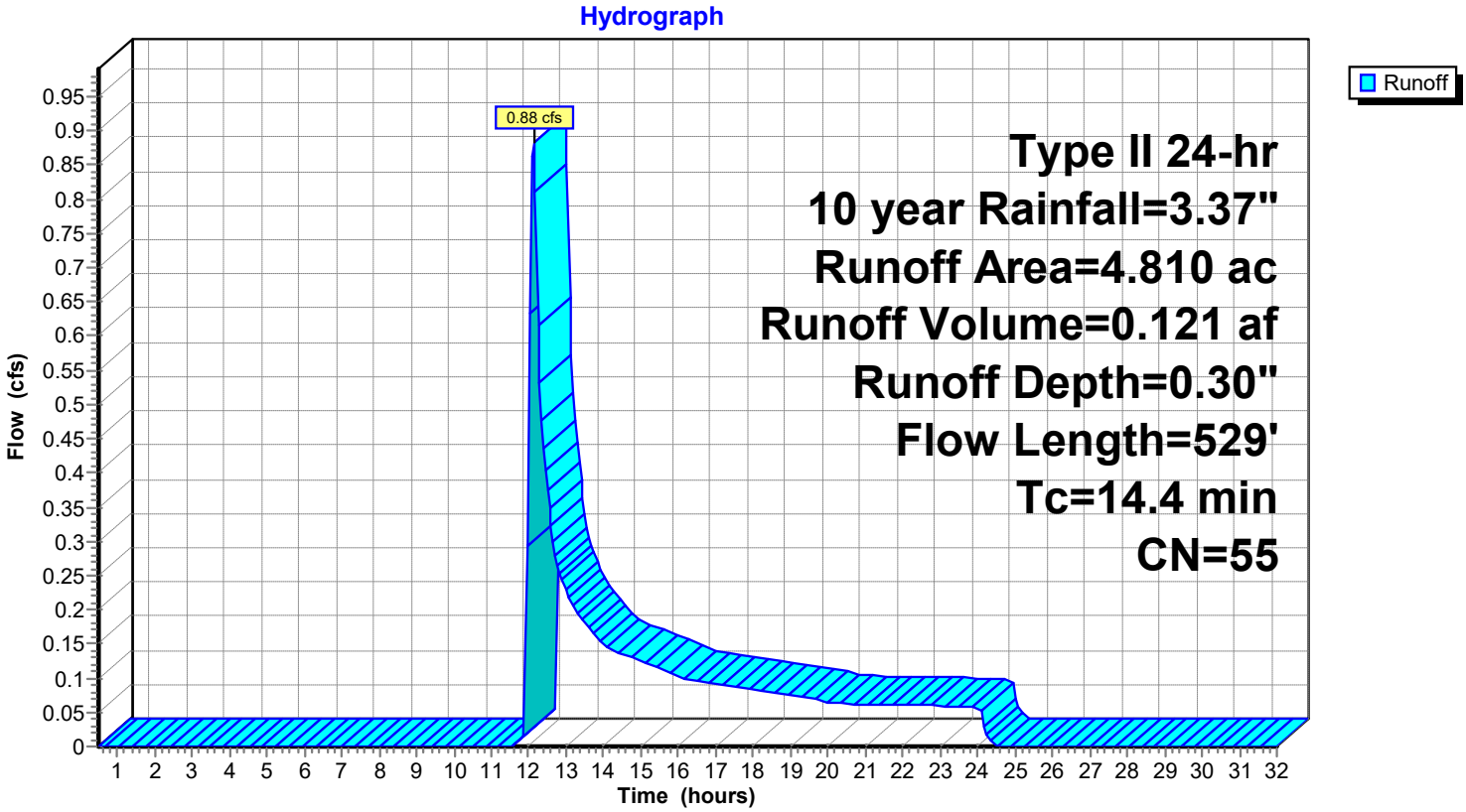
Runoff = 0.88 cfs @ 12.13 hrs, Volume= 0.121 af, Depth= 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 year Rainfall=3.37"

Area (ac)	CN	Description
1.070	30	Woods, Good, HSG A
1.480	79	Woods/grass comb., Good, HSG D
1.820	39	>75% Grass cover, Good, HSG A
0.240	98	Paved parking, HSG A
0.200	98	Roofs, HSG A
4.810	55	Weighted Average
4.370		90.85% Pervious Area
0.440		9.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0350	0.18		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"
3.5	232	0.0250	1.11		**Shallow Concentrated Flow, B-C Shallow Conc** Short Grass Pasture Kv= 7.0 fps
1.8	197	0.1270	1.78		**Shallow Concentrated Flow, C-D Shallow Conc** Woodland Kv= 5.0 fps
14.4	529	Total			

Subcatchment 1S: E-1



Summary for Subcatchment 2S: E-2

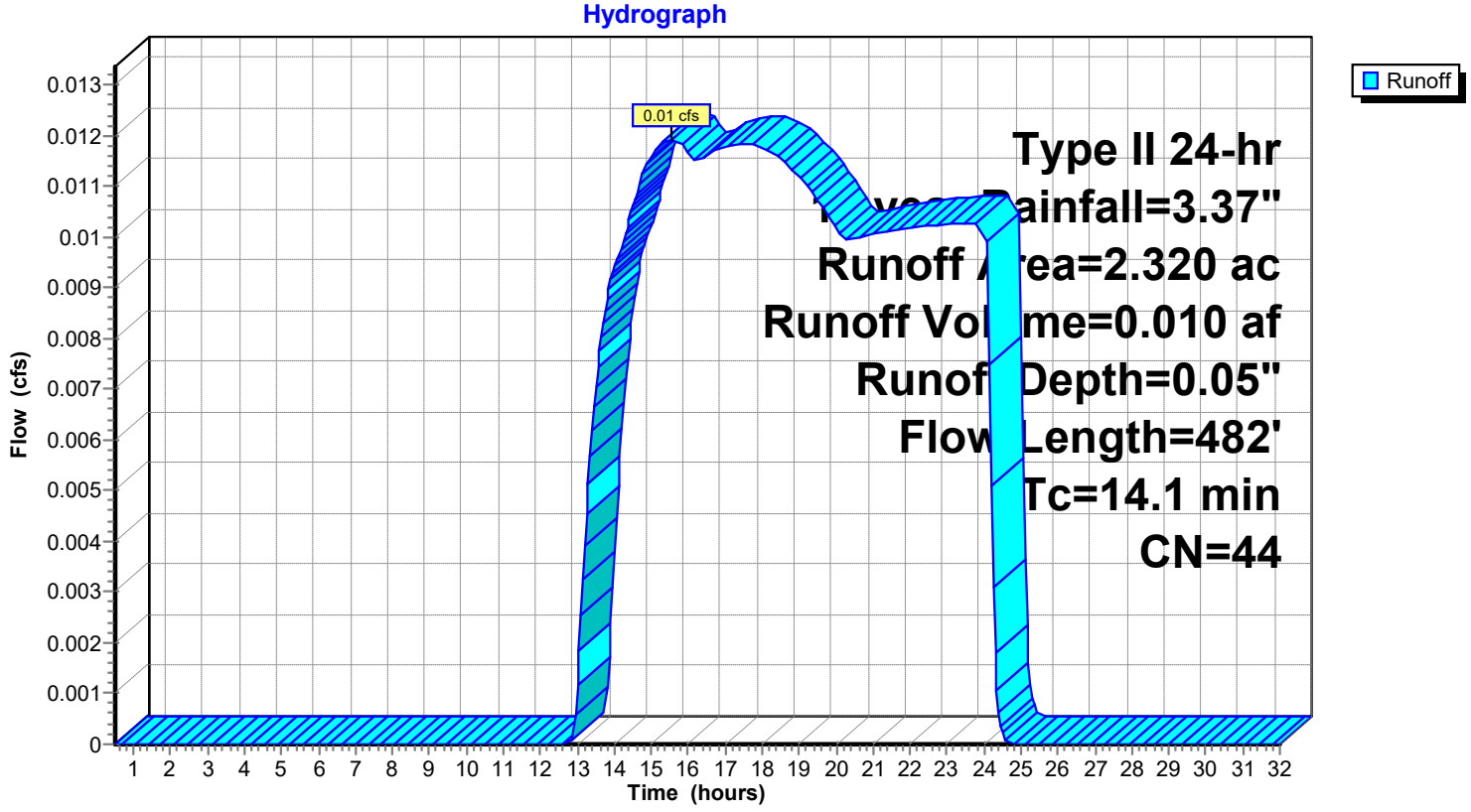
Runoff = 0.01 cfs @ 15.52 hrs, Volume= 0.010 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 year Rainfall=3.37"

Area (ac)	CN	Description
0.790	30	Woods, Good, HSG A
0.490	79	Woods/grass comb., Good, HSG D
1.040	39	>75% Grass cover, Good, HSG A
2.320	44	Weighted Average
2.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0305	0.17		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"
0.4	55	0.1090	2.31		**Shallow Concentrated Flow, B-C Shallow Conc** Short Grass Pasture Kv= 7.0 fps
4.0	327	0.0730	1.35		**Shallow Concentrated Flow, C-D Shallow Conc** Woodland Kv= 5.0 fps
14.1	482	Total			

Subcatchment 2S: E-2



Summary for Subcatchment 3S: O-1

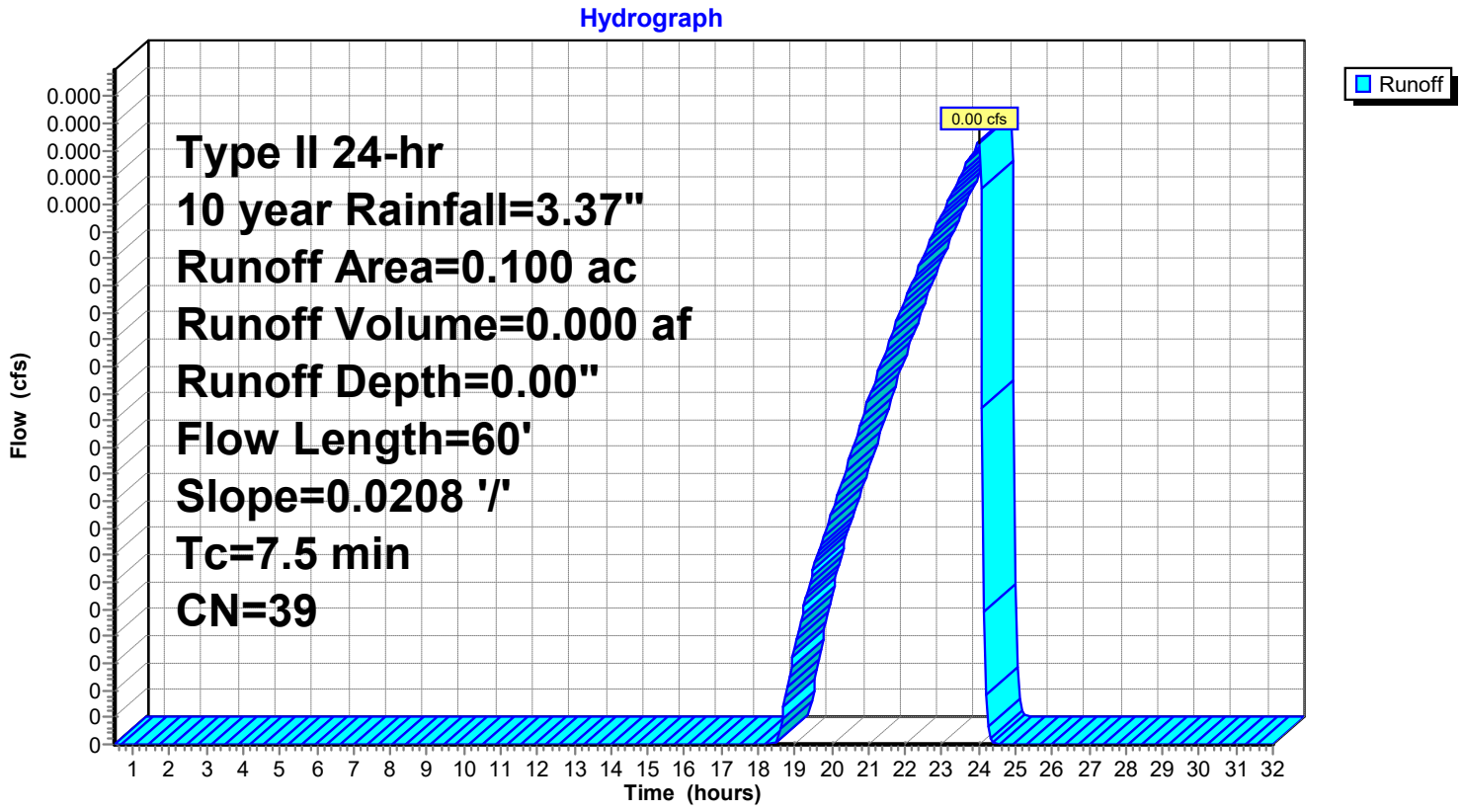
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 year Rainfall=3.37"

Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	60	0.0208	0.13		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 3S: O-1



Time span=0.50-32.00 hrs, dt=0.05 hrs, 631 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: E-1 Runoff Area=4.810 ac 9.15% Impervious Runoff Depth=1.33"
Flow Length=529' Tc=14.4 min CN=55 Runoff=7.44 cfs 0.532 af

Subcatchment 2S: E-2 Runoff Area=2.320 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=482' Tc=14.1 min CN=44 Runoff=1.07 cfs 0.118 af

Subcatchment 3S: O-1 Runoff Area=0.100 ac 0.00% Impervious Runoff Depth=0.35"
Flow Length=60' Slope=0.0208 '/' Tc=7.5 min CN=39 Runoff=0.02 cfs 0.003 af

Total Runoff Area = 7.230 ac Runoff Volume = 0.653 af Average Runoff Depth = 1.08"
93.91% Pervious = 6.790 ac 6.09% Impervious = 0.440 ac

Summary for Subcatchment 1S: E-1

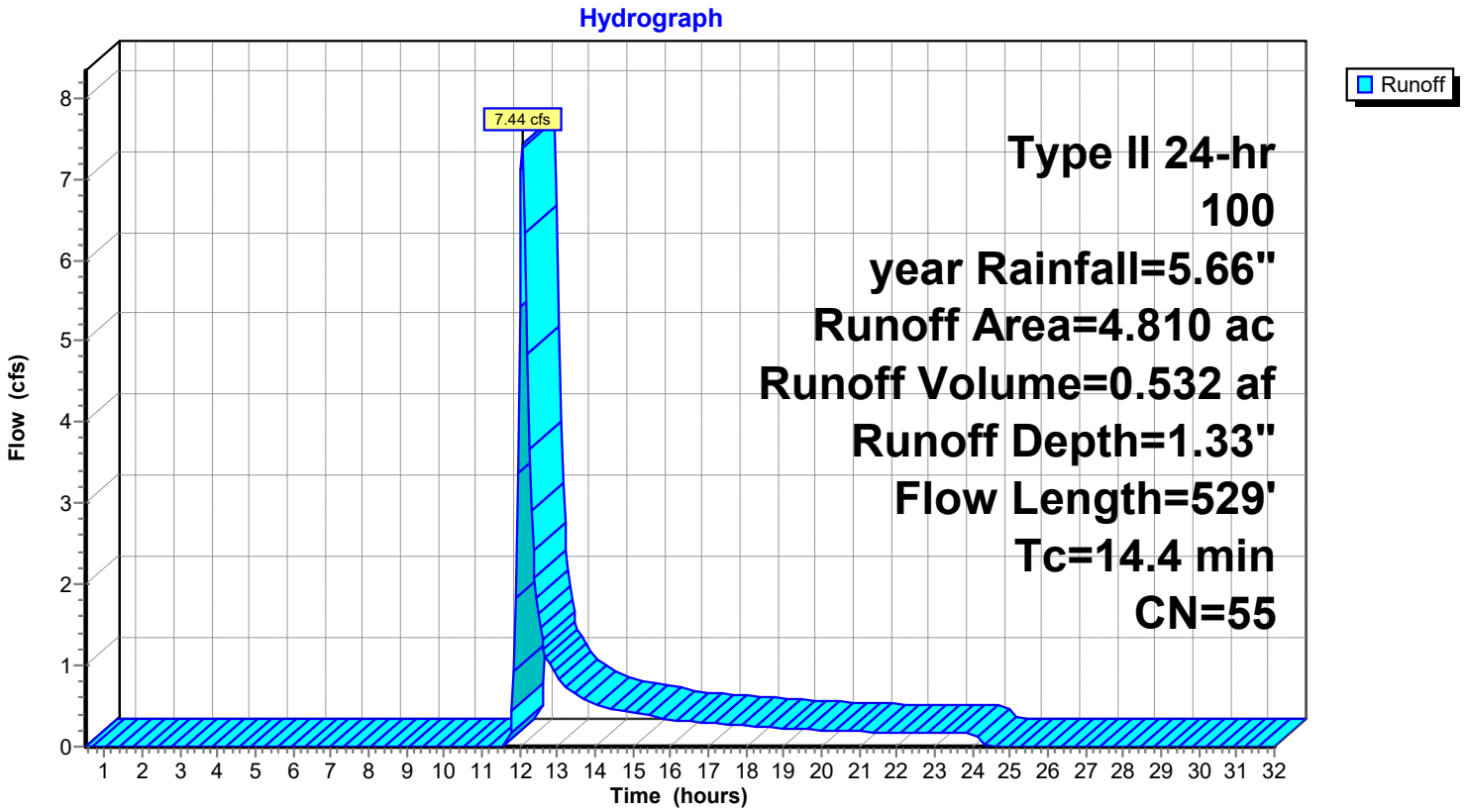
Runoff = 7.44 cfs @ 12.09 hrs, Volume= 0.532 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 year Rainfall=5.66"

Area (ac)	CN	Description
1.070	30	Woods, Good, HSG A
1.480	79	Woods/grass comb., Good, HSG D
1.820	39	>75% Grass cover, Good, HSG A
0.240	98	Paved parking, HSG A
0.200	98	Roofs, HSG A
4.810	55	Weighted Average
4.370		90.85% Pervious Area
0.440		9.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0350	0.18		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"
3.5	232	0.0250	1.11		**Shallow Concentrated Flow, B-C Shallow Conc** Short Grass Pasture Kv= 7.0 fps
1.8	197	0.1270	1.78		**Shallow Concentrated Flow, C-D Shallow Conc** Woodland Kv= 5.0 fps
14.4	529	Total			

Subcatchment 1S: E-1



Summary for Subcatchment 2S: E-2

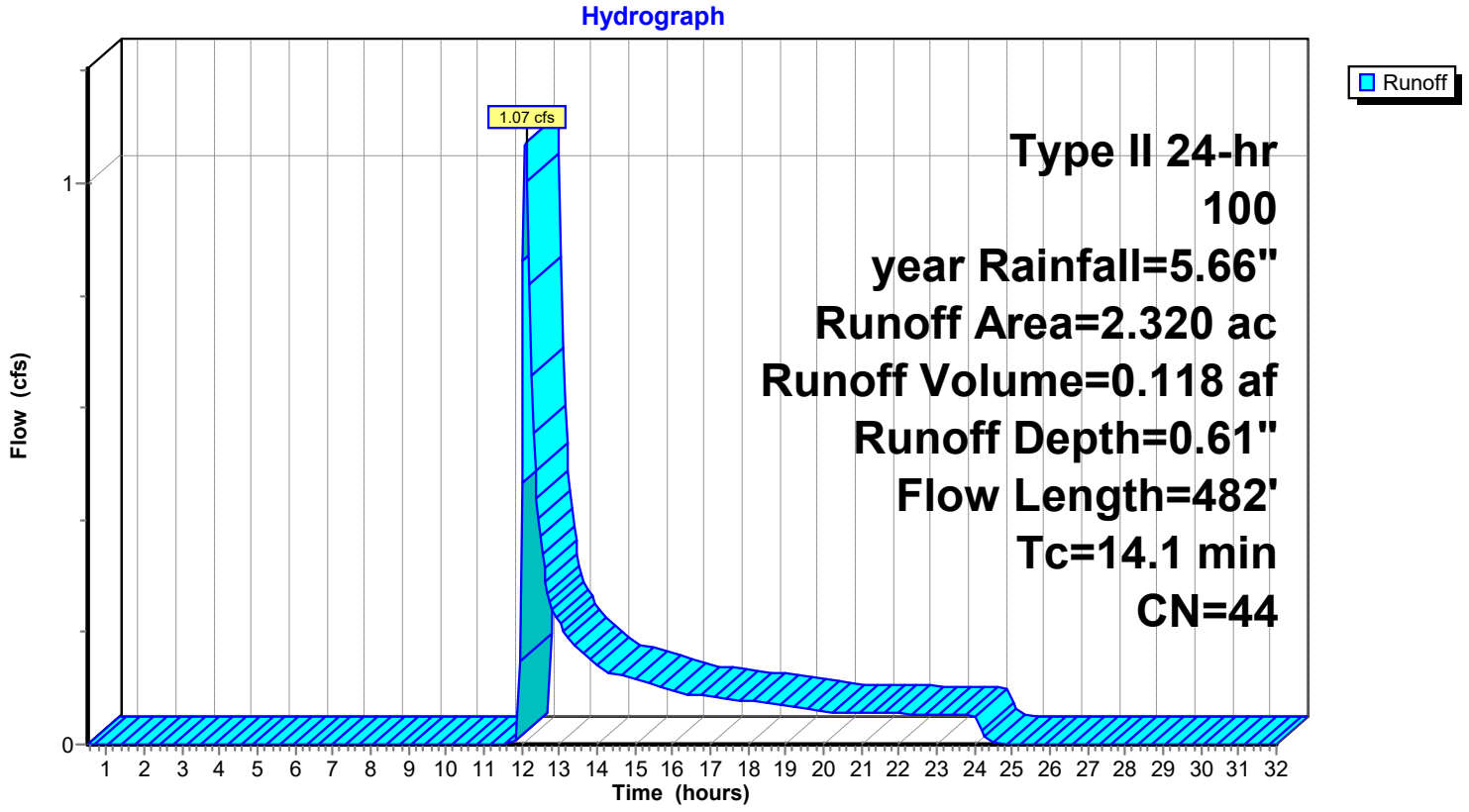
Runoff = 1.07 cfs @ 12.11 hrs, Volume= 0.118 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 year Rainfall=5.66"

Area (ac)	CN	Description
0.790	30	Woods, Good, HSG A
0.490	79	Woods/grass comb., Good, HSG D
1.040	39	>75% Grass cover, Good, HSG A
2.320	44	Weighted Average
2.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0305	0.17		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"
0.4	55	0.1090	2.31		**Shallow Concentrated Flow, B-C Shallow Conc** Short Grass Pasture Kv= 7.0 fps
4.0	327	0.0730	1.35		**Shallow Concentrated Flow, C-D Shallow Conc** Woodland Kv= 5.0 fps
14.1	482	Total			

Subcatchment 2S: E-2



Summary for Subcatchment 3S: O-1

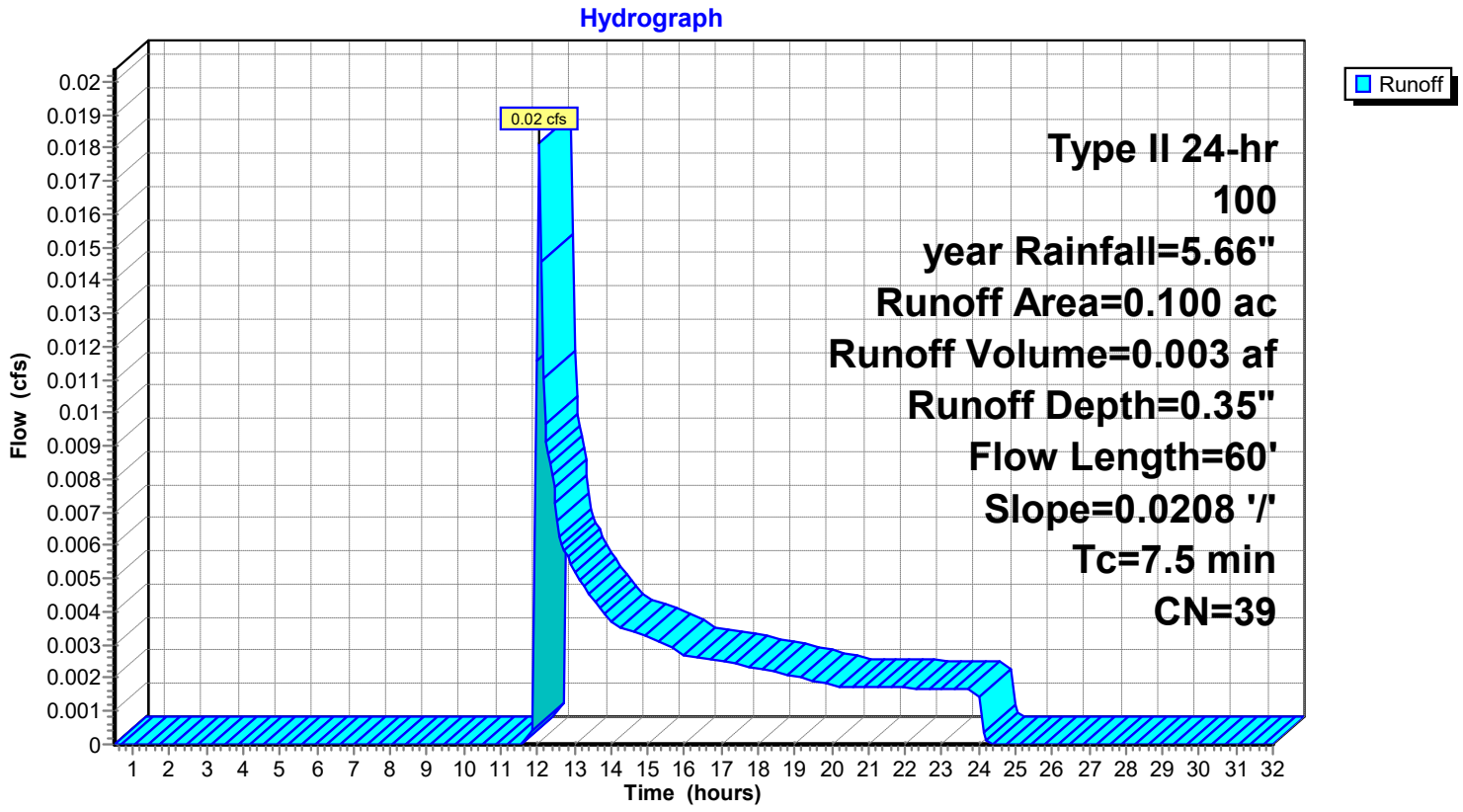
Runoff = 0.02 cfs @ 12.06 hrs, Volume= 0.003 af, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-32.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 year Rainfall=5.66"

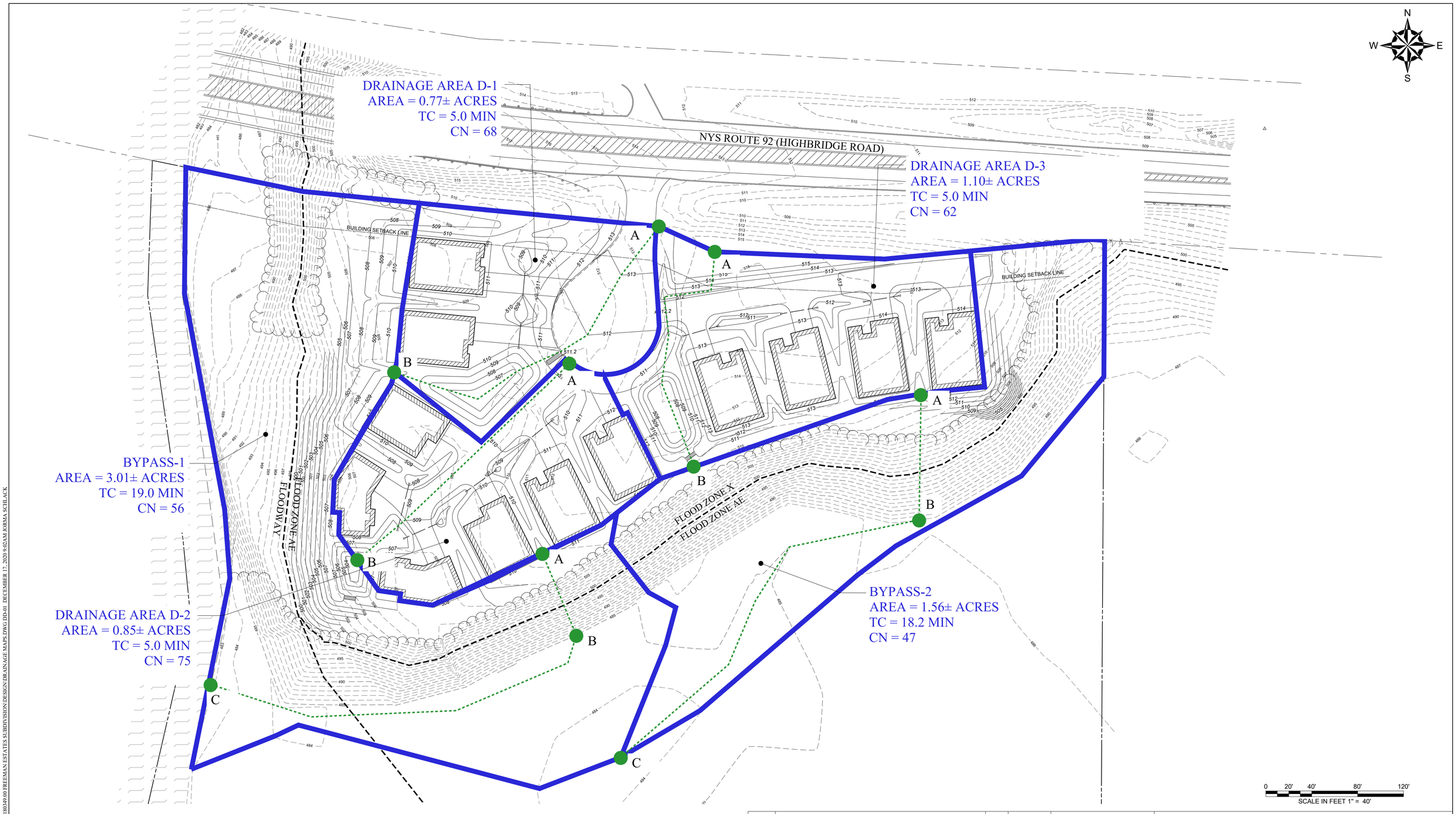
Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	60	0.0208	0.13		**Sheet Flow, A-B Sheet Flow** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 3S: O-1



ATTACHMENT I
DEVELOPED DRAINAGE AREA MAP



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811 Know what's below. Call before you dig.

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NO.	ISSUE/DESCRIPTION	BY	DATE

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DEVELOPED DRAINAGE AREA MAP

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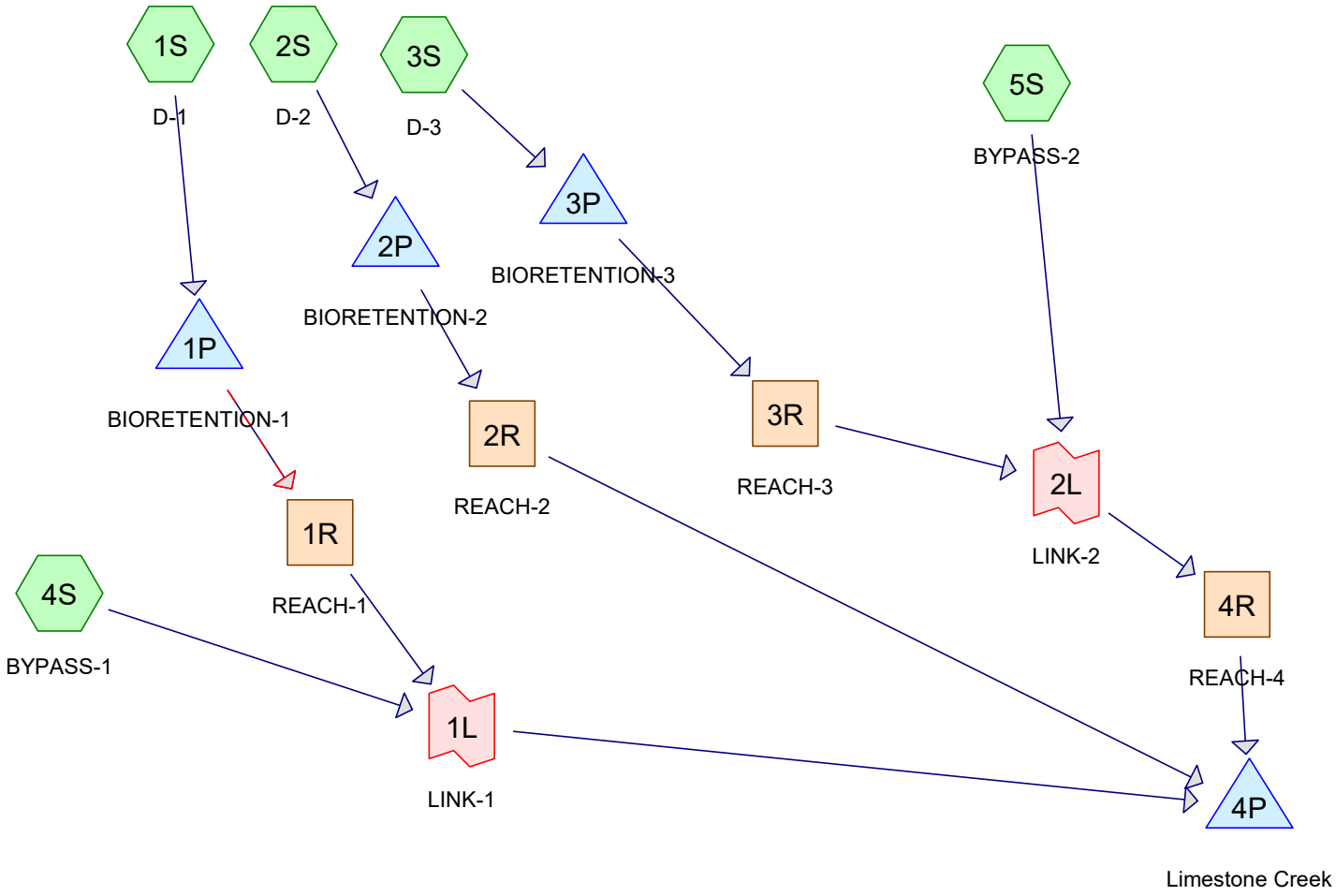
DESIGNED BY:	E.K.R.	DRAWN BY:	E.K.R.	SCALE:	AS NOTED
DATE:	DEC. 16, 2020	PROJECT NO.	31.0180349.00	REVISION NO.	

DWG
DD-01
SHEET NO. 2 OF 2

ATTACHMENT J

DEVELOPED DRAINAGE AREA CALCULATIONS AND HYDROGRAPHS



Subcat Reach Pond Link

Routing Diagram for Freeman Estates Developed

Prepared by GZA GeoEnvironmental, Inc., Printed 12/16/2020

HydroCAD® 10.00-25 s/n 11440 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.140	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S, 5S)
0.560	98	Paved parking, HSG A (1S, 2S, 3S)
0.730	98	Roofs, HSG A (1S, 2S, 3S)
1.830	30	Woods, Good, HSG A (4S, 5S)
1.970	79	Woods/grass comb., Good, HSG D (4S, 5S)
7.230	**58**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.260	HSG A	1S, 2S, 3S, 4S, 5S
0.000	HSG B	
0.000	HSG C	
1.970	HSG D	4S, 5S
0.000	Other	
7.230		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
2.140	0.000	0.000	0.000	0.000	2.140	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S
0.560	0.000	0.000	0.000	0.000	0.560	Paved parking	1S, 2S, 3S
0.730	0.000	0.000	0.000	0.000	0.730	Roofs	1S, 2S, 3S
1.830	0.000	0.000	0.000	0.000	1.830	Woods, Good	4S, 5S
0.000	0.000	0.000	1.970	0.000	1.970	Woods/grass comb., Good	4S, 5S
5.260	**0.000**	**0.000**	**1.970**	**0.000**	**7.230**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	507.00	506.60	75.0	0.0053	0.013	12.0	0.0	0.0

Time span=0.50-40.00 hrs, dt=0.03 hrs, 1318 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: D-1 Runoff Area=0.770 ac 49.35% Impervious Runoff Depth=0.20"
Tc=5.0 min CN=68 Runoff=0.18 cfs 0.013 af

Subcatchment 2S: D-2 Runoff Area=0.850 ac 61.18% Impervious Runoff Depth=0.39"
Tc=5.0 min CN=75 Runoff=0.55 cfs 0.027 af

Subcatchment 3S: D-3 Runoff Area=0.990 ac 39.39% Impervious Runoff Depth=0.09"
Tc=5.0 min CN=62 Runoff=0.02 cfs 0.007 af

Subcatchment 4S: BYPASS-1 Runoff Area=3.010 ac 0.00% Impervious Runoff Depth=0.02"
Flow Length=427' Tc=19.0 min CN=56 Runoff=0.01 cfs 0.006 af

Subcatchment 5S: BYPASS-2 Runoff Area=1.610 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=464' Tc=18.2 min CN=47 Runoff=0.00 cfs 0.000 af

Reach 1R: REACH-1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=142.0' S=0.1725 '/' Capacity=88.08 cfs Outflow=0.00 cfs 0.000 af

Reach 2R: REACH-2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=198.0' S=0.1237 '/' Capacity=74.59 cfs Outflow=0.00 cfs 0.000 af

Reach 3R: REACH-3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=307.0' S=0.0847 '/' Capacity=61.71 cfs Outflow=0.00 cfs 0.000 af

Reach 4R: REACH-4 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=366.0' S=0.0055 '/' Capacity=15.68 cfs Outflow=0.00 cfs 0.000 af

Pond 1P: BIORETENTION-1 Peak Elev=507.15' Storage=115 cf Inflow=0.18 cfs 0.013 af
Discarded=0.02 cfs 0.013 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.013 af

Pond 2P: BIORETENTION-2 Peak Elev=505.33' Storage=585 cf Inflow=0.55 cfs 0.027 af
Discarded=0.02 cfs 0.027 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.027 af

Pond 3P: BIORETENTION-3 Peak Elev=508.02' Storage=17 cf Inflow=0.02 cfs 0.007 af
Discarded=0.01 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af

Pond 4P: Limestone Creek Inflow=0.01 cfs 0.006 af
Primary=0.01 cfs 0.006 af

Link 1L: LINK-1 Inflow=0.01 cfs 0.006 af
Primary=0.01 cfs 0.006 af

Link 2L: LINK-2 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 7.230 ac Runoff Volume = 0.053 af Average Runoff Depth = 0.09"
82.16% Pervious = 5.940 ac 17.84% Impervious = 1.290 ac

Summary for Subcatchment 1S: D-1

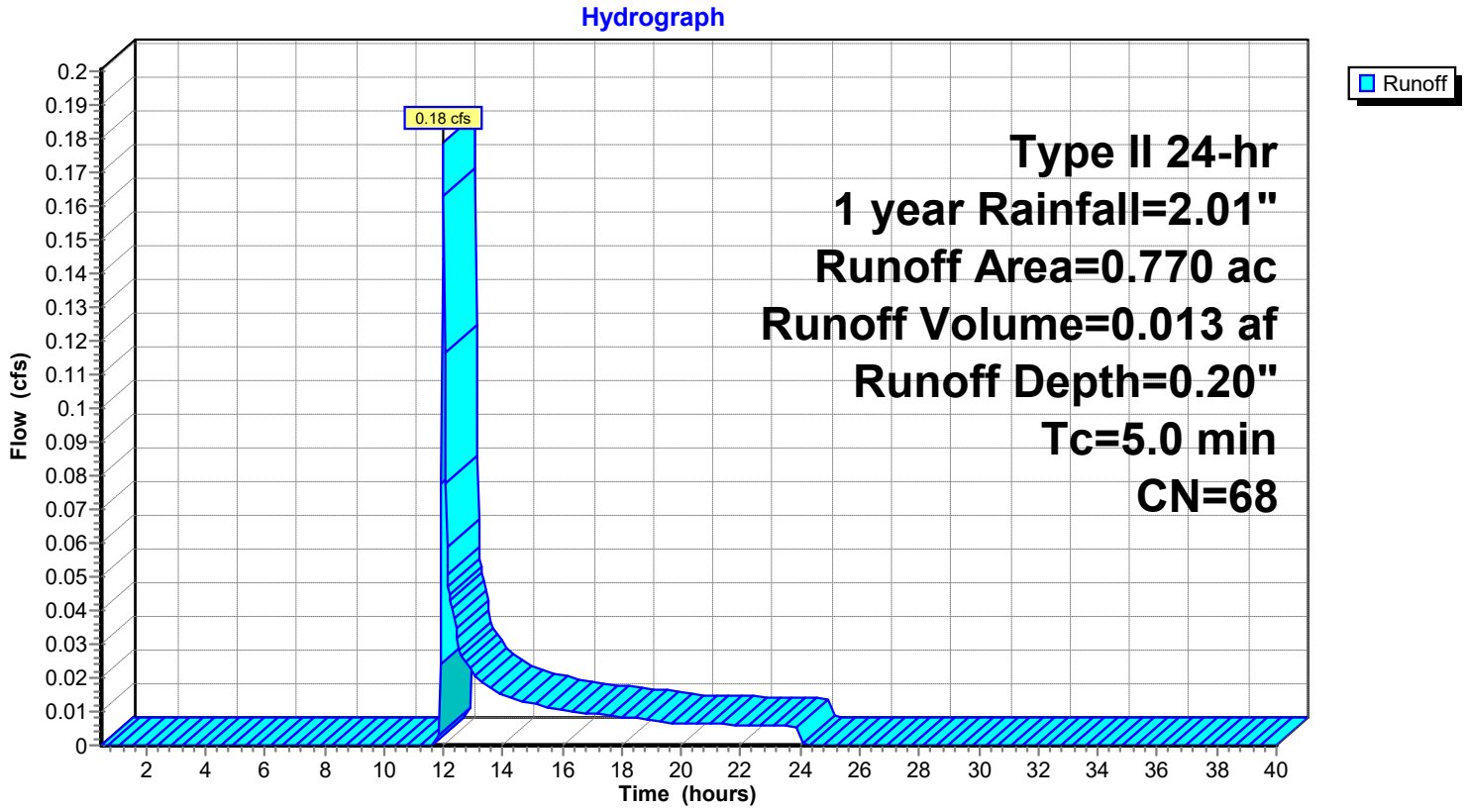
Runoff = 0.18 cfs @ 12.00 hrs, Volume= 0.013 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.01"

Area (ac)	CN	Description
0.390	39	>75% Grass cover, Good, HSG A
0.250	98	Paved parking, HSG A
0.130	98	Roofs, HSG A
0.770	68	Weighted Average
0.390		50.65% Pervious Area
0.380		49.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 1S: D-1



Summary for Subcatchment 2S: D-2

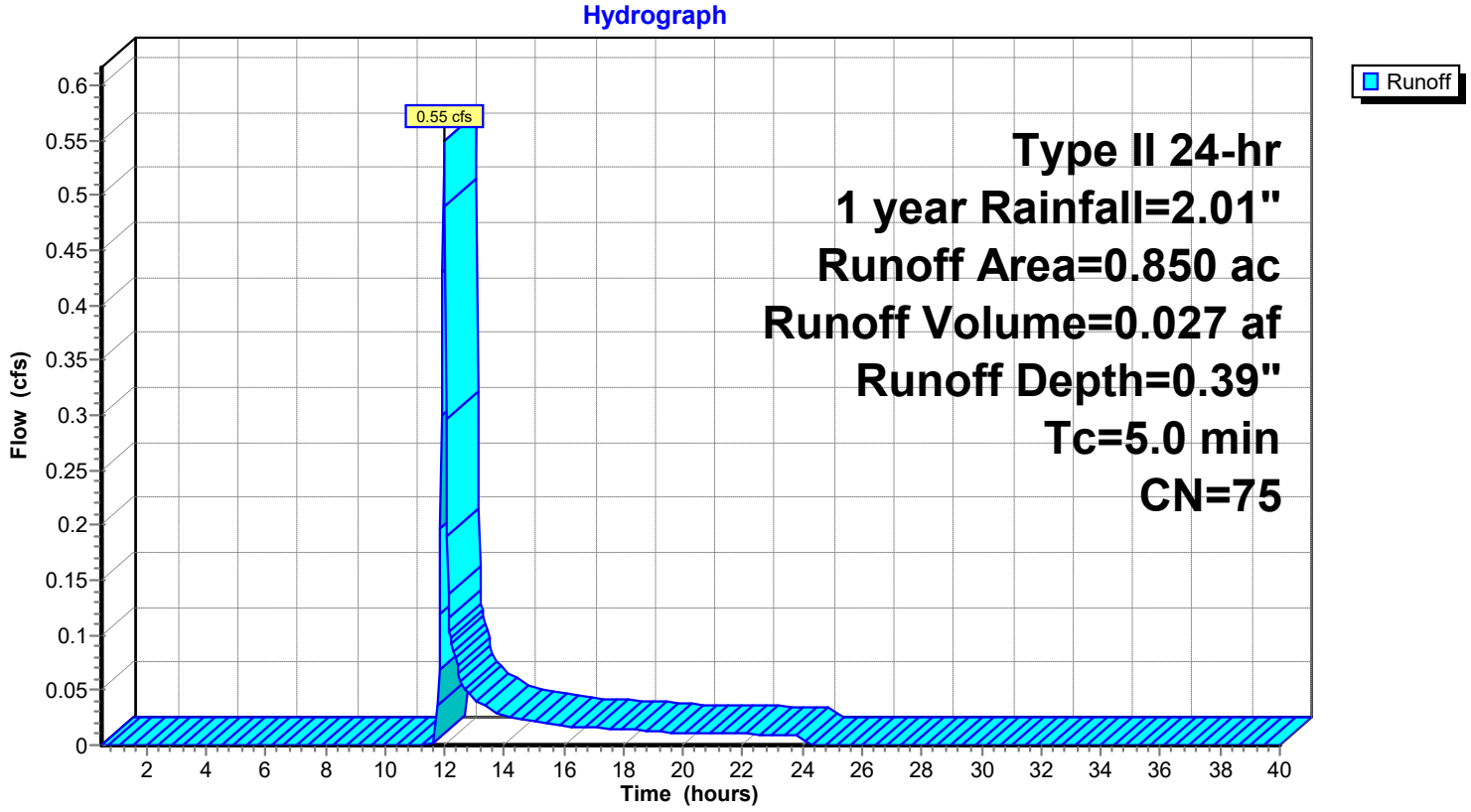
Runoff = 0.55 cfs @ 11.98 hrs, Volume= 0.027 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.01"

Area (ac)	CN	Description
0.330	39	>75% Grass cover, Good, HSG A
0.170	98	Paved parking, HSG A
0.350	98	Roofs, HSG A
0.850	75	Weighted Average
0.330		38.82% Pervious Area
0.520		61.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 2S: D-2



Summary for Subcatchment 3S: D-3

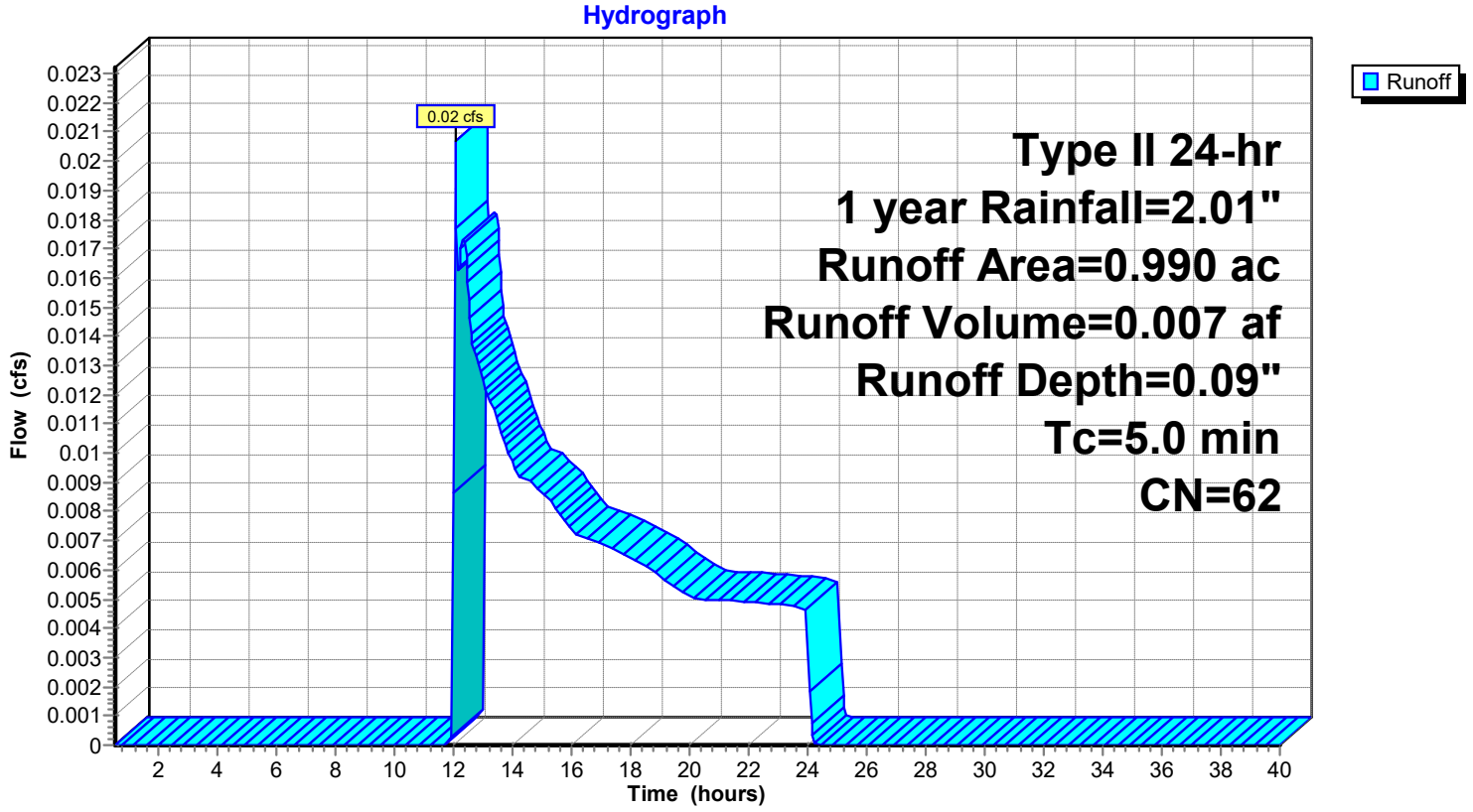
Runoff = 0.02 cfs @ 12.05 hrs, Volume= 0.007 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.01"

Area (ac)	CN	Description
0.600	39	>75% Grass cover, Good, HSG A
0.140	98	Paved parking, HSG A
0.250	98	Roofs, HSG A
0.990	62	Weighted Average
0.600		60.61% Pervious Area
0.390		39.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 3S: D-3



Summary for Subcatchment 4S: BYPASS-1

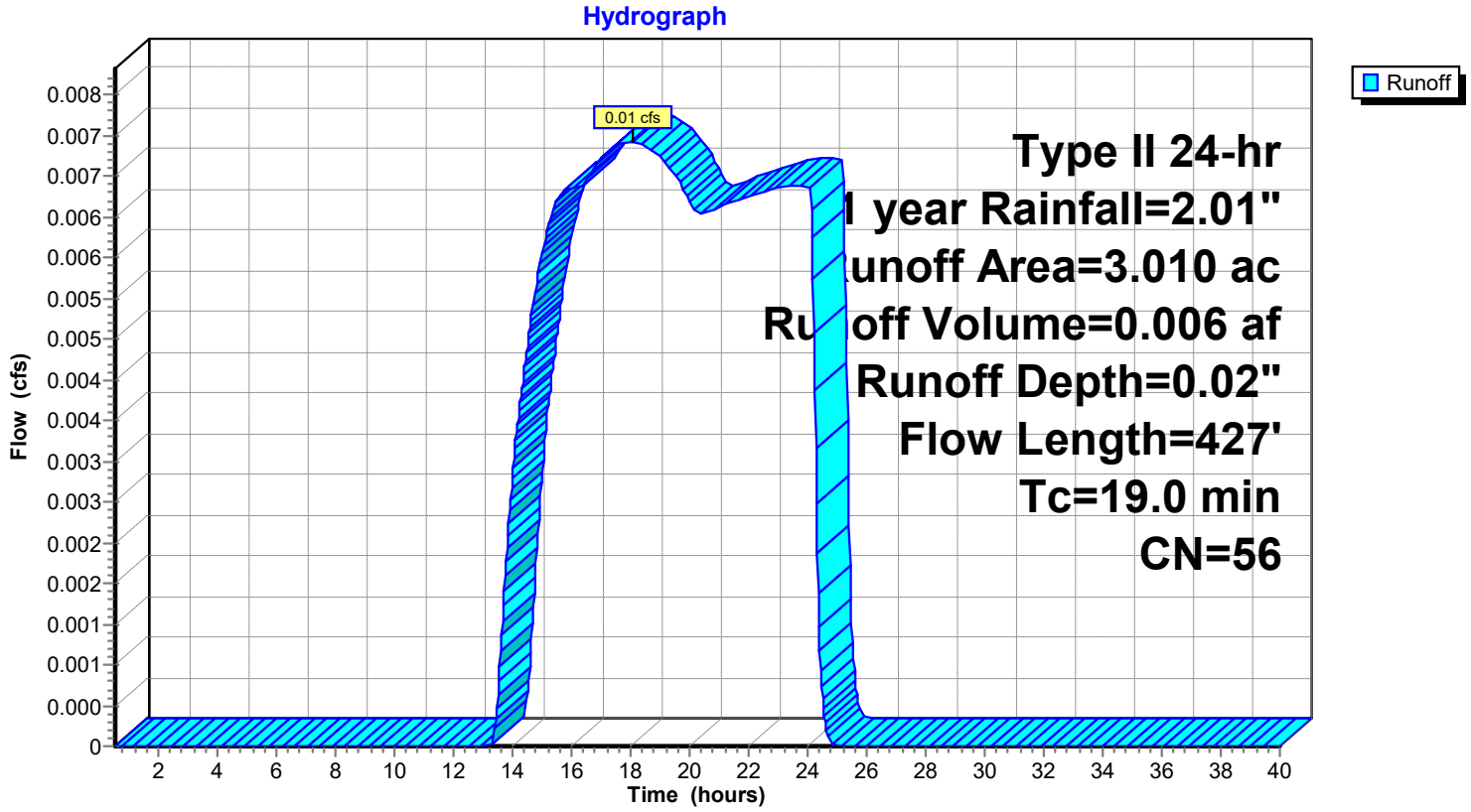
Runoff = 0.01 cfs @ 18.05 hrs, Volume= 0.006 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.01"

Area (ac)	CN	Description
0.490	39	>75% Grass cover, Good, HSG A
1.040	30	Woods, Good, HSG A
1.480	79	Woods/grass comb., Good, HSG D
3.010	56	Weighted Average
3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	77	0.3200	0.19		**Sheet Flow, A-B SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 2.35"
12.3	350	0.0090	0.47		**Shallow Concentrated Flow, B-C SHALLOW CONC** Woodland Kv= 5.0 fps
19.0	427	Total			

Subcatchment 4S: BYPASS-1



Summary for Subcatchment 5S: BYPASS-2

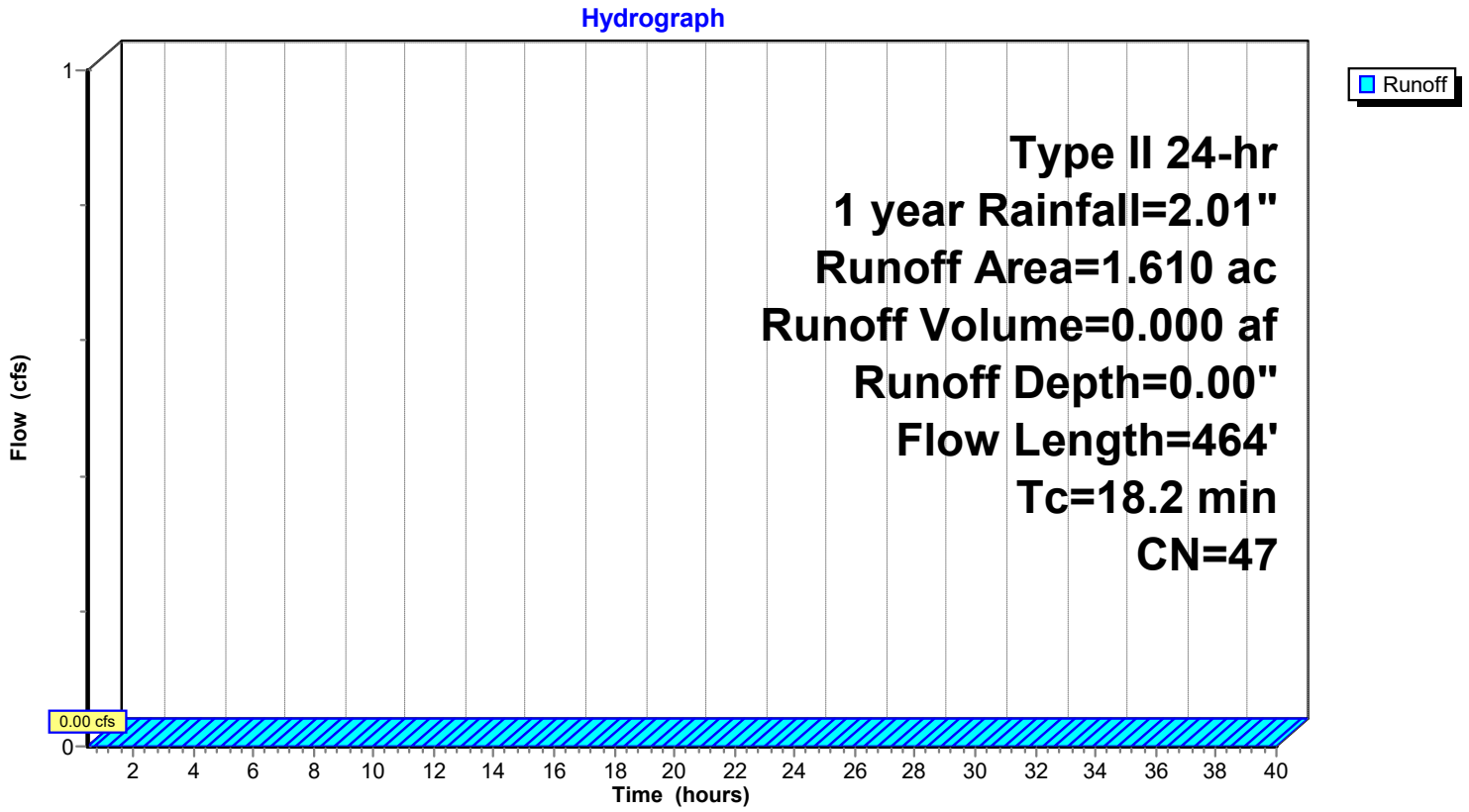
Runoff = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.01"

Area (ac)	CN	Description
0.790	30	Woods, Good, HSG A
0.490	79	Woods/grass comb., Good, HSG D
0.330	39	>75% Grass cover, Good, HSG A
1.610	47	Weighted Average
1.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.2200	0.17		**Sheet Flow, A-B SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 2.35"
8.6	364	0.0200	0.71		**Shallow Concentrated Flow, B-C SHALL CONC** Woodland Kv= 5.0 fps
18.2	464	Total			

Subcatchment 5S: BYPASS-2



Summary for Reach 1R: REACH-1

Inflow Area = 0.770 ac, 49.35% Impervious, Inflow Depth = 0.00" for 1 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

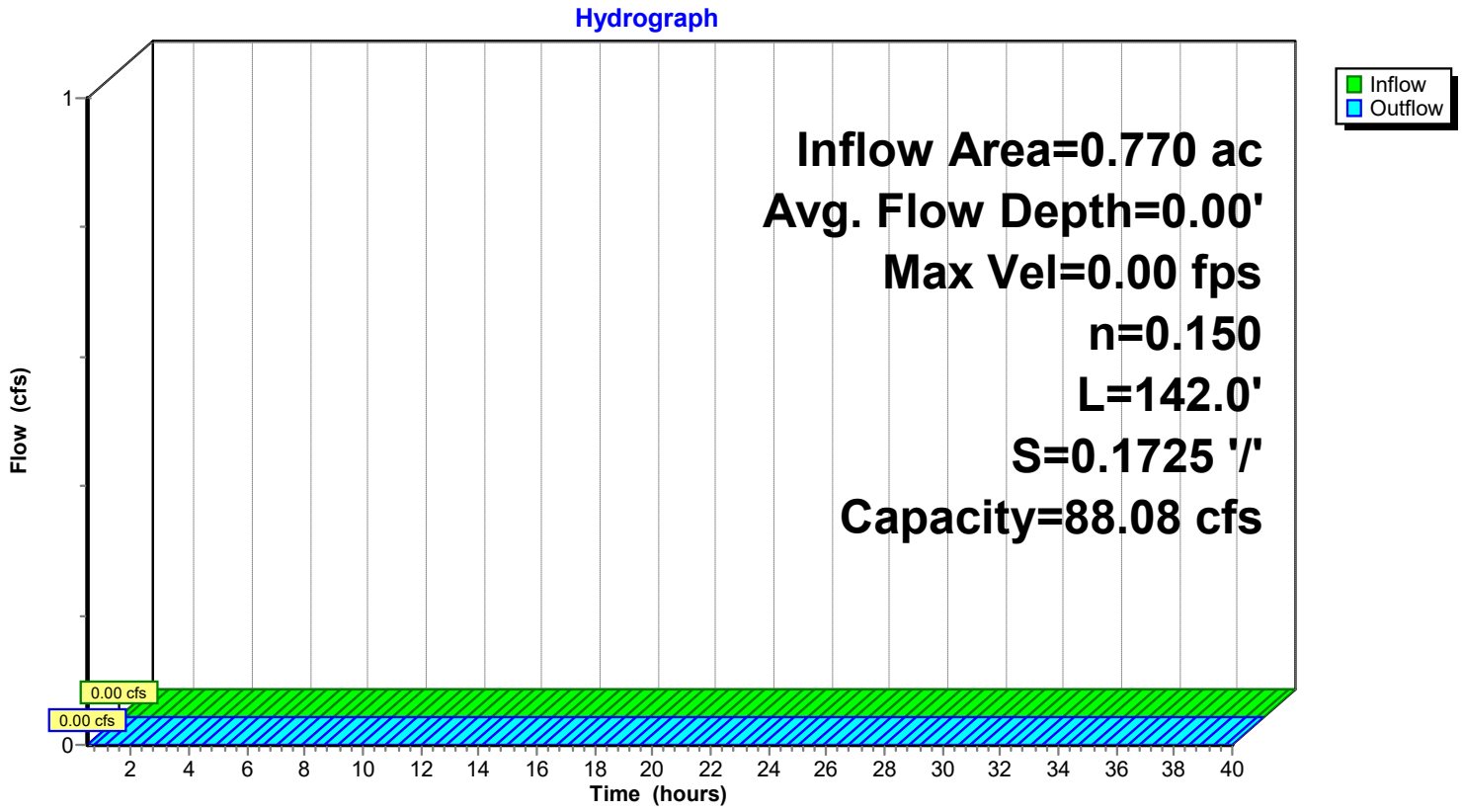
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 88.08 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 142.0' Slope= 0.1725 '/'
Inlet Invert= 506.50', Outlet Invert= 482.00'



‡

Reach 1R: REACH-1



Summary for Reach 2R: REACH-2

Inflow Area = 0.850 ac, 61.18% Impervious, Inflow Depth = 0.00" for 1 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

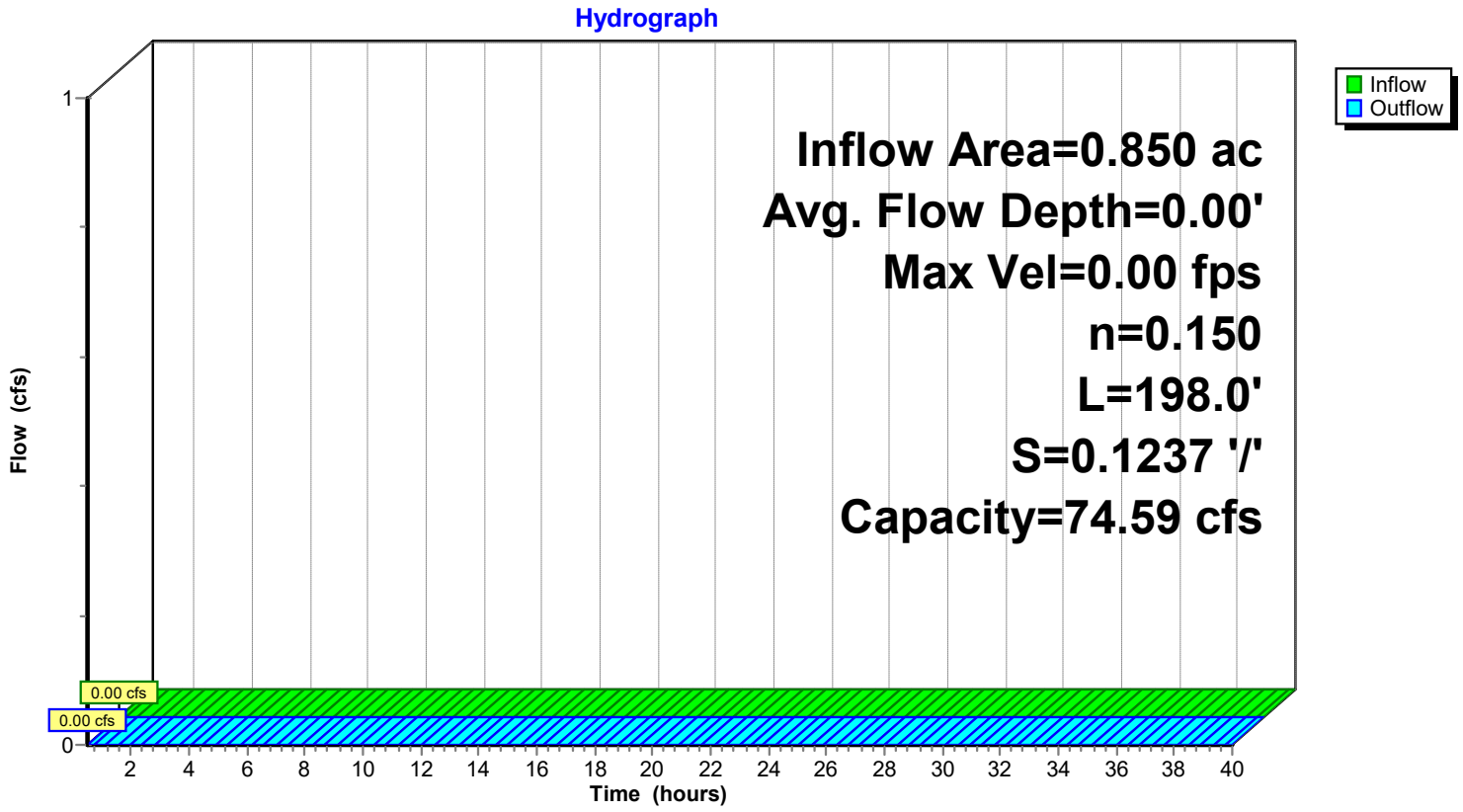
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 74.59 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 198.0' Slope= 0.1237 '/'
Inlet Invert= 506.50', Outlet Invert= 482.00'



‡

Reach 2R: REACH-2



Summary for Reach 3R: REACH-3

Inflow Area = 0.990 ac, 39.39% Impervious, Inflow Depth = 0.00" for 1 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

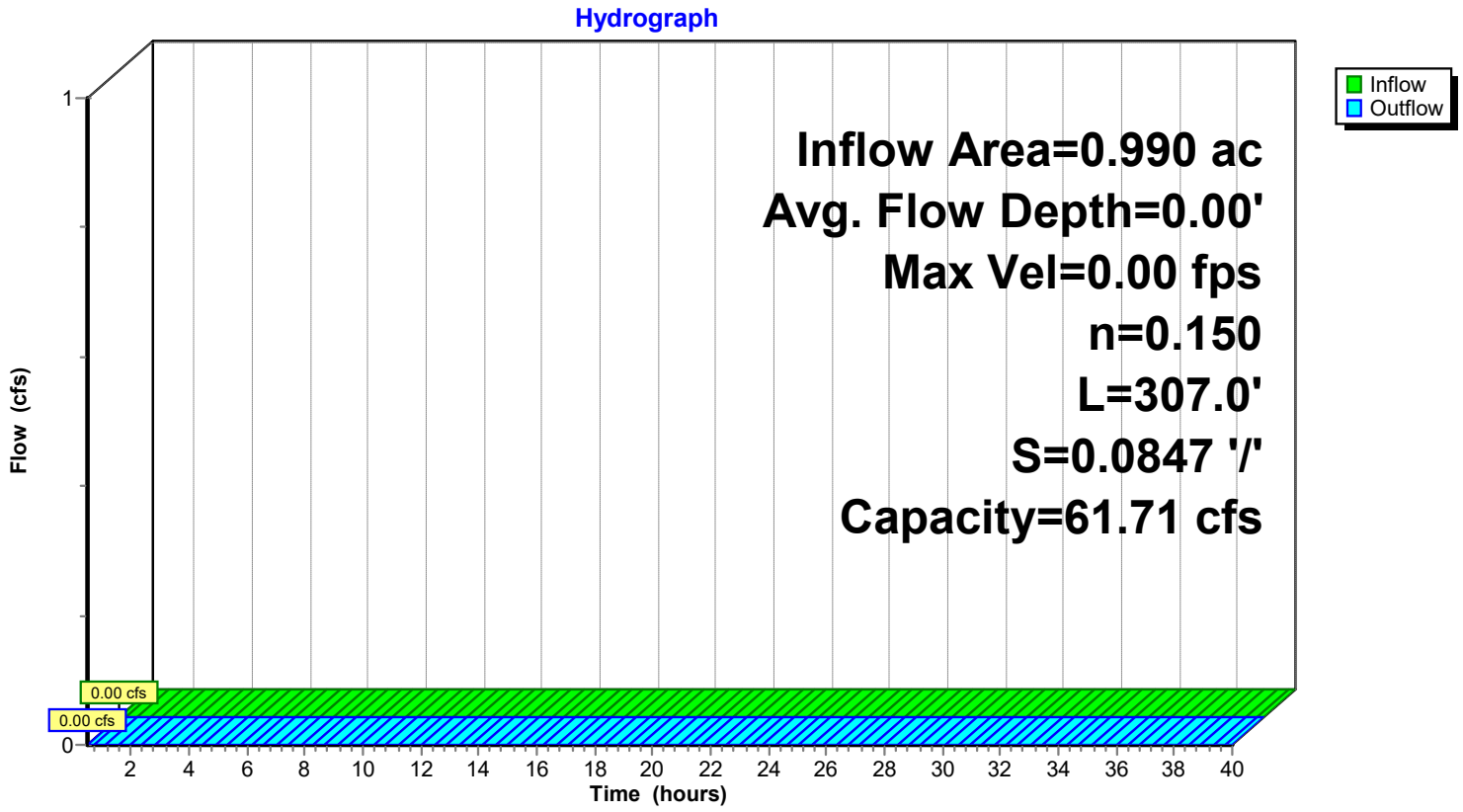
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 61.71 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 307.0' Slope= 0.0847 '/'
Inlet Invert= 510.00', Outlet Invert= 484.00'



‡

Reach 3R: REACH-3



Summary for Reach 4R: REACH-4

Inflow Area = 2.600 ac, 15.00% Impervious, Inflow Depth = 0.00" for 1 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

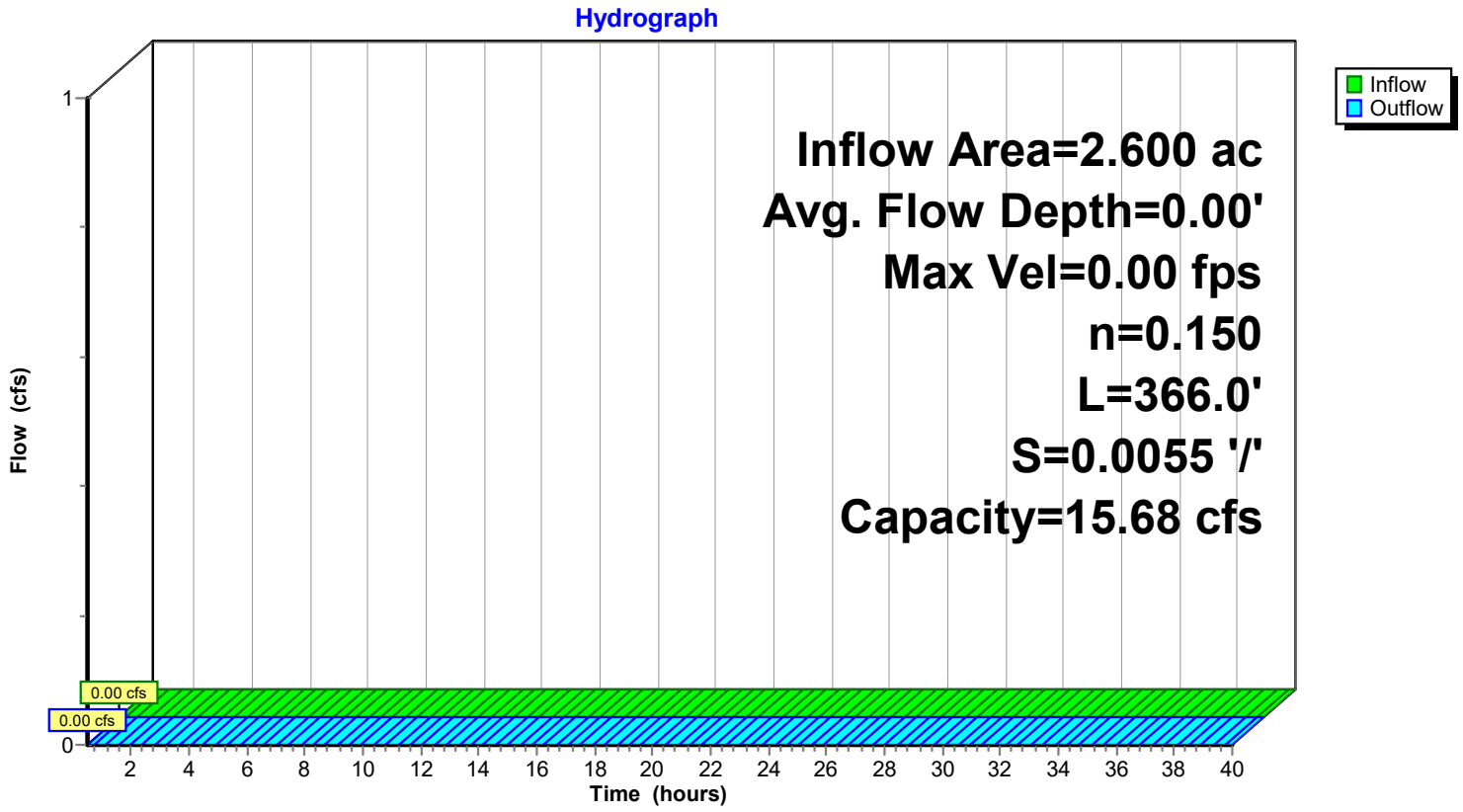
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 15.68 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 366.0' Slope= 0.0055 '/'
Inlet Invert= 484.00', Outlet Invert= 482.00'



‡

Reach 4R: REACH-4



Summary for Pond 1P: BIORETENTION-1

Inflow Area = 0.770 ac, 49.35% Impervious, Inflow Depth = 0.20" for 1 year event
Inflow = 0.18 cfs @ 12.00 hrs, Volume= 0.013 af
Outflow = 0.02 cfs @ 13.14 hrs, Volume= 0.013 af, Atten= 89%, Lag= 68.8 min
Discarded = 0.02 cfs @ 13.14 hrs, Volume= 0.013 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 507.15' @ 13.14 hrs Surf.Area= 851 sf Storage= 115 cf

Plug-Flow detention time= 53.0 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 52.8 min (990.4 - 937.6)

Volume	Invert	Avail.Storage	Storage Description
#1	507.00'	5,870 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
507.00	690	0	0
508.00	1,766	1,228	1,228
509.00	3,487	2,627	3,855
509.50	4,575	2,016	5,870

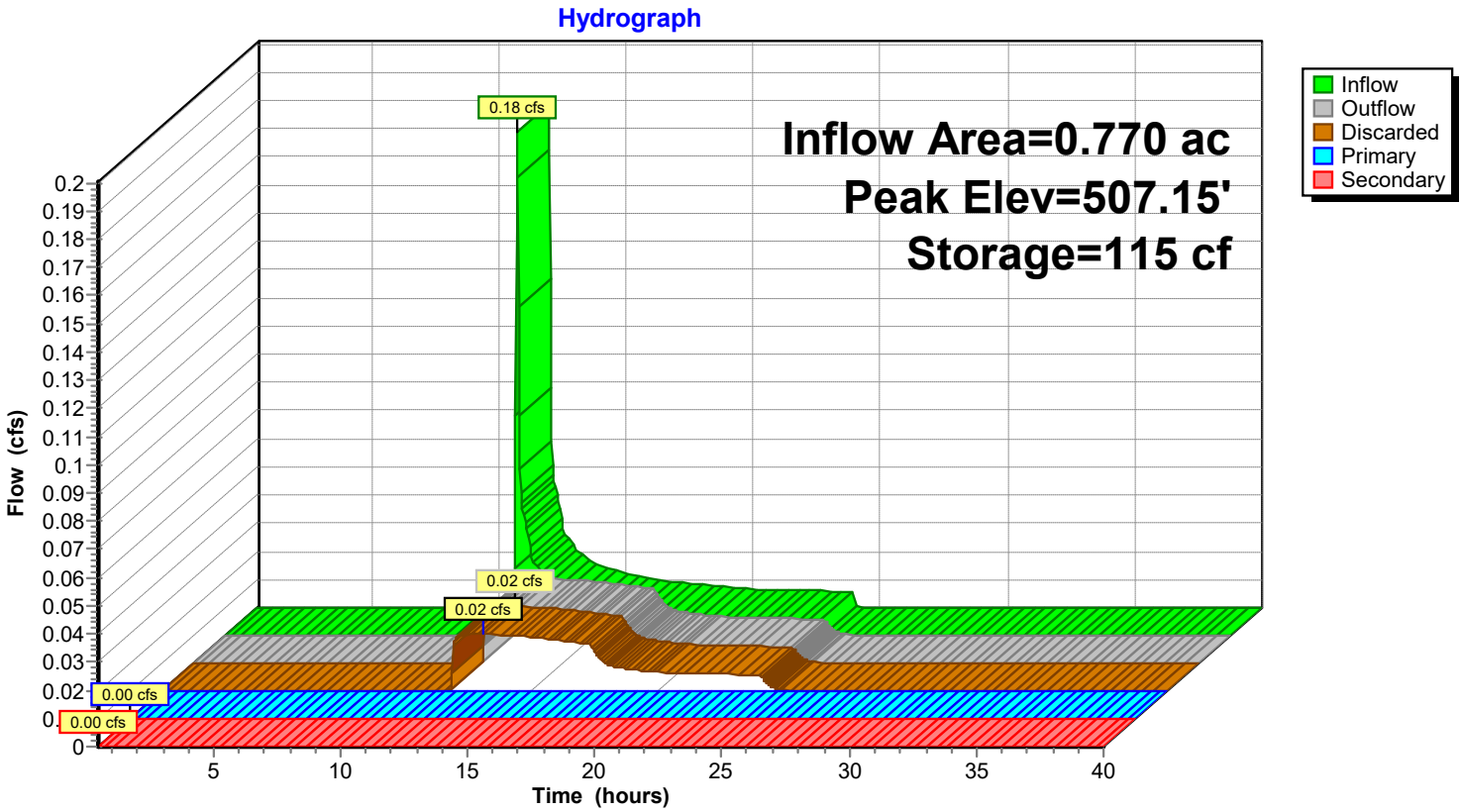
Device	Routing	Invert	Outlet Devices
#1	Secondary	509.00'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height
#2	Primary	507.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 507.00' / 506.60' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	508.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Discarded	507.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 502.00'

Discarded OutFlow Max=0.02 cfs @ 13.14 hrs HW=507.15' (Free Discharge)
└**4=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=507.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.50 hrs HW=507.00' (Free Discharge)
└**1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: BIORETENTION-1



Summary for Pond 2P: BIORETENTION-2

Inflow Area = 0.850 ac, 61.18% Impervious, Inflow Depth = 0.39" for 1 year event
Inflow = 0.55 cfs @ 11.98 hrs, Volume= 0.027 af
Outflow = 0.02 cfs @ 15.82 hrs, Volume= 0.027 af, Atten= 97%, Lag= 230.4 min
Discarded = 0.02 cfs @ 15.82 hrs, Volume= 0.027 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 505.33' @ 15.82 hrs Surf.Area= 687 sf Storage= 585 cf

Plug-Flow detention time= 430.8 min calculated for 0.027 af (100% of inflow)
Center-of-Mass det. time= 430.7 min (1,321.2 - 890.5)

Volume	Invert	Avail.Storage	Storage Description
#1	504.00'	3,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

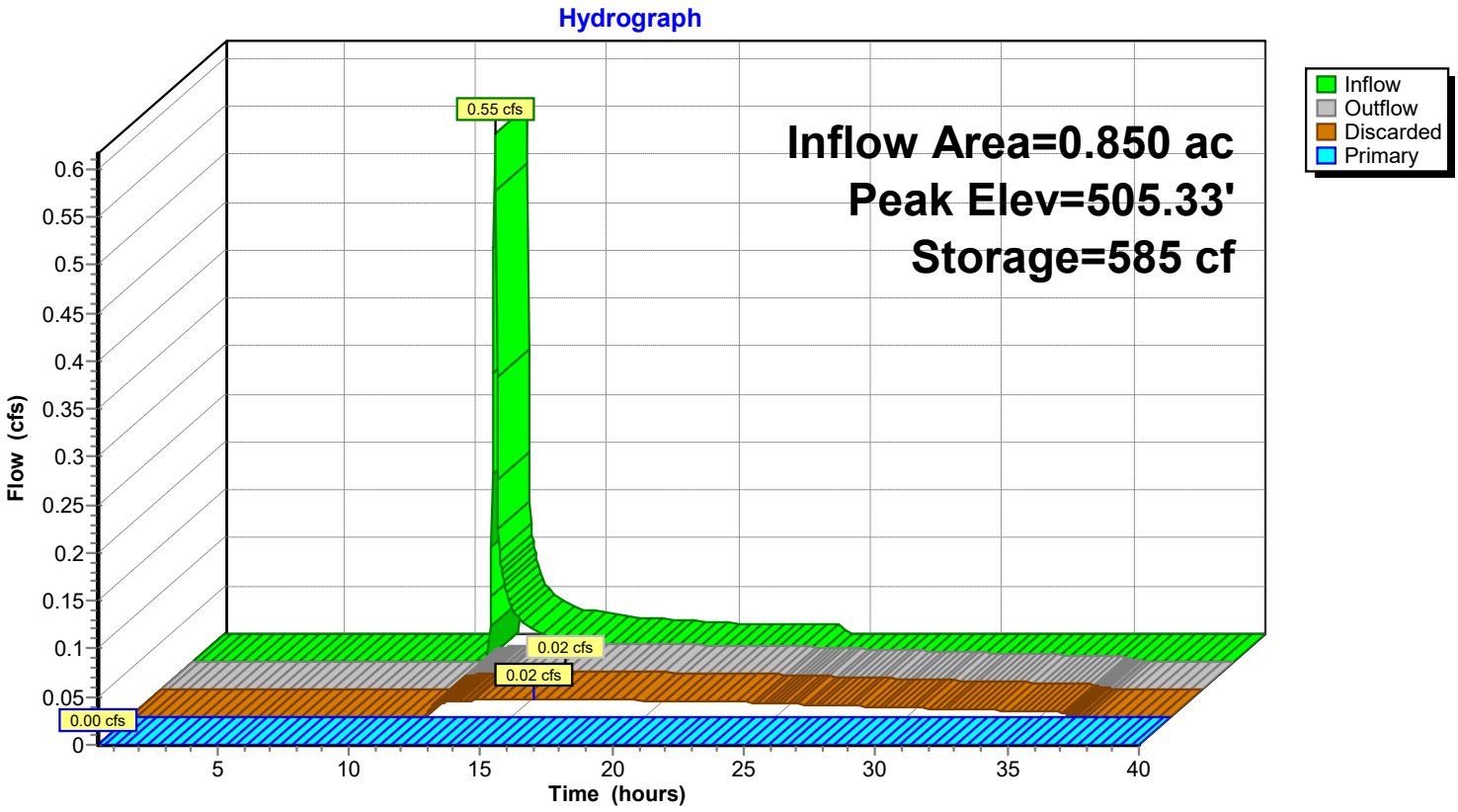
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
504.00	225	0	0
505.00	540	383	383
506.00	987	764	1,146
507.00	2,158	1,573	2,719
507.50	2,677	1,209	3,927

Device	Routing	Invert	Outlet Devices
#1	Discarded	504.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 499.00'
#2	Primary	507.00'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 3.0' Crest Height

Discarded OutFlow Max=0.02 cfs @ 15.82 hrs HW=505.33' (Free Discharge)
↑**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=504.00' (Free Discharge)
↑**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: BIORETENTION-2



Summary for Pond 3P: BIORETENTION-3

Inflow Area = 0.990 ac, 39.39% Impervious, Inflow Depth = 0.09" for 1 year event
Inflow = 0.02 cfs @ 12.05 hrs, Volume= 0.007 af
Outflow = 0.01 cfs @ 12.78 hrs, Volume= 0.007 af, Atten= 36%, Lag= 43.8 min
Discarded = 0.01 cfs @ 12.78 hrs, Volume= 0.007 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 508.02' @ 12.78 hrs Surf.Area= 1,014 sf Storage= 17 cf

Plug-Flow detention time= 21.5 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 21.3 min (1,026.8 - 1,005.5)

Volume	Invert	Avail.Storage	Storage Description
#1	508.00'	6,376 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

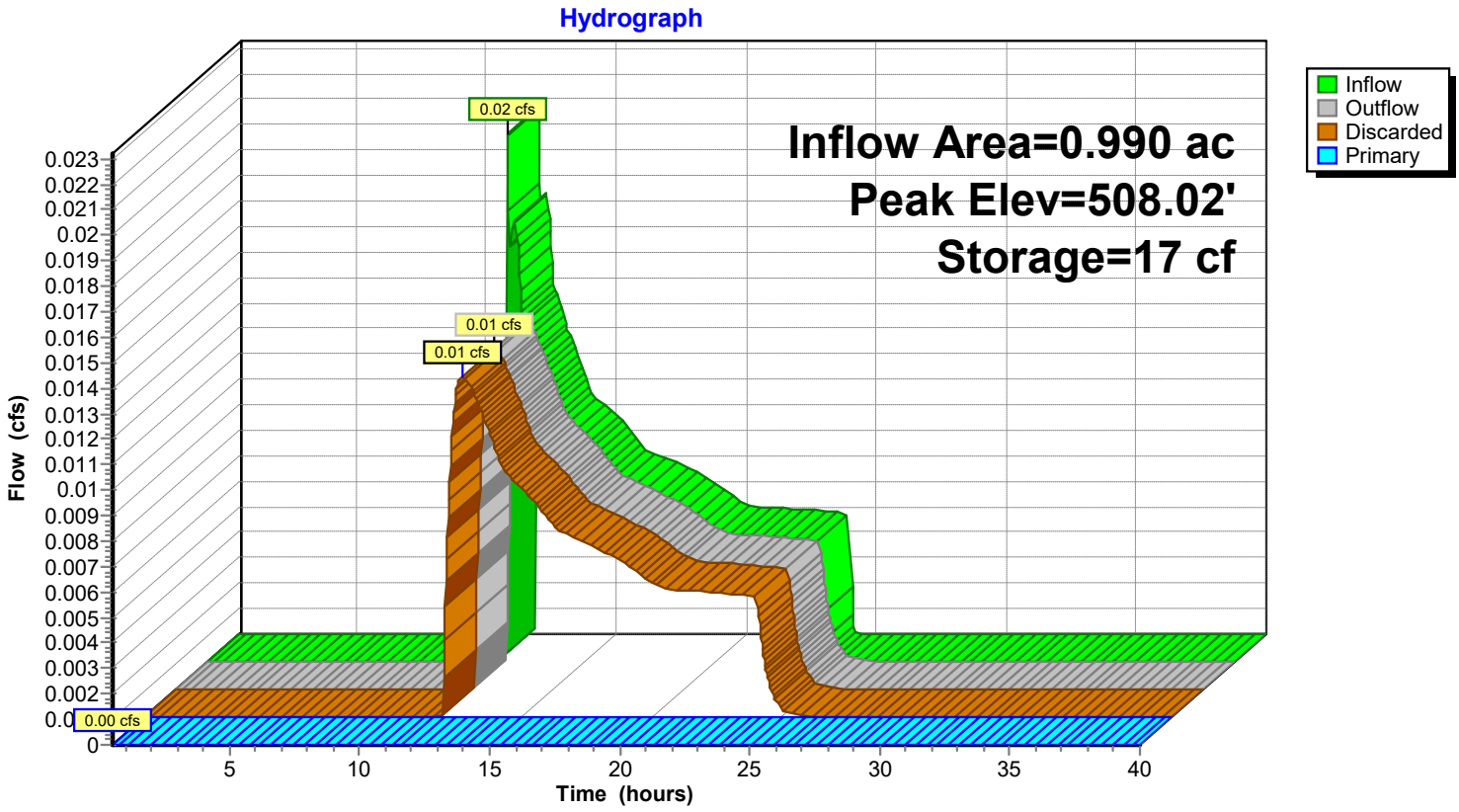
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
508.00	1,004	0	0
509.00	1,594	1,299	1,299
510.00	2,284	1,939	3,238
511.00	3,991	3,138	6,376

Device	Routing	Invert	Outlet Devices
#1	Discarded	508.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 503.00'
#2	Primary	510.50'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.5' Crest Height

Discarded OutFlow Max=0.02 cfs @ 12.78 hrs HW=508.02' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=508.00' (Free Discharge)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: BIORETENTION-3

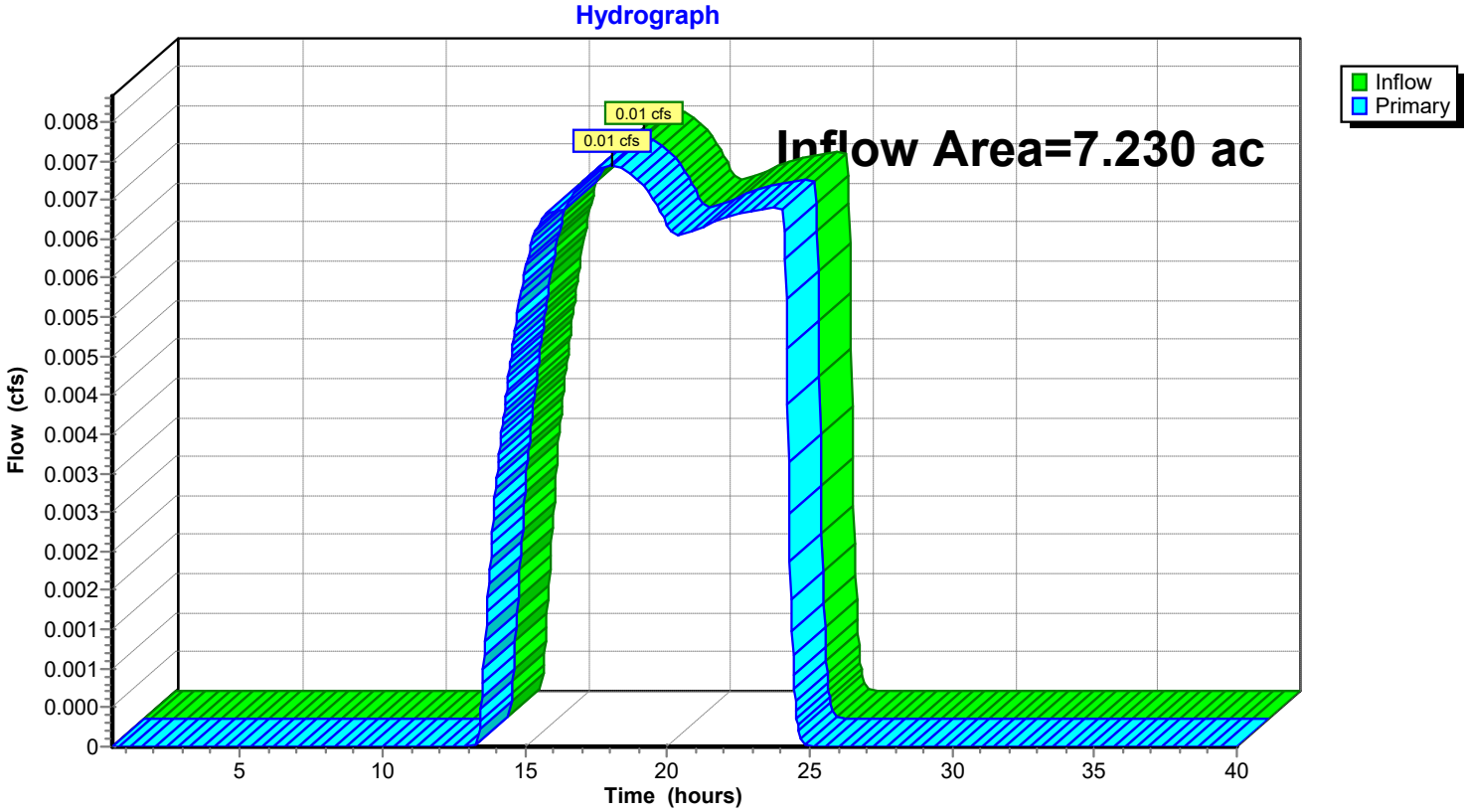


Summary for Pond 4P: Limestone Creek

Inflow Area = 7.230 ac, 17.84% Impervious, Inflow Depth = 0.01" for 1 year event
Inflow = 0.01 cfs @ 18.05 hrs, Volume= 0.006 af
Primary = 0.01 cfs @ 18.05 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Pond 4P: Limestone Creek

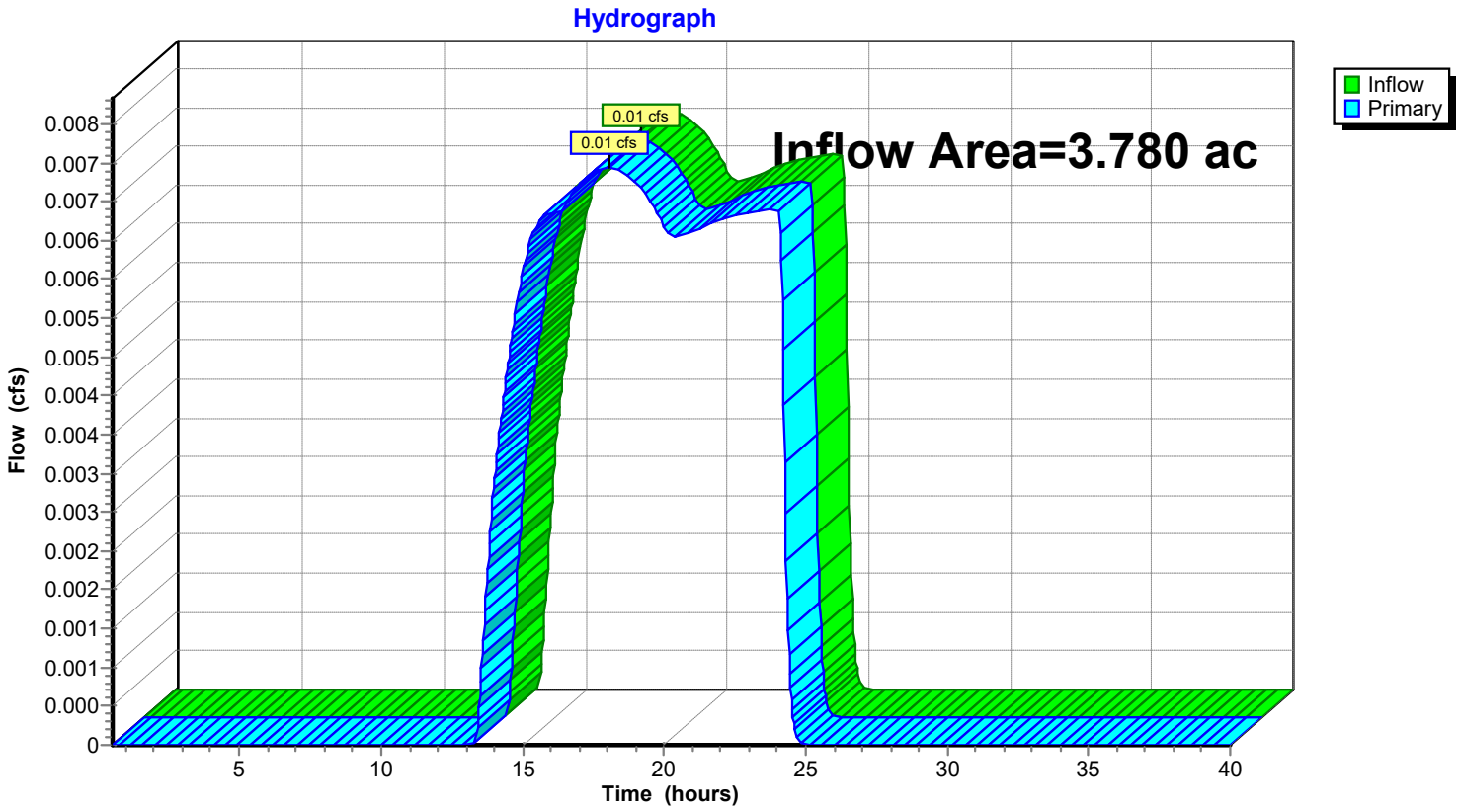


Summary for Link 1L: LINK-1

Inflow Area = 3.780 ac, 10.05% Impervious, Inflow Depth = 0.02" for 1 year event
Inflow = 0.01 cfs @ 18.05 hrs, Volume= 0.006 af
Primary = 0.01 cfs @ 18.05 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Link 1L: LINK-1

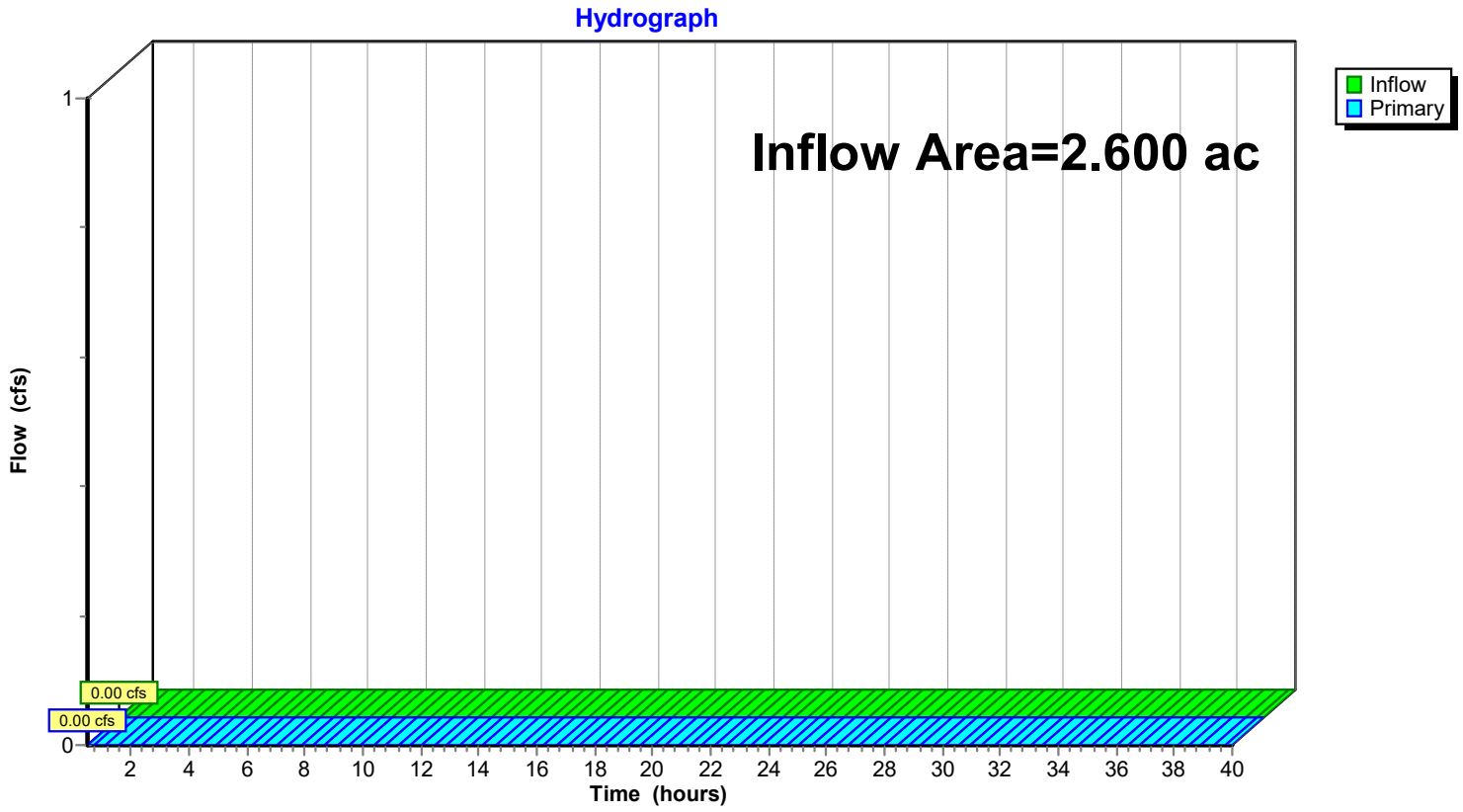


Summary for Link 2L: LINK-2

Inflow Area = 2.600 ac, 15.00% Impervious, Inflow Depth = 0.00" for 1 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Link 2L: LINK-2



Time span=0.50-40.00 hrs, dt=0.03 hrs, 1318 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: D-1 Runoff Area=0.770 ac 49.35% Impervious Runoff Depth=0.32"
Tc=5.0 min CN=68 Runoff=0.37 cfs 0.021 af

Subcatchment 2S: D-2 Runoff Area=0.850 ac 61.18% Impervious Runoff Depth=0.56"
Tc=5.0 min CN=75 Runoff=0.85 cfs 0.040 af

Subcatchment 3S: D-3 Runoff Area=0.990 ac 39.39% Impervious Runoff Depth=0.17"
Tc=5.0 min CN=62 Runoff=0.14 cfs 0.014 af

Subcatchment 4S: BYPASS-1 Runoff Area=3.010 ac 0.00% Impervious Runoff Depth=0.07"
Flow Length=427' Tc=19.0 min CN=56 Runoff=0.03 cfs 0.018 af

Subcatchment 5S: BYPASS-2 Runoff Area=1.610 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=464' Tc=18.2 min CN=47 Runoff=0.00 cfs 0.000 af

Reach 1R: REACH-1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=142.0' S=0.1725 '/' Capacity=88.08 cfs Outflow=0.00 cfs 0.000 af

Reach 2R: REACH-2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=198.0' S=0.1237 '/' Capacity=74.59 cfs Outflow=0.00 cfs 0.000 af

Reach 3R: REACH-3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=307.0' S=0.0847 '/' Capacity=61.71 cfs Outflow=0.00 cfs 0.000 af

Reach 4R: REACH-4 Avg. Flow Depth=0.00' Max Vel=0.04 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=366.0' S=0.0055 '/' Capacity=15.68 cfs Outflow=0.00 cfs 0.000 af

Pond 1P: BIORETENTION-1 Peak Elev=507.33' Storage=287 cf Inflow=0.37 cfs 0.021 af
Discarded=0.03 cfs 0.021 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.021 af

Pond 2P: BIORETENTION-2 Peak Elev=505.77' Storage=931 cf Inflow=0.85 cfs 0.040 af
Discarded=0.02 cfs 0.040 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.040 af

Pond 3P: BIORETENTION-3 Peak Elev=508.09' Storage=88 cf Inflow=0.14 cfs 0.014 af
Discarded=0.02 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.014 af

Pond 4P: Limestone Creek Inflow=0.03 cfs 0.018 af
Primary=0.03 cfs 0.018 af

Link 1L: LINK-1 Inflow=0.03 cfs 0.018 af
Primary=0.03 cfs 0.018 af

Link 2L: LINK-2 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 7.230 ac Runoff Volume = 0.093 af Average Runoff Depth = 0.15"
82.16% Pervious = 5.940 ac 17.84% Impervious = 1.290 ac

Summary for Subcatchment 1S: D-1

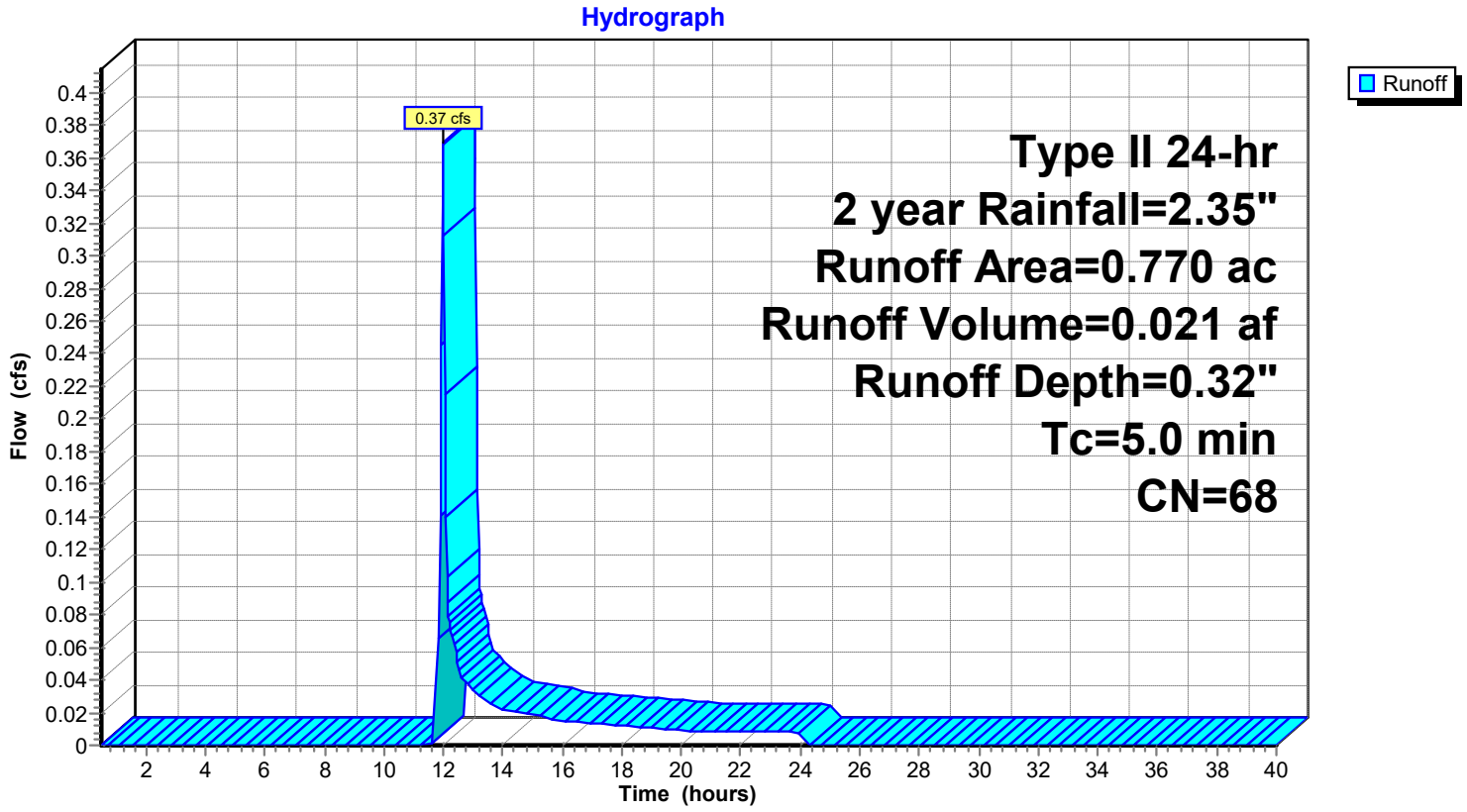
Runoff = 0.37 cfs @ 11.98 hrs, Volume= 0.021 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 2 year Rainfall=2.35"

Area (ac)	CN	Description
0.390	39	>75% Grass cover, Good, HSG A
0.250	98	Paved parking, HSG A
0.130	98	Roofs, HSG A
0.770	68	Weighted Average
0.390		50.65% Pervious Area
0.380		49.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 1S: D-1



Summary for Subcatchment 2S: D-2

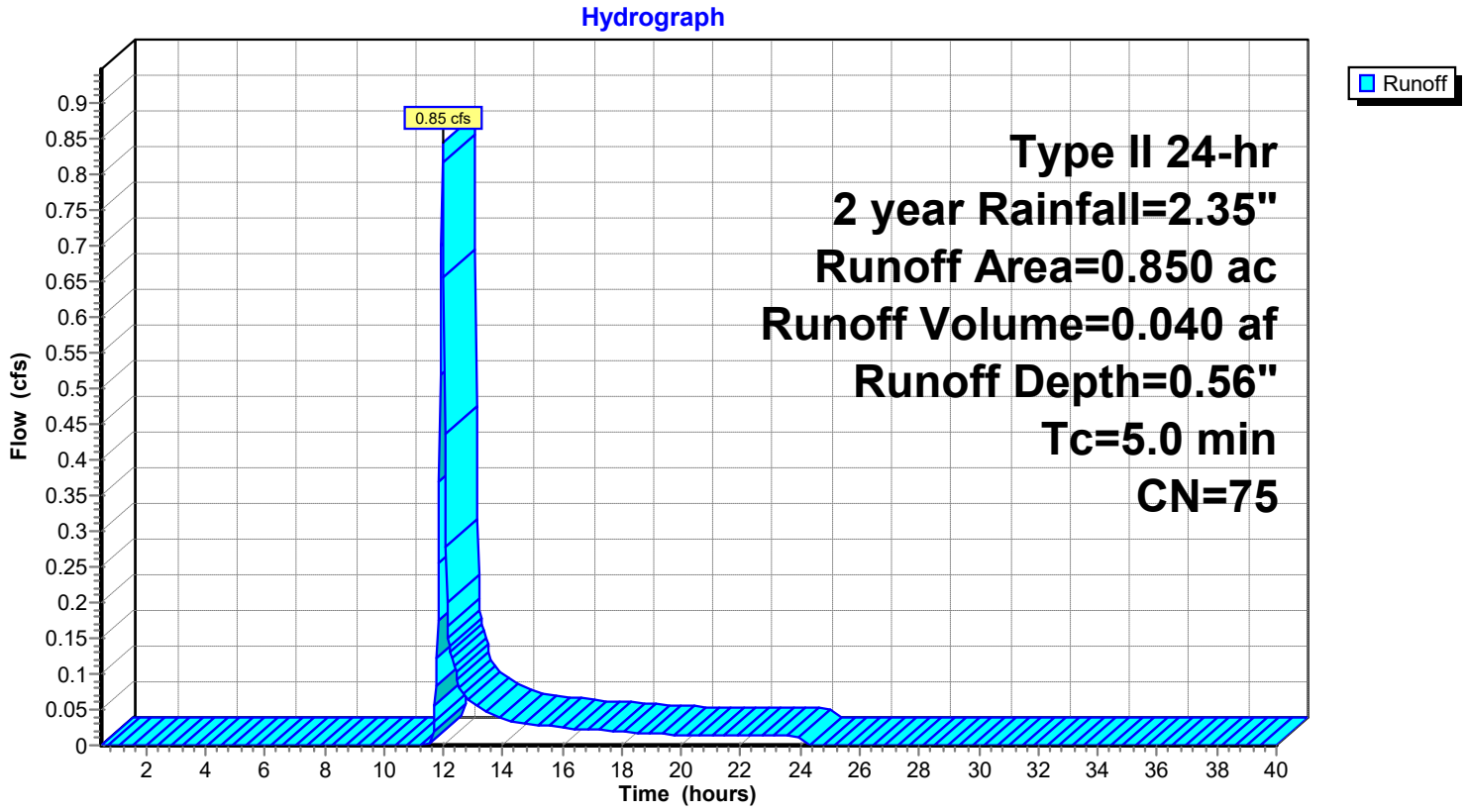
Runoff = 0.85 cfs @ 11.97 hrs, Volume= 0.040 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 2 year Rainfall=2.35"

Area (ac)	CN	Description
0.330	39	>75% Grass cover, Good, HSG A
0.170	98	Paved parking, HSG A
0.350	98	Roofs, HSG A
0.850	75	Weighted Average
0.330		38.82% Pervious Area
0.520		61.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 2S: D-2



Summary for Subcatchment 3S: D-3

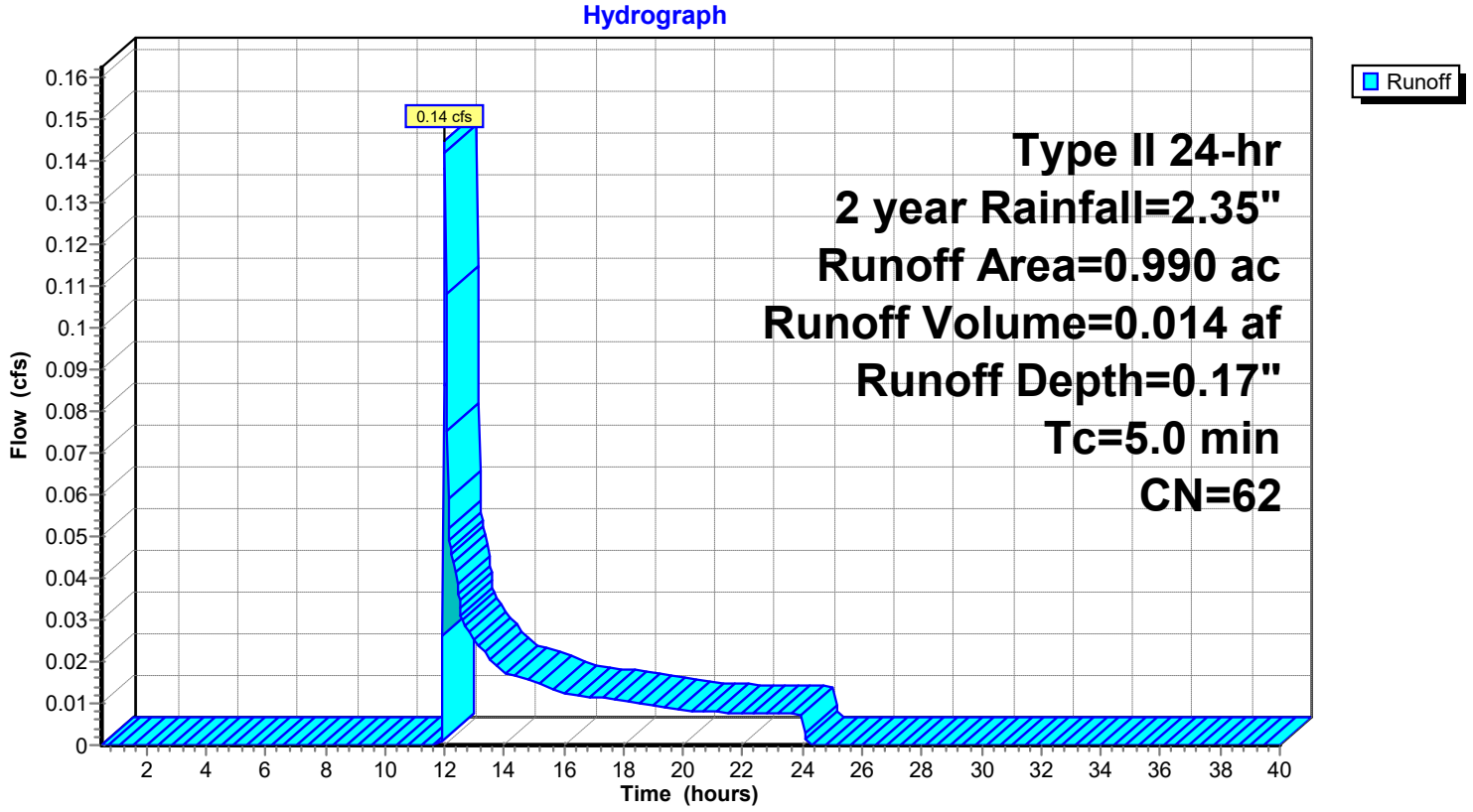
Runoff = 0.14 cfs @ 12.01 hrs, Volume= 0.014 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 2 year Rainfall=2.35"

Area (ac)	CN	Description
0.600	39	>75% Grass cover, Good, HSG A
0.140	98	Paved parking, HSG A
0.250	98	Roofs, HSG A
0.990	62	Weighted Average
0.600		60.61% Pervious Area
0.390		39.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 3S: D-3



Summary for Subcatchment 4S: BYPASS-1

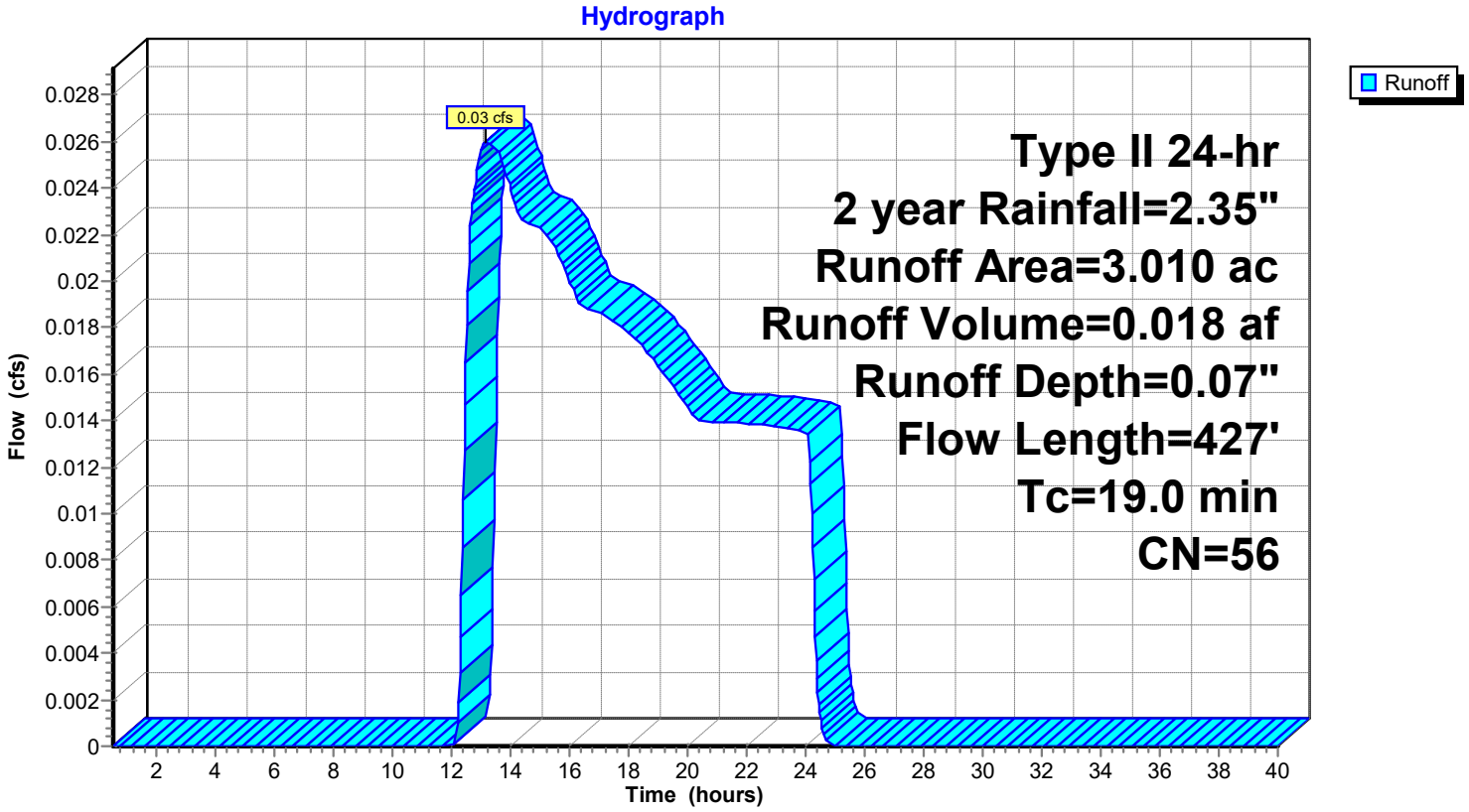
Runoff = 0.03 cfs @ 13.11 hrs, Volume= 0.018 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 2 year Rainfall=2.35"

Area (ac)	CN	Description
0.490	39	>75% Grass cover, Good, HSG A
1.040	30	Woods, Good, HSG A
1.480	79	Woods/grass comb., Good, HSG D
3.010	56	Weighted Average
3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	77	0.3200	0.19		**Sheet Flow, A-B SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 2.35"
12.3	350	0.0090	0.47		**Shallow Concentrated Flow, B-C SHALLOW CONC** Woodland Kv= 5.0 fps
19.0	427	Total			

Subcatchment 4S: BYPASS-1



Summary for Subcatchment 5S: BYPASS-2

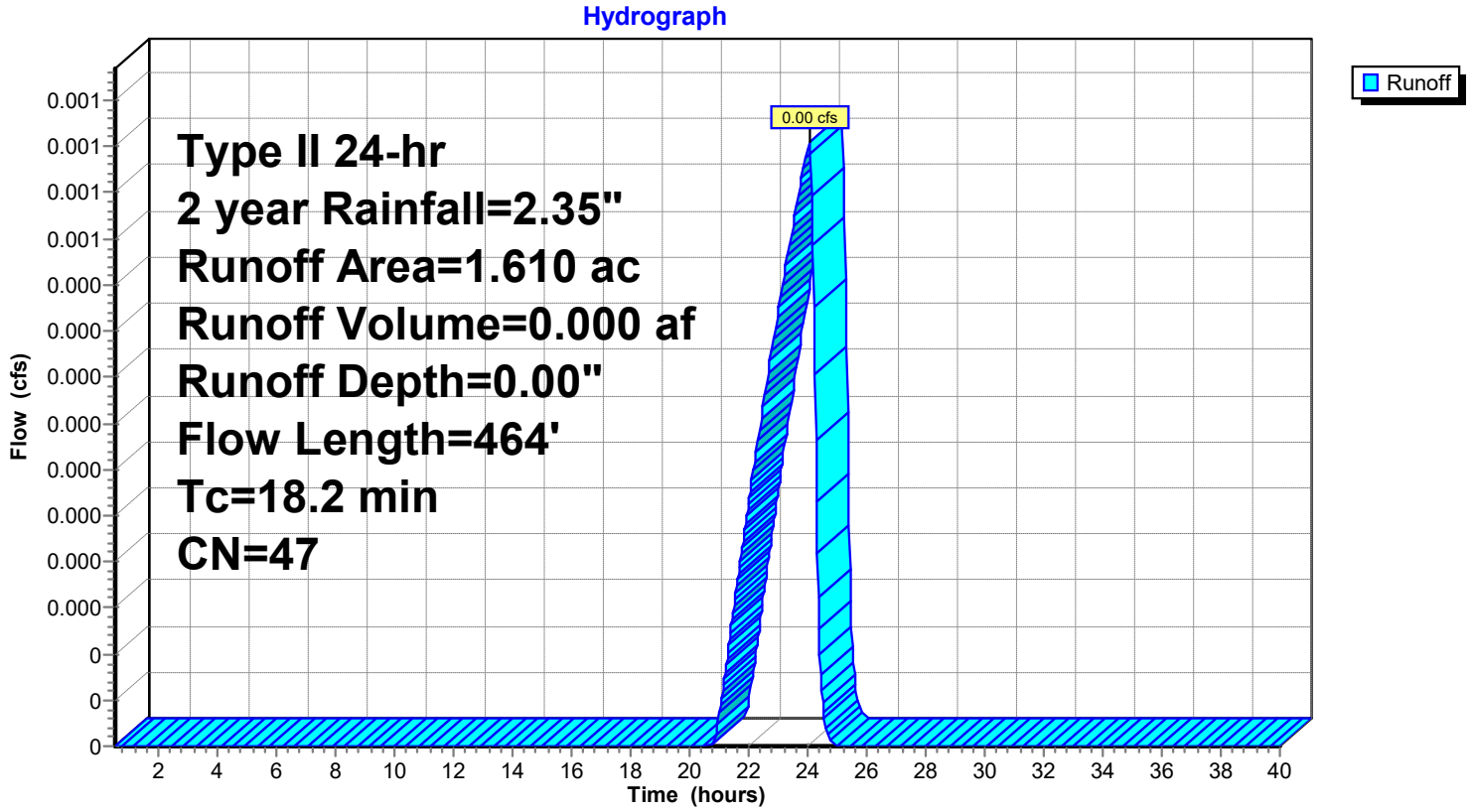
Runoff = 0.00 cfs @ 24.04 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 2 year Rainfall=2.35"

Area (ac)	CN	Description
0.790	30	Woods, Good, HSG A
0.490	79	Woods/grass comb., Good, HSG D
0.330	39	>75% Grass cover, Good, HSG A
1.610	47	Weighted Average
1.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.2200	0.17		**Sheet Flow, A-B SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 2.35"
8.6	364	0.0200	0.71		**Shallow Concentrated Flow, B-C SHALL CONC** Woodland Kv= 5.0 fps
18.2	464	Total			

Subcatchment 5S: BYPASS-2



Summary for Reach 1R: REACH-1

Inflow Area = 0.770 ac, 49.35% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

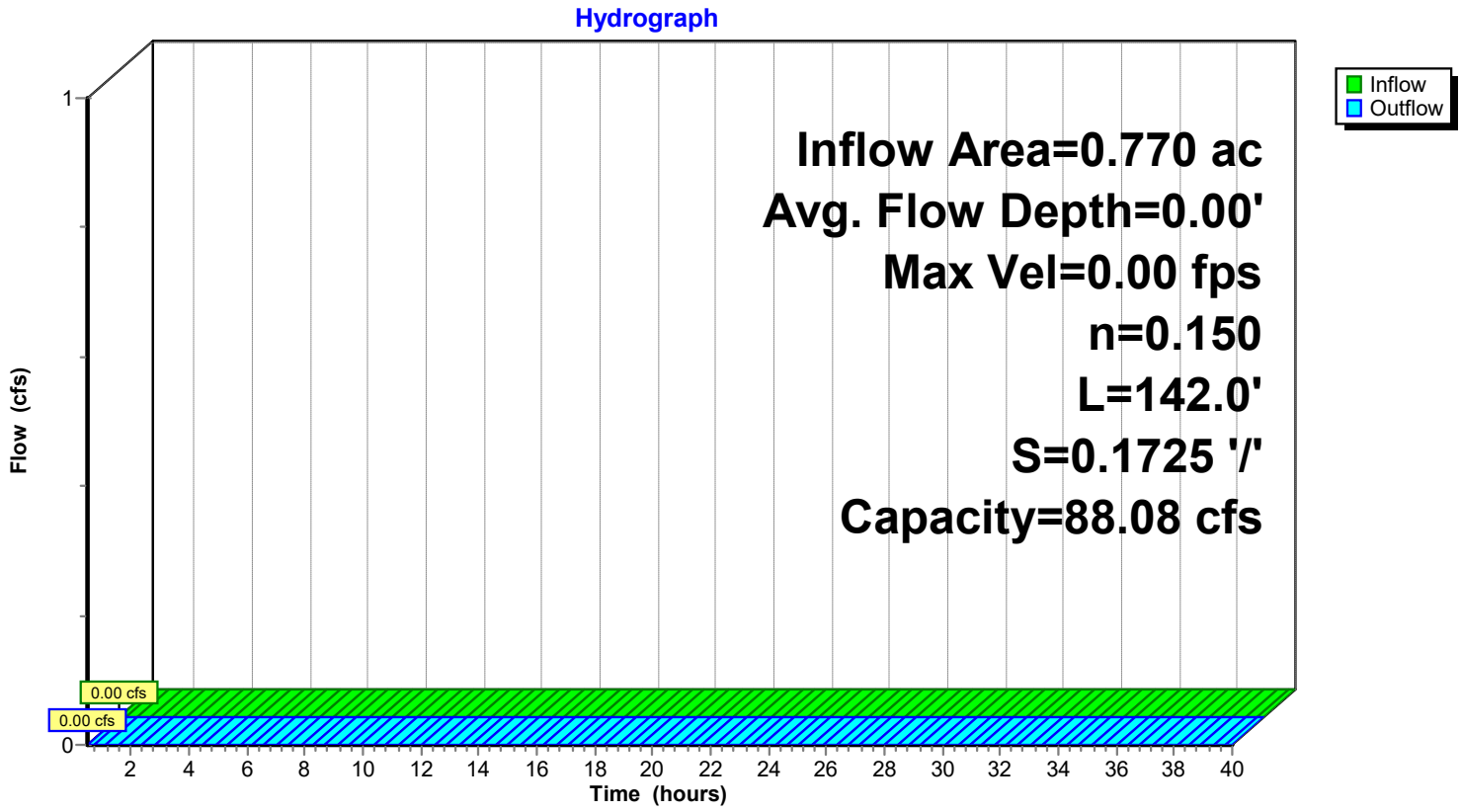
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 88.08 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 142.0' Slope= 0.1725 '/'
Inlet Invert= 506.50', Outlet Invert= 482.00'



‡

Reach 1R: REACH-1



Summary for Reach 2R: REACH-2

Inflow Area = 0.850 ac, 61.18% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

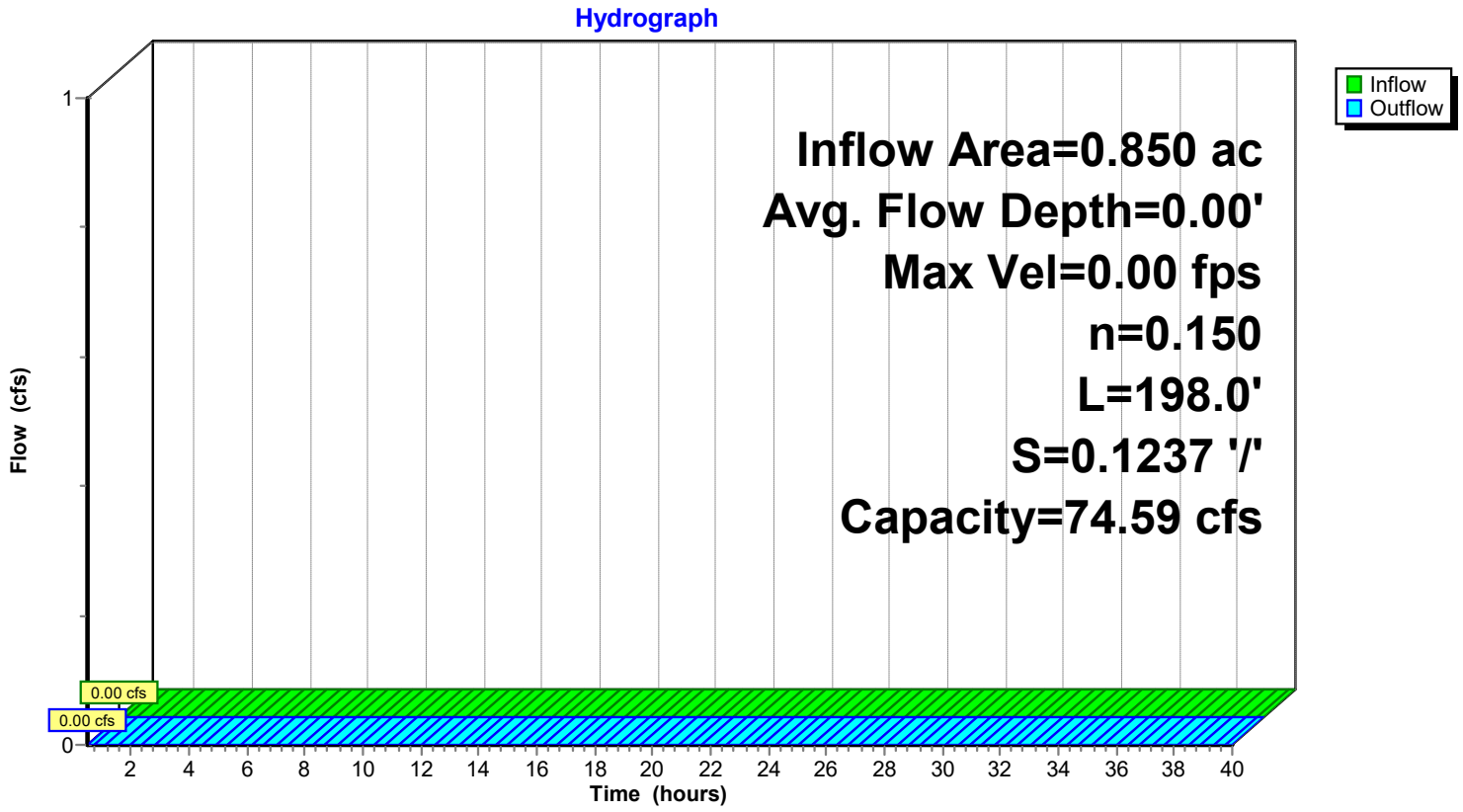
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 74.59 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 198.0' Slope= 0.1237 '/'
Inlet Invert= 506.50', Outlet Invert= 482.00'



‡

Reach 2R: REACH-2



Summary for Reach 3R: REACH-3

Inflow Area = 0.990 ac, 39.39% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 61.71 cfs

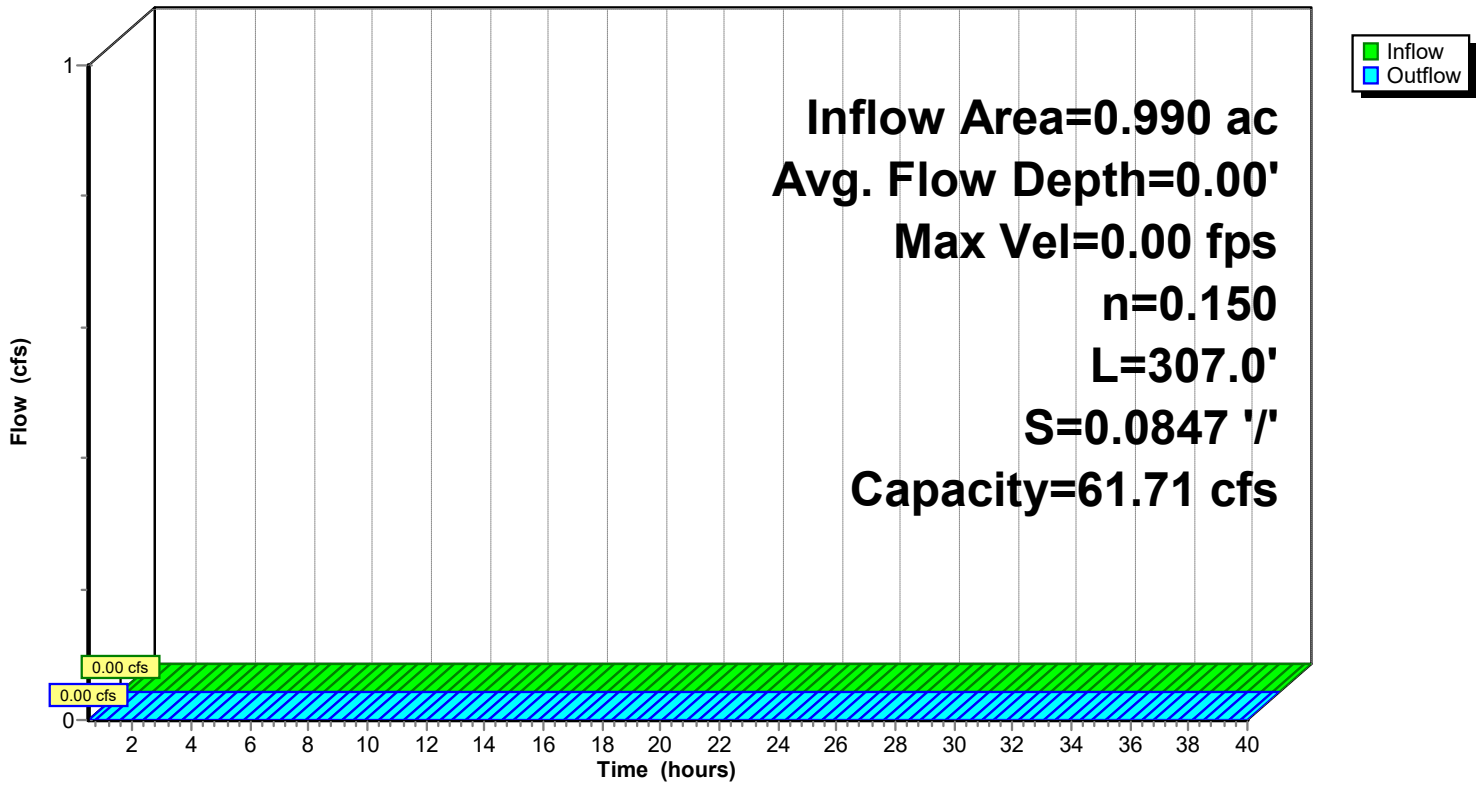
6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 307.0' Slope= 0.0847 '/'
Inlet Invert= 510.00', Outlet Invert= 484.00'



‡

Reach 3R: REACH-3

Hydrograph



Summary for Reach 4R: REACH-4

Inflow Area = 2.600 ac, 15.00% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 24.04 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 26.56 hrs, Volume= 0.000 af, Atten= 48%, Lag= 151.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.04 fps, Min. Travel Time= 138.3 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 138.3 min

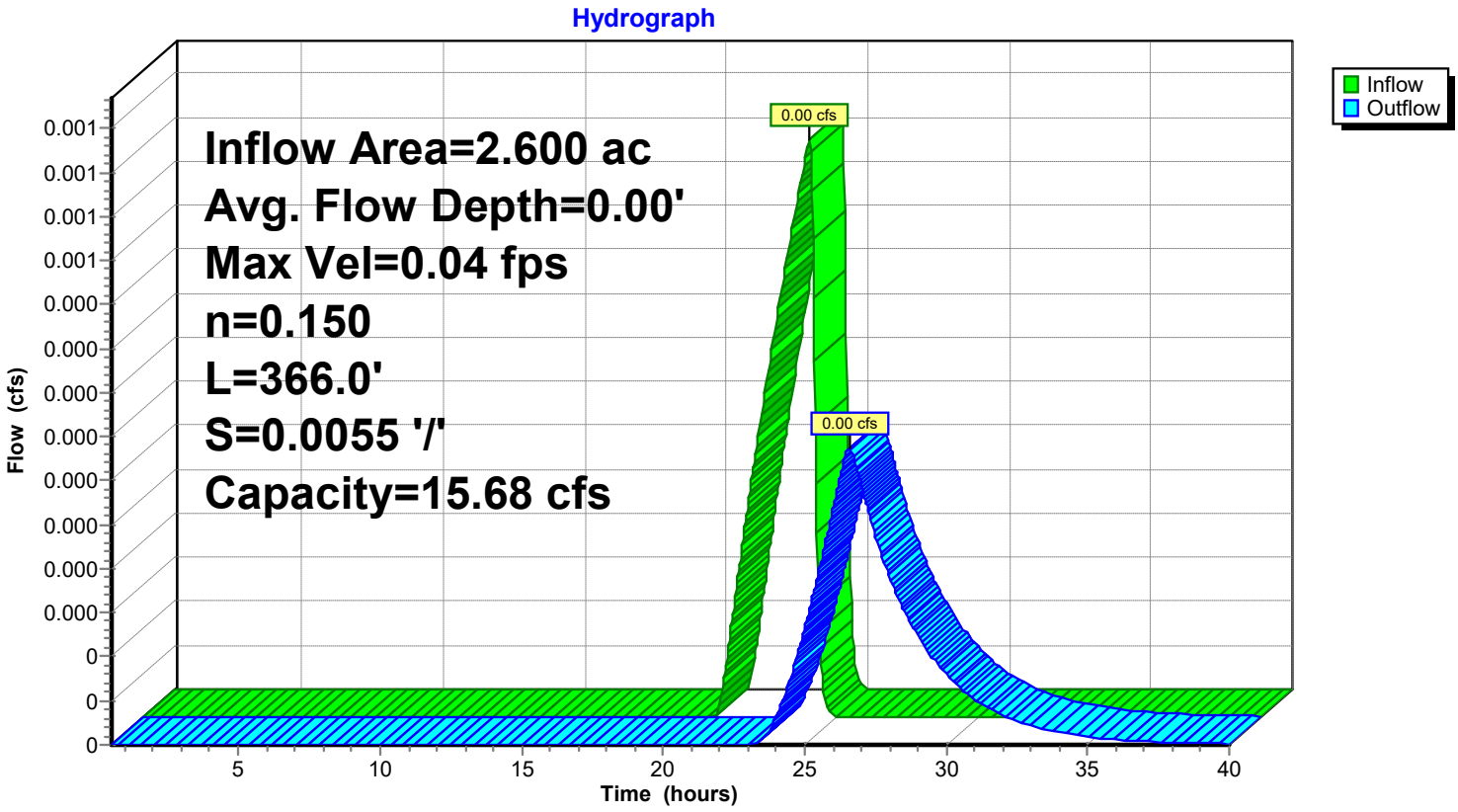
Peak Storage= 3 cf @ 24.26 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 15.68 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 366.0' Slope= 0.0055 '/'
Inlet Invert= 484.00', Outlet Invert= 482.00'



‡

Reach 4R: REACH-4



Summary for Pond 1P: BIORETENTION-1

Inflow Area = 0.770 ac, 49.35% Impervious, Inflow Depth = 0.32" for 2 year event
Inflow = 0.37 cfs @ 11.98 hrs, Volume= 0.021 af
Outflow = 0.03 cfs @ 13.65 hrs, Volume= 0.021 af, Atten= 93%, Lag= 99.6 min
Discarded = 0.03 cfs @ 13.65 hrs, Volume= 0.021 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 507.33' @ 13.65 hrs Surf.Area= 1,046 sf Storage= 287 cf

Plug-Flow detention time= 125.3 min calculated for 0.021 af (100% of inflow)
Center-of-Mass det. time= 125.2 min (1,038.0 - 912.7)

Volume	Invert	Avail.Storage	Storage Description
#1	507.00'	5,870 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
507.00	690	0	0
508.00	1,766	1,228	1,228
509.00	3,487	2,627	3,855
509.50	4,575	2,016	5,870

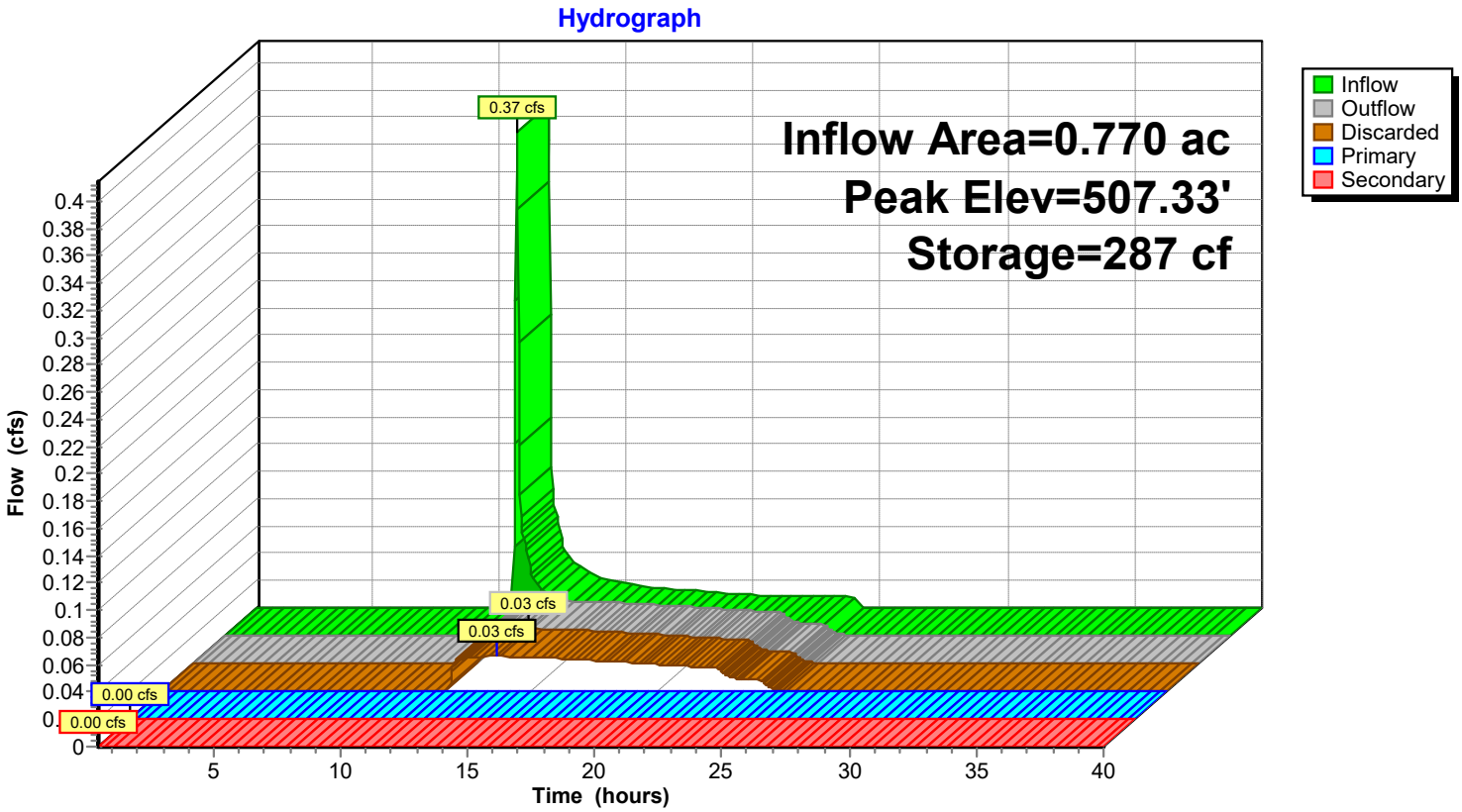
Device	Routing	Invert	Outlet Devices
#1	Secondary	509.00'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height
#2	Primary	507.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 507.00' / 506.60' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	508.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Discarded	507.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 502.00'

Discarded OutFlow Max=0.03 cfs @ 13.65 hrs HW=507.33' (Free Discharge)
└**4=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=507.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.50 hrs HW=507.00' (Free Discharge)
└**1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: BIORETENTION-1



Summary for Pond 2P: BIORETENTION-2

Inflow Area = 0.850 ac, 61.18% Impervious, Inflow Depth = 0.56" for 2 year event
Inflow = 0.85 cfs @ 11.97 hrs, Volume= 0.040 af
Outflow = 0.02 cfs @ 15.91 hrs, Volume= 0.040 af, Atten= 97%, Lag= 236.2 min
Discarded = 0.02 cfs @ 15.91 hrs, Volume= 0.040 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 505.77' @ 15.91 hrs Surf.Area= 884 sf Storage= 931 cf

Plug-Flow detention time= 514.6 min calculated for 0.040 af (99% of inflow)
Center-of-Mass det. time= 510.2 min (1,386.5 - 876.3)

Volume	Invert	Avail.Storage	Storage Description
#1	504.00'	3,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

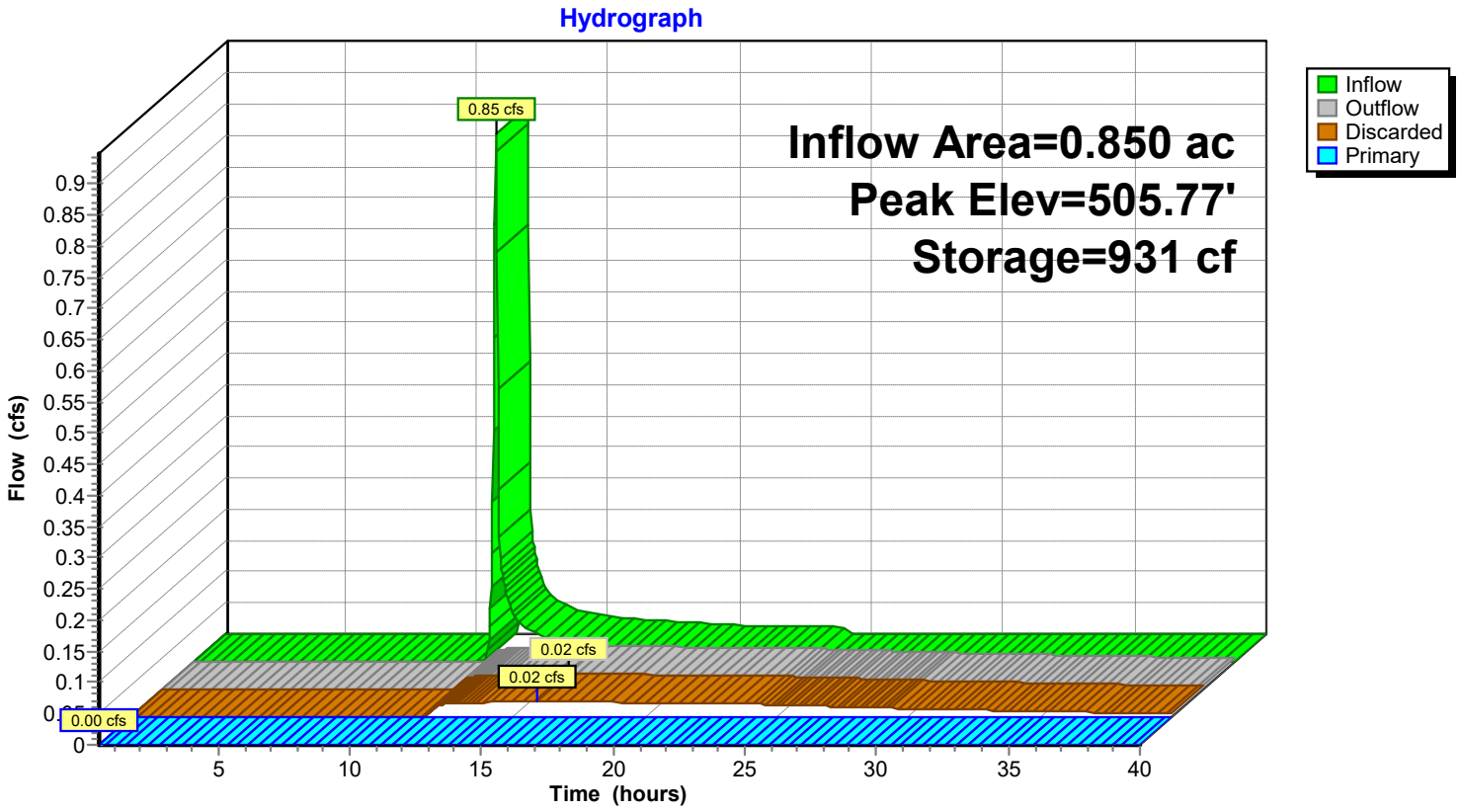
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
504.00	225	0	0
505.00	540	383	383
506.00	987	764	1,146
507.00	2,158	1,573	2,719
507.50	2,677	1,209	3,927

Device	Routing	Invert	Outlet Devices
#1	Discarded	504.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 499.00'
#2	Primary	507.00'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 3.0' Crest Height

Discarded OutFlow Max=0.02 cfs @ 15.91 hrs HW=505.77' (Free Discharge)
↑**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=504.00' (Free Discharge)
↑**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: BIORETENTION-2



Summary for Pond 3P: BIORETENTION-3

Inflow Area = 0.990 ac, 39.39% Impervious, Inflow Depth = 0.17" for 2 year event
Inflow = 0.14 cfs @ 12.01 hrs, Volume= 0.014 af
Outflow = 0.02 cfs @ 13.02 hrs, Volume= 0.014 af, Atten= 83%, Lag= 60.7 min
Discarded = 0.02 cfs @ 13.02 hrs, Volume= 0.014 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 508.09' @ 13.02 hrs Surf.Area= 1,054 sf Storage= 88 cf

Plug-Flow detention time= 33.5 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 33.5 min (993.7 - 960.2)

Volume	Invert	Avail.Storage	Storage Description
#1	508.00'	6,376 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

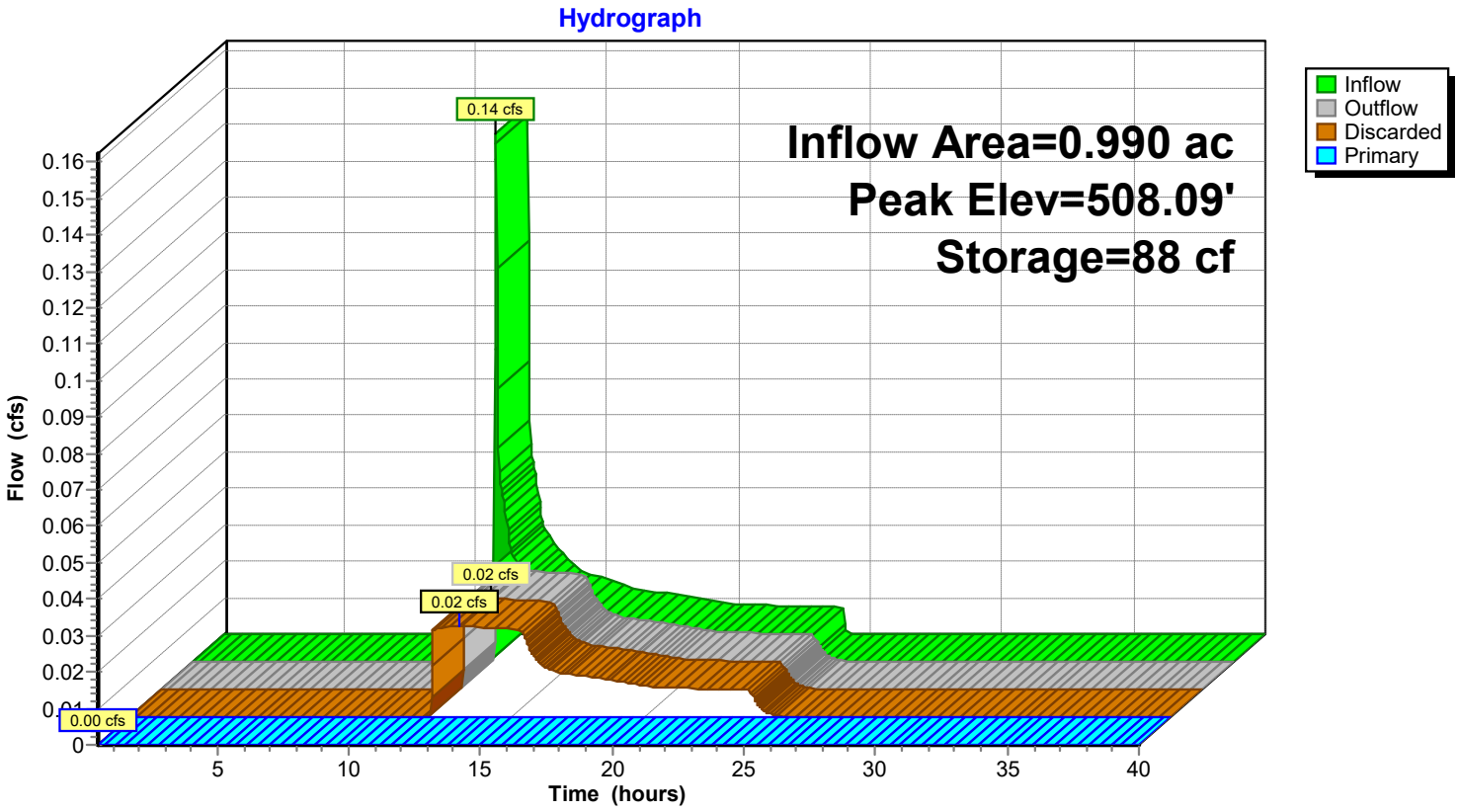
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
508.00	1,004	0	0
509.00	1,594	1,299	1,299
510.00	2,284	1,939	3,238
511.00	3,991	3,138	6,376

Device	Routing	Invert	Outlet Devices
#1	Discarded	508.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 503.00'
#2	Primary	510.50'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.5' Crest Height

Discarded OutFlow Max=0.02 cfs @ 13.02 hrs HW=508.09' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=508.00' (Free Discharge)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: BIORETENTION-3

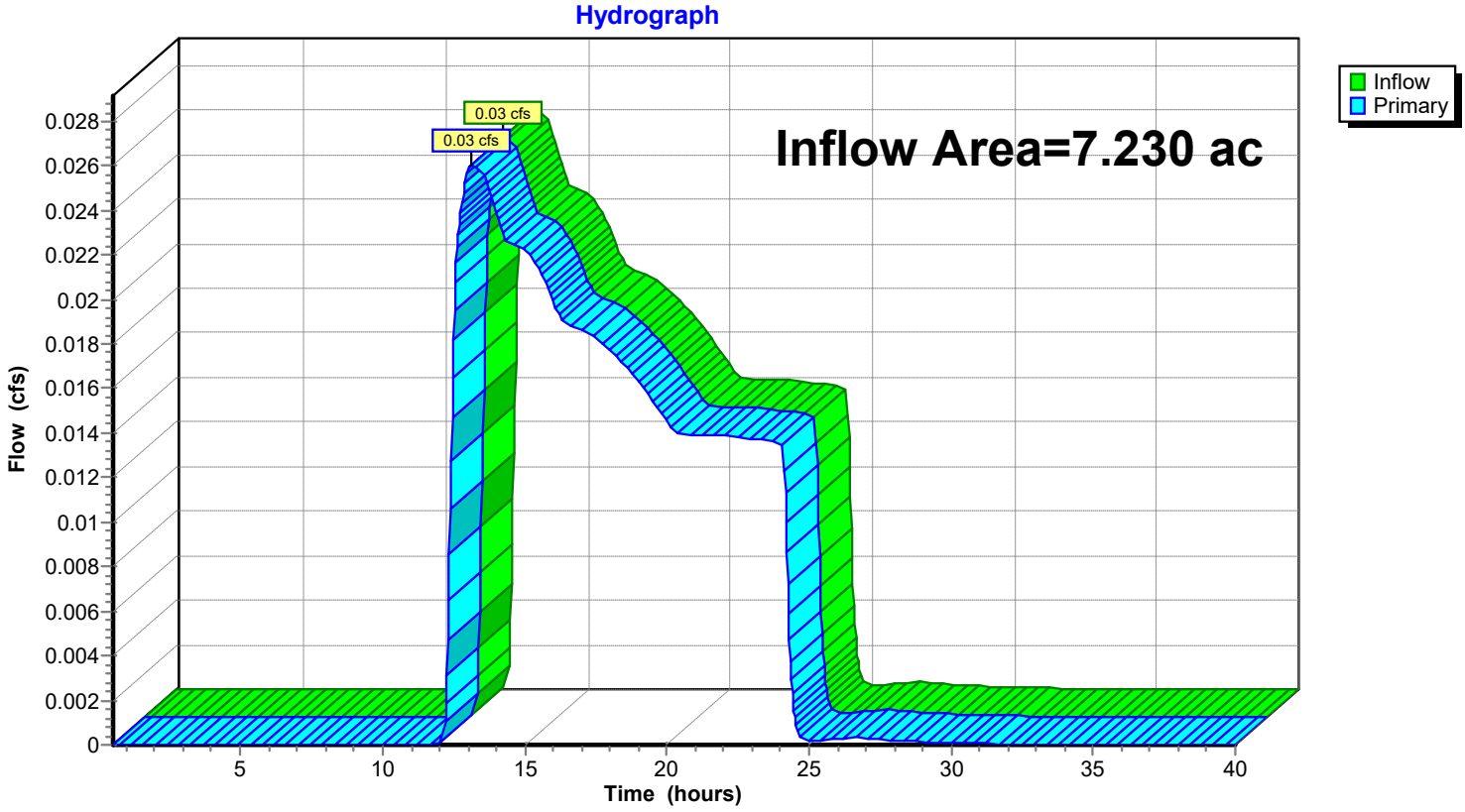


Summary for Pond 4P: Limestone Creek

Inflow Area = 7.230 ac, 17.84% Impervious, Inflow Depth = 0.03" for 2 year event
Inflow = 0.03 cfs @ 13.11 hrs, Volume= 0.018 af
Primary = 0.03 cfs @ 13.11 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Pond 4P: Limestone Creek

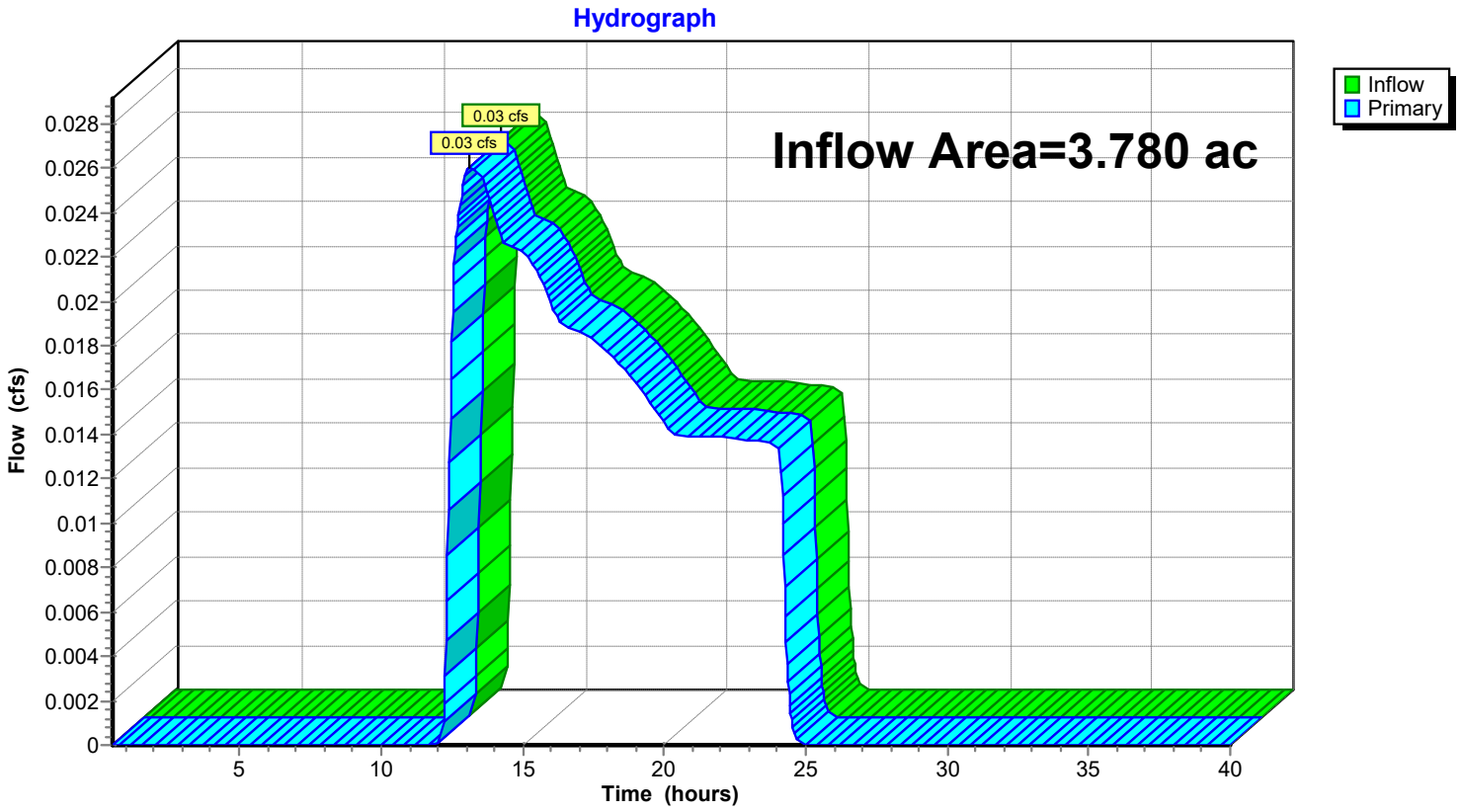


Summary for Link 1L: LINK-1

Inflow Area = 3.780 ac, 10.05% Impervious, Inflow Depth = 0.06" for 2 year event
Inflow = 0.03 cfs @ 13.11 hrs, Volume= 0.018 af
Primary = 0.03 cfs @ 13.11 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Link 1L: LINK-1

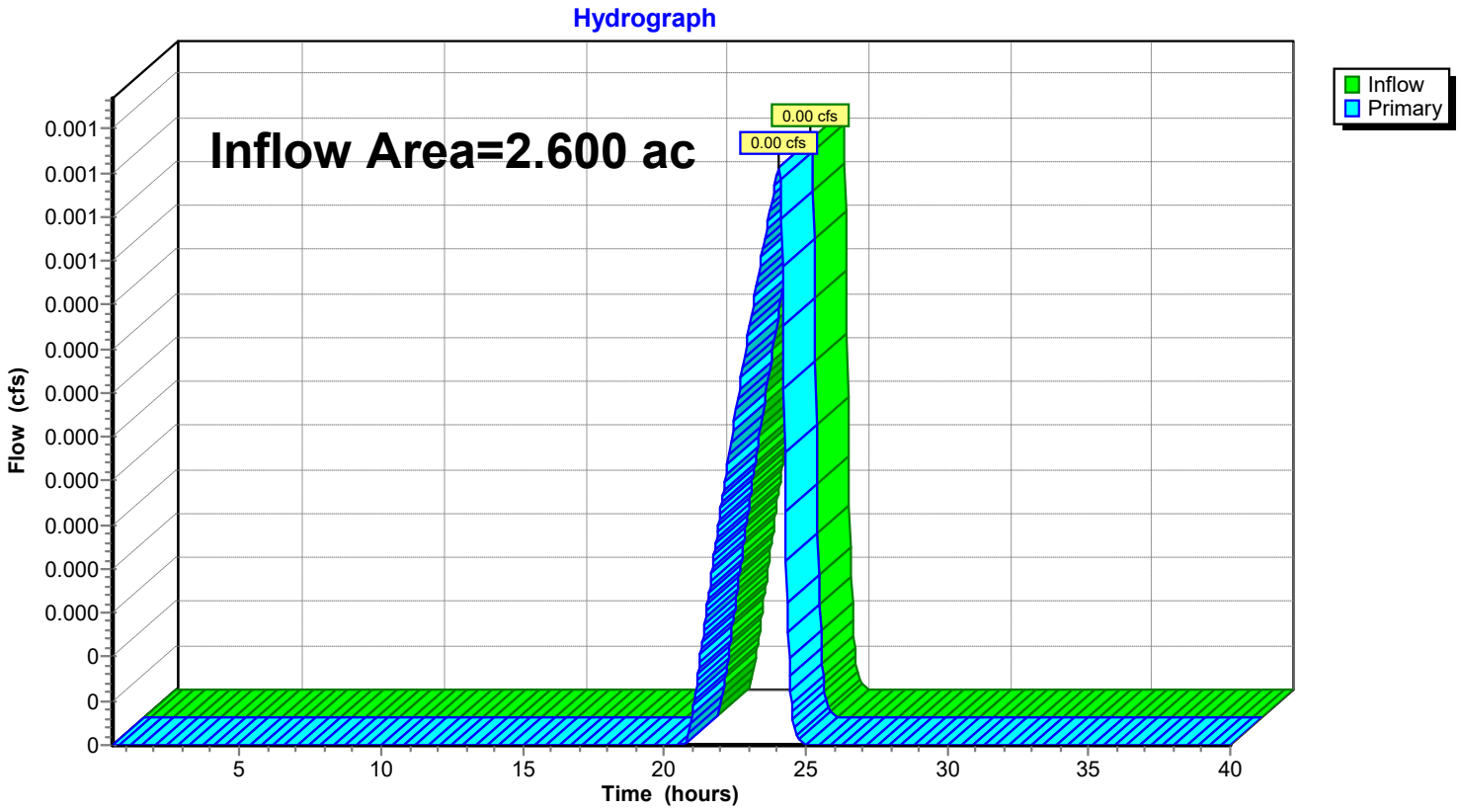


Summary for Link 2L: LINK-2

Inflow Area = 2.600 ac, 15.00% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 24.04 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 24.04 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Link 2L: LINK-2



Time span=0.50-40.00 hrs, dt=0.03 hrs, 1318 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: D-1 Runoff Area=0.770 ac 49.35% Impervious Runoff Depth=0.83"
Tc=5.0 min CN=68 Runoff=1.13 cfs 0.053 af

Subcatchment 2S: D-2 Runoff Area=0.850 ac 61.18% Impervious Runoff Depth=1.21"
Tc=5.0 min CN=75 Runoff=1.90 cfs 0.086 af

Subcatchment 3S: D-3 Runoff Area=0.990 ac 39.39% Impervious Runoff Depth=0.56"
Tc=5.0 min CN=62 Runoff=0.88 cfs 0.046 af

Subcatchment 4S: BYPASS-1 Runoff Area=3.010 ac 0.00% Impervious Runoff Depth=0.34"
Flow Length=427' Tc=19.0 min CN=56 Runoff=0.57 cfs 0.084 af

Subcatchment 5S: BYPASS-2 Runoff Area=1.610 ac 0.00% Impervious Runoff Depth=0.10"
Flow Length=464' Tc=18.2 min CN=47 Runoff=0.02 cfs 0.013 af

Reach 1R: REACH-1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=142.0' S=0.1725 '/' Capacity=88.08 cfs Outflow=0.00 cfs 0.000 af

Reach 2R: REACH-2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=198.0' S=0.1237 '/' Capacity=74.59 cfs Outflow=0.00 cfs 0.000 af

Reach 3R: REACH-3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=307.0' S=0.0847 '/' Capacity=61.71 cfs Outflow=0.00 cfs 0.000 af

Reach 4R: REACH-4 Avg. Flow Depth=0.03' Max Vel=0.08 fps Inflow=0.02 cfs 0.013 af
n=0.150 L=366.0' S=0.0055 '/' Capacity=15.68 cfs Outflow=0.02 cfs 0.013 af

Pond 1P: BIORETENTION-1 Peak Elev=507.92' Storage=1,088 cf Inflow=1.13 cfs 0.053 af
Discarded=0.04 cfs 0.053 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.053 af

Pond 2P: BIORETENTION-2 Peak Elev=506.72' Storage=2,157 cf Inflow=1.90 cfs 0.086 af
Discarded=0.05 cfs 0.079 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.079 af

Pond 3P: BIORETENTION-3 Peak Elev=508.70' Storage=852 cf Inflow=0.88 cfs 0.046 af
Discarded=0.04 cfs 0.046 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.046 af

Pond 4P: Limestone Creek Inflow=0.57 cfs 0.097 af
Primary=0.57 cfs 0.097 af

Link 1L: LINK-1 Inflow=0.57 cfs 0.084 af
Primary=0.57 cfs 0.084 af

Link 2L: LINK-2 Inflow=0.02 cfs 0.013 af
Primary=0.02 cfs 0.013 af

Total Runoff Area = 7.230 ac Runoff Volume = 0.282 af Average Runoff Depth = 0.47"
82.16% Pervious = 5.940 ac 17.84% Impervious = 1.290 ac

Summary for Subcatchment 1S: D-1

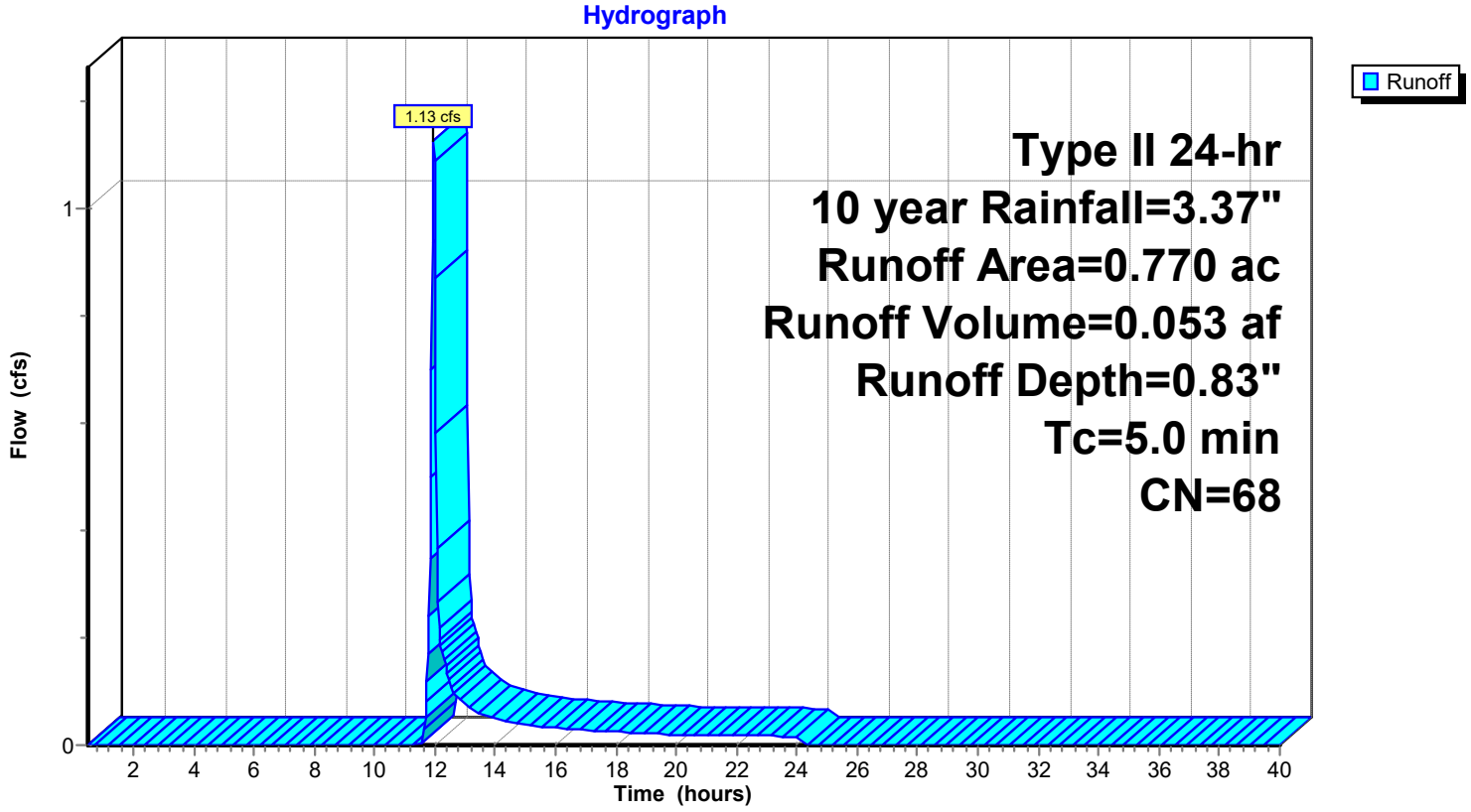
Runoff = 1.13 cfs @ 11.97 hrs, Volume= 0.053 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 10 year Rainfall=3.37"

Area (ac)	CN	Description
0.390	39	>75% Grass cover, Good, HSG A
0.250	98	Paved parking, HSG A
0.130	98	Roofs, HSG A
0.770	68	Weighted Average
0.390		50.65% Pervious Area
0.380		49.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 1S: D-1



Summary for Subcatchment 2S: D-2

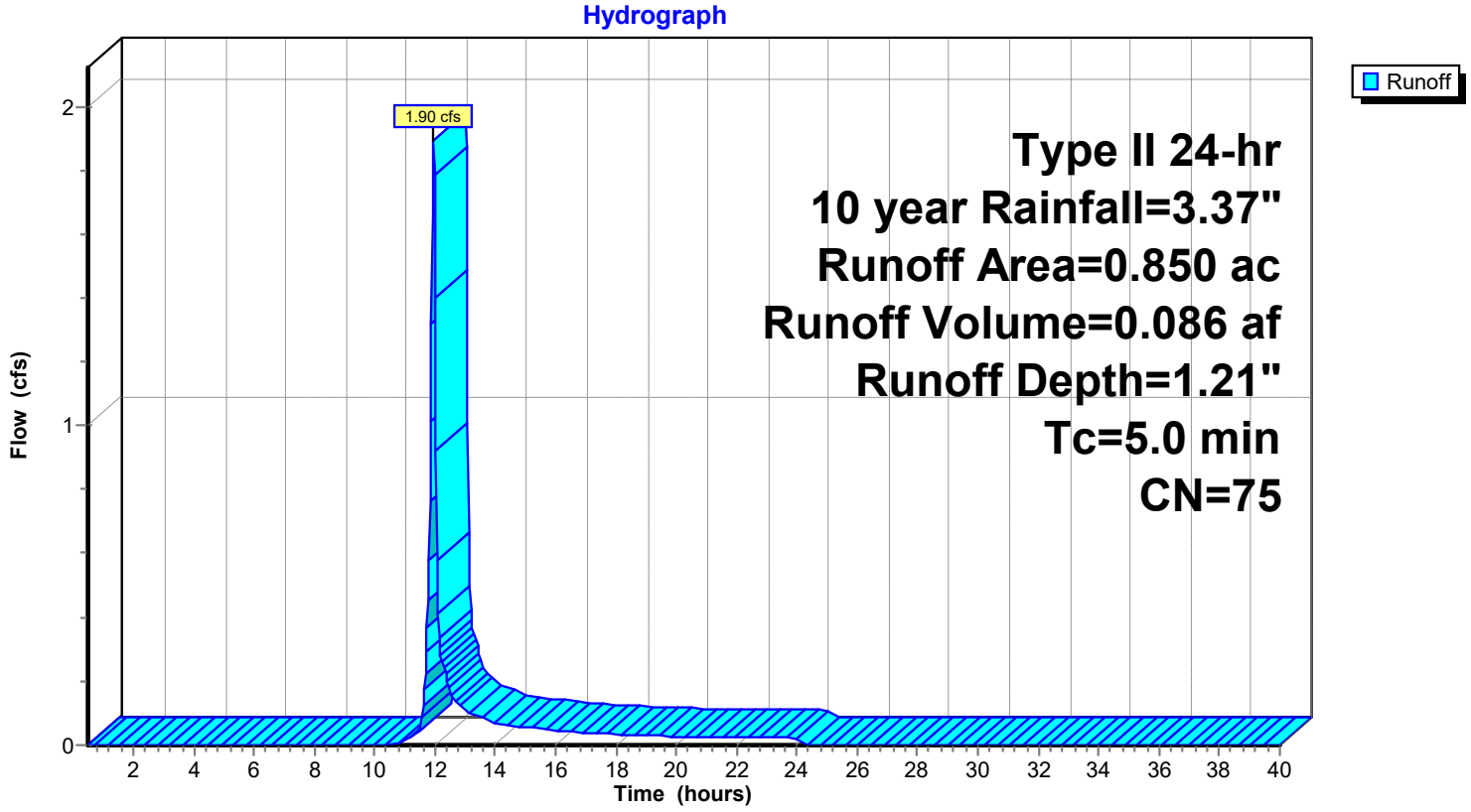
Runoff = 1.90 cfs @ 11.97 hrs, Volume= 0.086 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 10 year Rainfall=3.37"

Area (ac)	CN	Description
0.330	39	>75% Grass cover, Good, HSG A
0.170	98	Paved parking, HSG A
0.350	98	Roofs, HSG A
0.850	75	Weighted Average
0.330		38.82% Pervious Area
0.520		61.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 2S: D-2



Summary for Subcatchment 3S: D-3

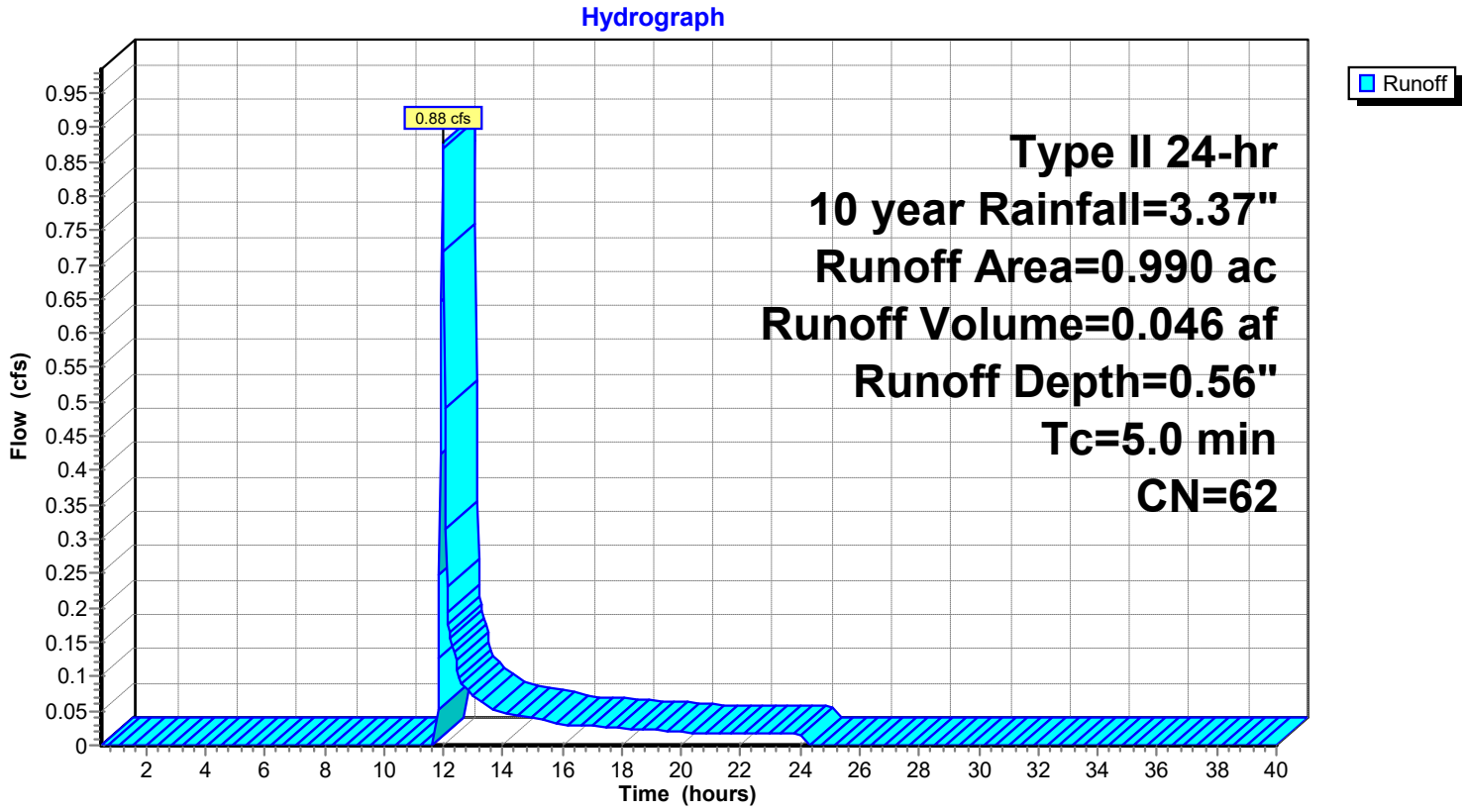
Runoff = 0.88 cfs @ 11.98 hrs, Volume= 0.046 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 10 year Rainfall=3.37"

Area (ac)	CN	Description
0.600	39	>75% Grass cover, Good, HSG A
0.140	98	Paved parking, HSG A
0.250	98	Roofs, HSG A
0.990	62	Weighted Average
0.600		60.61% Pervious Area
0.390		39.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 3S: D-3



Summary for Subcatchment 4S: BYPASS-1

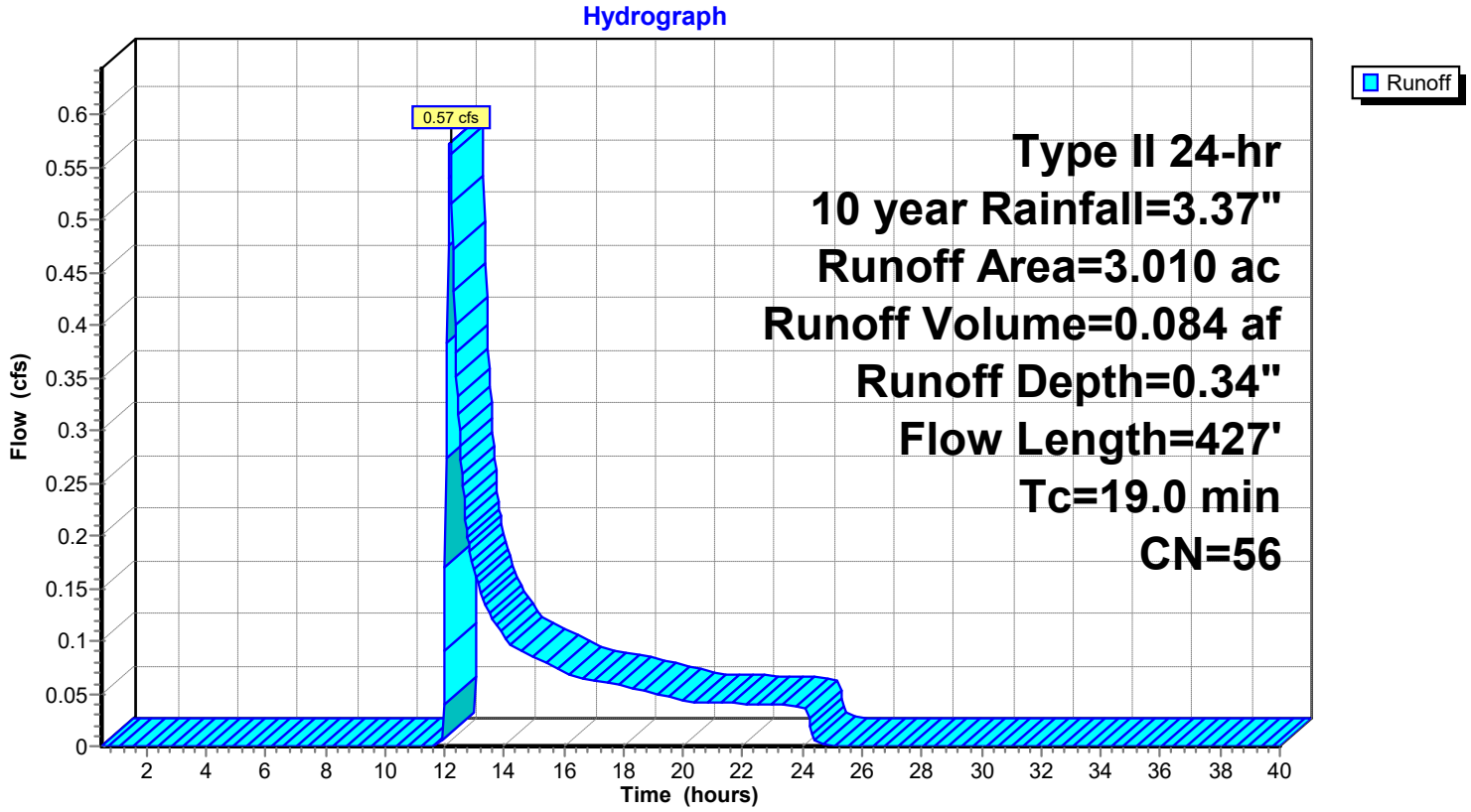
Runoff = 0.57 cfs @ 12.19 hrs, Volume= 0.084 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 10 year Rainfall=3.37"

Area (ac)	CN	Description
0.490	39	>75% Grass cover, Good, HSG A
1.040	30	Woods, Good, HSG A
1.480	79	Woods/grass comb., Good, HSG D
3.010	56	Weighted Average
3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	77	0.3200	0.19		**Sheet Flow, A-B SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 2.35"
12.3	350	0.0090	0.47		**Shallow Concentrated Flow, B-C SHALLOW CONC** Woodland Kv= 5.0 fps
19.0	427	Total			

Subcatchment 4S: BYPASS-1



Summary for Subcatchment 5S: BYPASS-2

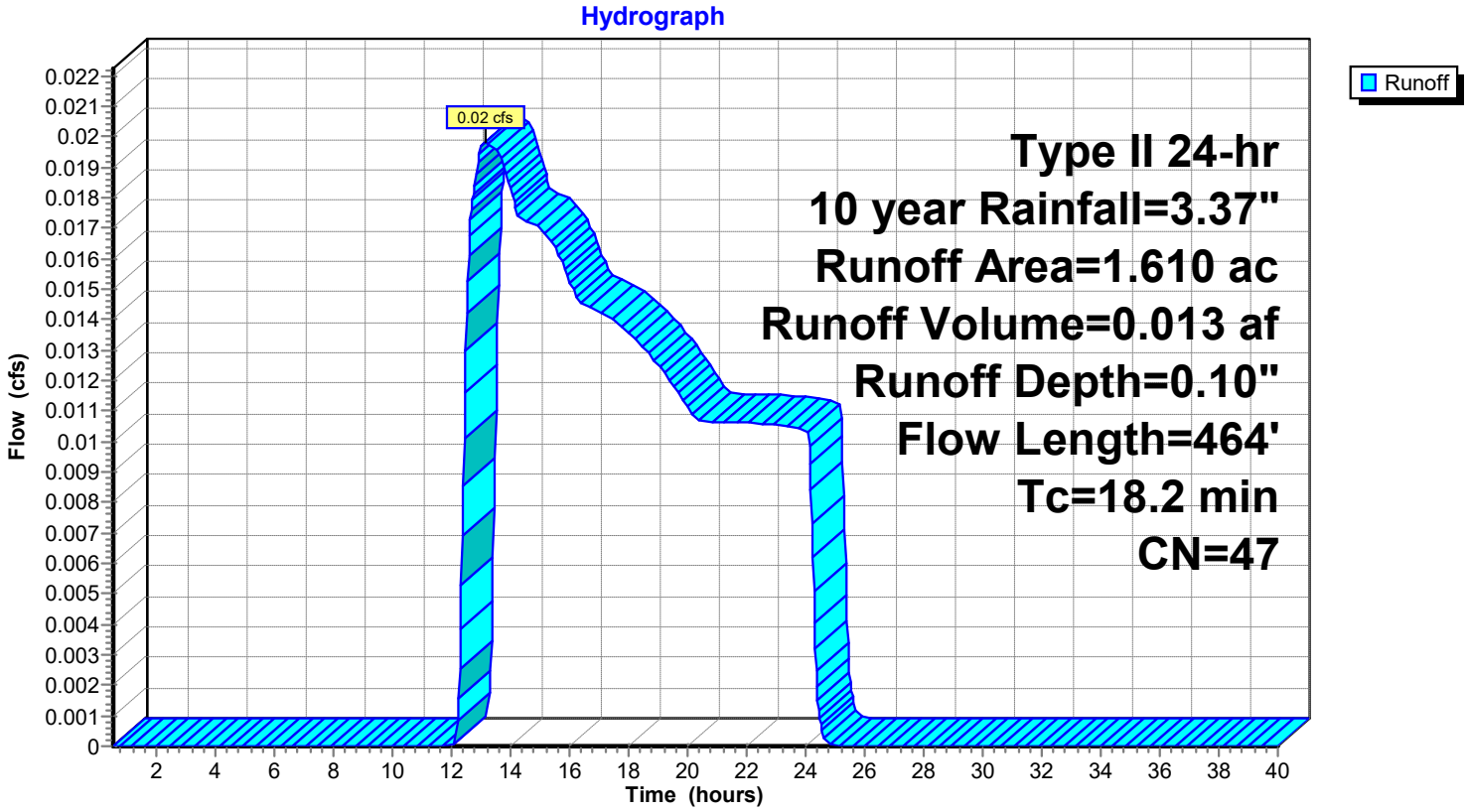
Runoff = 0.02 cfs @ 13.12 hrs, Volume= 0.013 af, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 10 year Rainfall=3.37"

Area (ac)	CN	Description
0.790	30	Woods, Good, HSG A
0.490	79	Woods/grass comb., Good, HSG D
0.330	39	>75% Grass cover, Good, HSG A
1.610	47	Weighted Average
1.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.2200	0.17		**Sheet Flow, A-B SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 2.35"
8.6	364	0.0200	0.71		**Shallow Concentrated Flow, B-C SHALL CONC** Woodland Kv= 5.0 fps
18.2	464	Total			

Subcatchment 5S: BYPASS-2



Summary for Reach 1R: REACH-1

Inflow Area = 0.770 ac, 49.35% Impervious, Inflow Depth = 0.00" for 10 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

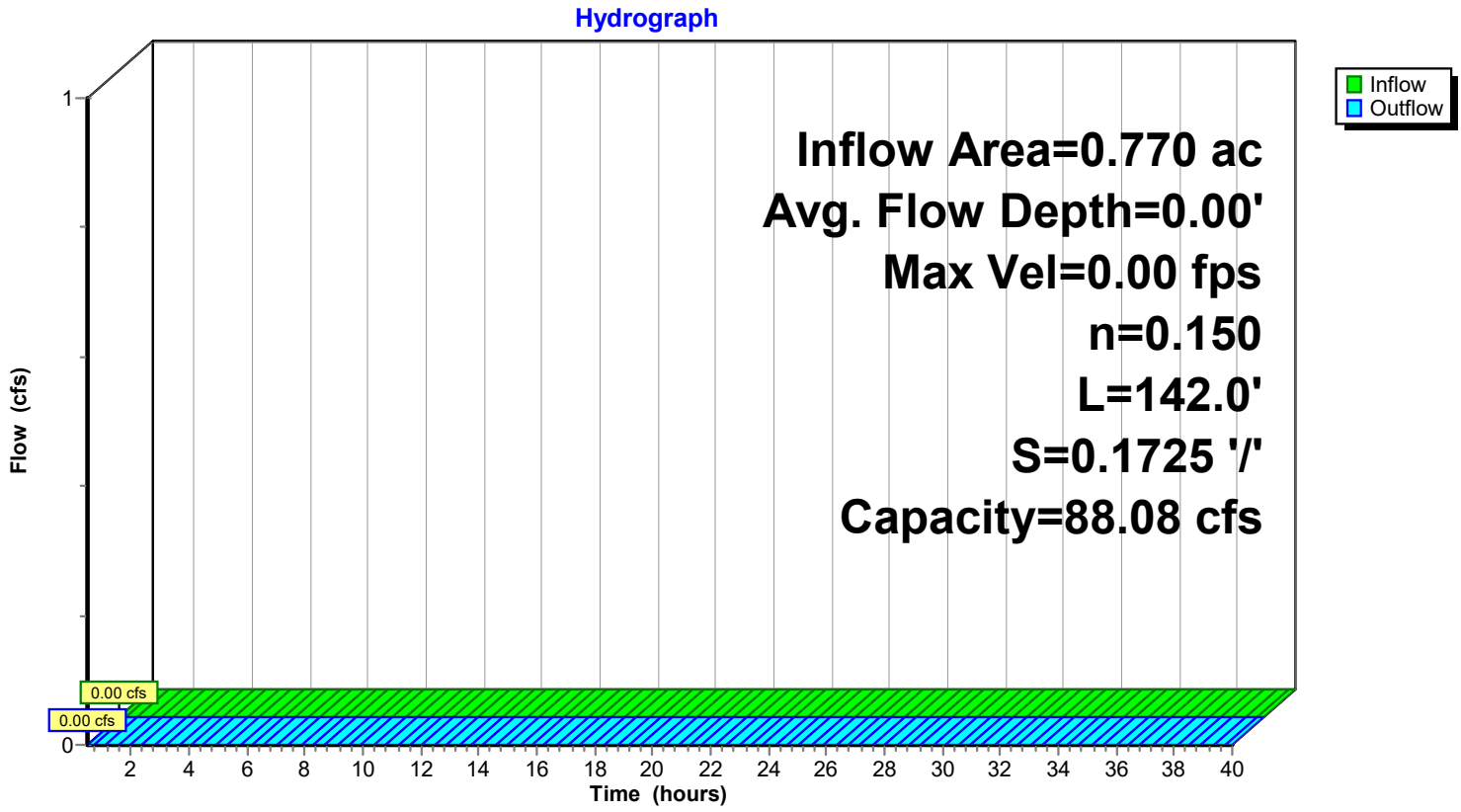
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 88.08 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 142.0' Slope= 0.1725 '/'
Inlet Invert= 506.50', Outlet Invert= 482.00'



‡

Reach 1R: REACH-1



Summary for Reach 2R: REACH-2

Inflow Area = 0.850 ac, 61.18% Impervious, Inflow Depth = 0.00" for 10 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

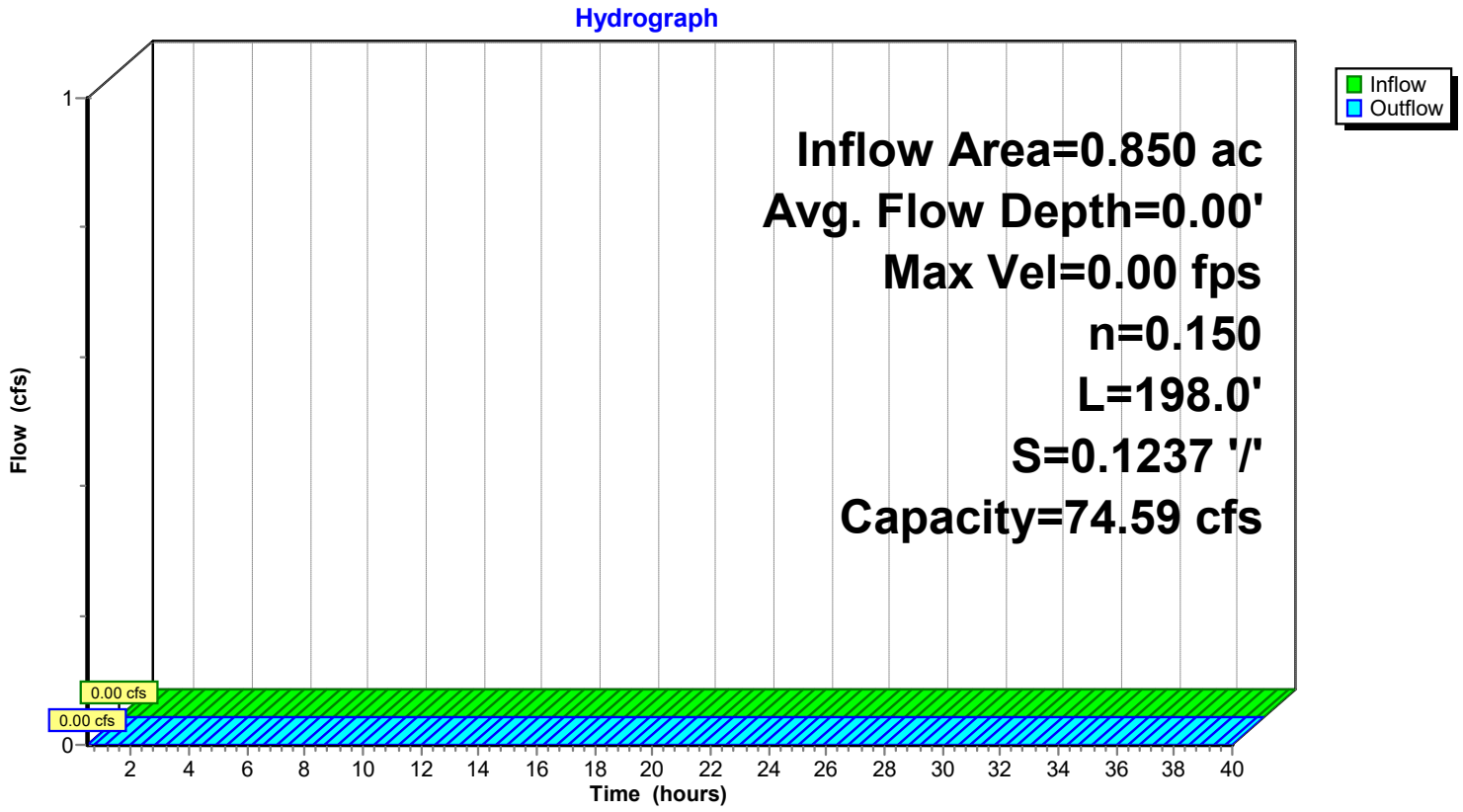
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 74.59 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 198.0' Slope= 0.1237 '/'
Inlet Invert= 506.50', Outlet Invert= 482.00'



‡

Reach 2R: REACH-2



Summary for Reach 3R: REACH-3

Inflow Area = 0.990 ac, 39.39% Impervious, Inflow Depth = 0.00" for 10 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

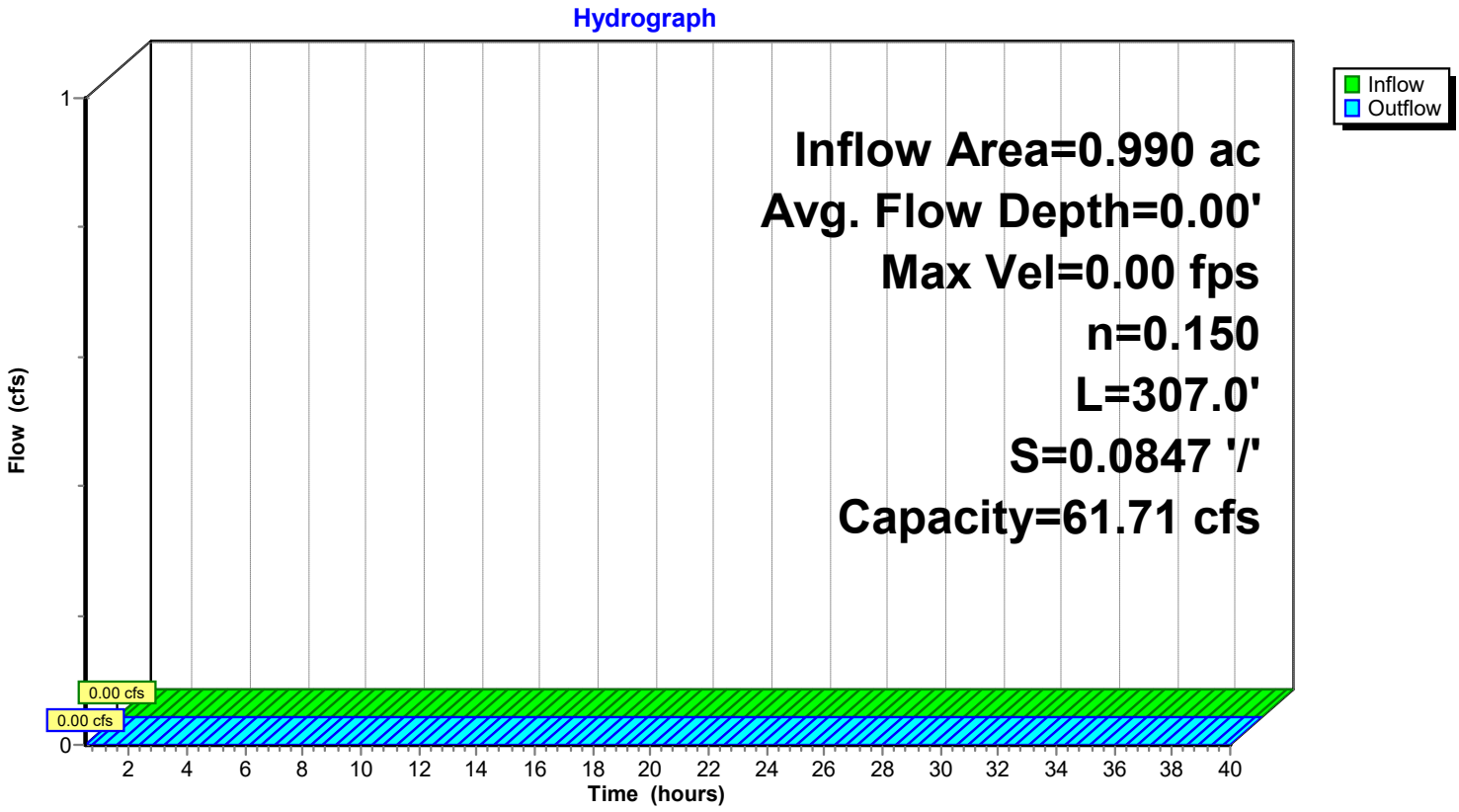
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 61.71 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 307.0' Slope= 0.0847 '/'
Inlet Invert= 510.00', Outlet Invert= 484.00'



‡

Reach 3R: REACH-3



Summary for Reach 4R: REACH-4

Inflow Area = 2.600 ac, 15.00% Impervious, Inflow Depth = 0.06" for 10 year event
Inflow = 0.02 cfs @ 13.12 hrs, Volume= 0.013 af
Outflow = 0.02 cfs @ 16.76 hrs, Volume= 0.013 af, Atten= 17%, Lag= 218.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.08 fps, Min. Travel Time= 79.1 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 111.0 min

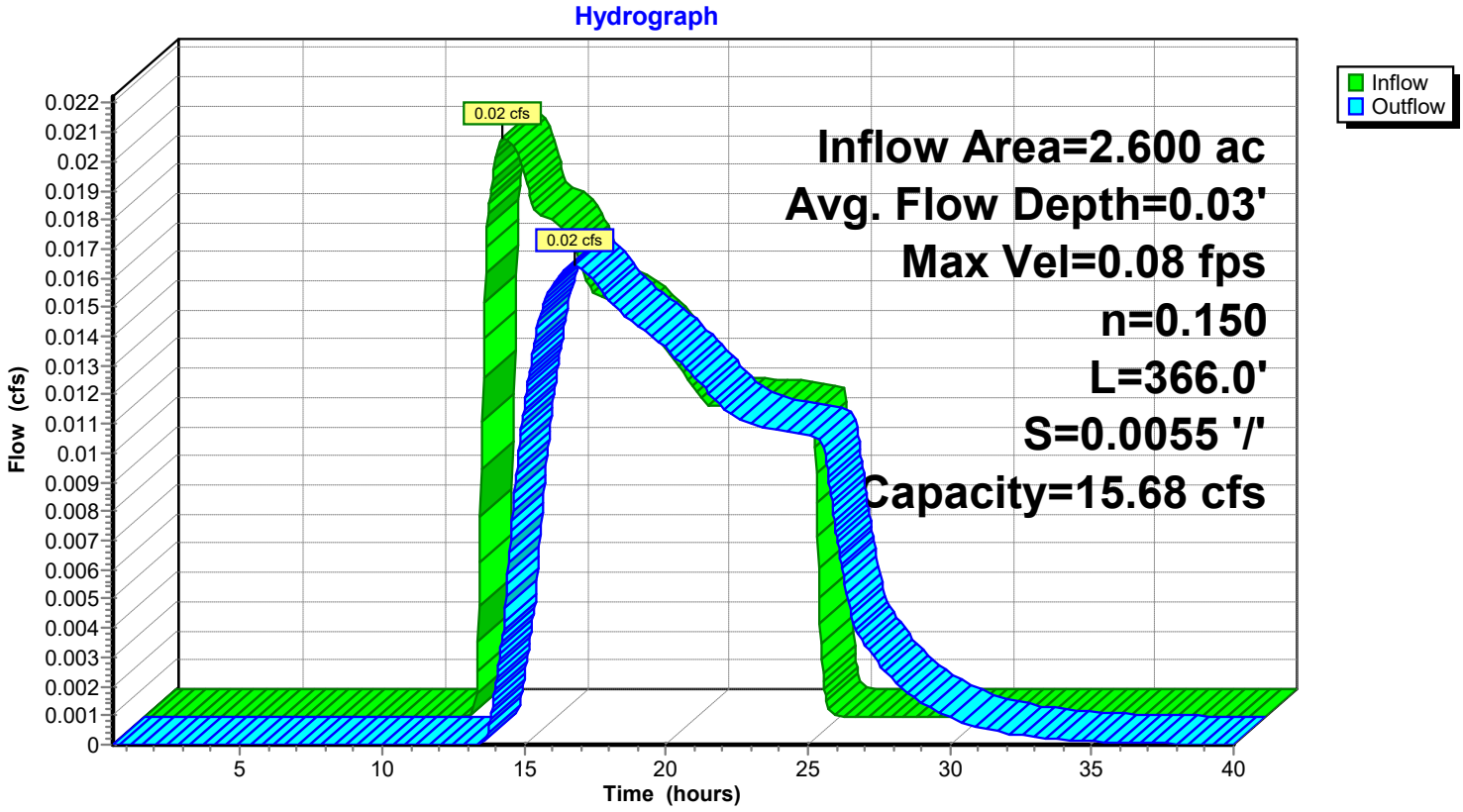
Peak Storage= 78 cf @ 15.44 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 15.68 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 366.0' Slope= 0.0055 '/'
Inlet Invert= 484.00', Outlet Invert= 482.00'



‡

Reach 4R: REACH-4



Summary for Pond 1P: BIORETENTION-1

Inflow Area = 0.770 ac, 49.35% Impervious, Inflow Depth = 0.83" for 10 year event
Inflow = 1.13 cfs @ 11.97 hrs, Volume= 0.053 af
Outflow = 0.04 cfs @ 14.47 hrs, Volume= 0.053 af, Atten= 96%, Lag= 149.9 min
Discarded = 0.04 cfs @ 14.47 hrs, Volume= 0.053 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 507.92' @ 14.47 hrs Surf.Area= 1,679 sf Storage= 1,088 cf

Plug-Flow detention time= 322.1 min calculated for 0.053 af (100% of inflow)
Center-of-Mass det. time= 322.2 min (1,197.2 - 875.0)

Volume	Invert	Avail.Storage	Storage Description
#1	507.00'	5,870 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
507.00	690	0	0
508.00	1,766	1,228	1,228
509.00	3,487	2,627	3,855
509.50	4,575	2,016	5,870

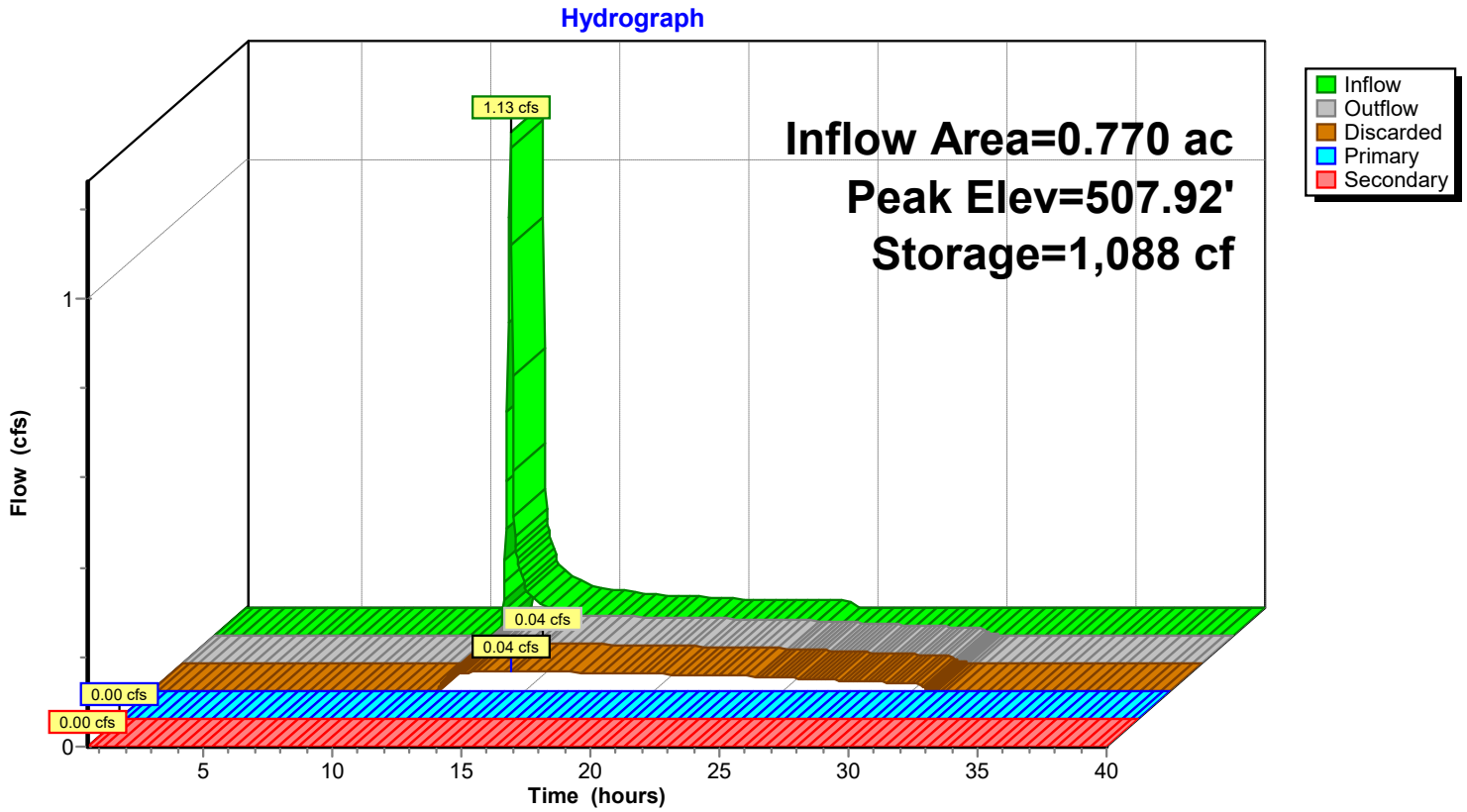
Device	Routing	Invert	Outlet Devices
#1	Secondary	509.00'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height
#2	Primary	507.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 507.00' / 506.60' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	508.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Discarded	507.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 502.00'

Discarded OutFlow Max=0.04 cfs @ 14.47 hrs HW=507.92' (Free Discharge)
└**4=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=507.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.50 hrs HW=507.00' (Free Discharge)
└**1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: BIORETENTION-1



Summary for Pond 2P: BIORETENTION-2

Inflow Area = 0.850 ac, 61.18% Impervious, Inflow Depth = 1.21" for 10 year event
Inflow = 1.90 cfs @ 11.97 hrs, Volume= 0.086 af
Outflow = 0.05 cfs @ 15.44 hrs, Volume= 0.079 af, Atten= 97%, Lag= 208.7 min
Discarded = 0.05 cfs @ 15.44 hrs, Volume= 0.079 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 506.72' @ 15.44 hrs Surf.Area= 1,828 sf Storage= 2,157 cf

Plug-Flow detention time= 560.2 min calculated for 0.079 af (92% of inflow)
Center-of-Mass det. time= 517.8 min (1,369.2 - 851.4)

Volume	Invert	Avail.Storage	Storage Description
#1	504.00'	3,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

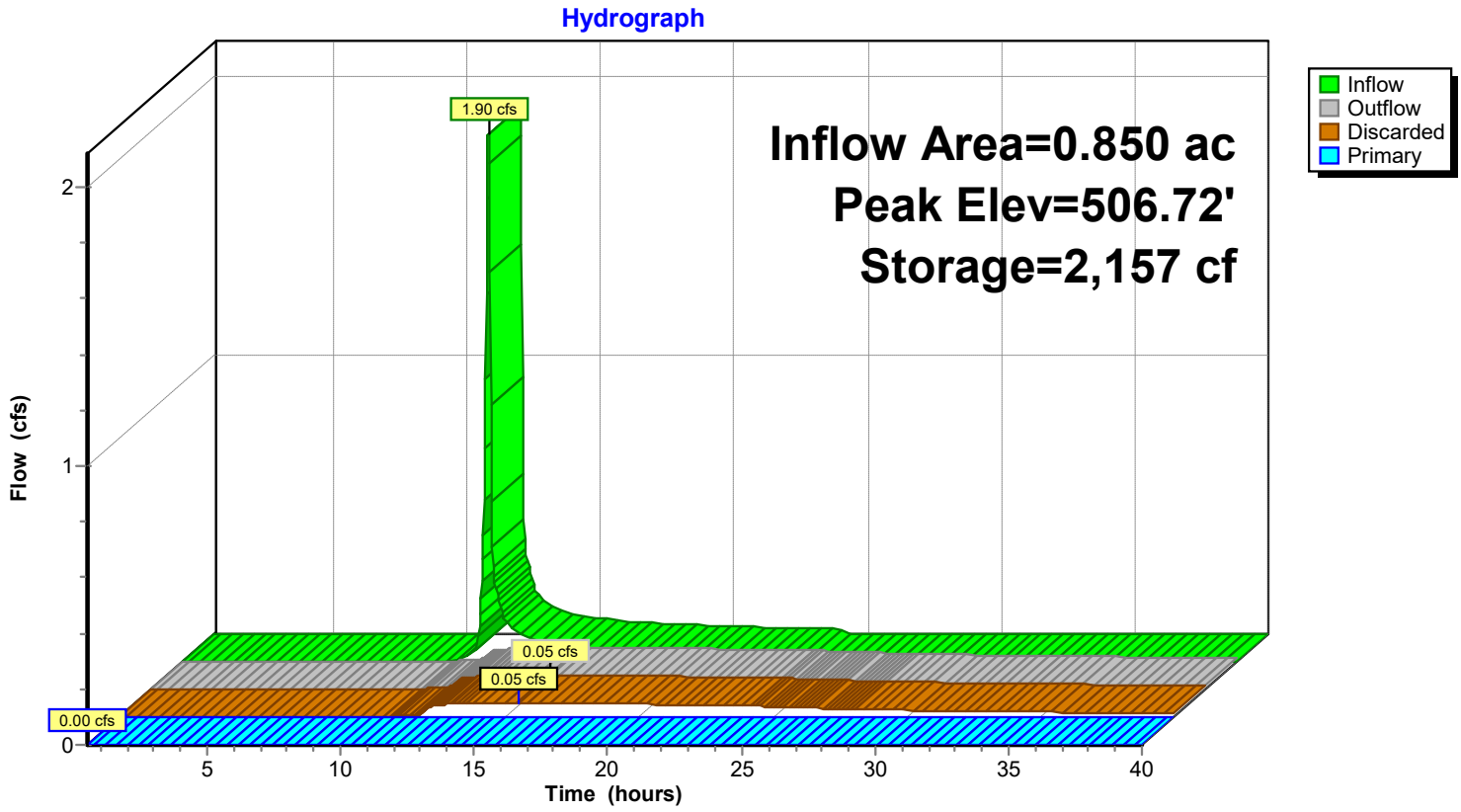
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
504.00	225	0	0
505.00	540	383	383
506.00	987	764	1,146
507.00	2,158	1,573	2,719
507.50	2,677	1,209	3,927

Device	Routing	Invert	Outlet Devices
#1	Discarded	504.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 499.00'
#2	Primary	507.00'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 3.0' Crest Height

Discarded OutFlow Max=0.05 cfs @ 15.44 hrs HW=506.72' (Free Discharge)
↑**1=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=504.00' (Free Discharge)
↑**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: BIORETENTION-2



Summary for Pond 3P: BIORETENTION-3

Inflow Area = 0.990 ac, 39.39% Impervious, Inflow Depth = 0.56" for 10 year event
Inflow = 0.88 cfs @ 11.98 hrs, Volume= 0.046 af
Outflow = 0.04 cfs @ 15.29 hrs, Volume= 0.046 af, Atten= 96%, Lag= 198.4 min
Discarded = 0.04 cfs @ 15.29 hrs, Volume= 0.046 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 508.70' @ 15.29 hrs Surf.Area= 1,419 sf Storage= 852 cf

Plug-Flow detention time= 292.3 min calculated for 0.046 af (100% of inflow)
Center-of-Mass det. time= 292.3 min (1,192.9 - 900.6)

Volume	Invert	Avail.Storage	Storage Description
#1	508.00'	6,376 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

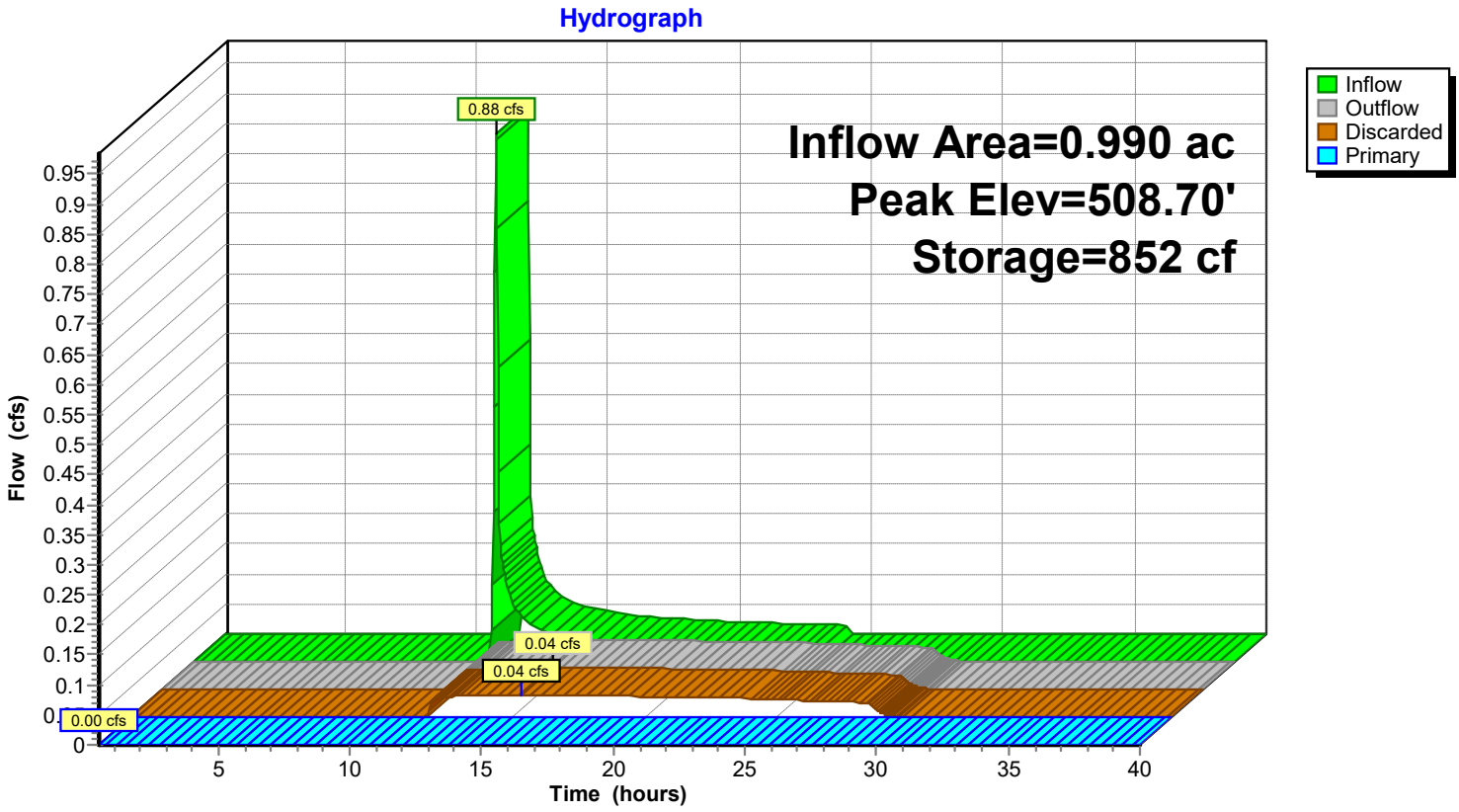
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
508.00	1,004	0	0
509.00	1,594	1,299	1,299
510.00	2,284	1,939	3,238
511.00	3,991	3,138	6,376

Device	Routing	Invert	Outlet Devices
#1	Discarded	508.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 503.00'
#2	Primary	510.50'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.5' Crest Height

Discarded OutFlow Max=0.04 cfs @ 15.29 hrs HW=508.70' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=508.00' (Free Discharge)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: BIORETENTION-3

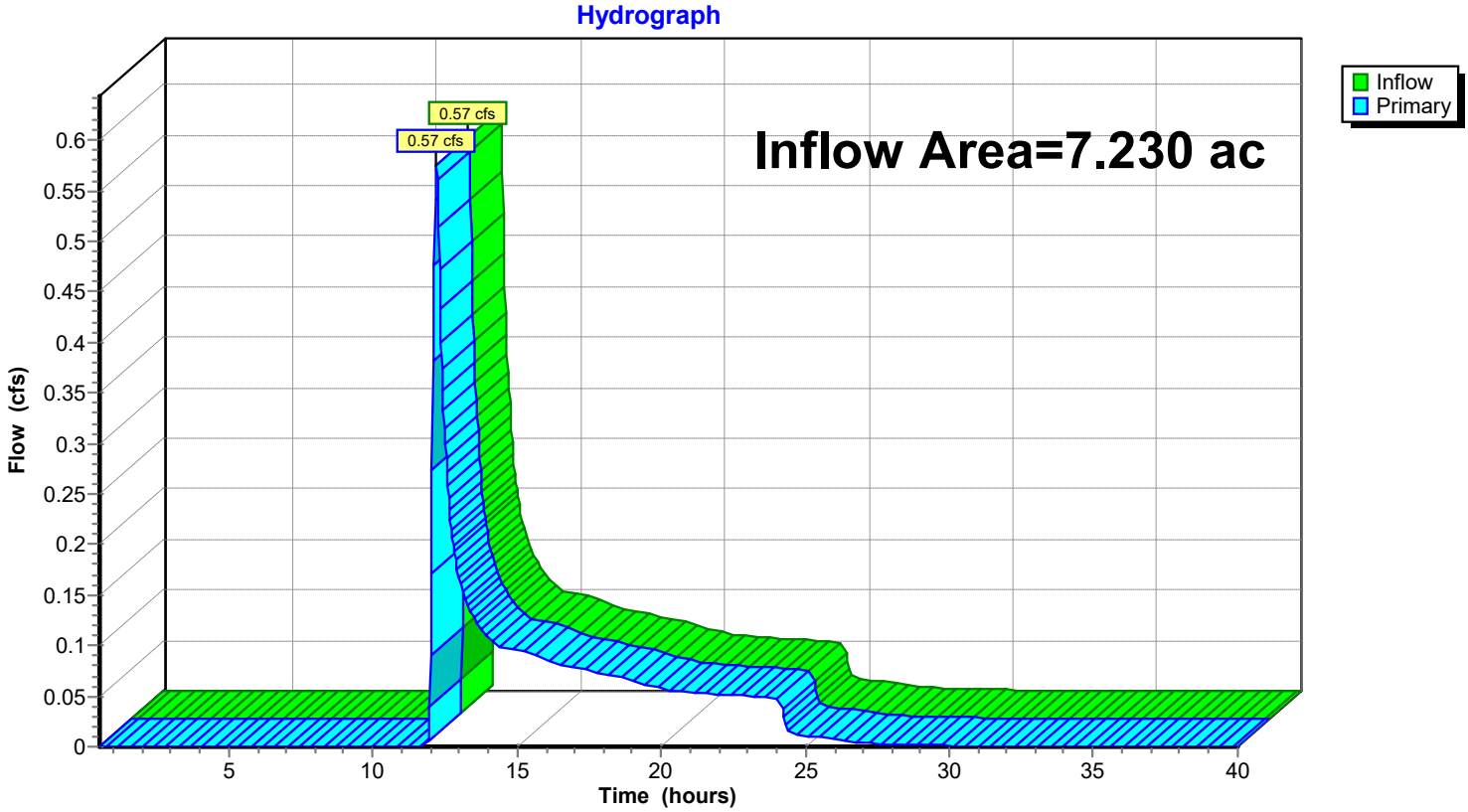


Summary for Pond 4P: Limestone Creek

Inflow Area = 7.230 ac, 17.84% Impervious, Inflow Depth = 0.16" for 10 year event
Inflow = 0.57 cfs @ 12.19 hrs, Volume= 0.097 af
Primary = 0.57 cfs @ 12.19 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Pond 4P: Limestone Creek

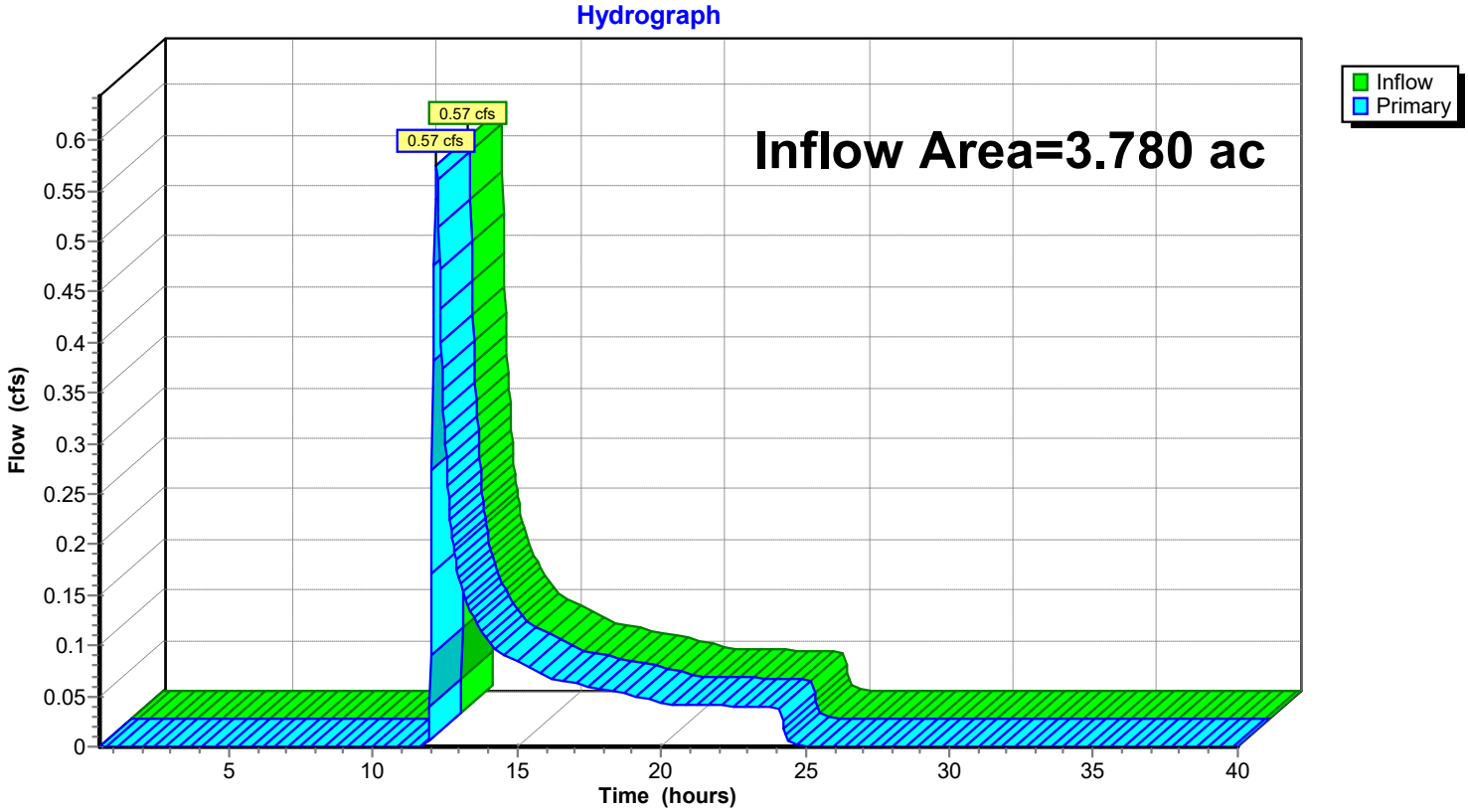


Summary for Link 1L: LINK-1

Inflow Area = 3.780 ac, 10.05% Impervious, Inflow Depth = 0.27" for 10 year event
Inflow = 0.57 cfs @ 12.19 hrs, Volume= 0.084 af
Primary = 0.57 cfs @ 12.19 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Link 1L: LINK-1

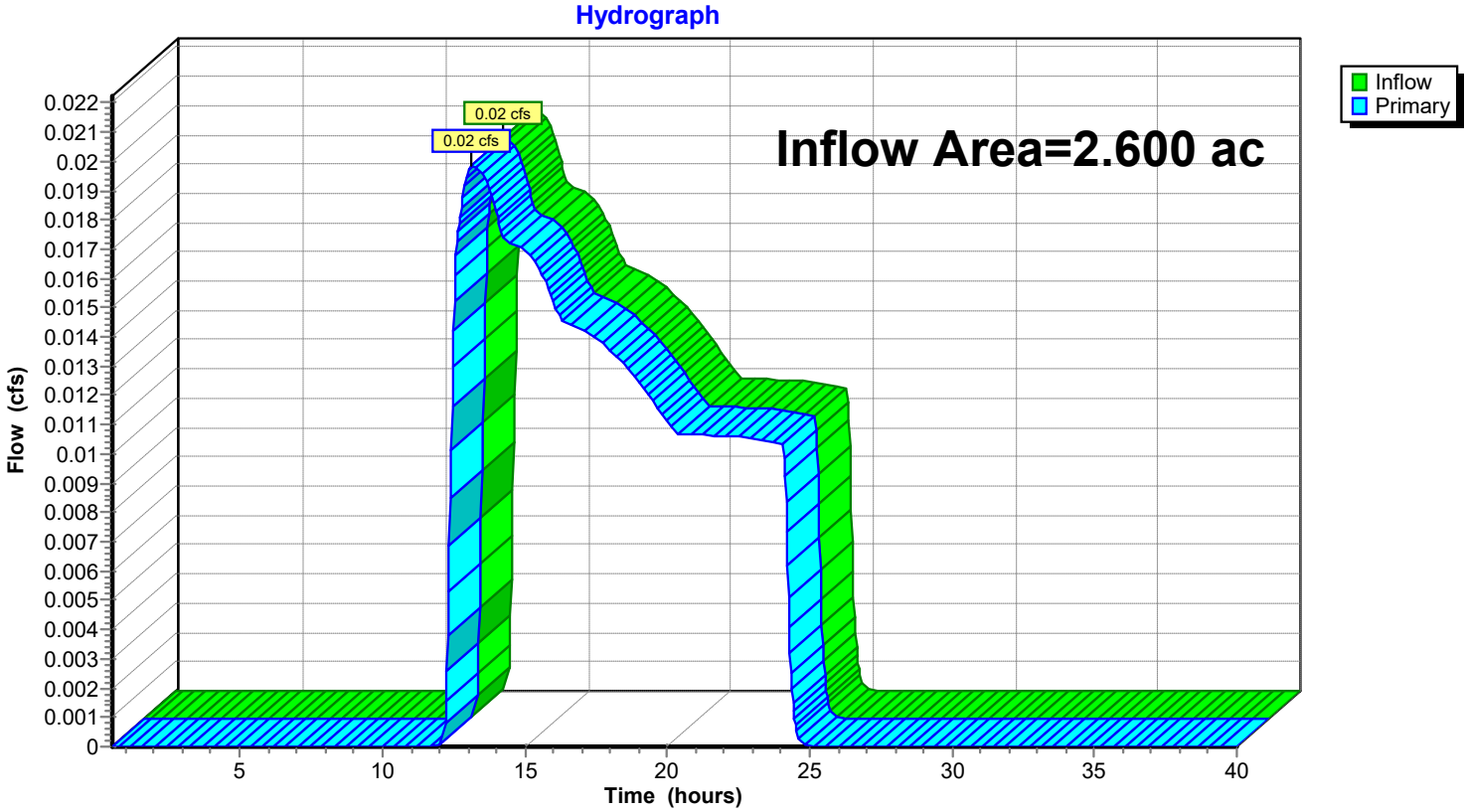


Summary for Link 2L: LINK-2

Inflow Area = 2.600 ac, 15.00% Impervious, Inflow Depth = 0.06" for 10 year event
Inflow = 0.02 cfs @ 13.12 hrs, Volume= 0.013 af
Primary = 0.02 cfs @ 13.12 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Link 2L: LINK-2



Time span=0.50-40.00 hrs, dt=0.03 hrs, 1318 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: D-1 Runoff Area=0.770 ac 49.35% Impervious Runoff Depth=2.36"
Tc=5.0 min CN=68 Runoff=3.36 cfs 0.152 af

Subcatchment 2S: D-2 Runoff Area=0.850 ac 61.18% Impervious Runoff Depth=2.99"
Tc=5.0 min CN=75 Runoff=4.67 cfs 0.212 af

Subcatchment 3S: D-3 Runoff Area=0.990 ac 39.39% Impervious Runoff Depth=1.86"
Tc=5.0 min CN=62 Runoff=3.38 cfs 0.154 af

Subcatchment 4S: BYPASS-1 Runoff Area=3.010 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=427' Tc=19.0 min CN=56 Runoff=4.28 cfs 0.351 af

Subcatchment 5S: BYPASS-2 Runoff Area=1.610 ac 0.00% Impervious Runoff Depth=0.79"
Flow Length=464' Tc=18.2 min CN=47 Runoff=1.00 cfs 0.106 af

Reach 1R: REACH-1 Avg. Flow Depth=0.10' Max Vel=0.83 fps Inflow=0.55 cfs 0.070 af
n=0.150 L=142.0' S=0.1725 '/' Capacity=88.08 cfs Outflow=0.55 cfs 0.070 af

Reach 2R: REACH-2 Avg. Flow Depth=0.29' Max Vel=1.33 fps Inflow=3.54 cfs 0.090 af
n=0.150 L=198.0' S=0.1237 '/' Capacity=74.59 cfs Outflow=2.84 cfs 0.090 af

Reach 3R: REACH-3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=307.0' S=0.0847 '/' Capacity=61.71 cfs Outflow=0.00 cfs 0.000 af

Reach 4R: REACH-4 Avg. Flow Depth=0.26' Max Vel=0.26 fps Inflow=1.00 cfs 0.106 af
n=0.150 L=366.0' S=0.0055 '/' Capacity=15.68 cfs Outflow=0.50 cfs 0.106 af

Pond 1P: BIORETENTION-1 Peak Elev=508.59' Storage=2,564 cf Inflow=3.36 cfs 0.152 af
Discarded=0.08 cfs 0.082 af Primary=0.55 cfs 0.070 af Secondary=0.00 cfs 0.000 af Outflow=0.63 cfs 0.152 af

Pond 2P: BIORETENTION-2 Peak Elev=507.23' Storage=3,233 cf Inflow=4.67 cfs 0.212 af
Discarded=0.07 cfs 0.109 af Primary=3.54 cfs 0.090 af Outflow=3.61 cfs 0.199 af

Pond 3P: BIORETENTION-3 Peak Elev=510.28' Storage=3,944 cf Inflow=3.38 cfs 0.154 af
Discarded=0.08 cfs 0.142 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.142 af

Pond 4P: Limestone Creek Inflow=7.41 cfs 0.617 af
Primary=7.41 cfs 0.617 af

Link 1L: LINK-1 Inflow=4.78 cfs 0.421 af
Primary=4.78 cfs 0.421 af

Link 2L: LINK-2 Inflow=1.00 cfs 0.106 af
Primary=1.00 cfs 0.106 af

Total Runoff Area = 7.230 ac Runoff Volume = 0.974 af Average Runoff Depth = 1.62"
82.16% Pervious = 5.940 ac 17.84% Impervious = 1.290 ac

Summary for Subcatchment 1S: D-1

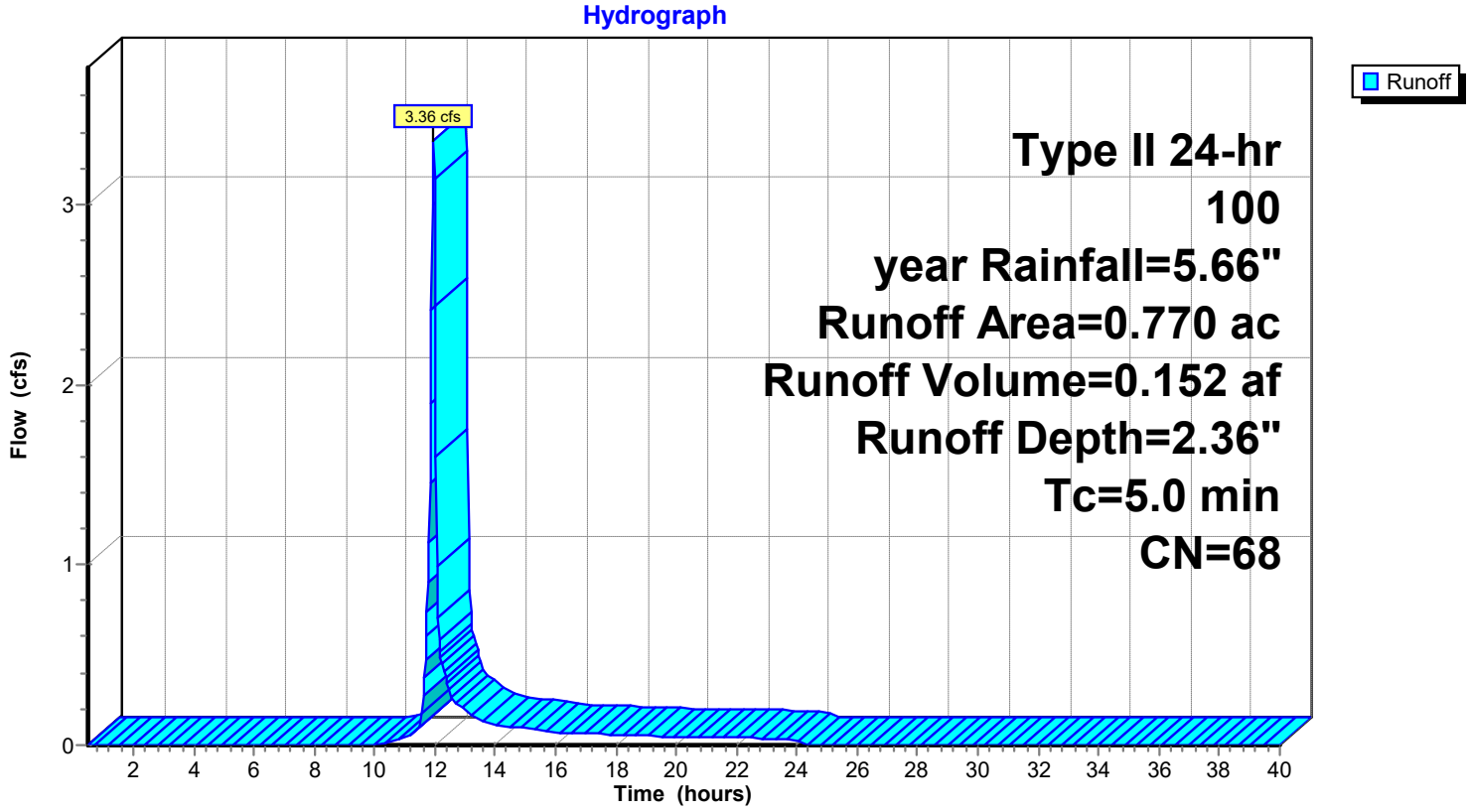
Runoff = 3.36 cfs @ 11.96 hrs, Volume= 0.152 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 100 year Rainfall=5.66"

Area (ac)	CN	Description
0.390	39	>75% Grass cover, Good, HSG A
0.250	98	Paved parking, HSG A
0.130	98	Roofs, HSG A
0.770	68	Weighted Average
0.390		50.65% Pervious Area
0.380		49.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 1S: D-1



Summary for Subcatchment 2S: D-2

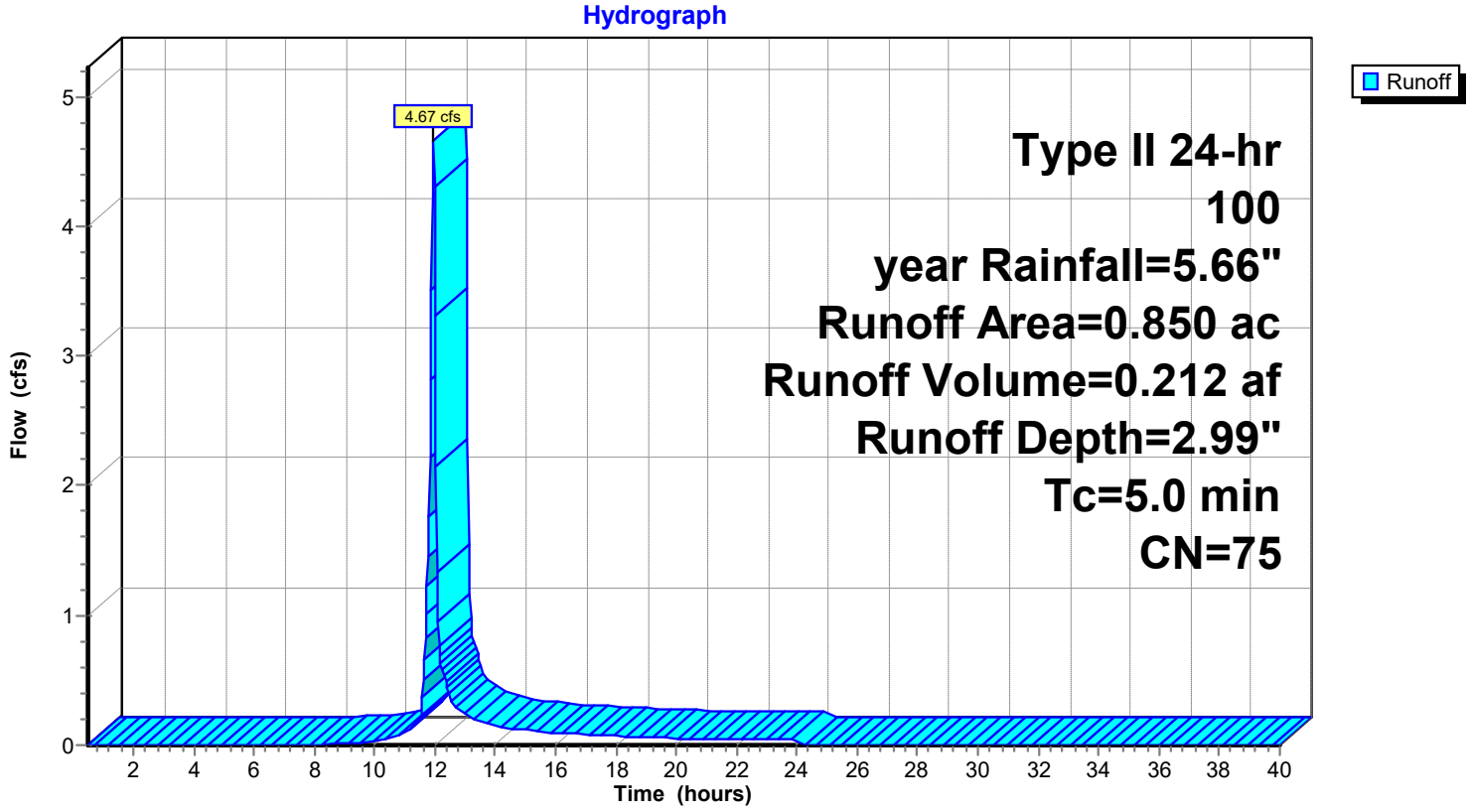
Runoff = 4.67 cfs @ 11.96 hrs, Volume= 0.212 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 100 year Rainfall=5.66"

Area (ac)	CN	Description
0.330	39	>75% Grass cover, Good, HSG A
0.170	98	Paved parking, HSG A
0.350	98	Roofs, HSG A
0.850	75	Weighted Average
0.330		38.82% Pervious Area
0.520		61.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 2S: D-2



Summary for Subcatchment 3S: D-3

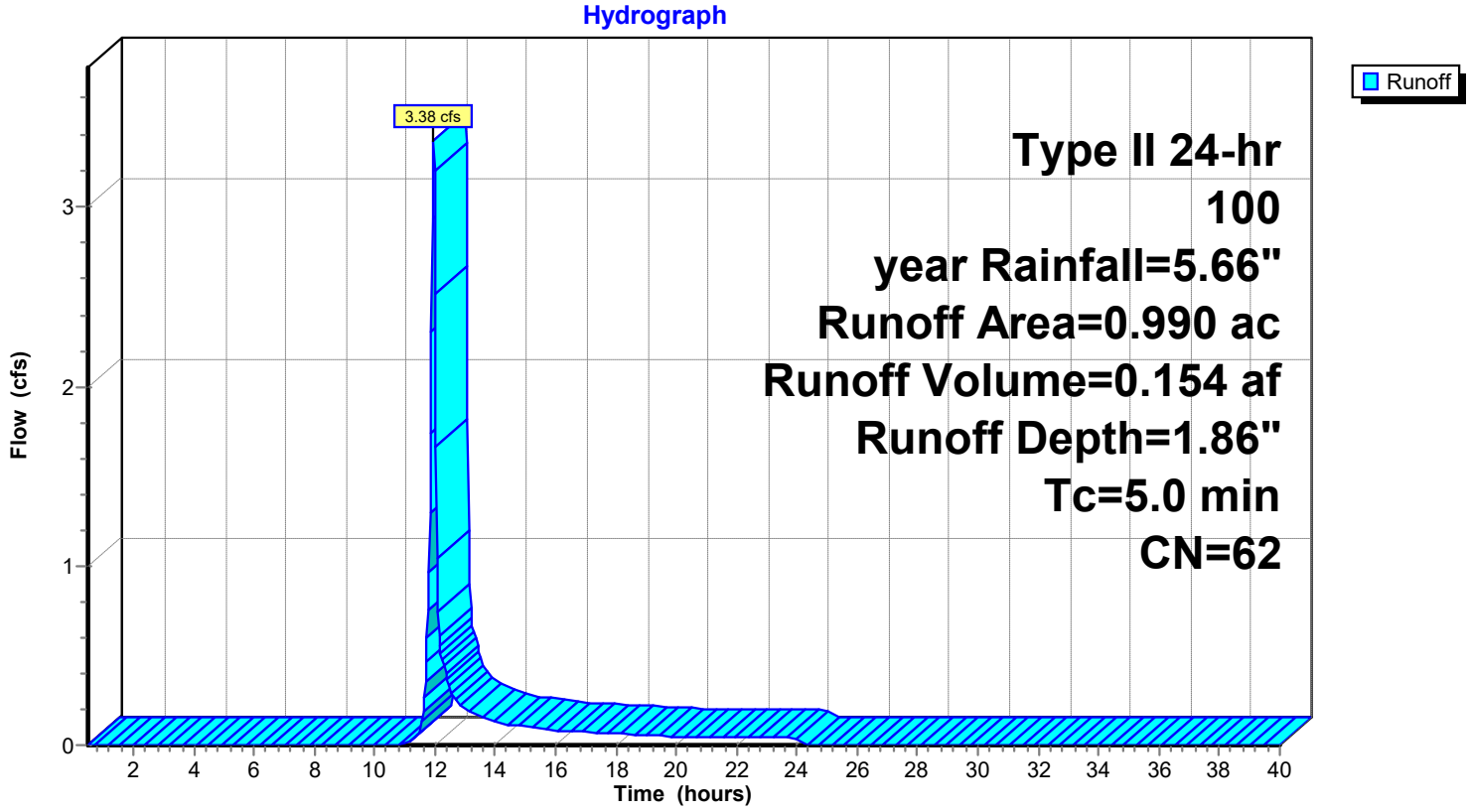
Runoff = 3.38 cfs @ 11.97 hrs, Volume= 0.154 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 100 year Rainfall=5.66"

Area (ac)	CN	Description
0.600	39	>75% Grass cover, Good, HSG A
0.140	98	Paved parking, HSG A
0.250	98	Roofs, HSG A
0.990	62	Weighted Average
0.600		60.61% Pervious Area
0.390		39.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Minimum Tc**

Subcatchment 3S: D-3



Summary for Subcatchment 4S: BYPASS-1

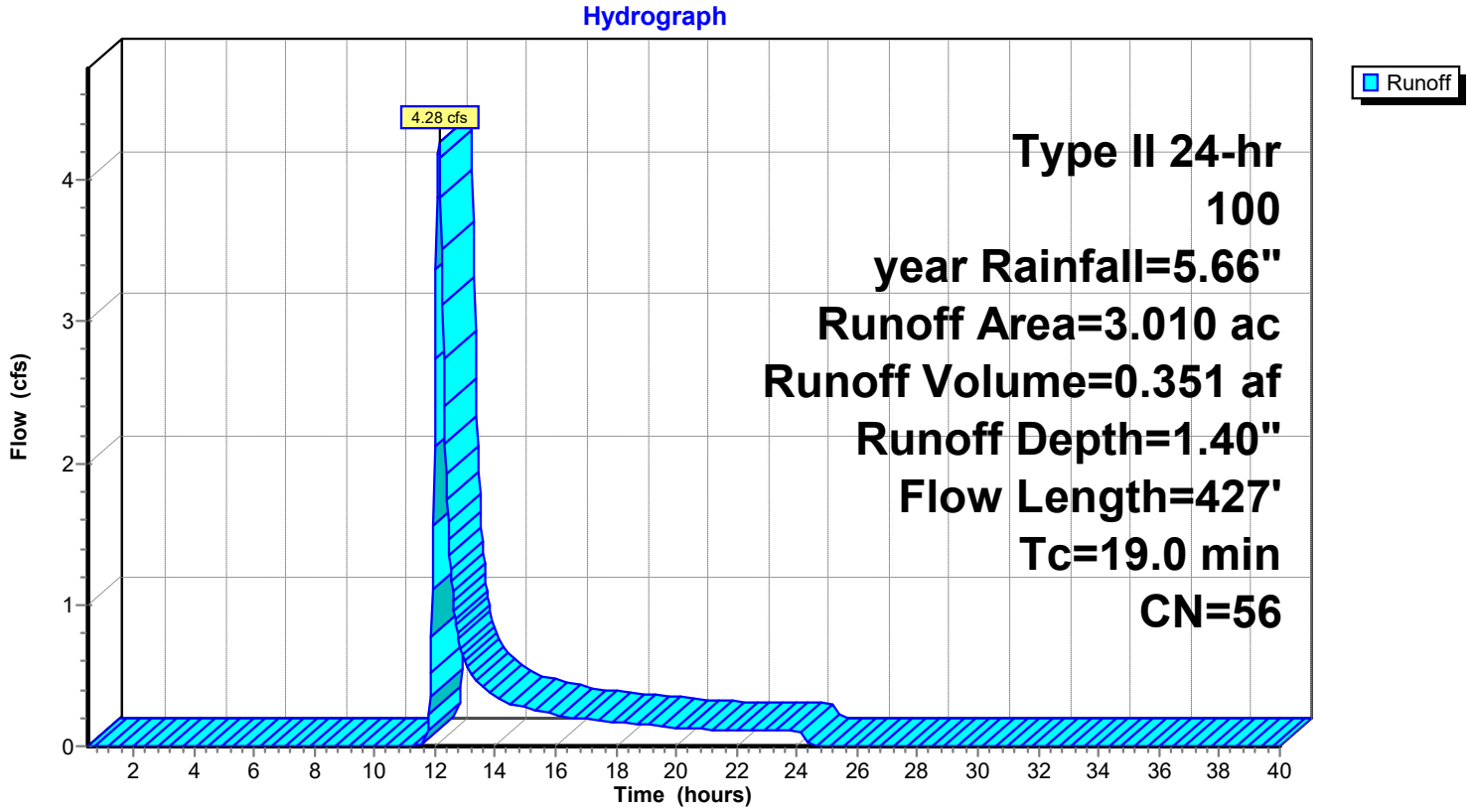
Runoff = 4.28 cfs @ 12.14 hrs, Volume= 0.351 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 100 year Rainfall=5.66"

Area (ac)	CN	Description
0.490	39	>75% Grass cover, Good, HSG A
1.040	30	Woods, Good, HSG A
1.480	79	Woods/grass comb., Good, HSG D
3.010	56	Weighted Average
3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	77	0.3200	0.19		**Sheet Flow, A-B SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 2.35"
12.3	350	0.0090	0.47		**Shallow Concentrated Flow, B-C SHALLOW CONC** Woodland Kv= 5.0 fps
19.0	427	Total			

Subcatchment 4S: BYPASS-1



Summary for Subcatchment 5S: BYPASS-2

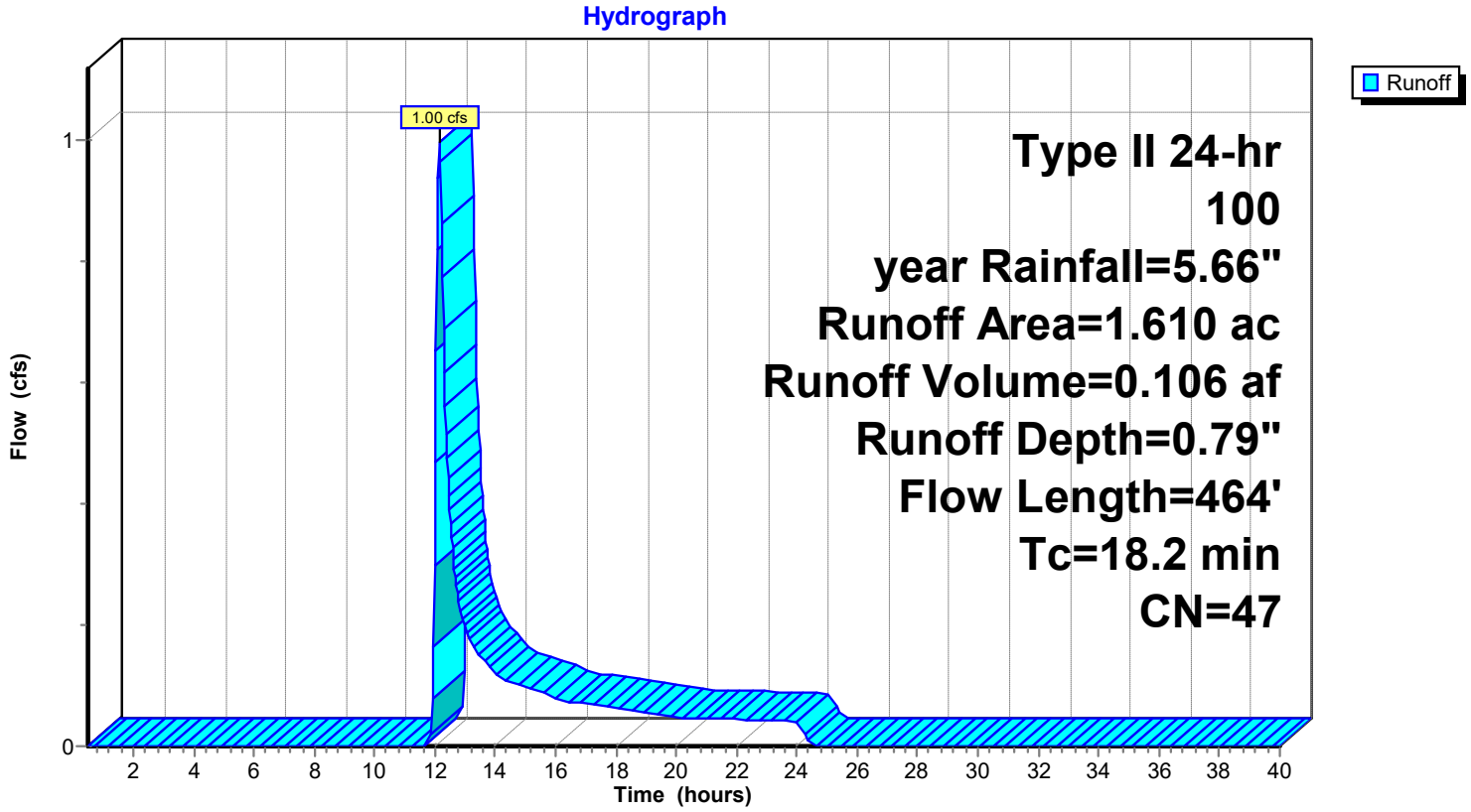
Runoff = 1.00 cfs @ 12.15 hrs, Volume= 0.106 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Type II 24-hr 100 year Rainfall=5.66"

Area (ac)	CN	Description
0.790	30	Woods, Good, HSG A
0.490	79	Woods/grass comb., Good, HSG D
0.330	39	>75% Grass cover, Good, HSG A
1.610	47	Weighted Average
1.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.2200	0.17		**Sheet Flow, A-B SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 2.35"
8.6	364	0.0200	0.71		**Shallow Concentrated Flow, B-C SHALL CONC** Woodland Kv= 5.0 fps
18.2	464	Total			

Subcatchment 5S: BYPASS-2



Summary for Reach 1R: REACH-1

Inflow Area = 0.770 ac, 49.35% Impervious, Inflow Depth = 1.09" for 100 year event
Inflow = 0.55 cfs @ 12.13 hrs, Volume= 0.070 af
Outflow = 0.55 cfs @ 12.24 hrs, Volume= 0.070 af, Atten= 1%, Lag= 6.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.83 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.36 fps, Avg. Travel Time= 6.7 min

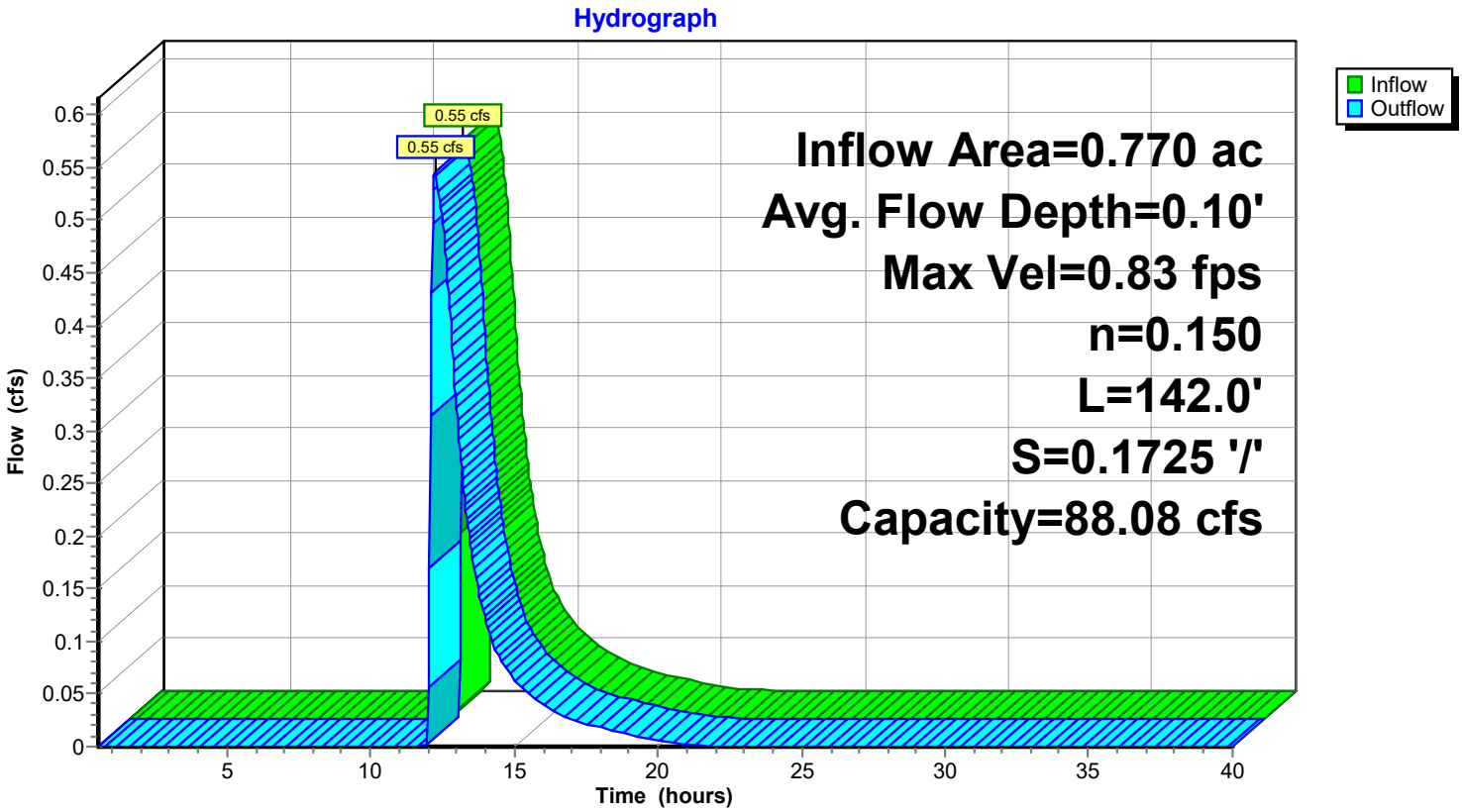
Peak Storage= 93 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 88.08 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 142.0' Slope= 0.1725 '/'
Inlet Invert= 506.50', Outlet Invert= 482.00'



‡

Reach 1R: REACH-1



Summary for Reach 2R: REACH-2

Inflow Area = 0.850 ac, 61.18% Impervious, Inflow Depth = 1.27" for 100 year event
Inflow = 3.54 cfs @ 12.02 hrs, Volume= 0.090 af
Outflow = 2.84 cfs @ 12.10 hrs, Volume= 0.090 af, Atten= 20%, Lag= 4.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 1.33 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 9.8 min

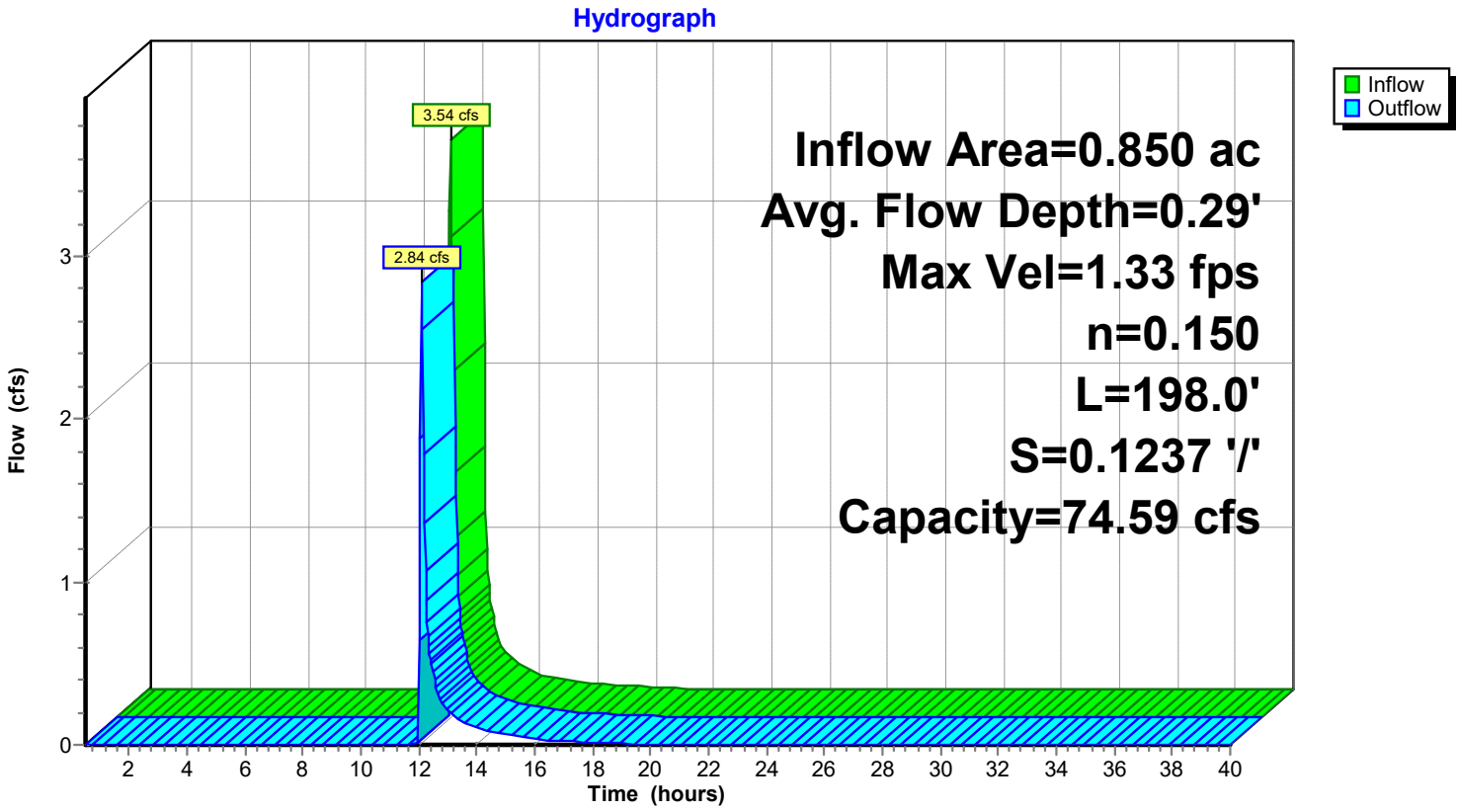
Peak Storage= 445 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 74.59 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 198.0' Slope= 0.1237 '/'
Inlet Invert= 506.50', Outlet Invert= 482.00'



‡

Reach 2R: REACH-2



Summary for Reach 3R: REACH-3

Inflow Area = 0.990 ac, 39.39% Impervious, Inflow Depth = 0.00" for 100 year event
Inflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

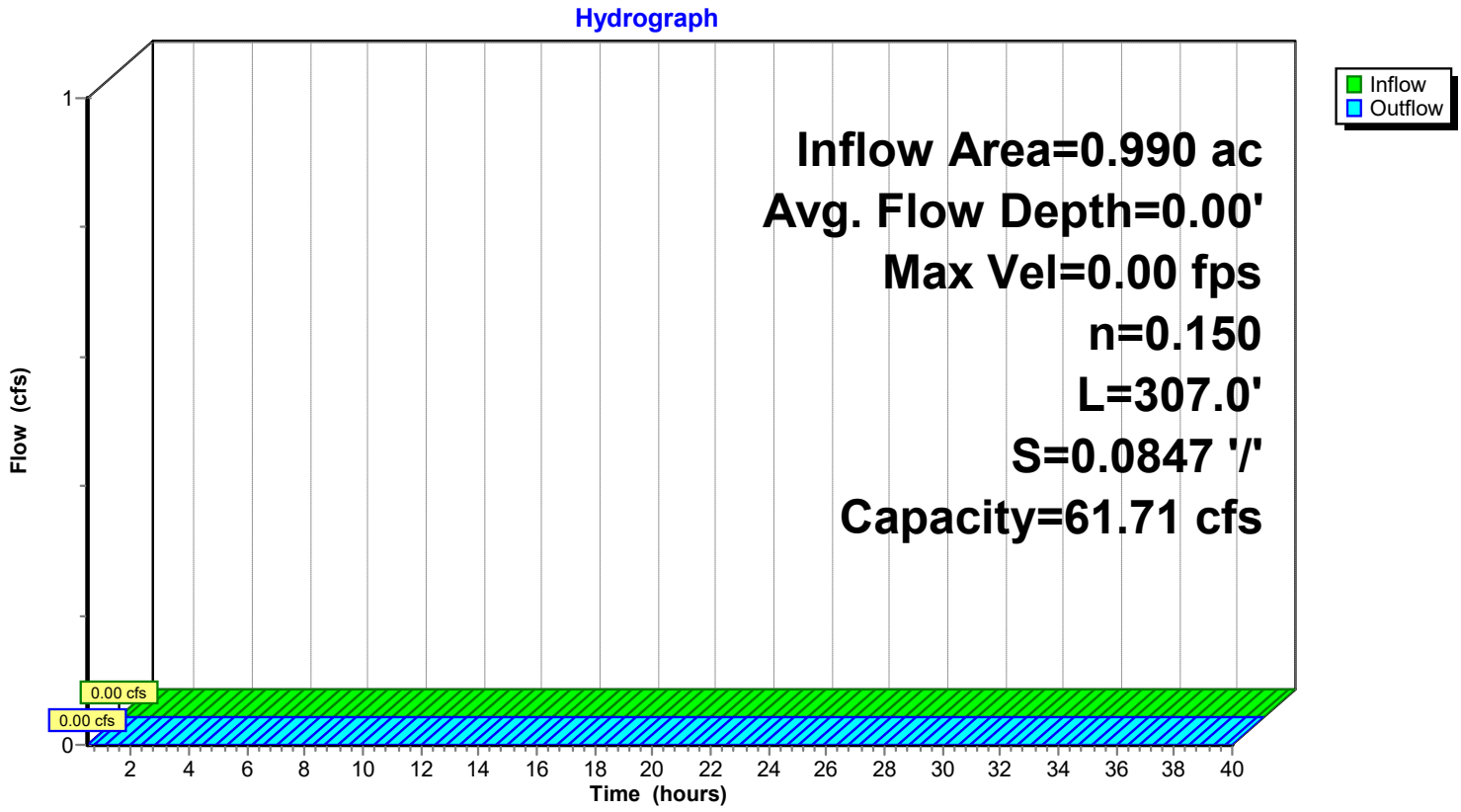
Peak Storage= 0 cf @ 0.50 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 61.71 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 307.0' Slope= 0.0847 '/'
Inlet Invert= 510.00', Outlet Invert= 484.00'



‡

Reach 3R: REACH-3



Summary for Reach 4R: REACH-4

Inflow Area = 2.600 ac, 15.00% Impervious, Inflow Depth = 0.49" for 100 year event
Inflow = 1.00 cfs @ 12.15 hrs, Volume= 0.106 af
Outflow = 0.50 cfs @ 12.78 hrs, Volume= 0.106 af, Atten= 50%, Lag= 37.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Max. Velocity= 0.26 fps, Min. Travel Time= 23.5 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 69.3 min

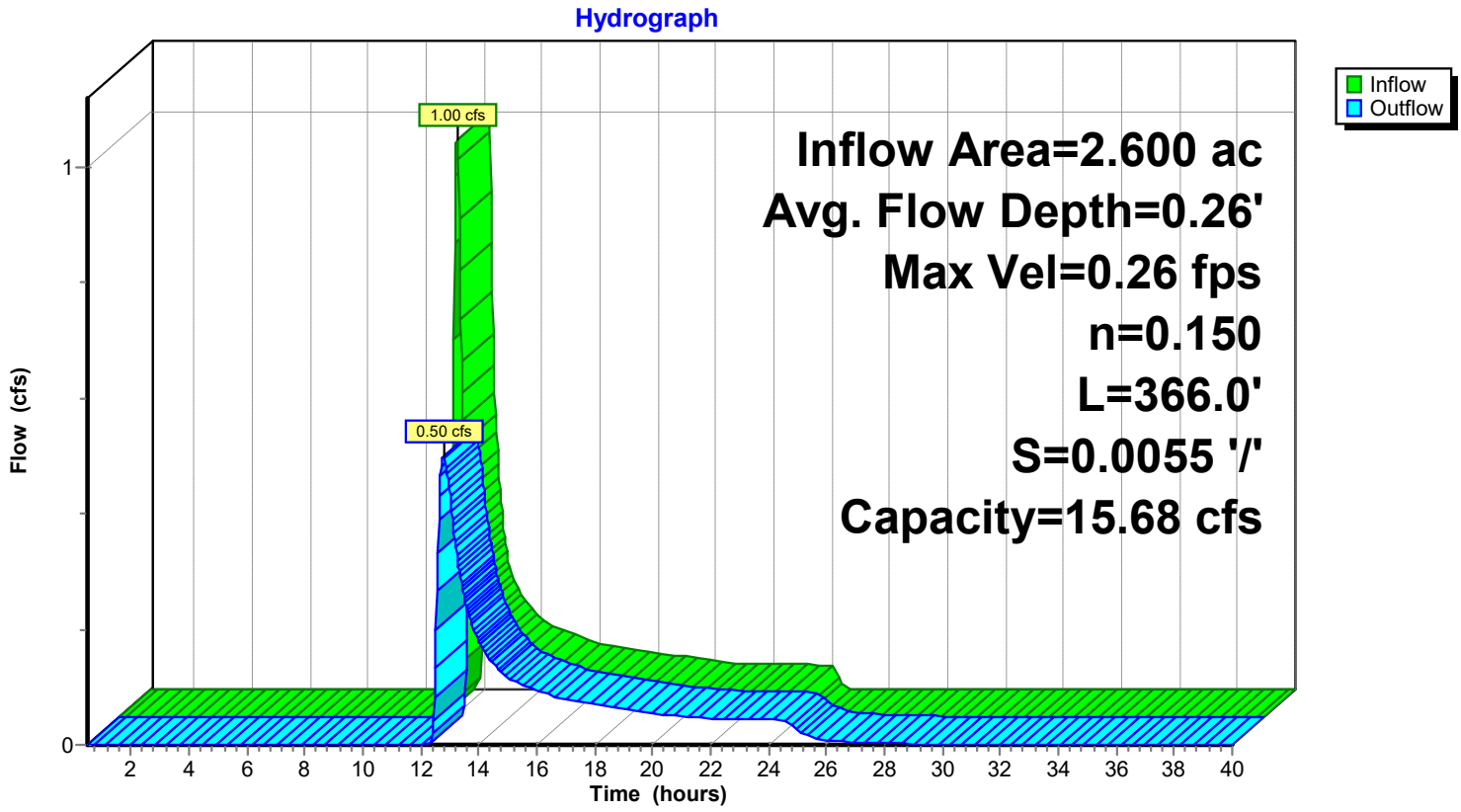
Peak Storage= 705 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.50' Flow Area= 22.5 sf, Capacity= 15.68 cfs

6.00' x 1.50' deep channel, n= 0.150 Dense willows
Side Slope Z-value= 6.0 '/' Top Width= 24.00'
Length= 366.0' Slope= 0.0055 '/'
Inlet Invert= 484.00', Outlet Invert= 482.00'



‡

Reach 4R: REACH-4



Summary for Pond 1P: BIORETENTION-1

Inflow Area = 0.770 ac, 49.35% Impervious, Inflow Depth = 2.36" for 100 year event
Inflow = 3.36 cfs @ 11.96 hrs, Volume= 0.152 af
Outflow = 0.63 cfs @ 12.13 hrs, Volume= 0.152 af, Atten= 81%, Lag= 10.1 min
Discarded = 0.08 cfs @ 12.13 hrs, Volume= 0.082 af
Primary = 0.55 cfs @ 12.13 hrs, Volume= 0.070 af
Secondary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 508.59' @ 12.13 hrs Surf.Area= 2,778 sf Storage= 2,564 cf

Plug-Flow detention time= 210.8 min calculated for 0.151 af (100% of inflow)
Center-of-Mass det. time= 211.1 min (1,052.9 - 841.8)

Volume	Invert	Avail.Storage	Storage Description
#1	507.00'	5,870 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
507.00	690	0	0
508.00	1,766	1,228	1,228
509.00	3,487	2,627	3,855
509.50	4,575	2,016	5,870

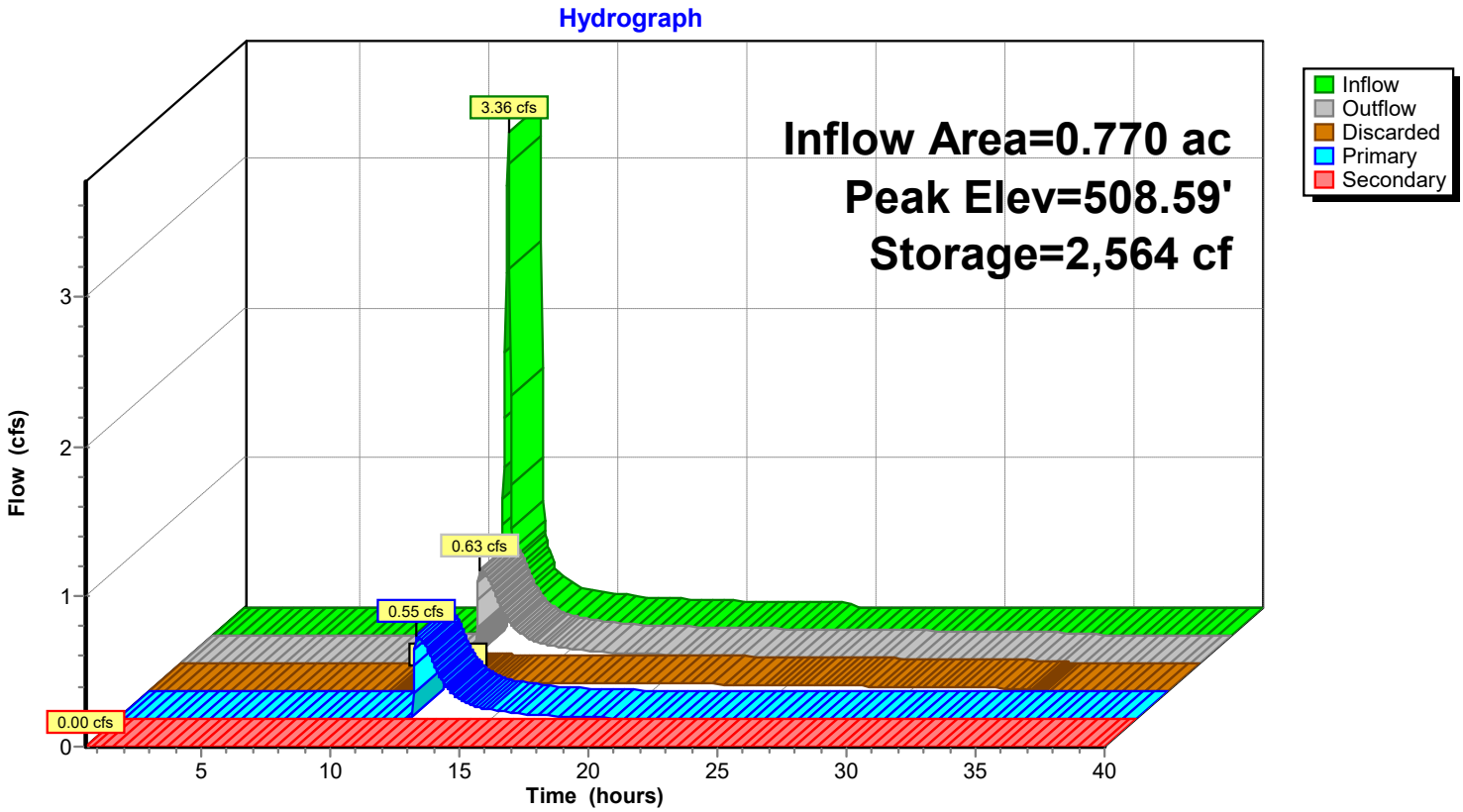
Device	Routing	Invert	Outlet Devices
#1	Secondary	509.00'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height
#2	Primary	507.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 507.00' / 506.60' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	508.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Discarded	507.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 502.00'

Discarded OutFlow Max=0.08 cfs @ 12.13 hrs HW=508.59' (Free Discharge)
└**4=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.55 cfs @ 12.13 hrs HW=508.59' (Free Discharge)
└**2=Culvert** (Passes 0.55 cfs of 3.19 cfs potential flow)
└**3=Orifice/Grate** (Orifice Controls 0.55 cfs @ 2.80 fps)

Secondary OutFlow Max=0.00 cfs @ 0.50 hrs HW=507.00' (Free Discharge)
└**1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: BIORETENTION-1



Summary for Pond 2P: BIORETENTION-2

Inflow Area = 0.850 ac, 61.18% Impervious, Inflow Depth = 2.99" for 100 year event
Inflow = 4.67 cfs @ 11.96 hrs, Volume= 0.212 af
Outflow = 3.61 cfs @ 12.02 hrs, Volume= 0.199 af, Atten= 23%, Lag= 3.4 min
Discarded = 0.07 cfs @ 12.02 hrs, Volume= 0.109 af
Primary = 3.54 cfs @ 12.02 hrs, Volume= 0.090 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 507.23' @ 12.02 hrs Surf.Area= 2,393 sf Storage= 3,233 cf

Plug-Flow detention time= 314.7 min calculated for 0.199 af (94% of inflow)
Center-of-Mass det. time= 279.8 min (1,104.8 - 825.0)

Volume	Invert	Avail.Storage	Storage Description
#1	504.00'	3,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

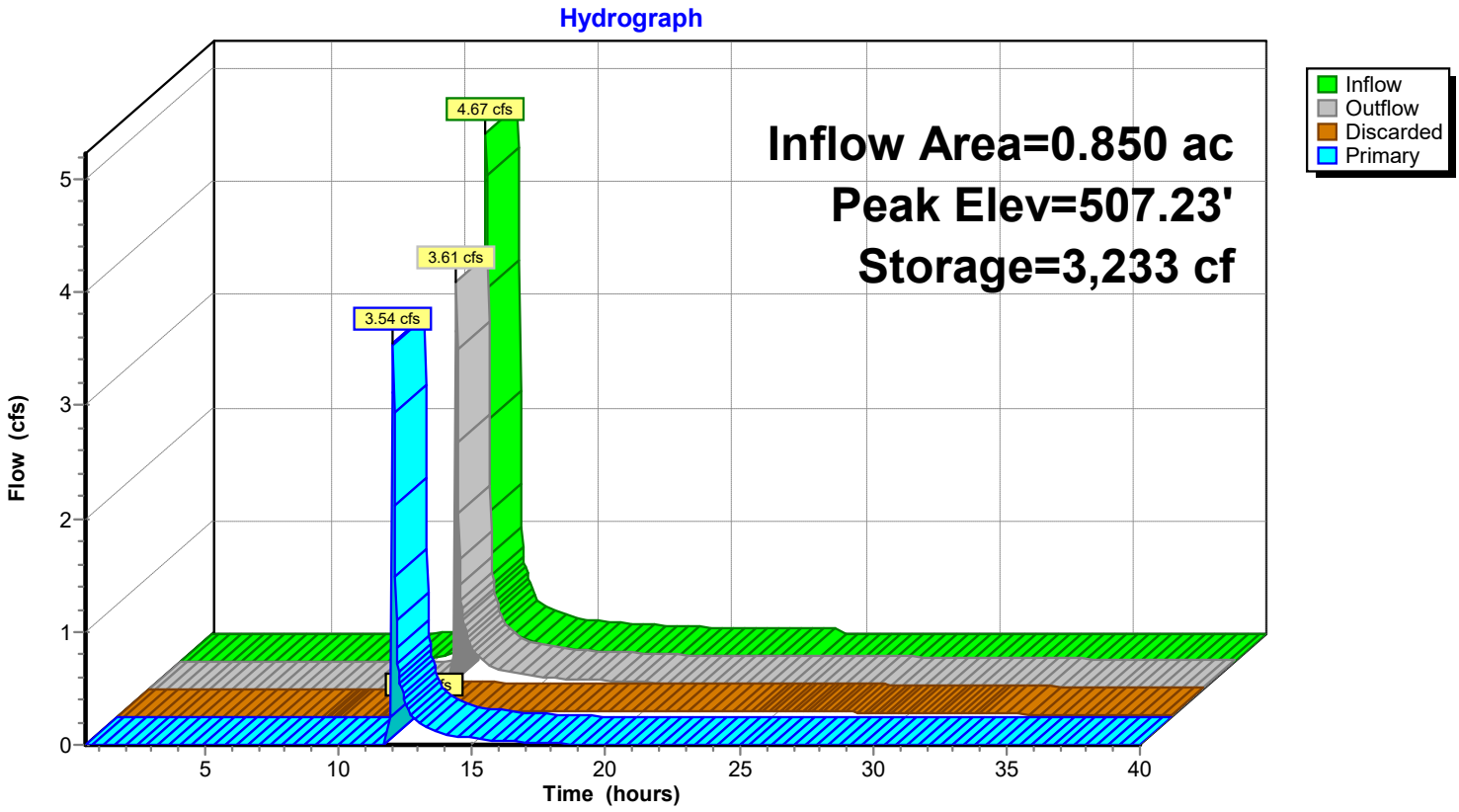
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
504.00	225	0	0
505.00	540	383	383
506.00	987	764	1,146
507.00	2,158	1,573	2,719
507.50	2,677	1,209	3,927

Device	Routing	Invert	Outlet Devices
#1	Discarded	504.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 499.00'
#2	Primary	507.00'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 3.0' Crest Height

Discarded OutFlow Max=0.07 cfs @ 12.02 hrs HW=507.22' (Free Discharge)
↑**1=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=3.50 cfs @ 12.02 hrs HW=507.22' (Free Discharge)
↑**2=Sharp-Crested Rectangular Weir** (Weir Controls 3.50 cfs @ 1.56 fps)

Pond 2P: BIORETENTION-2



Summary for Pond 3P: BIORETENTION-3

Inflow Area = 0.990 ac, 39.39% Impervious, Inflow Depth = 1.86" for 100 year event
Inflow = 3.38 cfs @ 11.97 hrs, Volume= 0.154 af
Outflow = 0.08 cfs @ 16.03 hrs, Volume= 0.142 af, Atten= 98%, Lag= 243.9 min
Discarded = 0.08 cfs @ 16.03 hrs, Volume= 0.142 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs
Peak Elev= 510.28' @ 16.03 hrs Surf.Area= 2,762 sf Storage= 3,944 cf

Plug-Flow detention time= 614.2 min calculated for 0.142 af (92% of inflow)
Center-of-Mass det. time= 572.8 min (1,429.8 - 856.9)

Volume	Invert	Avail.Storage	Storage Description
#1	508.00'	6,376 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

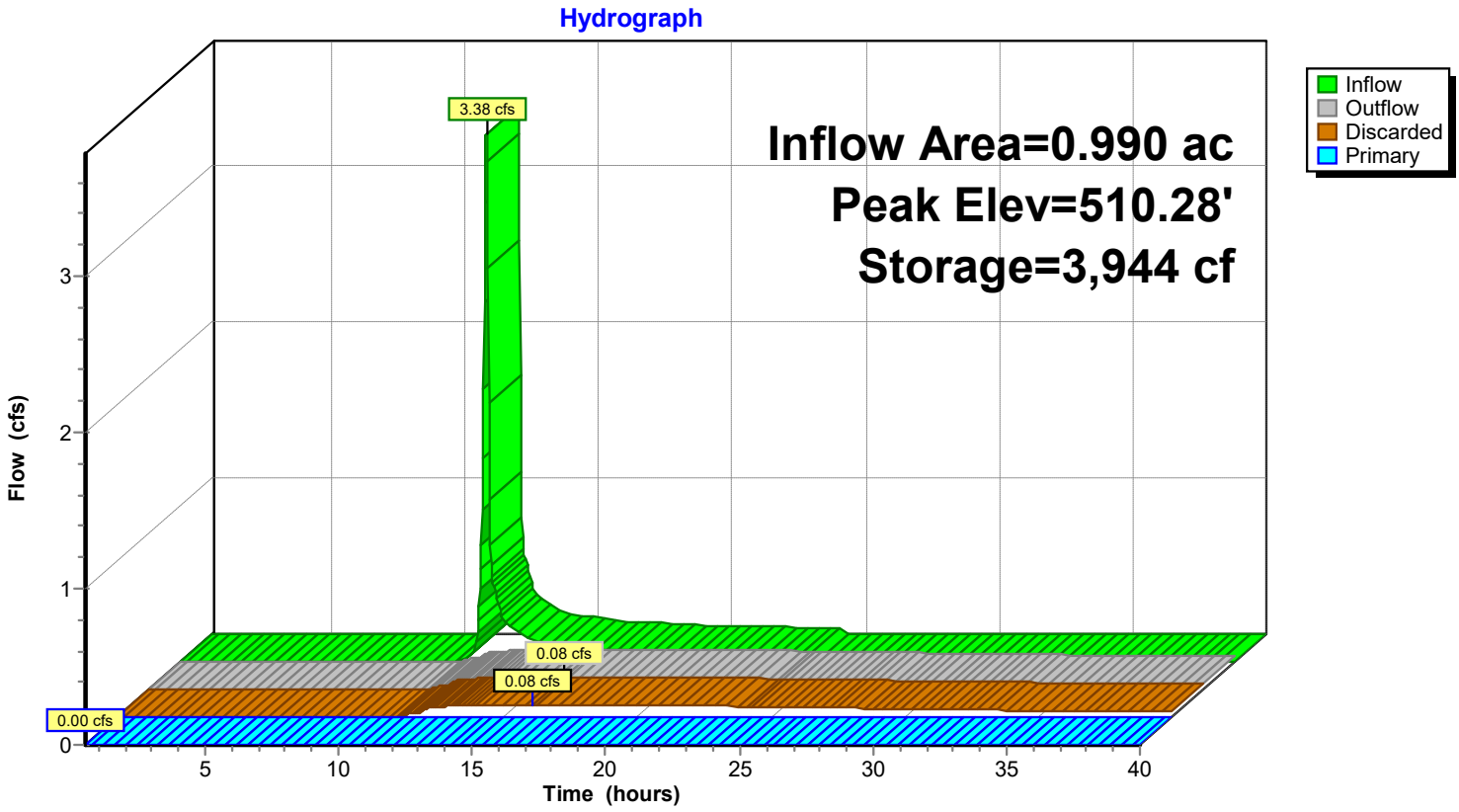
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
508.00	1,004	0	0
509.00	1,594	1,299	1,299
510.00	2,284	1,939	3,238
511.00	3,991	3,138	6,376

Device	Routing	Invert	Outlet Devices
#1	Discarded	508.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 503.00'
#2	Primary	510.50'	**10.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.5' Crest Height

Discarded OutFlow Max=0.08 cfs @ 16.03 hrs HW=510.28' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=508.00' (Free Discharge)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: BIORETENTION-3

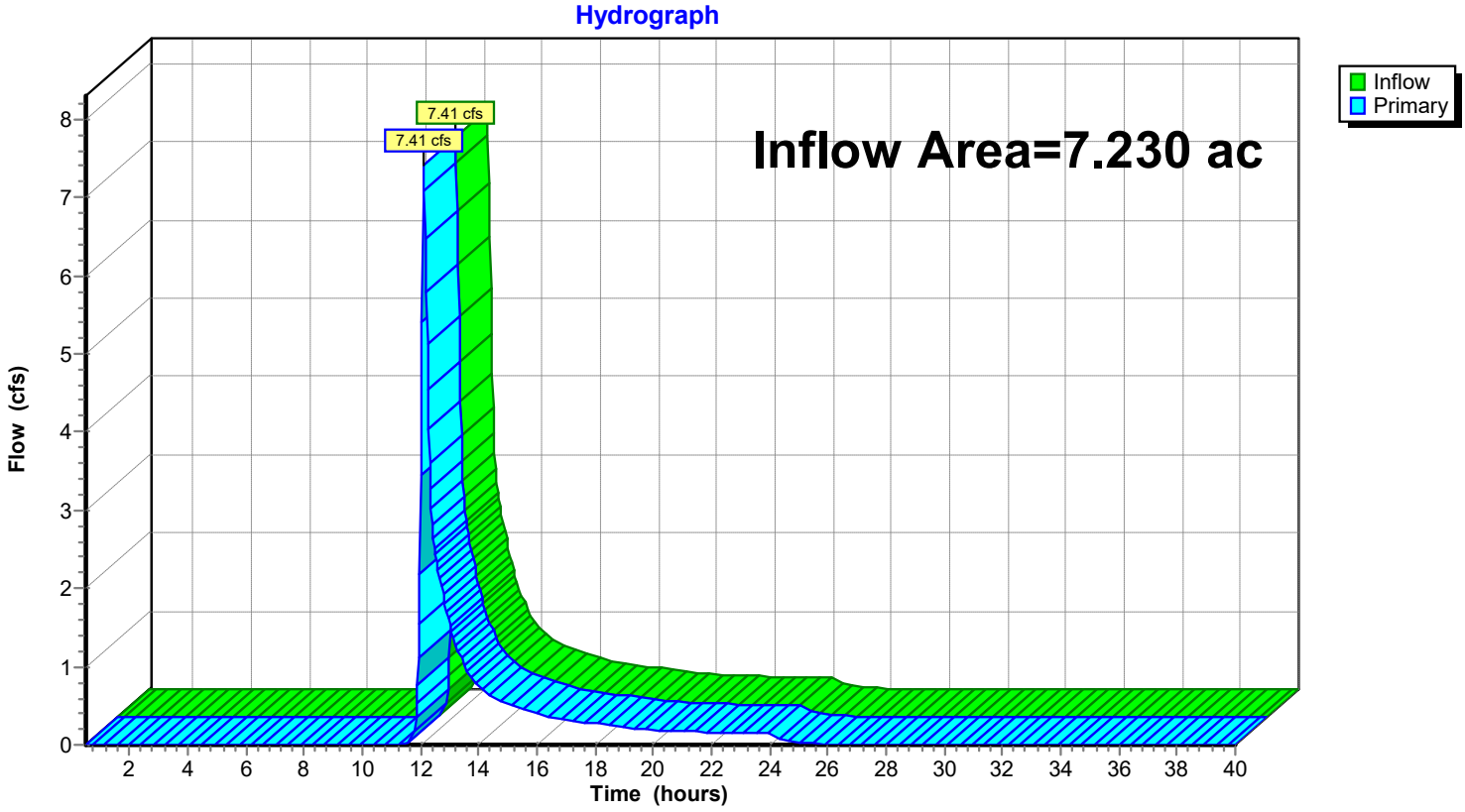


Summary for Pond 4P: Limestone Creek

Inflow Area = 7.230 ac, 17.84% Impervious, Inflow Depth = 1.02" for 100 year event
Inflow = 7.41 cfs @ 12.11 hrs, Volume= 0.617 af
Primary = 7.41 cfs @ 12.11 hrs, Volume= 0.617 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Pond 4P: Limestone Creek

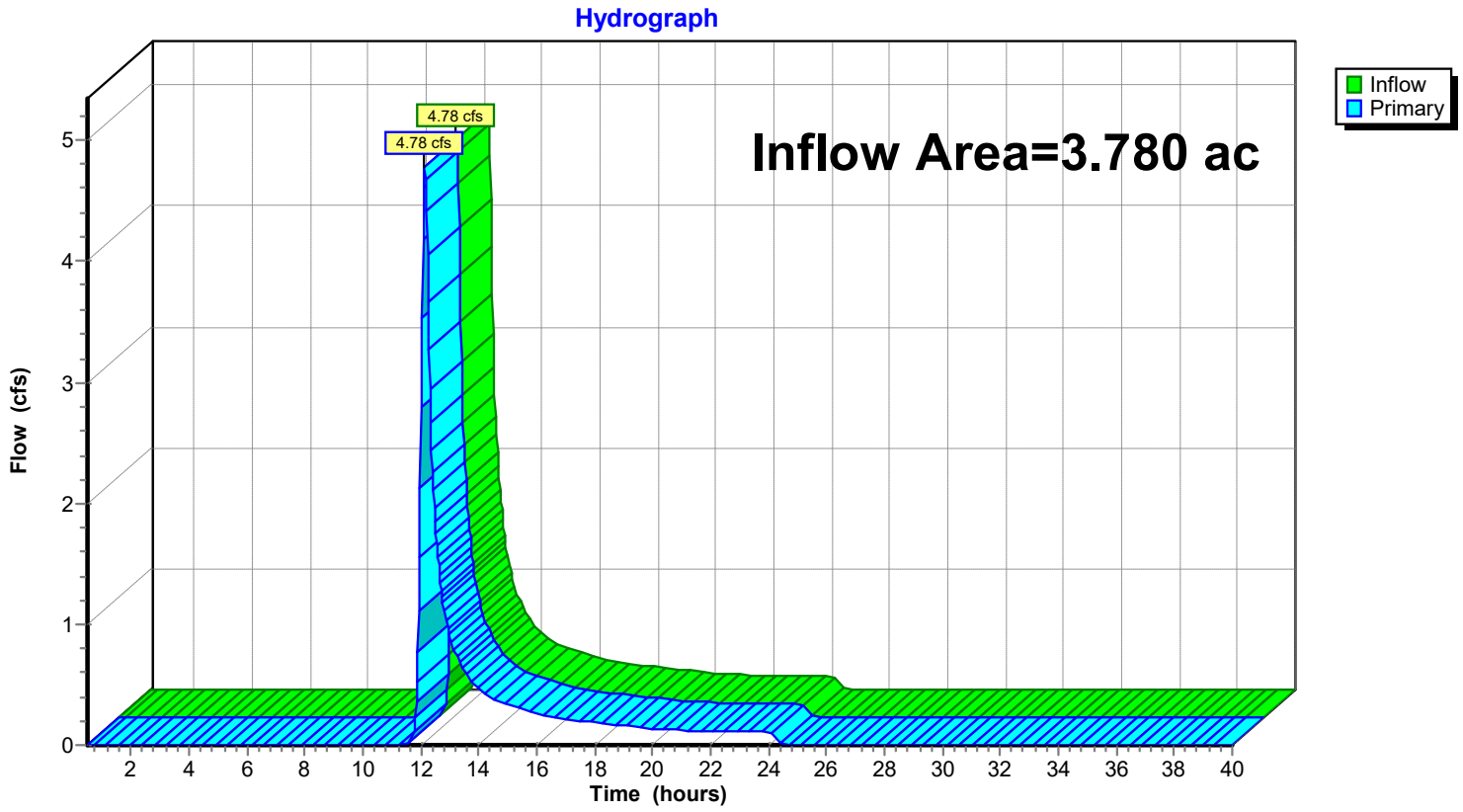


Summary for Link 1L: LINK-1

Inflow Area = 3.780 ac, 10.05% Impervious, Inflow Depth = 1.34" for 100 year event
Inflow = 4.78 cfs @ 12.14 hrs, Volume= 0.421 af
Primary = 4.78 cfs @ 12.14 hrs, Volume= 0.421 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Link 1L: LINK-1

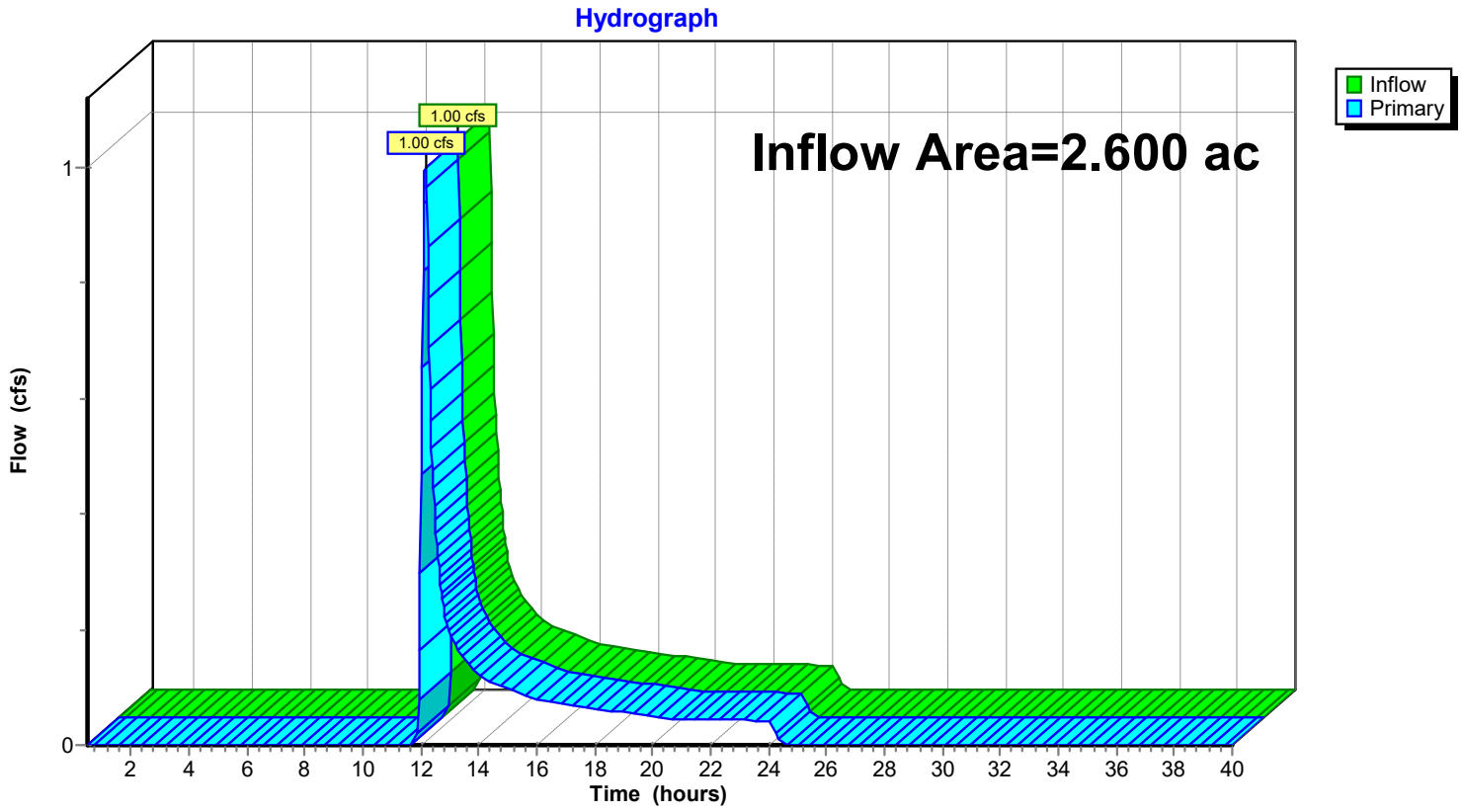


Summary for Link 2L: LINK-2

Inflow Area = 2.600 ac, 15.00% Impervious, Inflow Depth = 0.49" for 100 year event
Inflow = 1.00 cfs @ 12.15 hrs, Volume= 0.106 af
Primary = 1.00 cfs @ 12.15 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-40.01 hrs, dt= 0.03 hrs

Link 2L: LINK-2



ATTACHMENT K

WQV, RRV, AND CPV CALCULATIONS

PROJECT NAME: *FREEMAN ESTATES HOUSING - MANLIUS, NY* **PROJECT NUMBER:** *31.0180349.00*
CALCULATED BY: *JFF* **CHK'D BY:** *EKR* **DATE:** 12/16/2020

Notes: Developed Conditions (+/- acreas)
Soil Types: A & D SOILS

Water Quality Volume:

WQ_v: $\frac{[(P)(R_v)(A)]}{12}$

WQ_v: $\frac{1.301}{12}$

A=	2.61	acres
P=	1	
I =	0.50	percent of impervious surface (expressed as a percentage)
R_v^*=	0.50	

* R_v= 0.05 + [0.009(I)(100)]

WQv req'd: **0.11**

PROJECT NAME: *FREEMAN ESTATES HOUSING - MANLIUS, NY* **PROJECT NUMBER:** *31.0180349.00*
CALCULATED BY: *JFF* **CHK'D BY:** *EKR* **DATE:** 12/16/2020

Notes: Developed Conditions (+/- acreas)
Soil Types: A & D SOILS

Channel Protection Volume:

$$CP_v: \frac{(V_r)(V_s/V_r)(A)]}{12}$$

$$CP_v: \frac{0.33}{12}$$

CP_v req'd: 0.03 ac-ft

1191 ft^3

A=	2.61	
I_a=	0.90	(I_a=200/CN-2) CN= 69
P=	2.01	(1-yr 24 hr rainfall)
V_r=	0.20	(1-yr cumulative runoff in inches from HydroCAD)
I_a/P=	0.45	
q_u=	450	(Exhibit 4-II in TR-55 manual)
q_o/q_i=	0.04	(Fig. B-1 from NYSSMDM)
V_s/V_r=	$0.683-1.43(qo/qi)+1.64(qo/qi)^2-0.804(qo/qi)^3$	
V_s/V_r=	0.628	

PROJECT NAME: *FREEMAN ESTATES HOUSING - MANLIUS, NY* **PROJECT NUMBER:** *31.0180349.00*
CALCULATED BY: *JFF* **CHK'D BY:** *EKR* **DATE:** 12/16/2020

11. SOURCE CONTROL WQv TREATMENT PRACTICES WORKSHEET - (complete for all applicable practices and soil types).

Standard Practices (used as source control)				**Allowable Runoff Reduction Volume (RRv)**
Infiltration (A soils only) (maximum 1-20 acre DA)				
DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV =	WQv = _____ (ac-ft)	90% of WQv = _____ ac-ft A soils only
Bioretention D-1			WQv = 0.032 (ac-ft)	80% of WQv = 0.077 ac-ft A/B soils only OR
DA tributary to practice: 0.77 acre(s)	AI = 0.38 acre(s)	RV = 0.49	WQv Provided = 0.096 (ac-ft)	40% of WQv = ____ ac-ft C/D soils
Bioretention D-2			WQv = 0.043 (ac-ft)	80% of WQv = 0.047 ac-ft A/B soils only OR
DA tributary to practice: 0.85 acre(s)	AI = 0.52 acre(s)	RV = 0.60	WQv Provided = 0.059 (ac-ft)	40% of WQv = ____ ac-ft C/D soils
Bioretention D-3			WQv = 0.033 (ac-ft)	80% of WQv = 0.050 ac-ft A/B soils only OR
DA tributary to practice: 0.77 acre(s)	AI = 0.39 acre(s)	RV = 0.40	WQv Provided = 0.063 (ac-ft)	40% of WQv = ____ ac-ft C/D soils
Dry Swale (maximum 5-acre DA)				40% of WQv = _____ ac-ft A/B soils only OR
DA tributary to practice: ____ acre(s)	AI = ___ acre(s)	RV =	WQv = ___ (ac-ft)	20% of WQv = ____ ac-ft C/D soils

Green Infrastructure Practices

Vegetated open swale (maximum 5-acre DA				20% of WQv = _____ ac-ft A/B soils only OR
DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV =	WQv = _____ (ac-ft)	10% of WQv = _____ ac-ft C/D soils
Green Roof				
Roof area = _____ acre(s)		RV = 0.95	WQv = _____ (ac-ft)	100% of WQv = _____ ac-ft
Rain Garden (maximum 1,000 square foot roof)				
Roof area = _____ acre(s)		RV = 0.95	WQv = _____ (ac-ft)	100% of WQv = _____ ac-ft
Stormwater planters (maximum 15,000-s.f. DA				
DA tributary to practice: _____ acre(s)	AI = ___ acre(s)	RV =	WQv = _____ (ac-ft)	100% of WQv = _____ ac-ft
Cisterns/ rain barrels				
Roof area = _____ acre(s)		RV = 0.95	WQv = _____ (ac-ft)	100% of WQv = _____ ac-ft
Porous pavement (A/B soils only)				
DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV =	WQv = _____ (ac-ft)	100% of WQv = _____ ac-ft A/B soils only
11a. Subtotal DA tributary to Source Control WQv practices = 2.61 (acres)				
11b. Subtotal Source Control WQv Treatment Volume = 0.22 (ac-ft)				
11c. Subtotal Runoff Reduction Volume (RRv): 0.17				**Subtotal (Rv) RRv = 0.17 (ac-ft)**

STORMWATER MANAGEMENT
PLANNING AND PRACTICE SELECTION WORKSHEET

PROJECT: FREEMAN ESTATES HOUSING - MANLIUS, NY **DATE:** 12/16/2020

Watershed Drainage Area	Impervious Area (Acres)	
DA: 2.61	**AI:** 1.29	**90% Rain: (P)=** 1

PLANNING

1. Plan to preserve, avoid and minimize (underline all concepts utilized):

***** Preserve undisturbed, natural buffer, and critical environment areas

***** Employ open space, conservation, and clustering site design techniques

***** Avoid developing in environmentally sensitive areas: floodplain, steep slopes, habitat, ecosystems, bedrock, wetlands, shorelines, shallow groundwater, impervious soils, unstable soils

WATER QUALITY VOLUME **(before runoff reduction)**

2. Calculate water quality volume (WQv): WQv = (P * A * Rv)/12

Watershed DA (acres)=	2.61
Impervious area (AI) =	1.29
Rv=	0.49

Original WQv (Ac-Ft)= 0.11

3. Minimum RRv requirements (when 100% WQv reduction cannot be achieved)

RRv = (P) * (Rv) * (S) * (AI) / 12

With S = **0.55** for A soils; **0.40** for B soils; **0.30** for C soils; **0.20** for D soils OR Weighted HSG average in DA

S = 0.55 (site is type A & D soils)

Minimum required RRv (Ac-Ft) = 0.056

AREA REDUCTION PRACTICES

4. **Incorporate area reduction practices (*complete for all applicable practices):***

* Conservation of natural areas (min. 10,000 sq. ft.):	Contributing AI (acres) =		Area (Ac.) =
* Riparian buffers/filter strips (max length: 150ft):	Contributing AI (acres) =		Area (Ac.) =
* Tree Planting/tree preservation (Max 100 s.f./tree):	Contributing AI (acres) =		Area (Ac.) =

Total Area Reduction.....	0.000
Total Impervious Area Reduction.....	0.000

5. Subtract total area reduction from DA:

Remaining drainage area: (#2 area - #4 area).....	2.61
Remaining impervious area: (#2 AI - #4 AI).....	1.29

6. Incorporate impervious area disconnection:

Total disconnected impervious area (now considered pervious for RV calcs.) Area (Ac.) = 0

GZA GeoEnvironmental of NY
6296 Fly Road
East Syracuse, New York 13057

STORMWATER MANAGEMENT
PLANNING AND PRACTICE SELECTION WORKSHEET

7. Recalculate WQv for site area remaining after area reductions and impervious disconnections:

Remaining DA (acres) =	2.61	Remaining AI (acres)=	1.29	Rv=	0.49

Reduced WQv (Ac-ft).....	0.11
Min Runoff Reduction Volume (Ac-ft).....	0.056

SOURCE CONTROL WQv TREATMENT PRACTICES

(From attached worksheet)

8a. Subtotal DA tributary to Source Control treatment practices (Acres).....	2.61
8b. Subtotal AI tributary to Source Control treatment practices (Acres).....	1.29
8c. Subtotal Source Control WQv Treatment Volume (Ac-Ft).....	0.22
8d. Subtotal Runoff Reduction Volume (RRv) (Ac-Ft).....	0.17

TOTAL RUNOFF REDUCTION VOLUME (RRv)

9. Total RRv provided (Ac-Ft).....	0.17

10. Is RRv ≥ original WQv ? **Yes:_____** **No:**__X__ If Yes, skip to #12

11. Is RRv ≥ minimum RRv? **Yes:**___X___ **No:_____**

12. Total drainage area treated with runoff reduction/source control practices (Acres)	2.61

(Area reduction (from #4) + total DA tributary to source control (#8a.)

STANDARD WQv TREATMENT

13. Provide treatment for any remaining untreated watershed DA with standard practices:

Remaining untreated DA = (Watershed DA(#2)) - (Treated DA(#12))(Acres).....	0.00
Remaining impervious area = Total AI (#2)) - Treated AI (#4 + #6 + #8).....	0.00
Rv for Standard Practice.....	0.000
WQv required in a Standard Practice (Ac-Ft)	0.00

GZA GeoEnvironmental of NY
6296 Fly Road
East Syracuse, New York 13057

Filter Bed Sizing Work Sheet

Project Name: FREEMAN ESTATES HOUSING Project Number: 31.0180349.00

Calculated by: JFF Checked by: EKR Date: 12/16/2020

DETERMINE REQUIRED SIZE OF BIO RETENTION FILTER PER HOUSING UNIT:

Per NYSSWDM: $AF = (WQv)(df) \div [(K)(hf + df)(tf)]$

Where: AF = Required surface area of filter bed (ft^2)

D-1 WQv = 0.032 ac-ft = 1394 ft^3

df = Filter bed depth (ft.) = 2.5ft

K = Coeff. Of permeability of filter media = 0.5 ft/ day

hf = Avg. height of water above filter = 0.5 ft

tf = Filter bed drain time = 2 days

AF = (1394 ft^3)(2.5ft) ÷ [(0.5ft/day)(0.5+2.5ft)(2days)]

Required area = 1162 ft^2

Provided filter area = 3500 ft^2 **(WQv Provided = 0.096 ac-ft)**

D-2 WQv = 0.043 ac-ft = 1873 ft^3

df = Filter bed depth (ft.) = 2.5ft

K = Coeff. Of permeability of filter media = 0.5 ft/ day

hf = Avg. height of water above filter = 0.5 ft

tf = Filter bed drain time = 2 days

AF = (1873 ft^3)(2.5ft) ÷ [(0.5ft/day)(0.5+2.5ft)(2days)]

Required area = 1561 ft^2

Provided filter area = 2150 ft^2 **(WQv Provided = 0.059 ac-ft)**

D-3 WQv = 0.033 ac-ft = 1438 ft^3

df = Filter bed depth (ft.) = 2.5ft

K = Coeff. Of permeability of filter media = 0.5 ft/ day

hf = Avg. height of water above filter = 0.5 ft

tf = Filter bed drain time = 2 days

AF = (1438 ft^3)(2.5ft) ÷ [(0.5ft/day)(0.5+2.5ft)(2days)]

Required area = 1198 ft^2

Provided filter area = 2300 ft^2 **(WQv Provided = 0.063 ac-ft)**

ATTACHMENT L

SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES (GP-0-20-001)

SEE GP-0-20-001AT: HTTP://WWW.DEC.NY.GOV/DOCS/WATER_PDF/GP020001.PDF

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

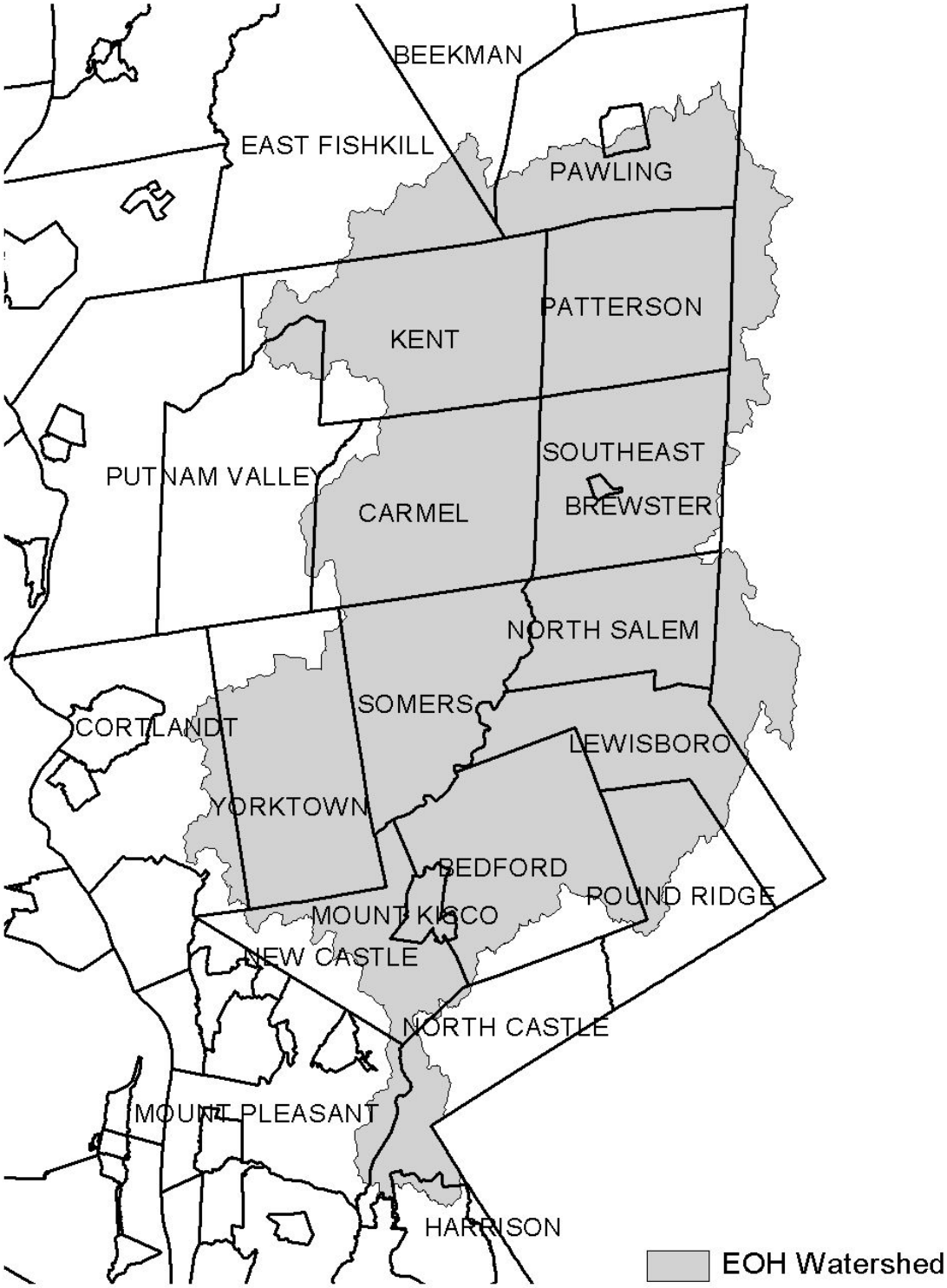


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

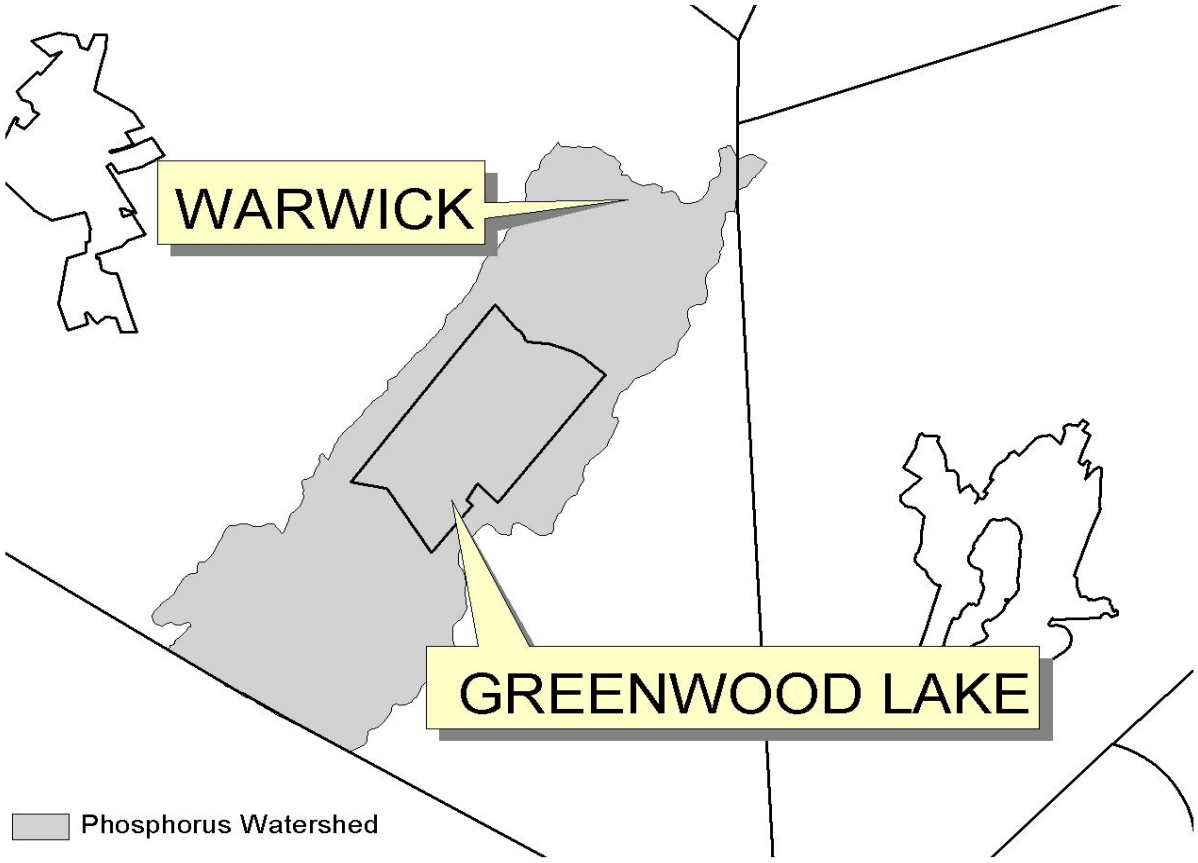


Figure 4 - Oscawana Lake Watershed

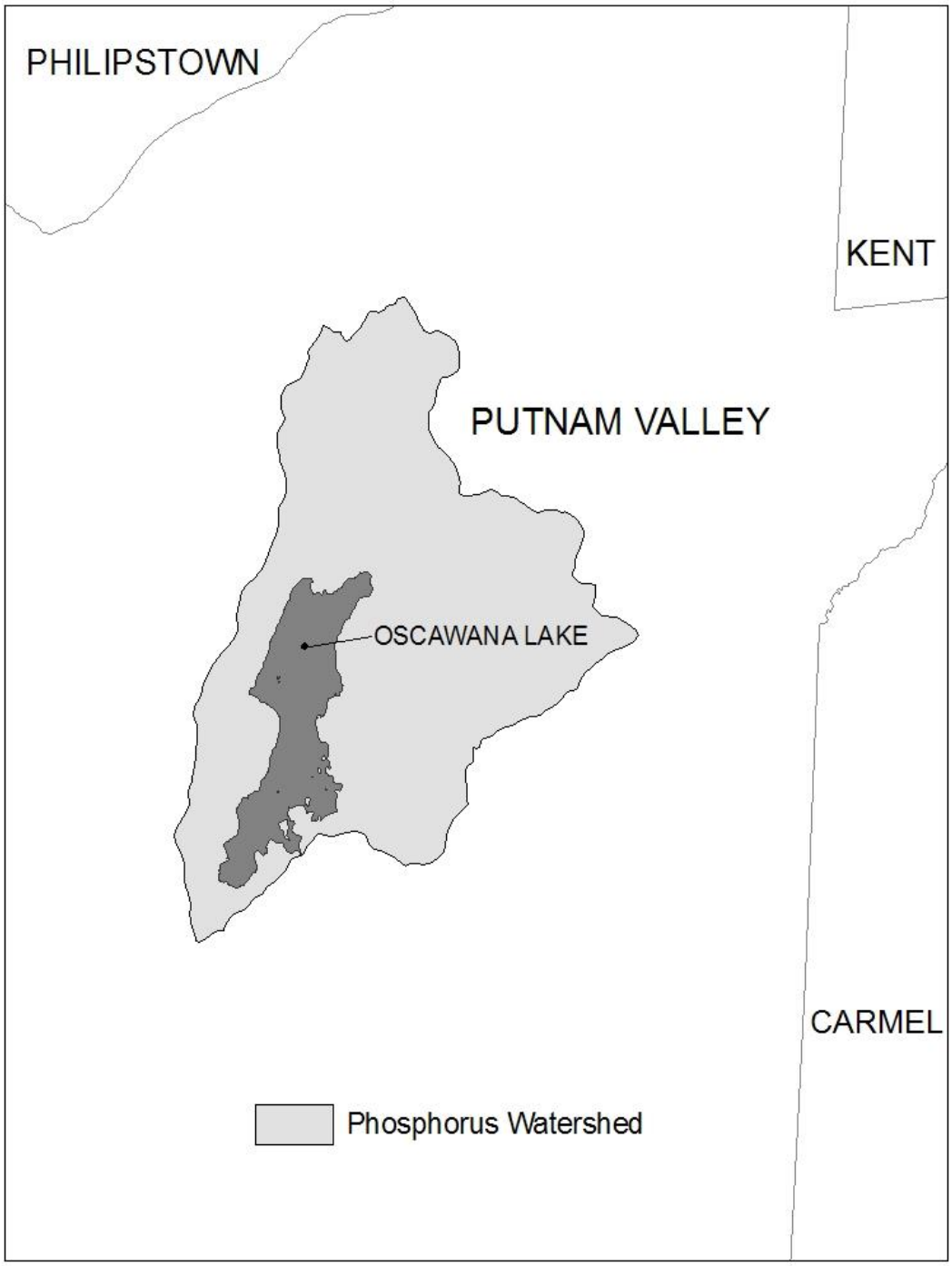
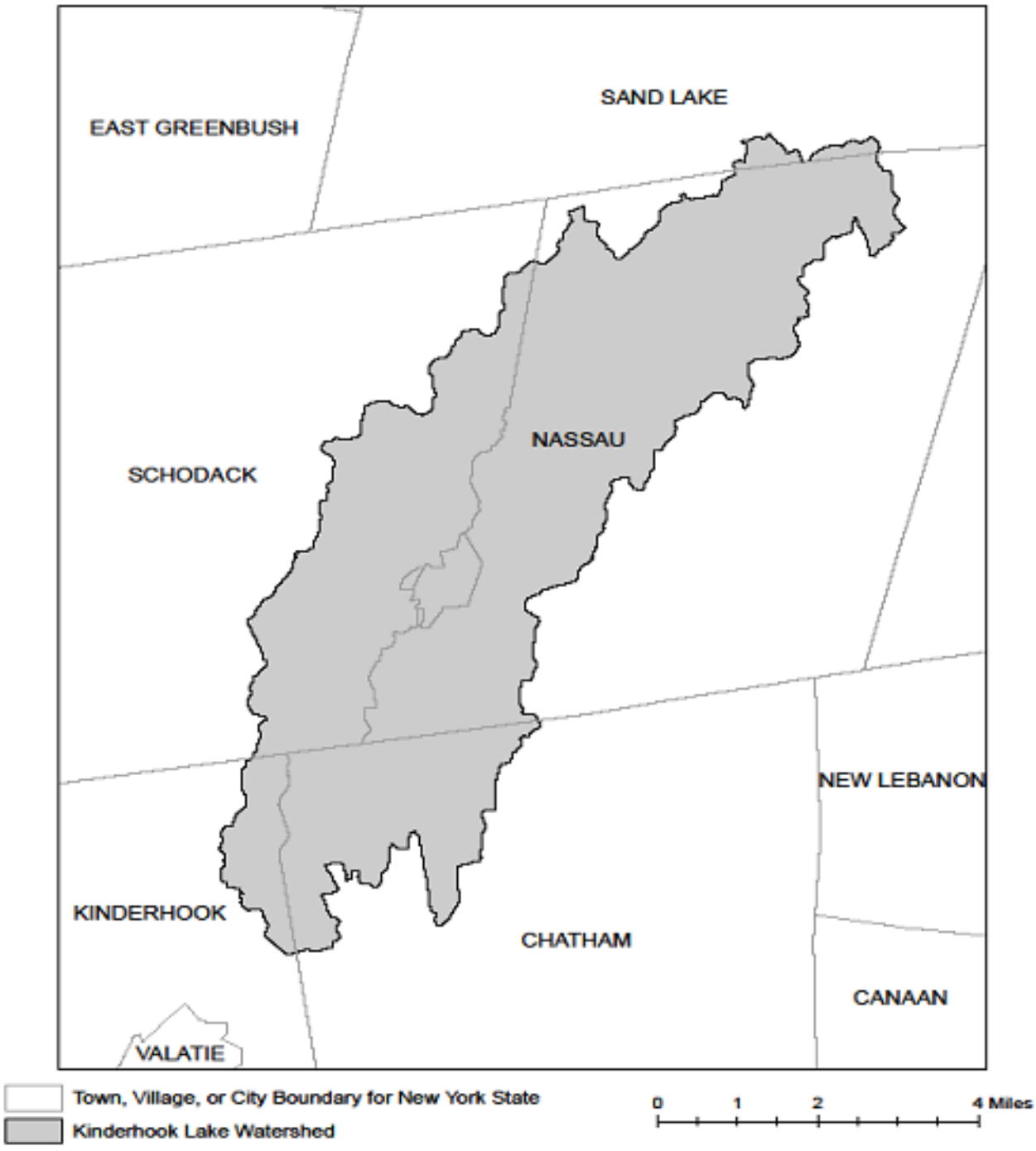


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

ATTACHMENT M
NOTICE OF INTENT (NOI)

NOI for coverage under Stormwater General Permit for Construction Activity

Alternate ID Freeman Estates Subdivision **Submission** HP5-20TZ-EX9YA **Revision** 1 **Form Version** 1.28

Review

This step allows you to review the form to confirm the form is populated completely and accurately, prior to certification and submission.

Please note: Any work you perform filling out a form will not be accessible by NYSDEC staff or the public until you actually submit the form in the 'Certify & Submit' step.

OWNER/OPERATOR INFORMATION

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
Brolex Properties, LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Jacobson

Owner/Operator Contact Person First Name
Brandon

Owner/Operator Mailing Address
5912 North Burdick Street

City
East Syracuse

State
NY

Zip
13057

Phone
315-559-0556

Email
brandon@banyanbrokerage.com

Federal Tax ID

None Specified

PROJECT LOCATION

Project/Site Name
Freeman Estates Subdivision

Street Address (Not P.O. Box)
7430 Highbridge Road

Side of Street
South

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Manlius

State
NY

Zip
13066

County
ONONDAGA

DEC Region
7

Name of Nearest Cross Street
Sweet Road

Distance to Nearest Cross Street (Feet)
0

Project In Relation to Cross Street
East

Tax Map Numbers Section-Block-Parcel
101.-02-02.1

Tax Map Numbers
None Specified

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates

Latitude	Longitude
43.01314900618204	-76.00979418968463

PROJECT DETAILS

2. What is the nature of this project?
New Construction

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Forest

Post-Development Future Land Use
Single Family Subdivision (Please answer 3a)

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
12

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
23.72

Total Area to be Disturbed (acres)
3.5

Existing Impervious Area to be Disturbed (acres)
0.44

Future Impervious Area Within Disturbed Area (acres)
1.29

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
25.2

B (%)
1.5

C (%)
0

D (%)
66.8

7. Is this a phased project?
No

8. Enter the planned start and end dates of the disturbance activities.

Start Date
2/1/2021

End Date
10/29/2021

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Limestone Creek

9a. Type of waterbody identified in question 9?
Stream/Creek On Site

Other Waterbody Type Off Site Description
None Specified

9b. If "wetland" was selected in 9A, how was the wetland identified?
None Specified

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey?
No

If Yes, what is the acreage to be disturbed?
None Specified

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?
None Specified

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

REQUIRED SWPPP COMPONENTS

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
GZA GeoEnvironmental

Contact Name (Last, Space, First)
Frazee, John

Mailing Address
6296 FLy Road

City
East Syracuse

State
New York

Zip
13057

Phone
3158001800

Email
john.frazee@gza.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document

Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification

No files uploaded

Comment
None Specified

At least one file is required.

EROSION & SEDIMENT CONTROL CRITERIA

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
Silt Fence
Stabilized Construction Entrance
Storm Drain Inlet Protection

Biotechnical
None

Vegetative Measures
Seeding
Mulching

Permanent Structural
None

Other
None Specified

POST-CONSTRUCTION CRITERIA

*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Preservation of Undisturbed Area
Preservation of Buffers
Reduction of Clearing and Grading
Locating Development in Less Sensitive Areas
Cul-de-sac Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.11

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.17

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
Yes

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
None Specified

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
None Specified

If Yes, go to question 33.

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
None Specified

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
None Specified

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
None Specified

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)
0.03

CPv Provided (acre-feet)
None Specified

36a. The need to provide channel protection has been waived because:
Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
0.89

Post-Development (CFS)
0.57

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
8.51

Post-Development (CFS)
7.41

37a. The need to meet the Qp and Qf criteria has been waived because:
None Specified

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
OWNER

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
None Specified

POST-CONSTRUCTION SMP IDENTIFICATION

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
None Specified

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
None Specified

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
None Specified

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
None Specified

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
None Specified

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
None Specified

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)

None Specified

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
None Specified

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
None Specified

Total Contributing Impervious Acres for Rain Garden (RR-6)
None Specified

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
None Specified

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
None Specified

Total Contributing Impervious Acres for Porous Pavement (RR-9)
None Specified

Total Contributing Impervious Acres for Green Roof (RR-10)
None Specified

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
None Specified

Total Contributing Impervious Acres for Infiltration Basin (I-2)
None Specified

Total Contributing Impervious Acres for Dry Well (I-3)
None Specified

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
None Specified

Total Contributing Impervious Acres for Bioretention (F-5)
1.29

Total Contributing Impervious Acres for Dry Swale (O-1)
None Specified

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
None Specified

Total Contributing Impervious Acres for Wet Pond (P-2)
None Specified

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
None Specified

Total Contributing Impervious Acres for Multiple Pond System (P-4)
None Specified

Total Contributing Impervious Acres for Pocket Pond (P-5)
None Specified

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
None Specified

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
None Specified

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
None Specified

Total Contributing Impervious Acres for Organic Filter (F-4)
None Specified

Total Contributing Impervious Acres for Shallow Wetland (W-1)
None Specified

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
None Specified

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
None Specified

Total Contributing Impervious Acres for Pocket Wetland (W-4)
None Specified

Total Contributing Impervious Acres for Wet Swale (O-2)
None Specified

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
None Specified

Total Contributing Impervious Area for Wet Vault
None Specified

Total Contributing Impervious Area for Media Filter
None Specified

"Other" Alternative SMP?
None Specified

Total Contributing Impervious Area for "Other"
None Specified

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

Manufacturer of Alternative SMP
None Specified

Name of Alternative SMP
None Specified

OTHER PERMITS

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
None Specified

If Other, then identify
None Specified

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
None Specified

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
None Specified

MS4 SWPPP ACCEPTANCE

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
None Specified

MS4 SWPPP Acceptance Form Download

Download form from the link below. Complete, sign, and upload.

MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload

No files uploaded

Comment
None Specified

OWNER/OPERATOR CERTIFICATION

The owner/operator must download, sign, and upload the certification form in order to complete this application.

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.

Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form

No files uploaded

Comment
None Specified

At least one file is required.

ATTACHMENT N

SAMPLE INPECTION FORM/ INSPECTION REPORTS

Stormwater Construction Site Inspection Report

General Information			
Project Name			
NPDES Tracking No.		**Location**	
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications	Insert qualifications or add reference to the SWPPP. (See Section 5 of the SWPPP Template)		
Describe present phase of construction			

Type of Inspection:
❑ Regular ❑ Pre-storm event ❑ During storm event ❑ Post-storm event

Weather Information

Has there been a storm event since the last inspection? ❑Yes ❑No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds
❑ Other: Temperature:

Have any discharges occurred since the last inspection? ❑Yes ❑No
If yes, describe:

Are there any discharges at the time of inspection? ❑Yes ❑No
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		❑Yes ❑No	❑Yes ❑No	
2		❑Yes ❑No	❑Yes ❑No	
3		❑Yes ❑No	❑Yes ❑No	
4		❑Yes ❑No	❑Yes ❑No	
5		❑Yes ❑No	❑Yes ❑No	
6		❑Yes ❑No	❑Yes ❑No	
7		❑Yes ❑No	❑Yes ❑No	
8		❑Yes ❑No	❑Yes ❑No	
9		❑Yes ❑No	❑Yes ❑No	
10		❑Yes ❑No	❑Yes ❑No	
11		❑Yes ❑No	❑Yes ❑No	

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
12		❑Yes ❑No	❑Yes ❑No	
13		❑Yes ❑No	❑Yes ❑No	
14		❑Yes ❑No	❑Yes ❑No	
15		❑Yes ❑No	❑Yes ❑No	
16		❑Yes ❑No	❑Yes ❑No	
17		❑Yes ❑No	❑Yes ❑No	
18		❑Yes ❑No	❑Yes ❑No	
19		❑Yes ❑No	❑Yes ❑No	
20		❑Yes ❑No	❑Yes ❑No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No	❑Yes ❑No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	❑Yes ❑No	❑Yes ❑No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	❑Yes ❑No	❑Yes ❑No	
4	Are discharge points and receiving waters free of any sediment deposits?	❑Yes ❑No	❑Yes ❑No	
5	Are storm drain inlets properly protected?	❑Yes ❑No	❑Yes ❑No	
6	Is the construction exit preventing sediment from being tracked into the street?	❑Yes ❑No	❑Yes ❑No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	❑Yes ❑No	❑Yes ❑No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	❑Yes ❑No	❑Yes ❑No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No	❑Yes ❑No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No	❑Yes ❑No	
12	(Other)	❑Yes ❑No	❑Yes ❑No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature:_____ **Date:**_____

ATTACHMENT O

NYSSEC GUIDANCE FOR EROSION AND SEDIMENT CONTROL PRACTICE INSTALLATION

STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK



Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

1. Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.

2. Diameters designed for use shall be 12" – 32" except that 8" diameter socks may be used for residential lots to control areas less than 0.25 acres.

3. The flat dimension of the sock shall be at least 1.5 times the nominal diameter.

4. The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	5	10	20	25	33	50
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50
* Length in feet							



5. The compost infill shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**

6. The compost filter sock fabric material shall meet the

7. Compost filter socks shall be anchored in earth with 2" x 2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock.

8. All specific construction details and material specifications shall appear on the erosion and sediment control constructions drawings when compost filter socks are included in the plan.

Maintenance

1. Traffic shall not be permitted to cross filter socks.

2. Accumulated sediment shall be removed when it reaches half the above ground height of the sock and disposed of in accordance with the plan.

3. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired in the manner required by the manufacturer or replaced within 24 hours of inspection notification.

4. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.

5. Upon stabilization of the area contributory to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed in accordance with the stabilization plan. For removal the mesh can be cut and the compost spread as an additional mulch to act as a soil supplement.

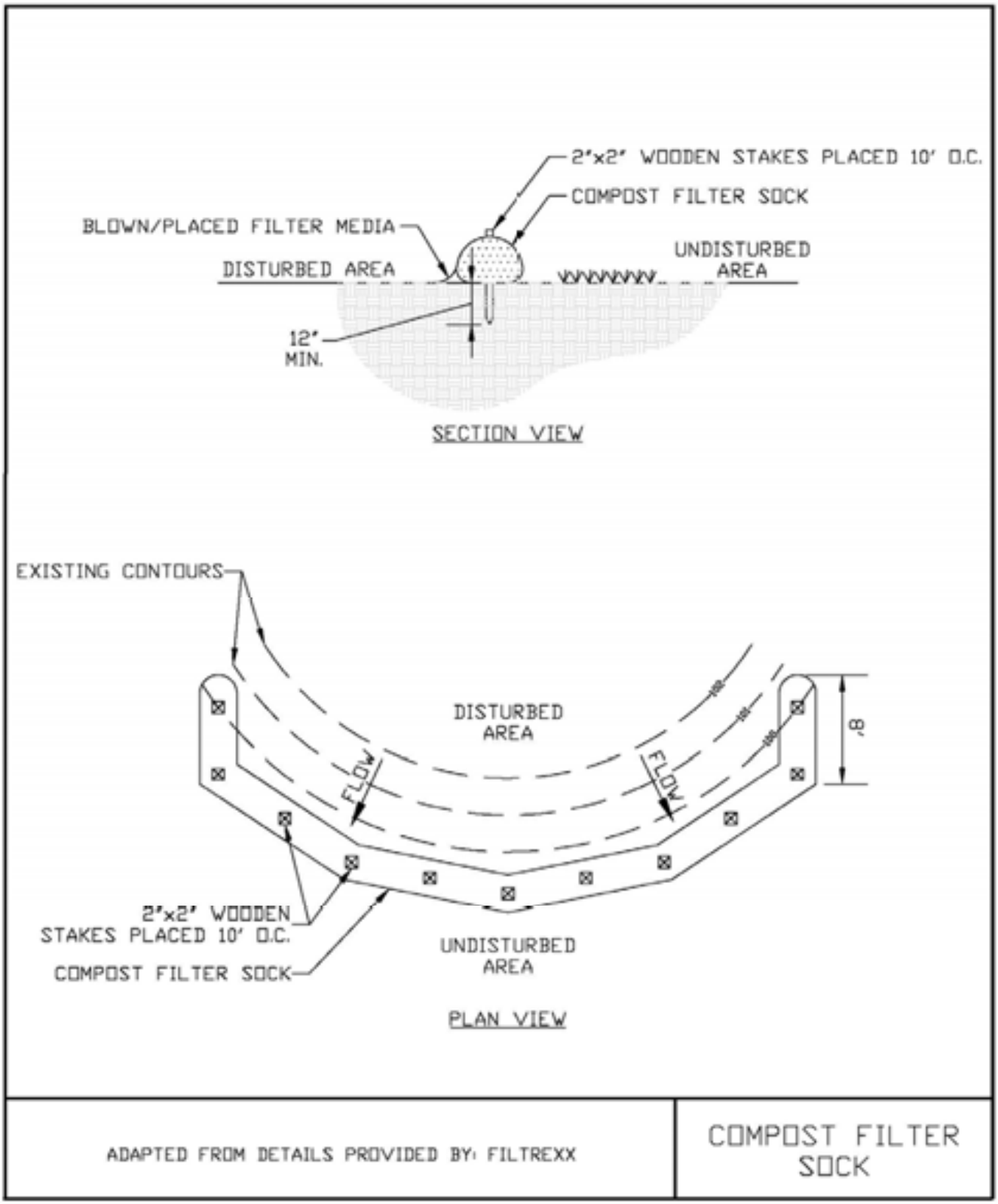
Table 5.1 - Compost Sock Fabric Minimum Specifications Table

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Table 5.2 - Compost Standards Table

Organic matter content	25% - 100% (dry weight)
Organic portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture content	30% - 60%
Particle size	100% passing a 1" screen and 10 - 50% passing a 3/8" screen
Soluble salt concentration	5.0 dS/m (mmhos/cm) maximum

Figure 5.2
Compost Filter Sock



STANDARD AND SPECIFICATIONS FOR SILT FENCE



Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Super Silt Fence

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/ min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

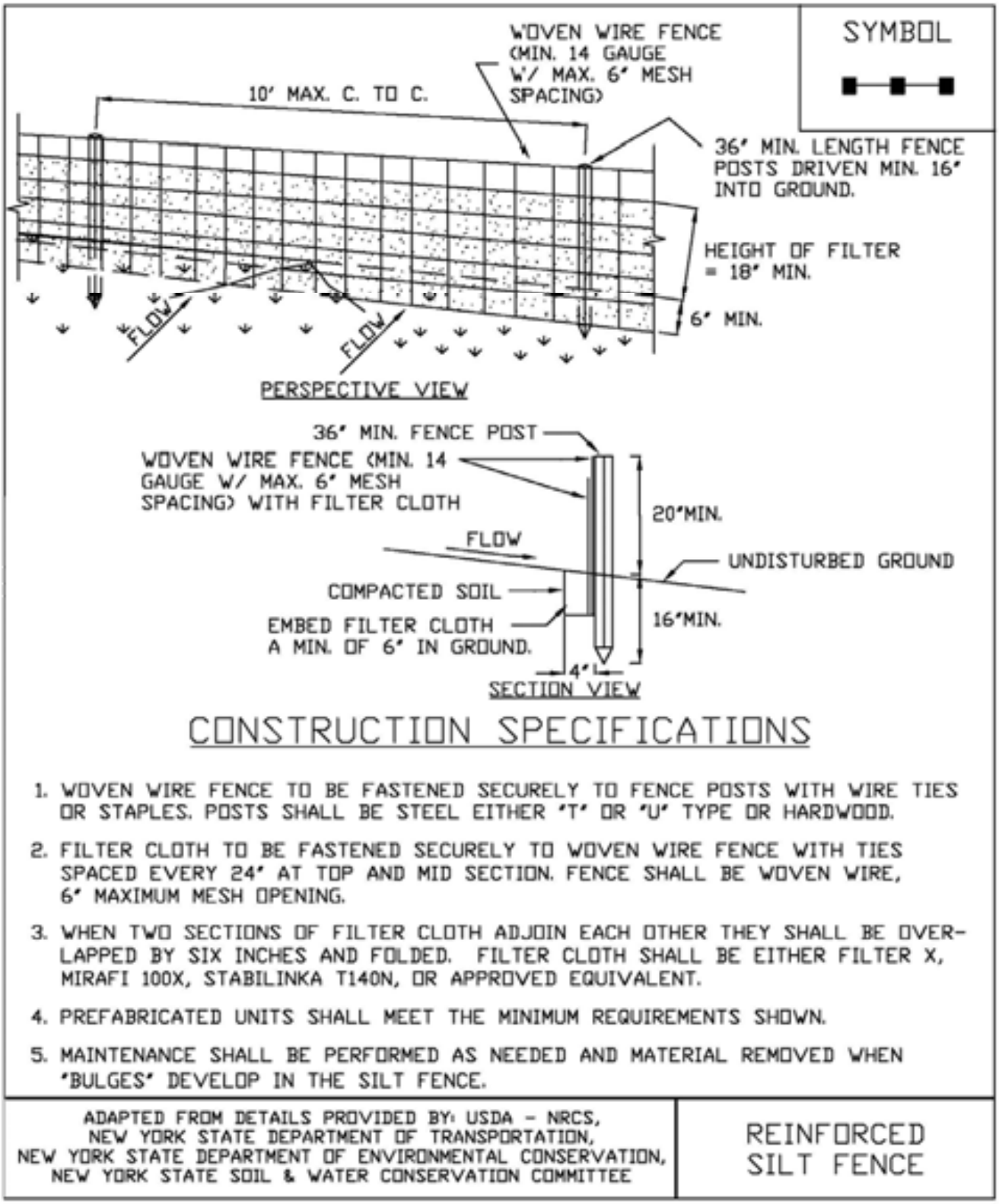
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Reinforced Silt Fence



Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION



Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Paved Surface Inlet Protection
V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection



This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet ("doughnut"). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection



This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.



The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection



The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

Figure 5.31
Excavated Drop Inlet Protection

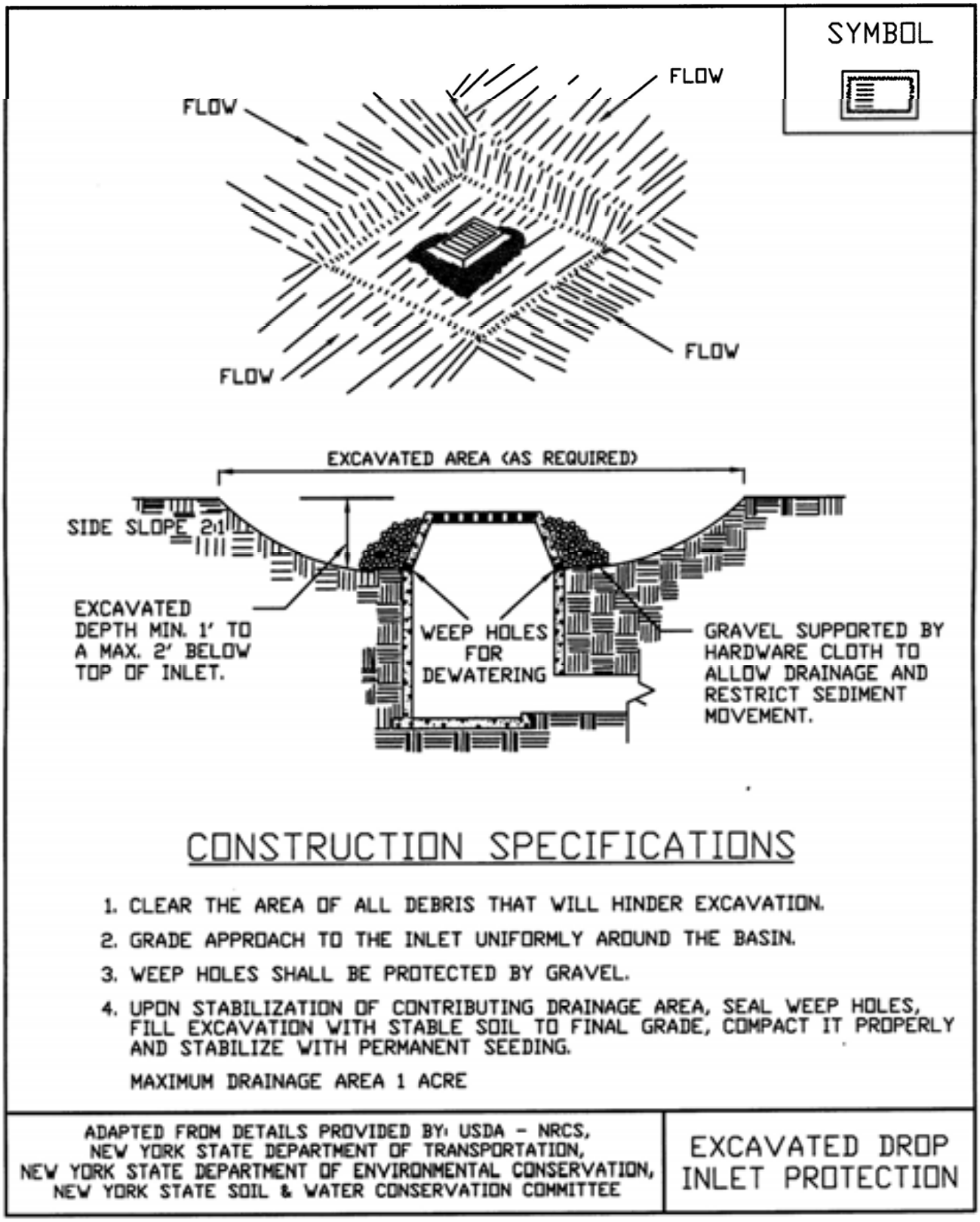


Figure 5.32
Fabric Drop Inlet Protection

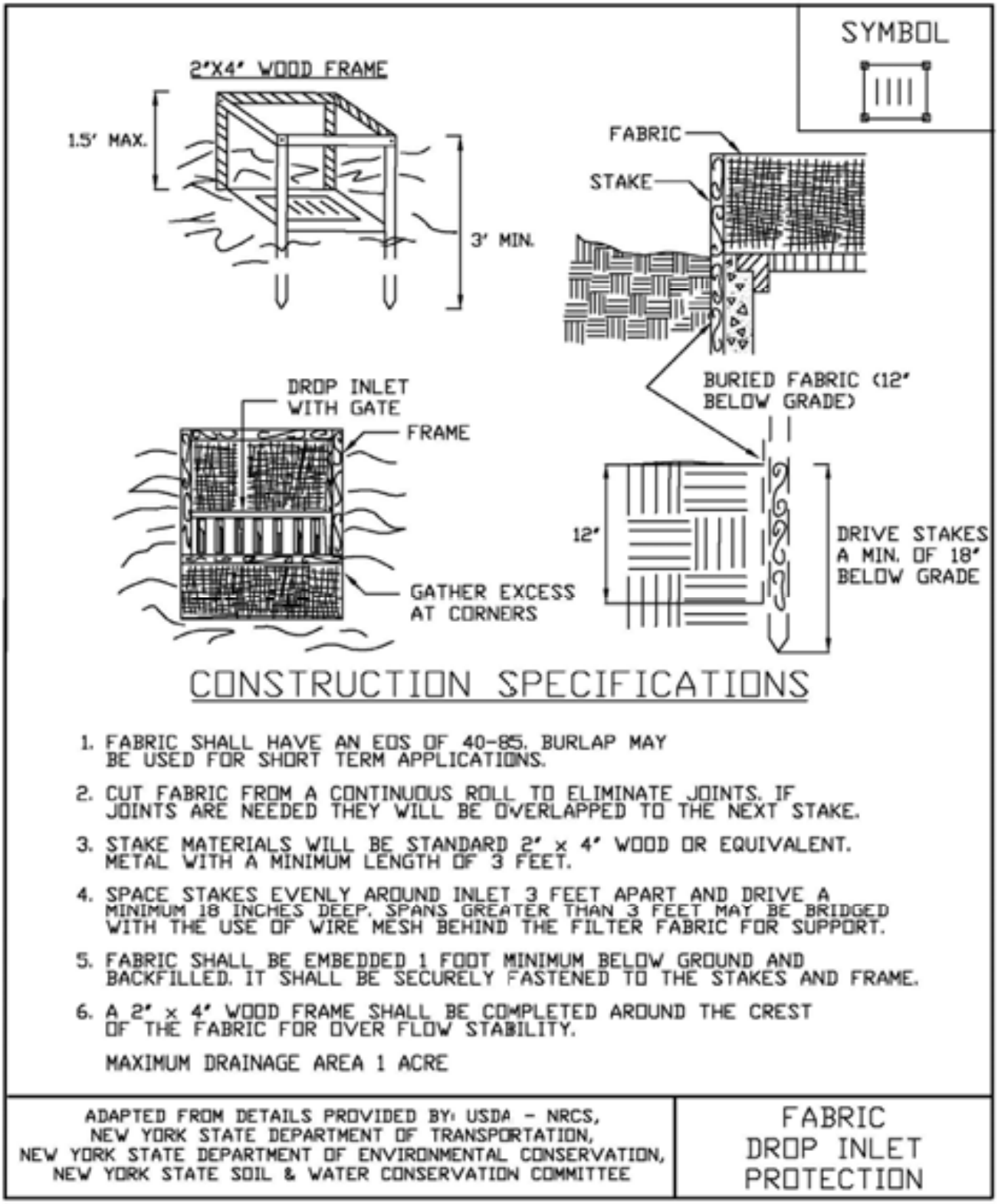
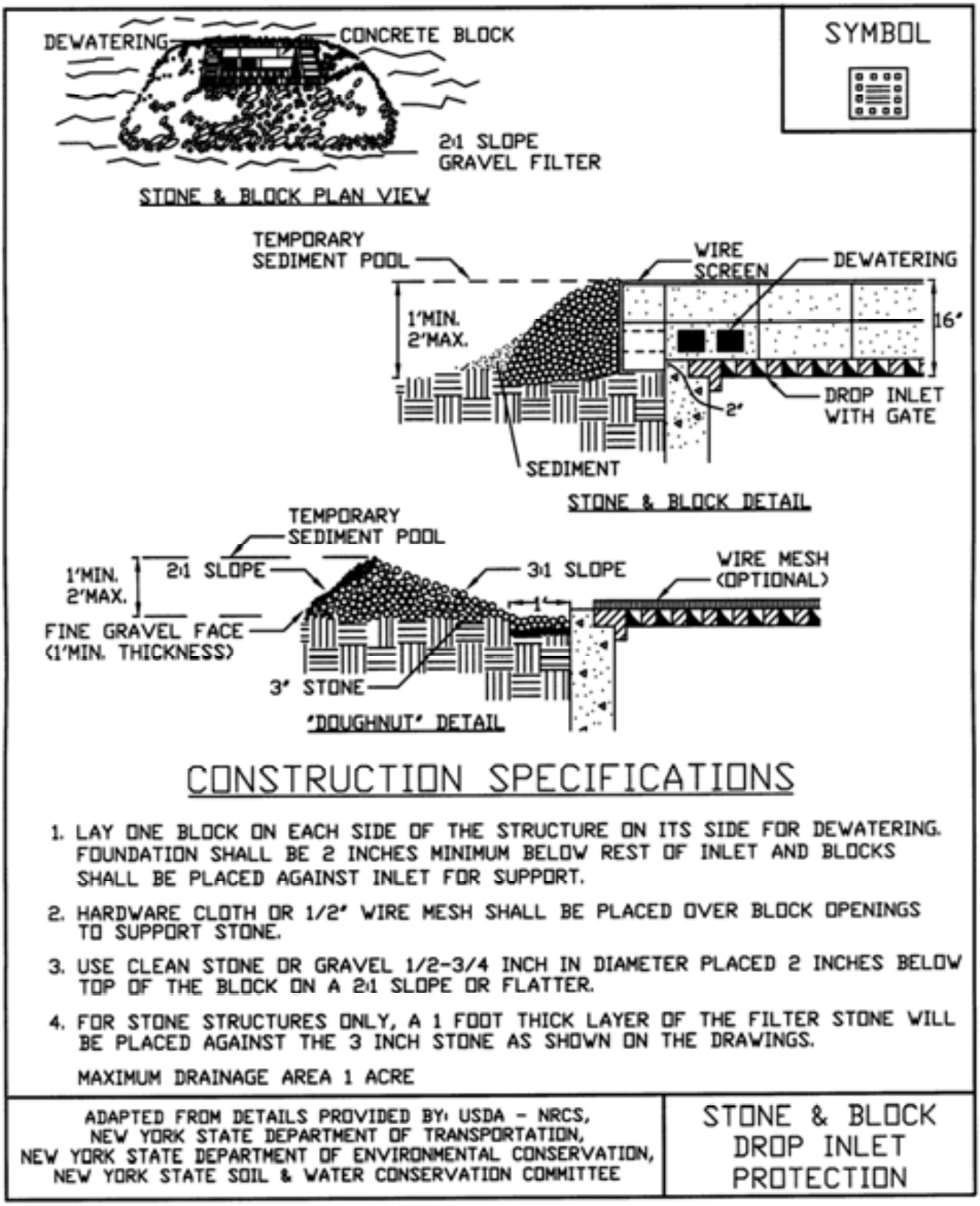


Figure 5.33
Stone & Block Drop Inlet Protection



CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE & BLOCK DROP INLET PROTECTION

STANDARD AND SPECIFICATIONS FOR CHECK DAM



Definition & Scope

Small barriers or dams constructed of stone, bagged sand or gravel, or other durable materials across a drainageway to reduce erosion in a drainage channel by reducing the velocity of flow in the channel.

Conditions Where Practice Applies

This practice is used as a **temporary** and, in some cases, a **permanent** measure to limit erosion by reducing velocities in open channels that are degrading or subject to erosion or where permanent stabilization is impractical due to short period of usefulness and time constraints of construction.

Design Criteria

Drainage Area: Maximum drainage area above the check dam shall not exceed two (2) acres.

Height: Not greater than 2 feet. Center shall be maintained 9 inches lower than abutments at natural ground elevation.

Side Slopes: Shall be 2:1 or flatter.

Spacing: The check dams shall be spaced as necessary in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

Therefore: $$S = \frac{h}{s}$$

Where: S = spacing interval (ft.)
h = height of check dam (ft.)
s = channel slope (ft./ft.)

Example:

For a channel with a 4% slope and 2 ft. high stone check dams, they are spaced as follows: $$S = \frac{2\ \text{ft}}{0.04\ \frac{\text{ft}}{\text{ft}}} = 50\ \text{ft}$$

For stone check dams: Use a well graded stone matrix 2 to 9 inches in size (NYS – DOT Light Stone Fill meets these requirements).

The overflow of the check dams will be stabilized to resist erosion that might be caused by the check dam. See Figure 3.1 on page 3.3 for details.

Check dams should be anchored in the channel by a cutoff trench 1.5 ft. wide and 0.5 ft. deep and lined with filter fabric to prevent soil migration.

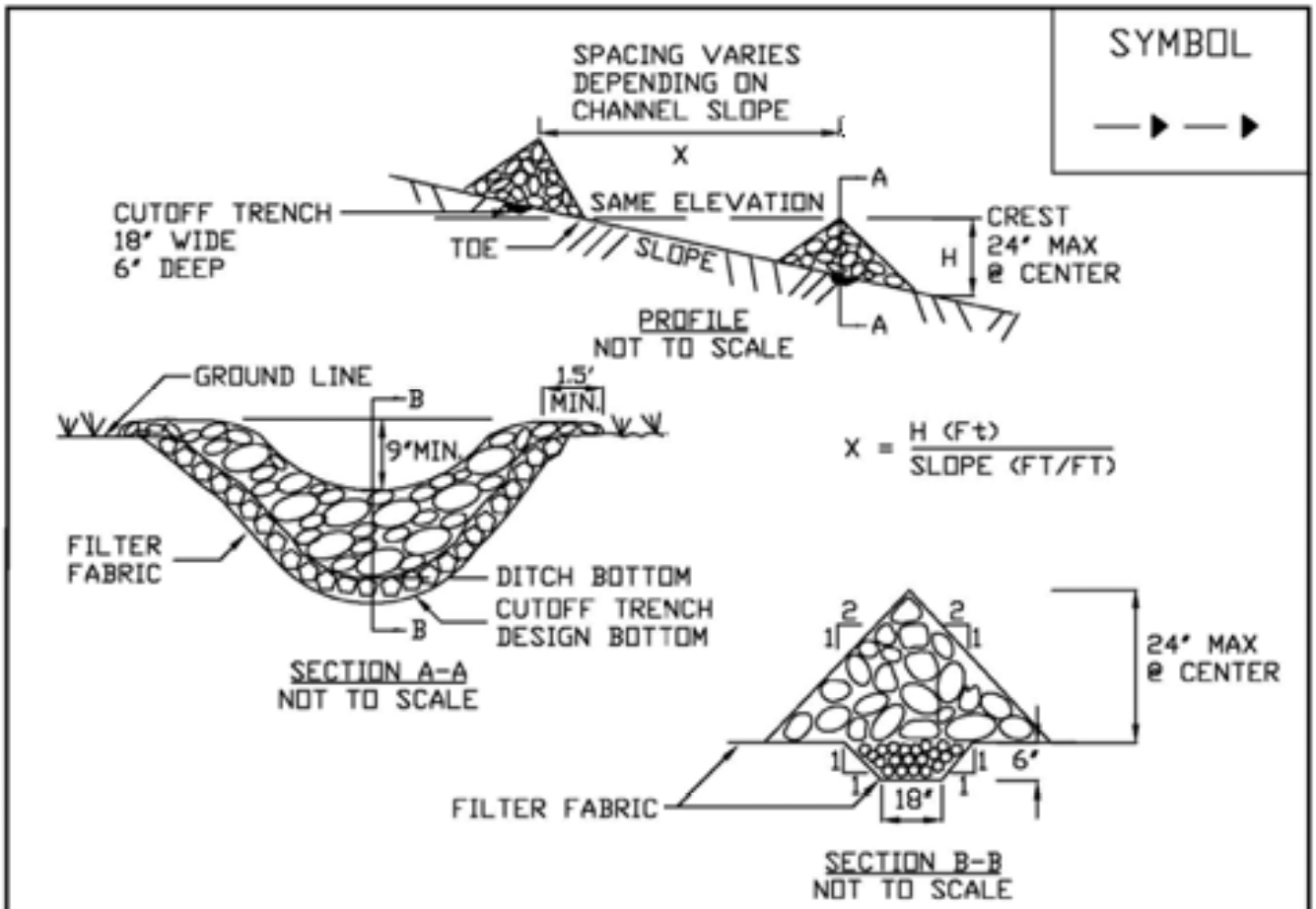
For filter sock or fiber roll check dams: The check dams will be anchored by staking the dam to the earth contact surface. The dam will extend to the top of the bank. The check dam will have a splash apron of NYS DOT #2 crushed stone extending a minimum 3 feet downstream from the dam and 1 foot up the sides of the channel. The compost and materials for a filter sock check dam shall meet the requirements shown in the standard for Compost Filter Sock on page 5.7.

Maintenance

The check dams should be inspected after each runoff event. Correct all damage immediately. If significant erosion has occurred between structures, a liner of stone or other suitable material should be installed in that portion of the channel or additional check dams added.

Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam.

Figure 3.1
Stone Check Dam Detail



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE CHECK DAM

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE



Definition

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area.

Purpose

The purpose of stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction entrance shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 5A.35 on page 5A.76 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile

The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Brust Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 modified
Equivalent Opening Size	40-80	40-80	US Std Sieve CW-02215
Aggregate Depth	6	10	--

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

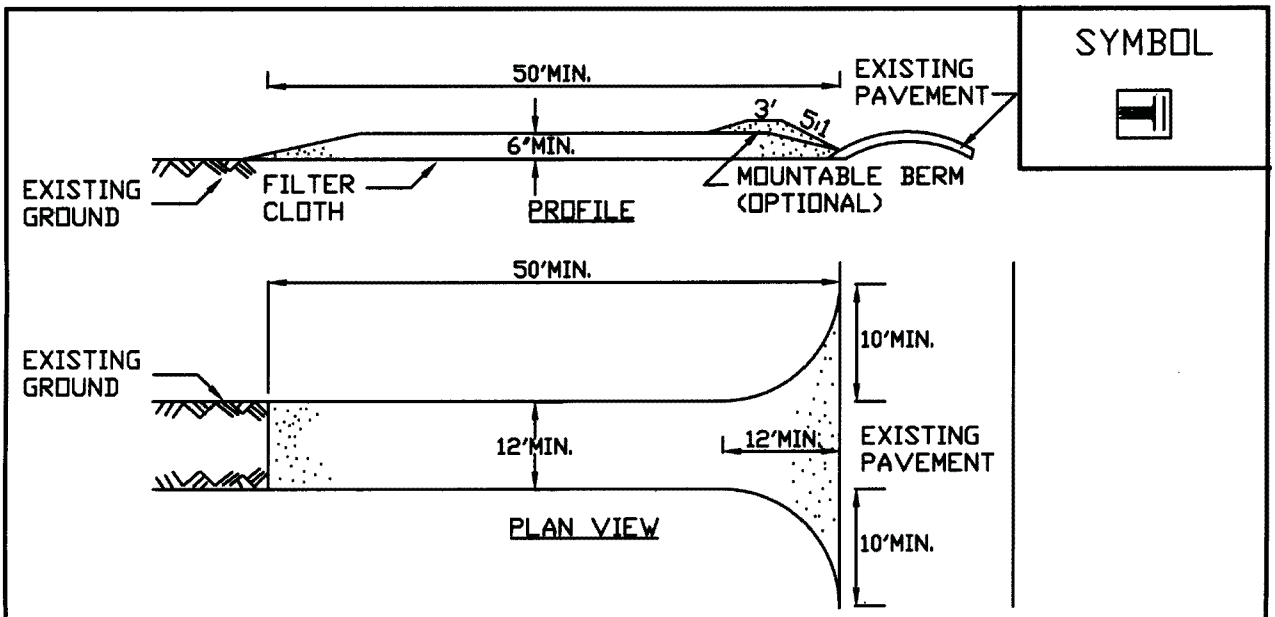
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The entrance shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 5A.35
Stabilized Construction Entrance



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STABILIZED CONSTRUCTION ENTRANCE

ATTACHMENT P

GENERAL AND SUBCONTRACTOR SIGNATURE PAGE

Contractor's Certification

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations.

Company: _____

Address: _____

_____

Phone: _____

Name: _____

Title: _____

Phone: _____

Date: _____

Qualified Inspector (if different than above)

Name: _____

Title: _____

Phone: _____

Date: _____

SWPPP elements Contractor is responsible for:

ATTACHMENT Q
AGENCY CONSULTATION AND PERMITS

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Brolex Properties, LLC
2. Contact Person:	Joshua Heintz
3. Street Address:	5912 North Burdick Street
4. City/State/Zip:	East Syracuse, NY 13057
II. Project Site Information	
5. Project/Site Name:	Freeman Estates Housing
6. Street Address:	7430 Highbridge Road
7. City/State/Zip:	Fayetteville, NY 13066
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Onondaga County, New York



Local office

New York Ecological Services Field Office

(607) 753-9334
(607) 753-9699

3817 Luker Road
Cortland, NY 13045-9385

http://www.fws.gov/northeast/nyfo/es/section7.htm

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

NOT FOR CONSULTATION

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Indiana Bat Myotis sodalis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Eastern Massasauga (=rattlesnake) Sistrurus catenatus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2202	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

NOT FOR CONSULTATION

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NOT FOR CONSULTATION

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31

Canada Warbler Cardellina canadensis — Breeds May 20 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cerulean Warbler Dendroica cerulea — Breeds Apr 20 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/2974

Golden-winged Warbler Vermivora chrysoptera — Breeds May 1 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8745

Henslow's Sparrow Ammodramus henslowii — Breeds May 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3941

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that

week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

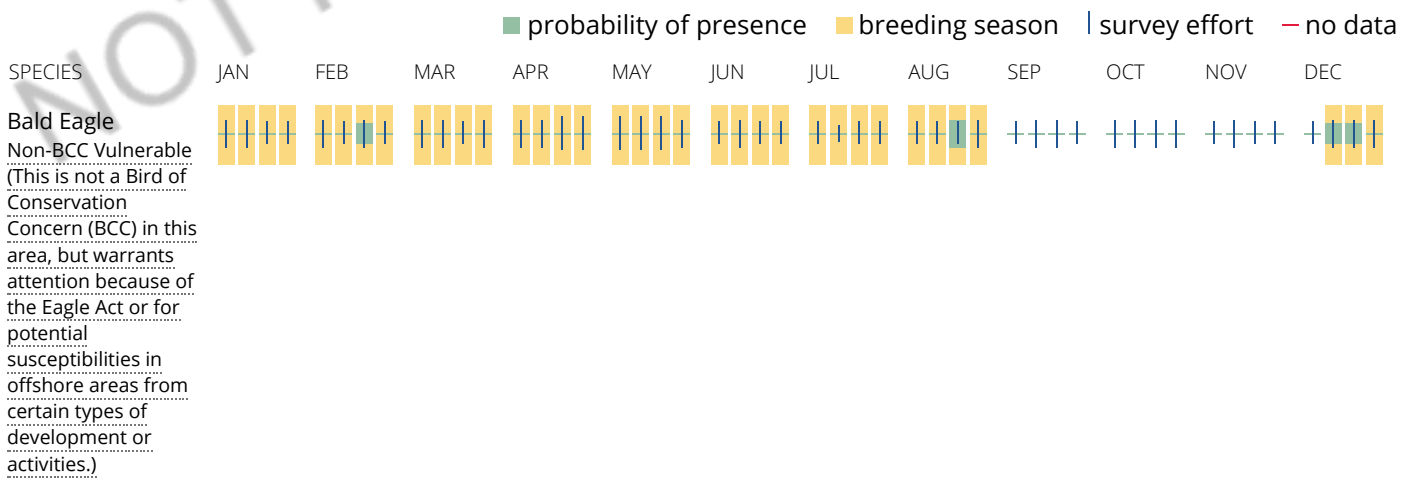
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

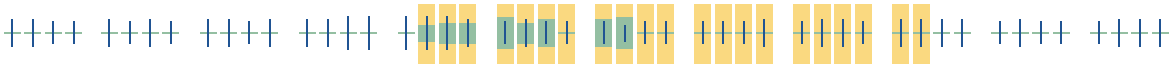
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



NOT FOR CONSULTATION

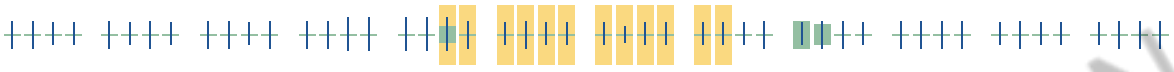
Black-billed Cuckoo
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



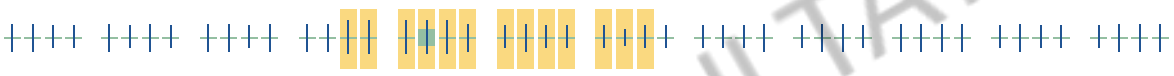
Bobolink
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



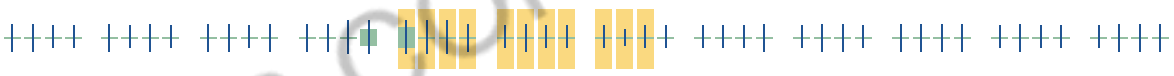
Canada Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Cerulean Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Golden-winged Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Henslow's Sparrow
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wood Thrush
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



NOT FOR CONSULTATION

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

NOT FOR CONSULTATION

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

R2UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

NOT FOR CONSULTATION

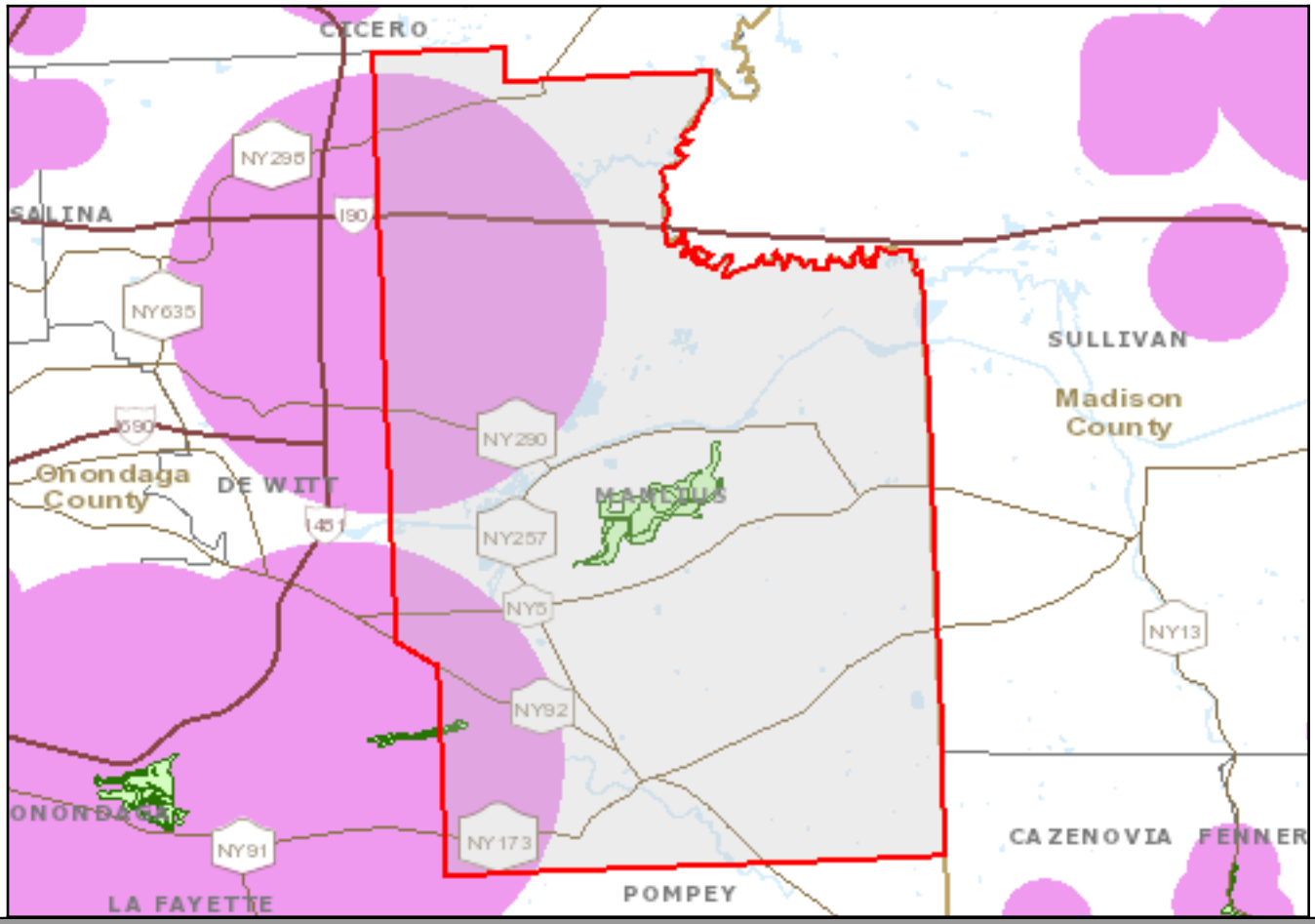
Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

New York Nature Explorer
Town Results Report

Criteria: Town: Manlius



Common Name	Subgroup	Distribution Status	Year Last Documente	Protection Status		Conservation Rank	
				State	Federal	State	Global
Town: Manlius							
Plant: Flowering Plants							
Little-leaf Tick Trefoil *Desmodium ciliare*	Other Flowering Plants	Historically Confirmed	1937	Threatened		S2S3	G5
Marsh Arrow Grass *Triglochin palustris*	Other Flowering Plants	Recently Confirmed	1993	Threatened		S2	G5
Nodding Pogonia *Triphora trianthophoros ssp. trianthophoros*	Orchids	Historically Confirmed	1913	Threatened		S2	G3G4T3T4
Northern Wild Comfrey *Andersonglossum boreale*	Other Flowering Plants	Possible but not Confirmed	1907	Endangered		S1S2	G5T4T5

New York Nature Explorer

Common Name	Subgroup	Distribution Status	Year Last Documente	Protection Status		Conservation Rank	
				State	Federal	State	Global
Ohio Goldenrod *Solidago ohioensis*	Asters, Goldenrods and Daisies	Recently Confirmed	1999	Threatened		S2	G4
Pink Wintergreen *Pyrola asarifolia ssp. asarifolia*	Other Flowering Plants	Possible but not Confirmed	1916	Threatened		S2	G5T5
Scorpion-weed *Phacelia dubia var. dubia*	Other Flowering Plants	Extirpated	1975			SX	G5T5
Slender Pondweed *Stuckenia filiformis*	Other Flowering Plants	Historically Confirmed	1988	Endangered		S1	G5
Yellow Giant-hyssop *Agastache nepetoides*	Other Flowering Plants	Historically Confirmed	1916	Threatened		S2S3	G5

Natural Community: Uplands

Maple-Basswood Rich Mesic Forest *Maple-basswood rich mesic forest*	Forested Uplands	Recently Confirmed	2009			S3	G4

Natural Community: Freshwater Nontidal Wetlands

Marl Fen *Marl fen*	Open Peatlands	Recently Confirmed	1999			S1	G1
Northern White Cedar Swamp *Northern white cedar swamp*	Forested Peatlands	Recently Confirmed	1989			S2S3	G4

Natural Community: Lakes and Ponds

Meromictic Lake *Meromictic lake*	Natural Lakes and Ponds	Recently Confirmed	2009			S1S2	G3G4

Note: Restricted plants and animals may also have also been documented in one or more of these Towns or Cities, but are not listed in these results. This application does not provide information at the level of Town or City on state-listed animals and on other sensitive animals and plants. A list of the restricted animals and plants documented in the corresponding county (or counties) can be obtained via the County link(s) on the original Town Search Results page. Any individual plant or animal on this county's restricted list may or may not occur in this particular Town or City.

This list only includes records of rare species and significant natural communities from the databases of the NY Natural Heritage Program. This list is not a definitive statement about the presence or absence of all plants and animals, including rare or state-listed species, or of all significant natural communities. For most areas, comprehensive field surveys have not been conducted, and this list should not be considered a substitute for on-site surveys.

ATTACHMENT R

GRADING, EROSION & SEDIMENT CONTROL PLAN & DETAIL SHEETS

(SEE PLAN SETS)

SITE DATA

1. OWNER: BROLEX PROPERTIES, LLC
   5912 NORTH BURDICK STREET
   EAST SYRACUSE, NEW YORK 13057
2. TAX ID #: 101.-02-02.1
3. PARCEL SIZE: 22.17± ACRES (3.5± ACRES DISTURBANCE)
4. ZONING CLASSIFICATION: RESIDENTIAL (R-3)
5. BUILDING SETBACK REQUIREMENTS: FRONT: 30'
   SIDE: 15'
   REAR: 25'

PROJECT INFORMATION

THIS PROJECT CONSISTS OF CLEARING OF LAND FOR THE PROPOSED CONSTRUCTION OF TWELVE (12) PATIO HOMES WITH ASSOCIATED UTILITIES, STORMWATER FACILITIES AND DRIVEWAYS. THE ESTIMATED TIME FOR COMPLETION IS WITHIN ONE (1) YEAR OF RECEIVING ALL NECESSARY PERMITS AND APPROVALS.

SURVEY DATA

FIELD SURVEY WAS COMPLETED BY CT MALE IN JUNE 2020.

NOTE:
THE LOCATION, SIZES, AND ELEVATIONS OF EXISTING UTILITIES ARE BASED ON INFORMATION COMPILED BY THE SURVEYOR AND ENGINEER FROM FIELD WORK, RECORD DRAWINGS AND INFORMATION FURNISHED BY VARIOUS UTILITY COMPANIES WITH FIELD EDITING WHERE NECESSARY AND POSSIBLE. THE ACCURACY OF THIS INFORMATION IS NOT GUARANTEED AND SHALL BE VERIFIED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

1. MOBILIZE ALL NECESSARY EQUIPMENT, PERSONNEL AND MATERIAL TO THE SITE. PROCEED WITH INSTALLATION OF EROSION & SEDIMENT CONTROL PRACTICES INCLUDING STABILIZED CONSTRUCTION ENTRANCE. EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO BEGINNING ANY EARTHWORK OPERATIONS. SCHEDULE AND CONDUCT SITE WALK TO INSPECT SEDIMENT AND EROSION CONTROL MEASURES WITH ENGINEER. MODIFY SEDIMENT AND EROSION CONTROL MEASURES AS NEEDED.
2. PROTECT EXISTING INSTRUMENTS, STRUCTURES, VEGETATION AND UTILITIES TO REMAIN.
3. INSTALL SILT FENCE, STABILIZED CONSTRUCTION ENTRANCE AND ANY OTHER PERTINENT EROSION AND SEDIMENT CONTROL MEASURES.
4. PERFORM CLEARING & GRUBBING OPERATIONS.
5. MASS EARTHWORK OPERATIONS.
6. INSTALL STORMWATER, SANITARY SEWER, AND OTHER UTILITIES. INSTALL FILTER DROP INLET PROTECTION AT ALL DRAINAGE INLETS.
7. CONSTRUCTION OF ROADWAYS. INSTALL SILT FENCING BEHIND ASPHALT CURBING.
8. FINAL GRADING.
9. PERMANENT STABILIZATION WITH TOPSOIL, SEED AND MULCH AS SPECIFIED.
10. INSTALLATION OF LANDSCAPING.
11. IN ADDITION TO THESE MEASURES, THE CONTRACTOR SHALL COMPLY WITH WHATEVER ADDITIONAL MEASURES MAY BE REQUIRED AS ORDERED BY THE VILLAGE OF MINOA.
12. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES MUST REMAIN IN PLACE UNTIL 80% GERMINATION OF THE SITE HAS BEEN ESTABLISHED. CONTACT ENGINEER TO SCHEDULE FINAL INSPECTION.

SANITARY SEWER NOTES:

APPLICABLE DETAILS AND NOTES PERTAIN TO THIS PROJECT UNLESS OTHERWISE NOTED:

1. SANITARY SEWER MAIN PIPE SHALL BE 8" ASTM D-3034 SDR-35 PVC WITH RUBBER RING GASKETS UNLESS OTHERWISE NOTED.
2. SANITARY SEWER LATERALS TO BE SDR-35 PVC WITH RUBBER RING GASKET, UNLESS OTHERWISE NOTED.
3. ALL SANITARY SEWER STRUCTURES, TEMPORARY STUBBED ENDS AND LATERAL ENDS SHALL BE MARKED WITH 2X4'S EXTENDING 3' ABOVE FINISHED GRADE WITH TOPS PAINTED GREEN.
4. EACH LOT TO HAVE 1 SANITARY SEWER LATERAL INSTALLED FROM THE MAIN TO R.O.W. LINE AT A MIN. SLOPE OF 1%. LATERALS TO BE LOCATED 5 FEET DOWNSTREAM FROM THE CENTER OF THE LOT UNLESS OTHERWISE SHOWN OR NOTED.
5. COMPACTION OF ALL BACKFILLED MATERIALS REQUIRED IN AREAS UNDER PROPOSED PAVEMENT.
6. LINING MATERIAL TO BE N.Y.S.D.O.T. ITEM NO. 304.05 TYPE 4 R.O.C. OR R.O.B.
7. LEAKAGE AND DEFLECTION TESTS REQUIRED ON ALL SEWER MAINS IN ACCORDANCE WITH LOCAL REGULATIONS.
8. SANITARY SEWERS SHALL BE TESTED AFTER THE INSTALLATION OF WATER MAINS AND SERVICES. EXFILTRATION TEST SHALL BE PERFORMED ON ALL SANITARY MANHOLES.
9. CONTRACTOR SHALL RECORD AND PROVIDE ENGINEER WITH AS-BUILT LOCATIONS AND DEPTHS OF ALL SANITARY SEWER LATERAL ENDS AND MANHOLE RIMS & INVERTS.
10. SEWERS SHALL BE LAID AT LEAST 10' (3.0 m) HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A 10' SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE BY CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND THE ELEVATION OF THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46 cm) ABOVE THE TOP OF SEWER. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46 CM) BETWEEN THE OUTSIDE OF THE WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHEN THE WATERMAIN IS ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THE JOINTS OF THE SEWER PIPE WILL BE EQUIDISTANT FROM AND AS FAR AWAY FROM THE WATERMAIN JOINTS AS POSSIBLE. WHERE THE WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATERMAIN.

WATERMAIN NOTES

ALL WATERMAINS SHALL HAVE A MINIMUM 5.0' OF COVER FROM THE TOP OF THE MAIN TO FINISHED GRADE. THE CONTRACTOR SHALL CHECK ALL CUT STAKED BEFORE TRENCHING TO INSURE THAT ALL INSTALLED WATERMAINS WILL HAVE THE REQUIRED COVER.

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GENERAL NOTES

1. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS. THE CONTRACTOR SHALL PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH WITH THE SAME, AND COORDINATE WITH THE ENGINEER AND ARCHITECT AS REQUIRED.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY AND ALL CONSTRUCTION MEANS AND METHODS.
3. ANY ALTERATIONS TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTION SHALL BE RECORDED BY THE CONTRACTOR ON RECORD DOCUMENTS.
4. THE CONTRACTOR'S PROFESSIONAL LAND SURVEYOR SHALL CHECK ALL HORIZONTAL AND VERTICAL CONTROLS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL PROMPTLY BE BROUGHT TO THE ATTENTION OF THE ENGINEER. CONTRACTOR IS TO SUBMIT A QUALIFICATIONS PACKAGE OF SURVEYOR TO ENGINEER FOR APPROVAL.
5. THE CONTRACTOR SHALL LIMIT OPERATIONS TO THE AREAS DESIGNATED ON THE CONTRACT DOCUMENTS.
6. ALL DAMAGE TO PRIVATE PROPERTY OR UTILITIES (UNDER OR ABOVE GROUND) SHALL BE RESTORED TO ORIGINAL CONDITION AT NO COST TO THE OWNER.
7. SAFE AND CONTINUOUS THROUGH TRAFFIC, INGRESS AND EGRESS FOR ADJACENT OWNERS DRIVEWAYS, SERVICE ROADS, PUBLIC STREETS, AND SIDEWALKS SHALL BE MAINTAINED THROUGHOUT THE PERIOD OF CONSTRUCTION.
8. STREET DRAINAGE, SWALES, DITCHES, AND OTHER EXISTING DRAINAGE FACILITIES SHALL BE PROTECTED AND MAINTAINED IN ADEQUATE WORKING CONDITION DURING CONSTRUCTION. THE CONTRACTOR SHALL RESTORE ANY OF SUCH FACILITIES THAT ARE DAMAGED DURING CONSTRUCTION.
9. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS NOT TO DISTURB AND/ OR DAMAGE PROPERTY CORNERS (IRON PINS, HUBS, ETC.). ANY DISTURBED OR DAMAGED PROPERTY CORNERS SHALL BE REPLACED BY THE CONTRACTOR'S LICENSED SURVEYOR AT THE CONTRACTOR'S EXPENSE.
10. ALL EXISTING UTILITIES SUCH AS ELECTRIC, GAS MAINS, AND TELEPHONE SHALL BE STAKED OUT BY THE UTILITY COMPANY PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY NEW YORK DIG SAFELY (1-800-962-7962) 72 HOURS, (3 WORKING DAYS) PRIOR TO CONSTRUCTION AND NOTIFY UTILITY COMPANIES FOR STAKEOUT.
11. IN AREAS WHERE THE CONTRACTOR IS EXCAVATING NEAR ANY UTILITY POLES, THE CONTRACTOR SHALL BRACE AND/ OR HOLD IN PLACE UNTIL THE EXCAVATED AREA IS BACKFILLED AND COMPACTED.
12. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE DEWATERING SYSTEM THAT WILL DRAW DOWN AND HAVE CONTROL ON THE GROUNDWATER TABLE AT ALL TIMES DURING CONSTRUCTION IF NECESSARY.
13. THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER DISPOSAL OF ALL REMOVED VEGETATION, SOIL AND OTHER DISTURBED AREAS.
14. THE CONTRACTOR SHALL CONDUCT ACTIVITIES IN THE VICINITY OF TREES AND BUSHES WITH CARE. ANY TREE REMOVAL SHALL BE LIMITED TO THE DIRECT PATH OF CONSTRUCTION.
15. THE CONTRACTOR SHALL OBSERVE O.S.H.A. AND OTHER APPLICABLE SAFETY REQUIREMENTS. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR CONSTRUCTION SAFETY AT ALL TIMES.
16. FOR DRAWING LEGIBILITY, ALL EXISTING TOPOGRAPHIC FEATURES, EXISTING UTILITIES, PROPERTY BOUNDARIES, EASEMENTS, ETC. MAY NOT BE SHOWN ON ALL DRAWINGS. REFER TO REFERENCED DRAWINGS AND OTHER DRAWINGS IN THIS SET FOR ADDITIONAL INFORMATION.
17. CONTRACTOR SHALL REPORT SIGNIFICANT CONFLICTS OR DISCREPANCIES TO THE OWNER AND ENGINEER BEFORE PROCEEDING WITH ANY PORTION OF SITE WORK WHICH MAY BE AFFECTED SO THAT PROPER ADJUSTMENTS CAN BE MADE IF NECESSARY.
18. UNDERGROUND UTILITIES WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND PUBLIC AGENCIES, ARE APPROXIMATE AND ASSUMED. BEFORE COMMENCING SITE WORK IN ANY AREA, CONTACT "DIG SAFE" AT 1-888-344-7233 AND THE OWNER TO ACCURATELY LOCATE UNDERGROUND UTILITIES. ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES SHALL BE THE CONTRACTORS RESPONSIBILITY. NO EXCAVATION SHALL BE DONE UNTIL UTILITY COMPANIES AND THE OWNER ARE PROPERLY NOTIFIED IN ADVANCE.
19. ALL SITE WORK SHALL MEET OR EXCEED THE SITE WORK SPECIFICATIONS TO BE PREPARED FOR THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
20. ALL WORK PERFORMED AND ALL MATERIALS SHALL CONFORM WITH THE LINES, GRADES AND OTHER SPECIFIC REQUIREMENTS OR SPECIFICATIONS FOR THE PROJECT AS SHOWN ON THE PLANS.
21. THE CONTRACTOR SHALL VERIFY EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT AS REQUIRED. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE OWNER AND ENGINEER FOR RESOLUTION.
22. INSTALL ALL UTILITIES (INCLUDING CONCRETE PADS) PER UTILITY COMPANY STANDARDS.
23. CONTRACTOR SHALL PROTECT ALL UNDERGROUND DRAINAGE, SEWER AND UTILITY FACILITIES FROM EXCESSIVE VEHICULAR LOADS DURING CONSTRUCTION. ANY DAMAGE TO THESE FACILITIES RESULTING FROM CONSTRUCTION LOADS WILL BE RESTORED TO ORIGINAL CONDITION.
24. CONTRACTOR TO PROVIDE VILLAGE ENGINEER WITH RIMS AND INVERTS OF ALL INSTALLED SANITARY SEWER MANHOLES AND DRAINAGE STRUCTURES ALONG WITH LOCATIONS AND INVERTS OF ALL SEWER LATERAL ENDS AND SUMP PUMP/ ROOF DRAIN CONNECTIONS. VILLAGE ENGINEER WILL USE INFORMATION TO CREATE RECORD DRAWINGS.

EROSION CONTROL NOTES

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TEMPORARY SOIL EROSION CONTROL AND WATER POLLUTION CONTROL.
2. THE CONTRACTOR SHALL CONTROL SURFACE RUNOFF WHICH MAY CONTAIN SUSPENDED SOLIDS FROM ONTO EXISTING PAVEMENT SERVICES IN USE. THIS SHALL BE ACCOMPLISHED BY STAKED BALES OF STRAW OR DIVERSION CHANNELS TO SEDIMENTATION BASINS.
3. THE CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS OF THE N.Y.S. DEPARTMENT OF ENVIRONMENTAL CONSERVATION SPDES GENERAL PERMIT, WATER QUALITY CERTIFICATION AND/ OR FRESH WATER WETLANDS PERMIT AND/ OR ARMY CORPS OF ENGINEERS PERMIT (IF APPLICABLE).
4. DURING CONSTRUCTION, NO WET OR FRESH CONCRETE OR LEACHATE SHALL BE ALLOWED TO ESCAPE INTO THE WATERS OF THE UNITED STATES, NOR SHALL WASHINGS FROM CONCRETE TRUCKS, MIXERS, OR OTHER DEVICES BE ALLOWED TO ENTER ANY WETLAND OR WATERS. A CONCRETE WASHOUT SHALL BE USED.
5. ALL AREAS OF SOIL DISTURBANCE RESULTING FROM THIS PROJECT SHALL BE SEEDED WITH AN APPROPRIATE PERENNIAL GRASS SEED AND MULCHED WITH STRAW WITHIN ONE WEEK OF FINAL GRADING. MULCH SHALL BE MAINTAINED UNTIL A SUITABLE VEGETATIVE COVER IS ESTABLISHED.
6. PERIODIC CLEANING, INSPECTION AND REPLACEMENT OF TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL DEVICES SHALL BE NECESSARY.
7. ALL CONTROLS SHALL BE PLACED PRIOR TO STARTING EARTHWORK OPERATIONS AND SHALL REMAIN IN PLACE UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/ OR SLOPE PROTECTION.
8. WHERE SILT FENCE IS USED IN AREAS OF CONCENTRATED FLOW, THE ENGINEER IN CHARGE MAY CALL FOR BACKING THE FENCE WITH STRAW BALES.
9. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED DUE TO VARIATIONS IN SITE CONDITIONS.
10. IF THERE IS SOME REASON THAT CUT OR FILL CANNOT BE BROUGHT TO FINAL GRADE AND MUST REMAIN UNCOMPLETED FOR A PERIOD OF TIME, IT SHALL BE TEMPORARILY SEEDED AND MULCHED WITHIN 7 DAYS.
20. REQUIRED INSPECTIONS SHALL OCCUR AND AS OUTLINED WITHIN THE SWPPP AND GENERAL SPDES PERMIT (ONE (1) INSPECTION PER SEVEN (7) DAYS SHALL BE COMPLETED).

MAINTENANCE AND REPAIR OF EROSION AND SEDIMENT POLLUTION CONTROL FACILITIES

1. PROPER MAINTENANCE AND REPAIR OF EROSION AND SEDIMENT CONTROL FACILITIES ARE NECESSARY TO THE EFFECTIVENESS OF THE EROSION AND SEDIMENT POLLUTION CONTROL FACILITIES.
2. DISTURBED GROUND SURFACES SHALL BE SPRINKLED WITH WATER, AS NEEDED, TO LIMIT THE FORMATION AND MIGRATION OF AIRBORNE DUST.
3. OPERATIONAL MEASURES SHALL BE EMPLOYED DURING CONSTRUCTION TO PREVENT THE SPILLS OF FUELS AND LUBRICANTS. IF A SPILL OCCURS, IT SHALL BE CONTROLLED IMMEDIATELY TO PREVENT ITS ENTRY INTO OFF-SITE AREAS INCLUDING ADJACENT STORM WATER FACILITIES.
4. ANY TEMPORARY EROSION CONTROL FACILITY SHALL REMAIN FUNCTIONAL UNTIL VEGETATIVE COVER IS SUFFICIENTLY ESTABLISHED WITHIN THE RESPECTIVE TRIBUTARY DRAINAGE AREA.
5. ANY DEBRIS ACCUMULATED IN EROSION AND SEDIMENT CONTROL SHALL BE REMOVED AND PROPERLY DISPOSED. THESE FACILITIES SHALL BE CHECKED DAILY AND AFTER RAINFALL EVENTS, AND REALIGNED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN IT REACHES THE FOLLOWING DEPTHS:

   SILT FENCE: 1/2 HEIGHT
   STONE CHECKDAMS: 1/2 HEIGHT
   INLET/ OUTLET PROTECTION: 1 INCH

   NOTE: DISTURBED AREAS SHALL BE CONSIDERED PERMANENTLY STABILIZED WHEN A MINIMUM COVER OF 80% HAS BEEN ESTABLISHED.

EROSION & SEDIMENT POLLUTION CONTROL NOTES

1. EROSION & SEDIMENT POLLUTION CONTROL FACILITIES AND PRACTICES, UTILIZED IN CONSTRUCTION OF THE PROJECT, SHALL BE CONSISTENT WITH THE LATEST EDITIONS OF THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL, AND THE NEW YORK STATE SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES.
2. NATURAL VEGETATION SHALL BE RETAINED, PROTECTED, AND SUPPLEMENTED AS FEASIBLE PRIOR TO AND DURING CONSTRUCTION.
3. CUT AND FILL SLOPES SHALL BE BROUGHT TO FINAL PROPOSED GRADES AS SOON AS POSSIBLE IN THE CONSTRUCTION SEQUENCE, AND SEEDED AND MULCHED.
4. EROSION AND SEDIMENT POLLUTION CONTROL FACILITIES (CHECK DAMS, SILT FENCING, STABILIZED CONSTRUCTION ENTRANCES, SEDIMENT TRAPS, AND OTHER ACCEPTABLE IMPLEMENTED FACILITIES), SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION UNTIL COMPLETE SITE STABILIZATION.
5. GRADE ALL AREAS TO DRAIN.
6. HEAVY CONSTRUCTION EQUIPMENT SHALL BE KEPT AS CLOSE TO THE WORK AREA AS PRACTICAL TO MINIMIZE DISTURBANCE OF SOIL ALREADY STABILIZED OR UNDISTURBED.
7. TOPSOIL AND OTHER SOIL REMOVED DURING CONSTRUCTION SHALL BE STOCKPILED IN A SUITABLE LOCATION CLEAR FROM ANY STORMATWATER DRAINAGE COURSES. STOCKPILES SHALL BE STABILIZED TO PREVENT EROSION.
8. VEGETATIVE STABILIZATION SHALL BE PERIODICALLY INSPECTED FOR SUFFICIENT GROWTH AND PROGRESS. AREAS NOT RESPONDING SHALL BE PROMPTLY RESEEDED AND REMULCHED AS SOON AS POSSIBLE. AREAS SHOWING SIGNS OF EROSION PRIOR TO STABILIZATION SHALL BE GRADED, RESEEDED, AND REMULCHED AS SOON AS POSSIBLE. SOD OR EROSION CONTROL FABRIC SHALL BE UTILIZED WHERE ADEQUATE STABILIZATION IS NOT OCCURRING.
9. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED BEGINNING EARTH MOVING ACTIVITIES, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
10. A STABILIZED CONSTRUCTION ENTRANCE PAD WITH CLEAN STONE WILL BE PLACED AT ALL CONSTRUCTION DRIVEWAYS IMMEDIATELY AFTER INITIAL SITE DISTURBANCE.
11. ANY DISTURBED AREAS THAT WILL LEFT EXPOSED FOR MORE THAN 5 DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW OR EQUIVALENT MATERIAL, AT A RATE OF 2.0 TONS PER ACRE, ACCORDING TO STANDARDS.
12. PERMANENT VEGETATION TO BE SEEDED ON ALL EXPOSED AREAS WITHIN FIVE (5) DAYS AFTER FINAL GRADING. MULCH TO BE USED AS NECESSARY FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
13. THE APPLICATION OF TOPSOIL, SEEDING, AND MULCHING FOR DISTURBED AREAS SHALL BE CONSISTENT WITH THE STANDARD GENERAL PRACTICES FOR CONSTRUCTION.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES UNTIL ALL AREAS HAVE BEEN PERMANENTLY STABILIZED.
15. ANY SEDIMENT TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE CLEANED IMMEDIATELY.
16. ALL DEBRIS GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE LEGALLY DISPOSED OF OFF SITE.
17. ADDITIONAL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AS CONDITIONS WARRANT OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
18. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ON A DAILY BASIS DURING CONSTRUCTION TO ENSURE THEIR CONTINUED FUNCTION.
19. DUST SHALL BE CONTROLLED BY SPRINKLING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
20. REQUIRED INSPECTIONS SHALL OCCUR AS OUTLINED WITHIN THE SWPPP AND SPDES PERMIT.

DRAINAGE SYSTEM NOTES:

1. CATCH BASINS AND MANHOLE DIAMETERS SHALL BE AS FOLLOWS:

LARGEST PIPE SIZE IN STRUCTURE	INSIDE DIAMETER OF STRUCTURE
UP TO 24"	4'
25" TO 36"	5'
LARGER THAN 36"	SPECIAL STRUCTURE

2. STORM SEWER PIPE SHALL BE ADS N-12 POLYETHYLENE UNLESS OTHERWISE NOTED. PIPE SHALL HAVE BANDED JOINTS AND RUBBER GASKETS.
3. LINING MATERIALS AND SPECIAL BACKFILL TO BE N.Y.S.D.O.T. ITEM NO. 304.05 TYPE 4 R.O.C. OR R.O.B..
4. GRANULAR FILTER MATERIAL TO BE (NYS DOT SECTION 605-2.02 TYPE 1) MEETING THE FOLLOWING GRADATIONS:

% PASSING BY WEIGHT	SIEVE SIZE
100	1-1/2"
30-100	1"
0-30	1/4"
0-10	NO.-10
0-5	NO.-20

5. RIP-RAP TO BE HARD, DURABLE, ANGULAR IN SHAPE, AND A MINIMUM OF 1 FT. THICK, AND MEETING THE FOLLOWING GRADATIONS:

PERCENT OF TOTAL WEIGHT SMALLER THAN GIVEN SIZE	WEIGHT OF STONE
100	100 LB.
80	60 LB.
50	25 LB.
<10	2 LB.

6. AL DRAINAGE STRUCTURES, INLETS, OUTLETS AND TEMPORARY PIPE ENDS SHALL BE MARKED WITH 2 x 4'S EXTENDING 3' ABOVE FINISHED GRADE. THE TOP 1' SHALL BE PAINTED SILVER.
7. CHANNEL SLOPE TO BE GRASS LINED UNLESS OTHERWISE SHOWN OR DIRECTED.
8. ALL BRICK USED TO RAISE THE CATCH BASIN FRAME AND GRATES TO BE RED NO. 1, 8000 PSI.
9. COMPACTION OF ALL BACKFILL MATERIALS REQUIRED IN AREAS UNDER PROPOSED PAVEMENT. COMPACT IN 8" LIFTS TO 95% DENSITY.
10. CONTRACTOR SHALL RECORD AND PROVIDE VILLAGE ENGINEER WITH ASBUILT LOCATIONS AND ELEVATIONS OF ALL CATCH BASIN RIMS AND INVERTS, INLET AND OUTLET PIPE INVERTS, AND SUMP PUMP/ ROOF DRAIN DRAIN CONNECTIONS.

NEW YORK STATE DOT SPECIFICATIONS

GENERAL NOTES:

1. THE CONTRACTOR MUST NOTIFY THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 3 ENGINEER, AT (315) 435-3176, THREE (3) WORKING DAYS PRIOR TO WORKING IN THE RIGHT-OF-WAY.
2. THE CONTRACTOR MUST NOTIFY DIG SAFELY NEW YORK THREE (3) WORK DAYS PRIOR TO DIGGING, DRILLING OR BLASTING AT 1-800-962-7962 FOR A UTILITY STAKE OUT.
3. ALL WORK CONTEMPLATED AND MATERIALS USED WITHIN THE STATE RIGHT-OF-WAY MUST COMPLY WITH THE LATEST VERSION OF THE NYSDOT STANDARD SPECIFICATIONS AND ALL CURRENT ADDENDAS, ALONG WITH ANY APPROPRIATE CURRENT NYSDOT STANDARD SHEETS.
4. NO NIGHT WORK WILL BE ALLOWED UNLESS PRIOR APPROVAL IS GIVEN BY THE NYSDOT. ADDITIONAL WORK ZONE TRAFFIC CONTROL WILL BE REQUIRED INCLUDING THE ADDITION OF REFLECTIVE MATERIALS AND LIGHTING.
5. STOP SIGNS SHALL BE (R1-1) ON BREAK-AWAY POSTS.
6. STOP LINES SHALL BE NYSDOT ITEM NO. 685.11.
7. ALL LAWN AREAS DISTURBED WITHIN R.O.W. SHALL RECEIVE TOPSOIL, SEED AND STRAW. NYSDOT ITEM NO. 610.1402.
8. A UTILITY PERMIT IS REQUIRED FOR ANY UTILITY WORK WITHIN THE NYSDOT RIGHT-OF-WAY.
9. HAZARDOUS WASTE NOTIFICATION - THE PERMITTEE ACCEPTS THE RIGHT-OF-WAY OF THE STATE HIGHWAY IN ITS 'AS IS' CONDITION. THE DOT MAKES NO REPRESENTATION AS TO THE ABSENCE OF UNDERGROUND TANKS, STRUCTURES, FEATURES OR SIMILAR IMPEDIMENTS TO THE COMPLETION OF THE WORK PERMITTED HEREUNDER, SHOULD PERMITTEE FIND SOME PREVIOUSLY UNKNOWN UNDERGROUND OBLIGATION TO CURE, REMOVE, REMEDY OR OTHERWISE DEAL WITH SUCH UNDERGROUND TANKS, STRUCTURE, FEATURE OR IMPEDIMENT IF SUCH IS DONE IN A MANNER WHICH MEETS ACCEPTABLE ENGINEERING PRACTICE IS PRE-APPROVED BY THE DOT. SHOULD PERMITTEE DETERMINE THAT SUCH UNFORESEEN UNDERGROUND IMPEDIMENT RENDERS PERMITTEE'S WORK AS AUTHORIZED BY THIS PERMIT UNFEASIBLE, PERMITTEE SHALL HAVE THE OPTION OF RESTORING THE HIGHWAY TO ITS ORIGINAL CONDITION AND NOT PERFOMING SUCH WORK.

WORK ZONE TRAFFIC CONTROL:
THE CONTRACT SHALL ADHERE TO THE FOLLOWING STANDARD SHEETS:
619-11, 619-20, 619-30, 619-60

EXISTING BUILDING
PROPERTY LINE
EXISTING ASPHALT
TREE LINE, EVERGREEN TREE, DECIDUOUS TREE, SHRUB
GUARD RAIL
RIGHT-OF-WAY LINE
100 EXISTING CONTOUR
100 PROPOSED CONTOUR
S.F. SILT FENCE
L.O.D. PROPOSED LIMIT OF DISTURBANCE
C.F.S. COMPOST FILTER SOCK
O.C.F. ORANGE CONSTRUCTION FENCE
SWALE/ DITCH, FLOW ARROW, CHECK DAM
ROCK WALL
X X X X BARBED WIRE FENCE
OH OVERHEAD UTILITIES, UTILITY POLE
D DRAINAGE PIPE, CATCH BASIN, END SECTION
S SANITARY PIPE, MANHOLE
FM FM FORCEMAIN
PROPOSED BUILDING
GV G GM GAS LINE/ VALVE/ METER
T TELCO VAULT TELCO LINE/ PEDESTAL/ HANDHOLE/ MANHOLE/ VAULT
EM E ELEC VAULT E TRANS ELEC METER/ LINE/ HANDHOLE/ MANHOLE/ VAULT/ TRANSFORMER
HYD WV W W WATER LINE/ HYDRANT/ VALVE/ WELL/ VAULT
C CABLE VAULT CABLE/ PEDESTAL/ HANDHOLE/ VAULT
F FIBER VAULT FIBER PEDESTAL/ HANDHOLE/ VAULT
U.G. U.G. UNDERGROUND UTILITIES
E & T ELECTRIC & TELEPHONE
SETBACK
C.O. TR MH CLEANOUT, TRAFFIC MANHOLE, MANHOLE
ONLY TRAFFIC CONTROL PAVEMENT MARKINGS
TRAFFIC LIGHT TRAFFIC LIGHT/ HANDICAP PARKING SYMBOL
INLET PROTECTION
LIGHT POLE/ WALL PACK
MAILBOX, POST, BOLLARD
BORE/ TEST PIT, DIRECTIONAL FLOW ARROW, FLAGGING
SIGN

LEGEND

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NOTES & LEGEND SHEET

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DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 2 OF 11

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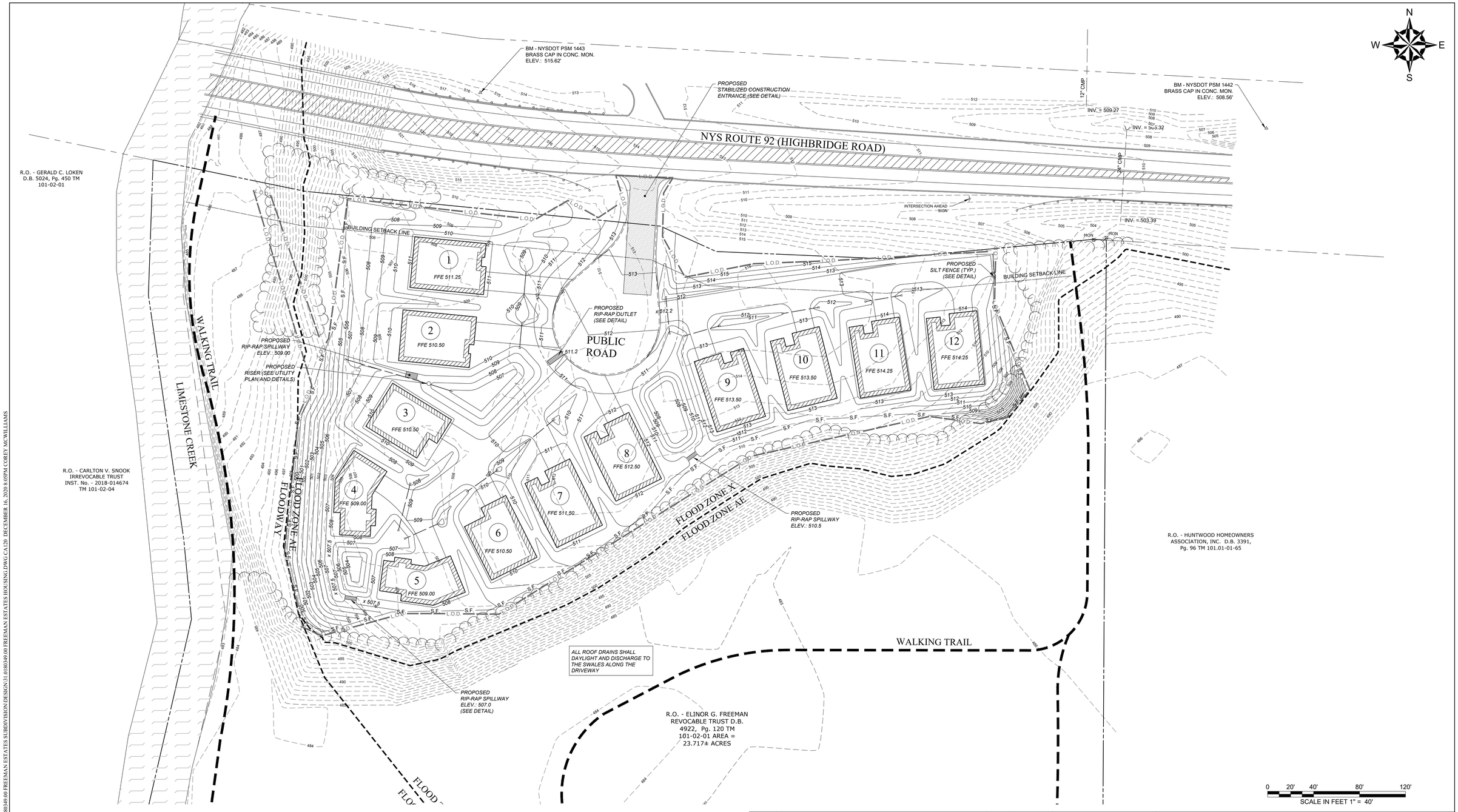

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GRADING & EROSION CONTROL PLAN

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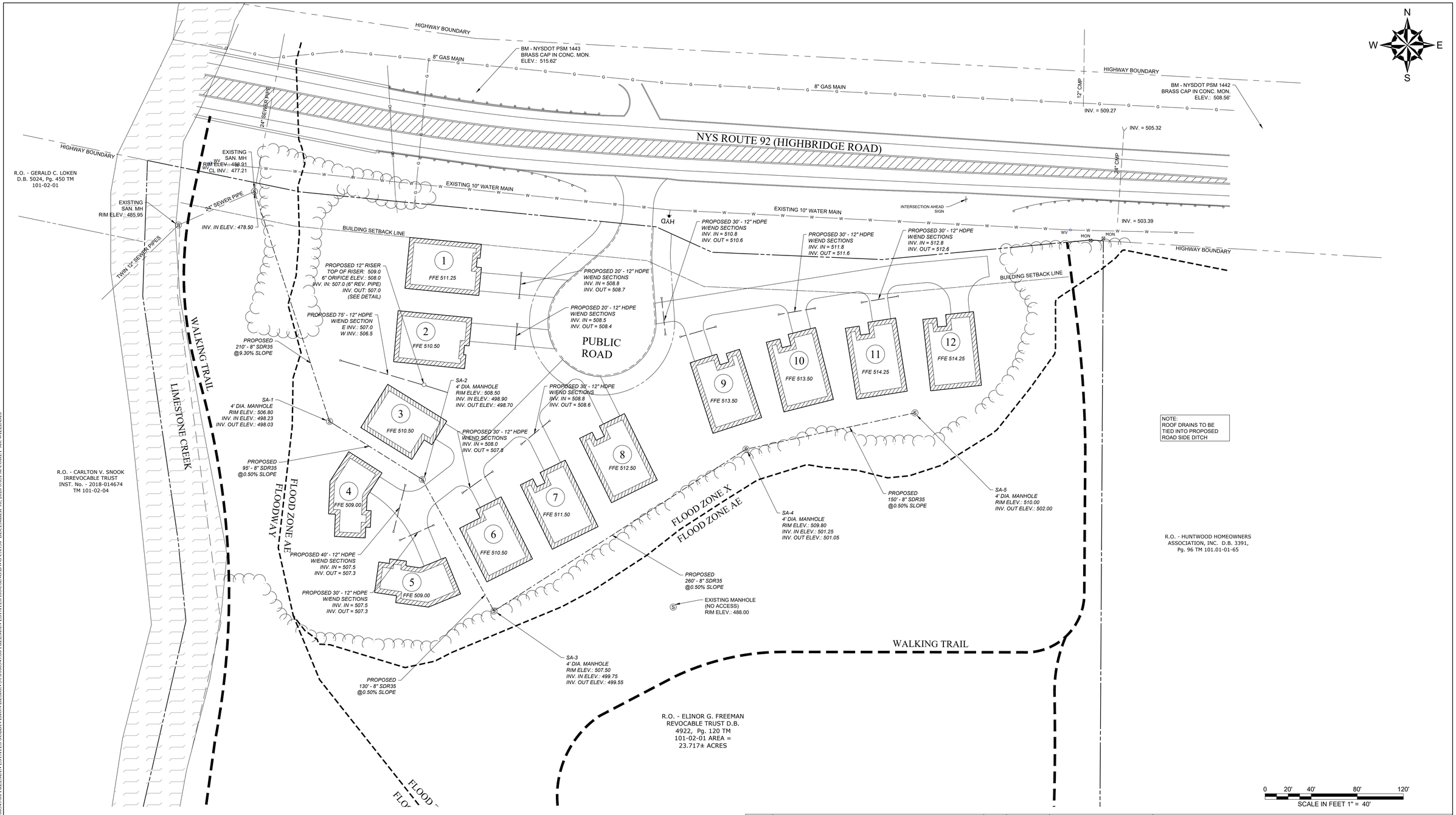
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 5 OF 11



© 2020 - GZA GeoEnvironmental, Inc. GZA-J:\31.0180349.00\FREEMAN ESTATES SUBDIVISION\DESIGN\31.0180349.00 FREEMAN ESTATES HOUSING.DWG CA130 DECEMBER 16, 2020 8:05PM COREY MCWILLIAMS

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069423
Licensed Professional Engineer

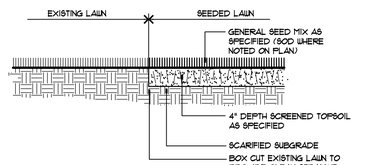
FREEMAN ESTATES HOUSING
7430 HIGHBRIDGE ROAD
TOWN OF MANLIUS, STATE OF NEW YORK

UTILITY PLAN

PREPARED BY:
GZAGeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
BROLEX PROPERTIES, LLC
5912 NORTH BURDICK STREET
EAST SYRACUSE, NY 13057

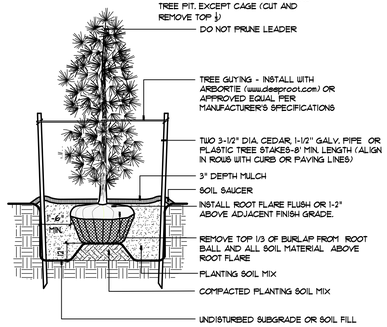
PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG CA130
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 6 OF 11



SECTION

3 / L-1 **SEEDED LAWN**

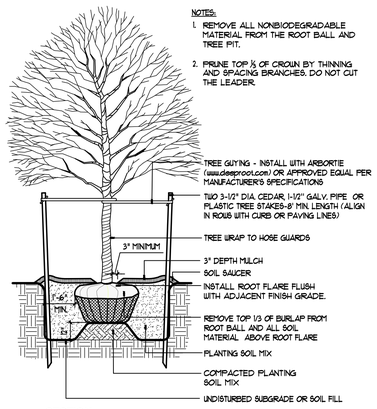
NOT TO SCALE — **FOR SLOPES LESS THAN 1V:4H AS INDICATED ON PLANS** — **32-9200-01A**



SECTION

2 / L-1 **EVERGREEN PLANTING**

NOT TO SCALE — **32-9300-03**



SECTION

1 / L-1 **TREE PLANTING**

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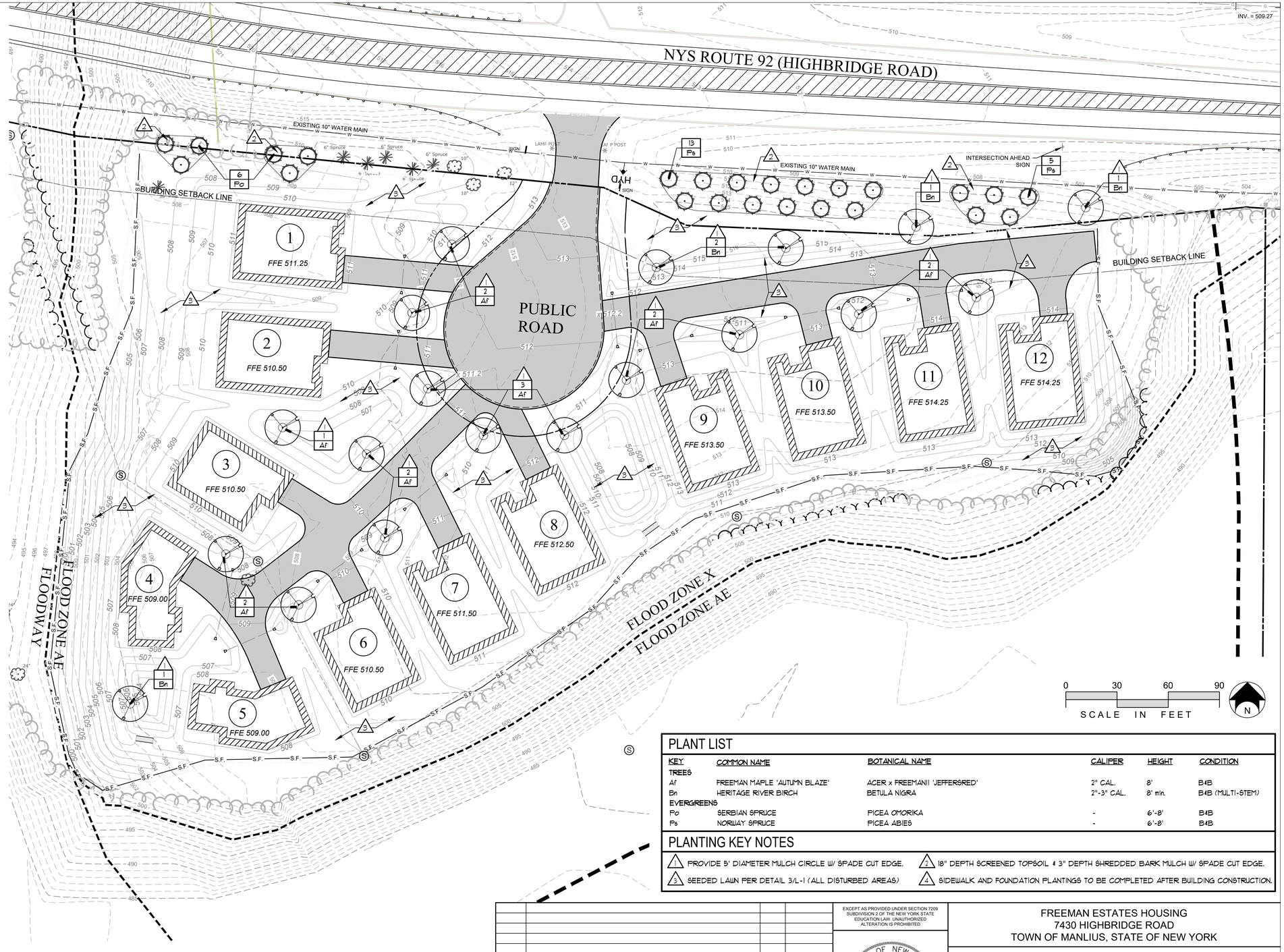

PLANT LIST

KEY	COMMON NAME	BOTANICAL NAME	CALIPER	HEIGHT	CONDITION
TREES					
Af	FREEMAN MAPLE 'AUTUMN BLAZE'	ACER x FREEMANII 'JEFFERSRED'	2" CAL.	8'	B&B
Bn	HERITAGE RIVER BIRCH	BETULA NIGRA	2"-3" CAL.	8' min.	B&B (MULTI-STEM)
EVERGREENS					
Po	SERBIAN SPRUCE	PICEA OMORIKA	-	6'-8'	B&B
Ps	NORWAY SPRUCE	PICEA ABIES	-	6'-8'	B&B

PLANTING KEY NOTES

1. PROVIDE 5' DIAMETER MULCH CIRCLE W/ SPADE CUT EDGE.
2. 18" DEPTH SCREENED TOPSOIL & 3" DEPTH SHREDDED BARK MULCH W/ SPADE CUT EDGE.
3. SEEDED LAWN PER DETAIL 3/L-1 (ALL DISTURBED AREAS)
4. SIDEWALK AND FOUNDATION PLANTINGS TO BE COMPLETED AFTER BUILDING CONSTRUCTION.

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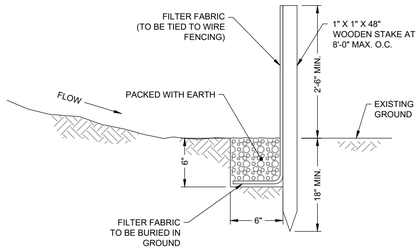
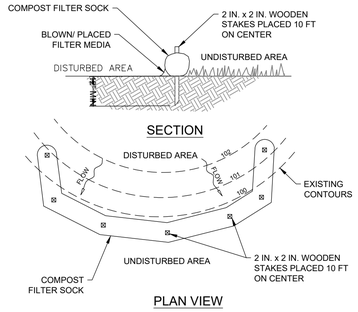


SILT FENCE DETAIL

NOT TO SCALE

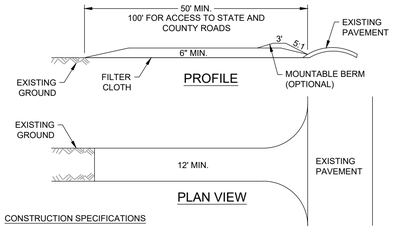


NOTES:

1. SOCK FABRIC SHALL MEET STANDARDS AND SPECIFICATIONS OUTLINED IN NYSDEC STORMWATER MANUAL.
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING ELEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.
3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
5. COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
6. BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

COMPOST FILTER SOCK

NOT TO SCALE

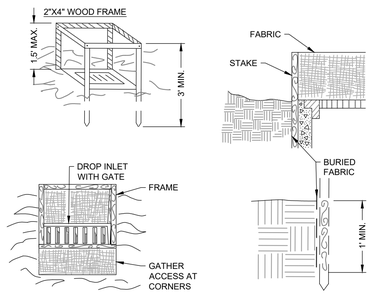


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN FIFTY (50) FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A THIRTY (30) FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRACKING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN EVENT.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVERFLOW STABILITY.
7. MAXIMUM DRAINAGE AREA 1 ACRE.

FILTER FABRIC INLET PROTECTION

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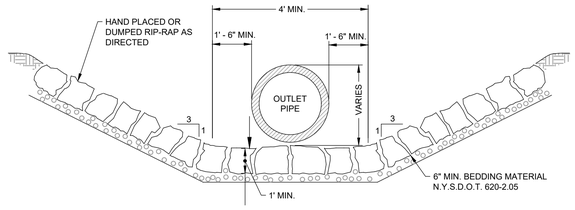

RIP-RAP DITCH FROM OUTLET PIPE DETAIL

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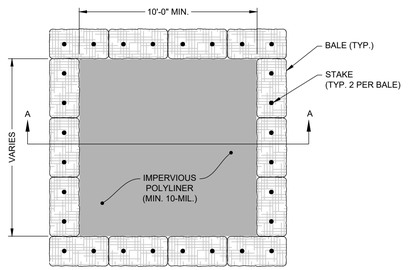
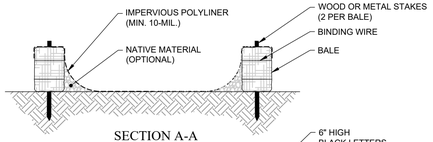


PLAN VIEW

NOT TO SCALE

CONCRETE WASHOUT AREA

(TYP. "ABOVE GRADE" WITH BALES)

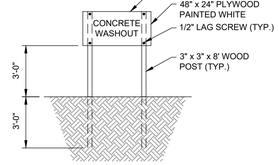


SECTION A-A

NOT TO SCALE

NOTES:

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS.
2. KEEP AS FAR FROM DRAINAGE CHANNELS AND WETLAND AREAS AS PRACTICAL.
3. SUMPS TO BE CLEANED AND WASTE CONCRETE REMOVED AND PROPERLY DISPOSED OF UPON COMPLETION OF WORK.



CONCRETE WASHOUT SIGN DETAIL (OR EQUIVALENT)

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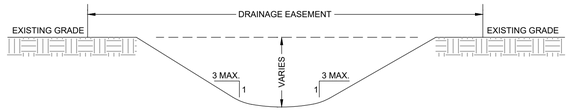
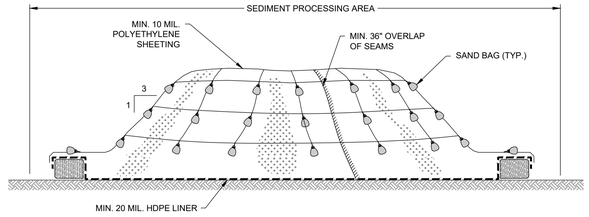


TYPICAL SWALE OR CHANNEL DETAIL

NOT TO SCALE



NOTES:

1. STOCKPILES SHALL BE PLACED ON MINIMUM 20 MIL HDPE LINER.
2. STOCKPILES SHALL BE COVERED WITH MINIMUM 10 MIL POLYETHYLENE SHEETING WHENEVER LOADING, STABILIZATION, OR PLACEMENT IS NOT OCCURING.
3. STOCKPILE AREAS SHALL BE SUBJECT TO DUST / ODOR CONTROLS WHENEVER LOADING, STABILIZATION, OR PLACEMENT IS OCCURING AND AS DIRECTED BY ENGINEER. STOCKPILES SHALL BE COVERED WITH POLYETHYLENE WHEN THESE ACTIVITIES ARE NOT BEING PERFORMED.
4. SHEETING COVERING STOCKPILE SHALL BE MAINTAINED TIGHTLY IN PLACE BY USING SAND BAGS ON ROPES WITH A MAXIMUM 10'-0" GRID SPACING IN ALL DIMENSIONS.
5. MINIMUM 36" OVERLAP OF ALL SEAMS REQUIRED.
6. STOCKPILE SIDE SLOPES SHALL BE NO STEEPER THAN 3 (HORIZONTAL) TO 1 (VERTICAL).
7. CONTRACTOR SHALL PLACE STRAW BALE BERMS AS SHOWN ON THE DETAIL ABOVE AROUND STOCKPILES GENERATED OUTSIDE OF THE SEDIMENT PROCESSING AREA. STRAW BALE BERMS, AS SHOWN ON THE DETAIL, ARE NOT REQUIRED FOR STOCKPILES IN THE SEDIMENT PROCESSING AREA.

TYPICAL STOCKPILE DETAIL

NOT TO SCALE

SOIL EXCAVATION AND BACKFILL RECOMMENDATIONS

EXCAVATIONS:

1. MAXIMUM ALLOWABLE SLOPES FOR EXCAVATIONS LESS THAN 20 FEET DEEP SHALL BE DONE IN ACCORDANCE WITH OSHA REGULATIONS, OR ANY APPLICABLE STATE AND OR LOCAL REGULATIONS.
2. SLOPING, BENCHING OR OTHER METHODS OF EXCAVATION SUPPORT FOR EXCAVATIONS GREATER THAN 20 FEET DEEP MUST BE DESIGNED BY A PROFESSIONAL ENGINEER.
3. CONTRACTOR SHALL ORGANIZE THE WORK IN A MANNER THAT EXCAVATIONS ARE OPEN FOR THE SHORTEST PRACTICAL TIME.
4. EXCAVATED OR IMPORTED BACKFILL MATERIALS SHOULD NOT BE STOCKPILED ADJACENT TO OPEN CUT EXCAVATIONS WITHIN A MINIMUM HORIZONTAL DISTANCE EQUAL TO THREE TIMES ITS DEPTH OR GREATER AS NECESSARY FOR SLOPE STABILITY AND ADJACENT TO THE SIDES OF SHEETED AND BRACED EXCAVATIONS WITHIN A MINIMUM HORIZONTAL DISTANCE EQUAL TO THE DEPTH OF THE EXCAVATION UNLESS THE EXCAVATION SUPPORT SYSTEM IS PROPERLY DESIGNED AND CONSTRUCTED FOR THE LOADS. STOCKPILING MATERIAL OVER EXISTING OR CONSTRUCTED UTILITIES MAY INDUCE SETTLEMENT BENEATH THEM AND SHOULD NOT BE PERMITTED.

BACKFILL RECOMMENDATIONS:

5. ORDINARY FILL (I.E. SUITABLE SOIL FROM EXCAVATION OPERATIONS) MAY BE USED FOR BACKFILL, PROVIDED THE MATERIAL IS STABLE, CAN BE COMPACTED TO THE REQUIRED DENSITY AS DESCRIBED BELOW. ORDINARY FILL SHOULD CONSIST OF SUITABLE ON-SITE SOIL, FREE OF ORGANICS, DELETERIOUS MATERIALS, ICE, SNOW, AND WASTE OF ANY KIND.
6. REPRESENTATIVE SAMPLES OF ALL FILLS AND BACKFILLS FOR USE ON THE PROJECT SHOULD BE TESTED USING MODIFIED PROCTOR METHOD (ASTM D1557) TO DETERMINE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT. THE MAXIMUM PARTICLE SIZE SHOULD BE NO GREATER THAN TWO-THIRDS OF THE LIFT THICKNESS. WATER CONTENT BY WEIGHT DURING COMPACTION SHOULD NOT EXCEED ±3 PERCENT OF OPTIMUM MOISTURE AS DETERMINED BY ASTM 1557.
7. IN STRUCTURAL AREAS (BENEATH HOMES, ROADS AND UTILITIES) FOR SOIL FILL SUBGRADE INTERVALS BELOW 3 FEET BELOW STRUCTURE, FILL LOOSE LIFT THICKNESSES SHALL BE NO GREATER THAN 12 INCHES. FOR FILL INTERVALS LESS THAN 3 FEET BELOW STRUCTURE (EXCLUDING SUBBASE STONE REQUIREMENTS), LOOSE LIFT THICKNESSES SHALL BE NO GREATER THAN 8 INCHES THICK. ALL LIFTS SHALL BE COMPACTED WITH A VIBRATORY SHEEPSFOOT COMPACTOR. FIELD COMPACTION SHOULD BE MEASURED PRIOR TO PLACING SUBSEQUENT LIFTS. SOIL SHALL BE COMPACTED TO A MINIMUM 90 PERCENT OF THE MAXIMUM DRY DENSITY FOR SOILS PLACED BELOW 3 FEET BELOW STRUCTURE, AND 95 PERCENT OF THE MAXIMUM DRY DENSITY FOR SOILS PLACED WITHIN 3 FEET BELOW THE STRUCTURE. COMPACTION OF BACKFILLED MATERIAL WITHIN THE ROADWAY WILL BE REQUIRED.
8. ROAD SUBBASE STONE SHALL BE COMPACTED TO A MINIMUM 95 PERCENT OF THE MAXIMUM DRY DENSITY.
9. IN NON-STRUCTURAL AREAS, SOIL FILL SHALL BE PLACED IN MAXIMUM 12-INCH THICK LOOSE LIFTS AND COMPACTED TO A STABLE MATRIX WITH A VIBRATORY SHEEPSFOOT COMPACTOR.
10. IN STRUCTURAL AREAS NOT REQUIRING FILL, THE EXPOSED SUBGRADES SHALL BE PROOF-COMPACTED WITH MULTIPLE PASSES OF A SHEEPSFOOT VIBRATORY COMPACTOR IN STATIC MODE PRIOR TO PLACEMENT OF CONCRETE FOR FOOTINGS OR ROAD SUBBASE STONE. WEAK OR SOFT SPOTS IDENTIFIED DURING PROOF COMPACTION SHALL BE EXCAVATED AND REPLACED WITH COMPACTED FILL. PROOF-ROLLING AND COMPACTION MAY BE WAIVED OR MODIFIED IF, WITH THE PROJECT AND TOWN ENGINEER'S CONCURRENCE, IT IS DETERMINED THAT THIS WILL DISTURB AN OTHERWISE SUITABLE SUBGRADE BASED ON OBSERVED FILED CONDITIONS.

TEMPORARY SEEDING REQUIREMENTS

1. SEEDING:
   - A. APPLY LAWN MIX AT A RATE (SEE SPECIFICATIONS)
   - B. APPLY SEED WITH A MECHANICAL SEEDER. OPTIMUM SETTING IN ONE INCH (EXCEPT SANDY SOILS, 2 INCHES).
   - C. WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTIPAKER TYPE SEEDER OR HYDRO-SEEDER IS USED, THE SEED BED SHALL BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A ROLLER, OR LIGHT DRAG. SEEDING OPERATIONS SHOULD BE ON THE CONTOUR.
2. MULCHING:
   - A. MULCH MATERIALS SHALL BE UN-ROTTED HAY OR STRAW AT A RATE OF 2.0 TO 3.0 TONS PER ACRE, OR 70 TO 90 POUNDS PER 1,000 SQUARE FEET. MULCH SHOULD NOT BE GROUND OR CHOPPED TO SHORT PIECES.
   - B. SPREAD UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 75 PERCENT TO 95 PERCENT OF THE SOIL SURFACE WILL BE COVERED.
   - C. MULCH ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER.

PERMANENT SEED REQUIREMENTS

1. SEEDBED PREPARATION:
   - A. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT (50%) CALCIUM PLUS MAGNESIUM OXIDES) AT A RATE PF 90 POUNDS PER 1,000 SQUARE FEET. APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OR 14 POUNDS PER 1,000 SQUARE FEET USING 10-20-10 OR EQUIVALENT.
   - B. WORK LIME AND FERTILIZER INTO SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM SEEDBED IS PREPARED.
   - C. REMOVE ALL ROCKS AND DEBRIS FROM SOIL SURFACE.
   - D. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACT, THE AREA MUST BE RE-TILLED AS ABOVE.
2. SEEDING:
   - A. PERMANENT SEEDING SHALL BE ERNST SOLAR FARM SEED MIX.
   - B. APPLY SEED WITH MECHANICAL SEEDER. OPTIMUM SEEDING DEPTH IS ONE INCH (EXCEPT SANDY SOILS, 2 INCHES).
   - C. WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTIPAKER TYPE SEEDER OR HYDRO-SEEDER IS USED, THE SEEDBED SHALL BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A ROLLER, OR LIGHT DRAG. SEEDING OPERATIONS SHOULD BE ON THE CONTOUR.
3. MULCHING:
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STATE OF NEW YORK
BARRY A. KLETT
069423
Licensed Professional Engineer

FREEMAN ESTATES HOUSING
7430 HIGHBRIDGE ROAD
TOWN OF MANLIUS, STATE OF NEW YORK

DETAIL SHEET (EROSION CONTROL)

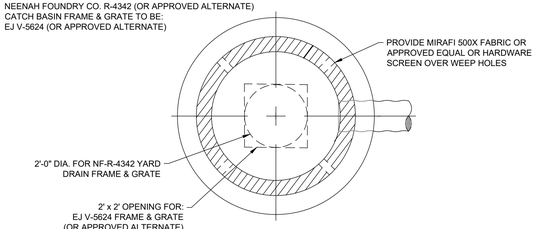
PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
BROLEX PROPERTIES, LLC
5912 NORTH BURDICK STREET
EAST SYRACUSE, NY 13057

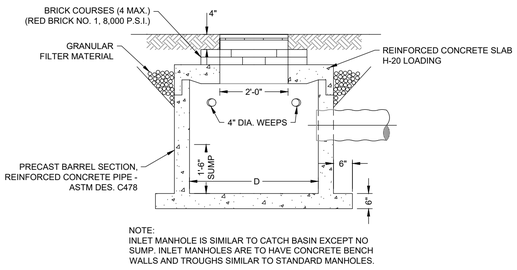
PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG CA500
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 8 OF 11

© 2020 - GZA GeoEnvironmental, Inc. GZA-J:\31.0180349.00\FREEMAN ESTATES SUBDIVISION\DESIGN\31.0180349.00 FREEMAN ESTATES HOUSING.DWG CA500 DECEMBER 16, 2020, 8:05PM COREY MCWILLIAMS

NOTE:
YARD DRAIN FRAME AND GRATE TO BE:
NEENAH FOUNDRY CO. R-4342 (OR APPROVED ALTERNATE)
CATCH BASIN FRAME & GRATE TO BE:
EJ V-5624 (OR APPROVED ALTERNATE)



PLAN SECTION
NOT TO SCALE



NOTE:
INLET MANHOLE IS SIMILAR TO CATCH BASIN EXCEPT NO SUMP. INLET MANHOLES ARE TO HAVE CONCRETE BENCH WALLS AND TROUGHS SIMILAR TO STANDARD MANHOLES.

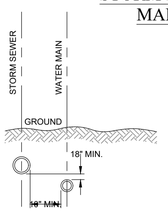
STANDARD PRECAST CONCRETE CATCH BASIN
NOT TO SCALE



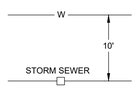
PLAN

SECTION

STORM SEWER & WATER MAIN CROSSING

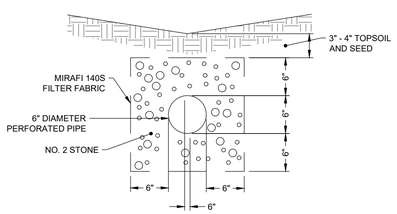


VERTICAL SEPARATION SECTION

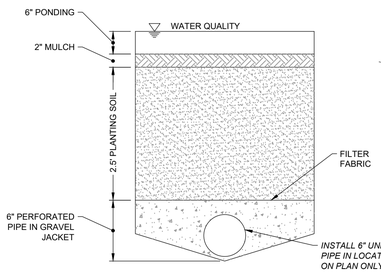


HORIZONTAL SEPARATION PLAN

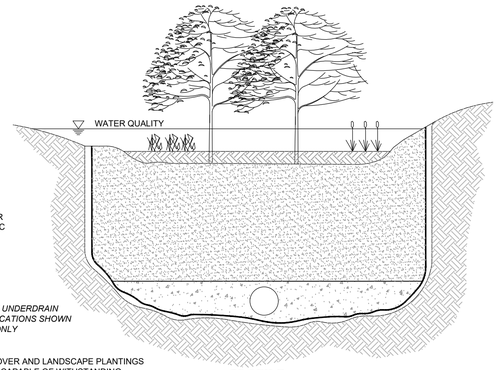
RELATION OF STORM SEWERS TO WATER MAINS
NOT TO SCALE



TYPICAL YARD UNDERDRAIN DETAIL
NOT TO SCALE



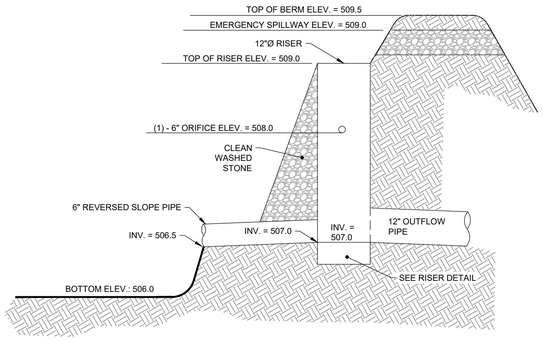
TYPICAL SECTION



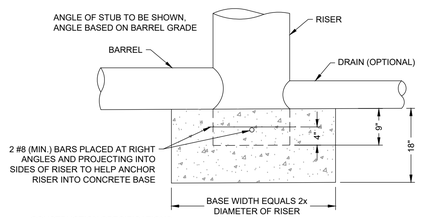
PROFILE

NOTES:
1. GRASS COVER AND LANDSCAPE PLANTINGS SHALL BE CAPABLE OF WITHSTANDING FREQUENT PERIODS OF INUNDATION AND DROUGHT.
2. (1) TREE PER 100 SQUARE FEET IS RECOMMENDED.

BIORETENTION FACILITY DETAIL
NOT TO SCALE



STORMWATER BASIN OUTLET CONTROL STRUCTURE
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. THE CONCRETE BASE SHALL BE POURED IN SUCH A MANNER TO INSURE THAT THE CONCRETE FILLS THE BOTTOM OF THE RISER TO THE INVERT OF THE OUTLET PIPE TO PREVENT THE RISER FROM THE BREAKING AWAY FROM THE BASE.
2. WITH ALUMINUM OR ALUMINIZED PIPE, THE EMBEDDED SECTION MUST BE PAINTED WITH CHROMATE OR EQUIVALENT.
3. RISER BASE MAY BE SIZED AS COMPUTED USING FLOTATION WITH A FACTOR OF SAFETY OF 1.2.

RISER DETAIL
NOT TO SCALE

Know what's **below.**
Call before you dig.

PERMITTING ONLY
NOT FOR CONSTRUCTION

NO.	ISSUE/DESCRIPTION	BY	DATE

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL OF NY (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

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STATE OF NEW YORK · BART A. KLETT · 069423 · Licensed Professional Engineer

FREEMAN ESTATES HOUSING
7430 HIGHBRIDGE ROAD
TOWN OF MANLIUS, STATE OF NEW YORK

DETAIL SHEET (STORM)

PREPARED BY:
GZAGeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
BROLEX PROPERTIES, LLC
5912 NORTH BURDICK STREET
EAST SYRACUSE, NY 13057

PROJ MGR: E.K.R.	REVIEWED BY: J.F.F.	CHECKED BY: C.J.M.	DWG CA502
DESIGNED BY: E.K.R.	DRAWN BY: E.K.R.	SCALE: AS NOTED	
DATE: DEC. 15, 2020	PROJECT NO. 31.0180349.00	REVISION NO.	SHEET NO. 10 OF 11

© 2020 - GZA GeoEnvironmental, Inc. G:\ZA\31\0180349.00 FREEMAN ESTATES SUBDIVISION\DESIGN\31.0180349.00 FREEMAN ESTATES HOUSING.DWG CA502 DECEMBER 16, 2020 8:03PM COREY MCWILLIAMS

ATTACHMENT S

AMENDMENTS TO THE SWPPP

This form will be utilized to document any amendments or modifications to the SWPPP that occur during construction.

Name	Date	Sheet Number	Modification	Rationale

ATTACHMENT T
NOTICE OF TERMINATION

Expected Fee: _____

TOWN OF MANLIUS

PLANNING DEPARTMENT

INITIAL APPEARANCE APPLICATION

DATE: _____

Name of Project: Abundant Solar Power (MI) LLC

Applicant must submit 12 copies of all site plans, surveys, and supporting data with the final application before a planning board meeting can be scheduled.

Location of Project: 5701 Bowman Rd, Manlius, NY 13057

Type of Project:

○ Division of Land ○ Subdivision ○ Accessory Use ○ Zone Change ○ Site Review ☑ Other Solar array

Developer: Abundant Solar Power Phone: 416 917 5667

Address: 700 W. Metro Park, Rochester Zip: NY 14623

Tax Map Number(#)/s: 074.-01-06.1

Present Zoning: RA Desired Zoning: _____

Total Acreage: 17.5 acres Total Number of Lots: _____

Property Owner/s: Town of Manlius Phone: _____

Address: 301 Brooklea Drive, Fayetteville Zip: NY 13066

Tax Map#(s): _____ Owner's Signature: _____

Printed Name: _____

Lessee

Property Owner/s: Abundant Solar Power (MI) LLC Phone: 416 264 3880

Address: 700 W. Metro park, Rochester Zip: NY 14623

Tax Map#(s): _____ Owner's Signature: [signature]

Printed Name: Richard Lu.

Use next page for additional known property owners' information

---

Planning Board Meeting Date Assignment: _____

Fee: _____ Paid: _____ Per: ○ Credit/Debit Card ○ Check ○ Cash

TOWN OF MANLIUS

DISCLOSURE AFFIDAVIT

This affidavit is a part of and must be completed and attached to every application, petition, request submitted for a *site plan, variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license* or *permit.*

Province of Ontario)
) SS:
)

I. Richard Lu ., being duly sworn, deposes and says that (s) he is:

Director, Abundant Solar Power (MI) LLC
(applicant, petitioner, corporation officer, property owner, *etc.)*

II. That deponent has read and is familiar with the provisions of the General NY Municipal Law, Section 809 which states:

A Every application, petition or request submitted for a site plan, variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provisions or any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state officer or any officer or employee of such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

B. For the purpose of this action an officer or employee shall be deemed to have an interest in the applicant when (s)he, his/her spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them:

1) is the applicant, or
2) is an officer, director, partner or employee of the applicant, or
3) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
4) is a party to an agreement with such an applicant, express or implied, whereby (s) he may receive any payment or other benefit, whether or not for services rendered, or contingent upon the favorable approval of such application, petition or request.

C. Ownership of less than five percent (5%) of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.

D. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

III. That no Town of Manlius officer, employee or a relative of either, as defined in Section 809 General Municipal Law has any interest in this application.

-OR-

If a Town of Manlius officer, employee or relative of either as defined in Section 809 General Municipal law has any interest in this application, the full particulars are provided on an attached sheet.

Date: November 30 ,2020

D : _____, W___

Richard Lu

(Print Name)

(Signature)

Abundant Solar Power (m1) LLC

(Entity Name)

Director

By (Officer) (Title)

700 West Metro Park, Rochester NY 13066

(Mailing Address of Applicant)

416 264 3880

(Telephone Number)

(Print Name)

(Signah1re)

(Entity Name)

By (Officer) (Title)

(Mailing Address of Applicant)

(Telephone Number)

ACKNOWLEDGEMENTS

Province of Ontario)
) SS:
)

On this 30th day of November in the year 2020 , before me, the undersigned, a notary public in and for said province, personally appeared_____,

_____., and_

_____personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within Petition and acknowledged to me the he/she/they executed the same in his/her/their capacity, and that by his/her/their signature(s) on the Petition, the individual or the persons upon behalf of which the individual acted executed the instrument.

46936I

Notary Public

CORPORATE ACKNOWLEDGEMENT

Province of Ontario)
) SS:
)

Richard Lu, being duly sworn, deposes and says the s(he) is the Director of Abundant Solar Power (M1) LLC corporation named in the within Application/Petition, that s(he) has read the foregoing affidavit and knows the contents thereof; that the same is true of s(he) own knowledge, except as to those matters therein stated to be alleged upon information and belief, and as to those matters s(he) believes it to be true.

Applicant Signature

Subscribed to me before this 30th day
Of November, 20 20

Notary Public

06/29/16 LB

ABUNDANT Solar Power Inc.
700 West Metro Park, Ground Level
Rochester, New York
14623-2678
Tel: 202 818 9194

ABUNDANT Solar Energy Inc.
Suite 900, 2235 Sheppard Ave E.
Toronto, ON M2J 5B5
Tel: 1 416 494 9559
www.abundantsolarenergy.com

RECEIVED
DEC 16 2020
By

Chairman Joe Lupia
Town of Manlius Planning Board
301 Brooklea Drive, Fayetteville,
NY 13066

Friday Dec 11th, 2020

Dear Chairman Lupia

I am reaching out to you today in order to submit our application for Planning board review and approval of the Town of Manlius Closed Landfill Solar project at 5701 Bowman Road, Manlius NY, 13057. The project will be known as Abundant Solar Power (M1) LLC.
I represent Abundant Solar Power and we have leased approximately 20 acres at the closed land fill, property tax id 074.-01-06.1, for the purpose of building and operating a 5MWac solar array. The power generated will be fed into the local distribution grid infrastructure and power local homes and businesses with green, clean, renewable power.
Our submission consists of the following documents:

1. Application Form and affidavit signed and notarized
2. Letter concerning SEQR and Type II status
3. SEAF for information only
4. Preliminary site plan
5. Wetland delineation
6. Slope Image

We have not included a survey at this time, as we are still in submission to the Utility for confirmation of capacity and interconnection. As the result of the Cesir could reduce the scale approved, we do not typically do the survey before we have this certainty. We have, however, had our local engineering partners at Barton & Laguidice conduct a Wetland delineation assessment in the last 60 days in order to gain clarity around Wetland presence and impact on setbacks. This has been included. We are happy to share the Survey when available. The Alta survey is also required for our Title insurance which is a condition of financing.

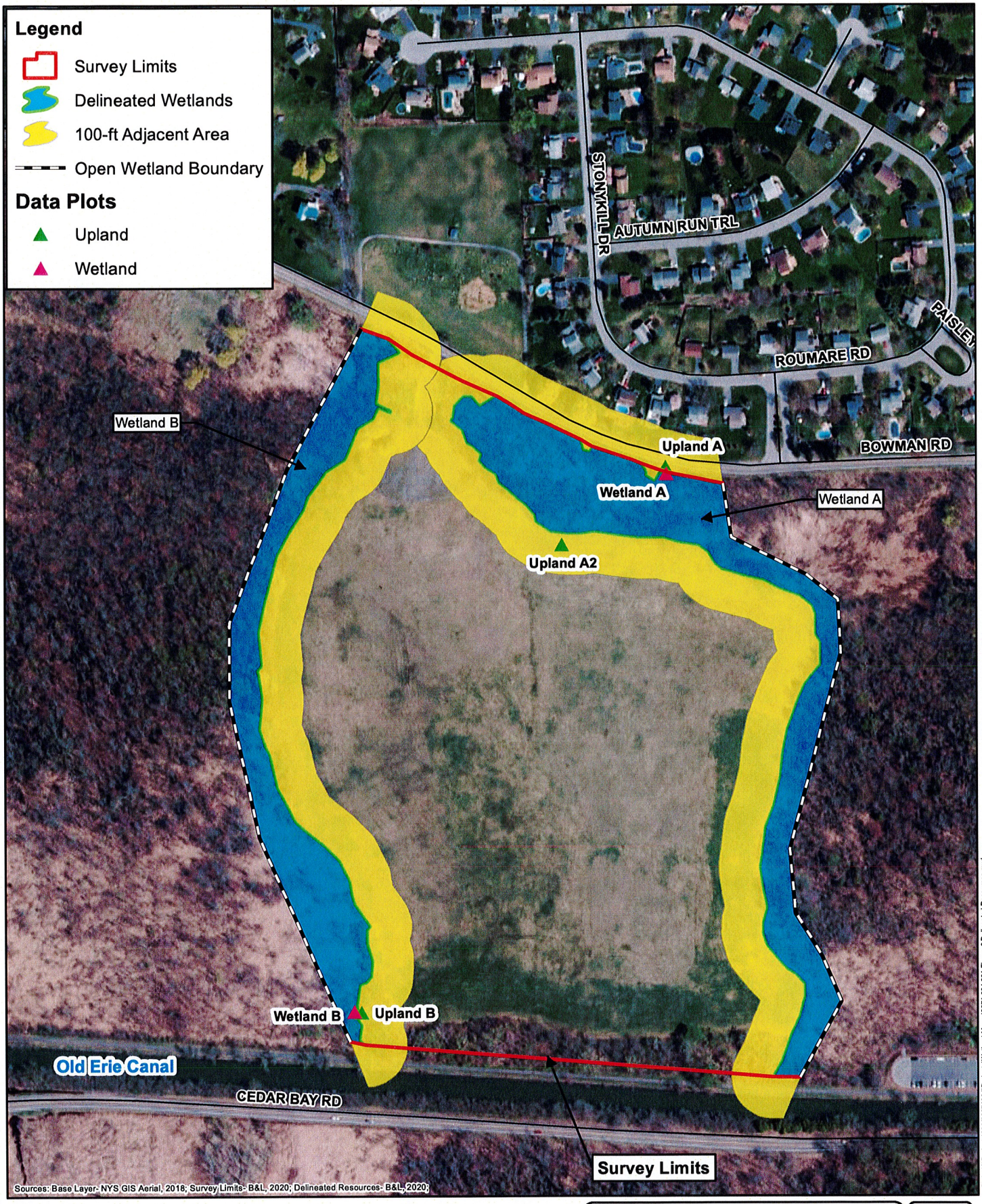
Should you require it, we are also happy to provide you with a decommissioning plan and associated bond / contribution schedule.
Please let me know if there are any other requirements or questions that you might have.

Sincerely,

M. Clark

Melissa Clark
VP Business Development
Abundant Solar Power

Mobile: 416 917 5667
Melissa.clark@abundantsolarenergy.com



Barton & Loguidice

N W E S

0 150 300 600 Feet

Abundant Solar Power, Inc.
Manlius Landfill Photovoltaic Array

Delineated Resources

Onondaga County November 2020 New York

Figure 6

Project No. 2271.004



SURVEY NOTE

1. BASE MAPPING COMPILED FROM NYSGIS CLEARING HOUSE PARCEL DATA, ORTHO IMAGERY, AND 2017 LIDAR DATASETS. INFORMATION FOR REFERENCE ONLY AND SHOULD BE CONSIDERED APPROXIMATE.

Plotted: Dec 11, 2020 - 8:57AM STR By: lan
Z:\JB-_Vault\WE\8217402-1071-4823-8927-9905054541471\0\2171000-217199\2171457\VL\2271.004.001-Manlius LF Solar-SLOPE ANALYSIS (0 2171457).dwg
Checked by _____ Drawn by TSC Designed by ZTP In charge of CJM

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION".

REVISIONS

ABUNDANT SOLAR POWER
TOWN OF MANLIUS LANDFILL SOLAR ARRAY

SITE CONDITIONS PLAN

ONONDAGA COUNTY, NEW YORK
TOWN OF MANLIUS

Barton & Loguidice

Date: DECEMBER, 2020
Scale: 1" = 150'
Sheet Number: 01
File Number: 2271.004.001

ABUNDANT Solar Energy Inc.
Suite 900, 2235 Sheppard Ave E,
Toronto, ON M2J 5B5
Tel: 1 416 494 9559
www.abuandantsolarenergy.com

Chairman Joe Lupia
Town of Manlius Planning Board
301 Brooklea Drive, Fayetteville
NY13066

Re: Town of Manlius Landfill Solar project Monday November 23, 2020

Dear Chairman Lupia

We are writing in reference to the solar array development proposed by Abundant Solar Power, Inc. (ASP) at the closed landfill in the Town of Manlius, New York. As you are likely aware, ASP is progressing with the environmental review, site planning, and permitting process for development of the solar array. We have already assisted the Town of Manlius Board with respect to their review of the project in compliance with the State Environmental Quality Review Act (SEQR) and had identified the project as a "Type II action" under SEQRA in accordance with the current regulations.

As you may or may not be aware, on January 1, 2019, amendments to the SEQR regulations became effective. In the opinion of our Engineers at B & L, these amendments have resulted in the proposed solar array development falling under the definition of a Type II Action. The relevant excerpts from NYCRR Part 617 are outlined below. § 617.5 Type II Actions (a) Actions or classes of actions identified in subdivision (c) of this section are not subject to review under this Part, except as otherwise provided in this section. These actions have been determined not to have a significant impact on the environment or are otherwise precluded from environmental review under Environmental Conservation Law, article 8.

The actions identified in subdivision (c) of this section apply to all agencies. (c) The following actions are not subject to review under this Part: …(14) installation of solar energy arrays where such installation involves 25 acres or less of physical alteration on the following sites: (i) closed landfills;…

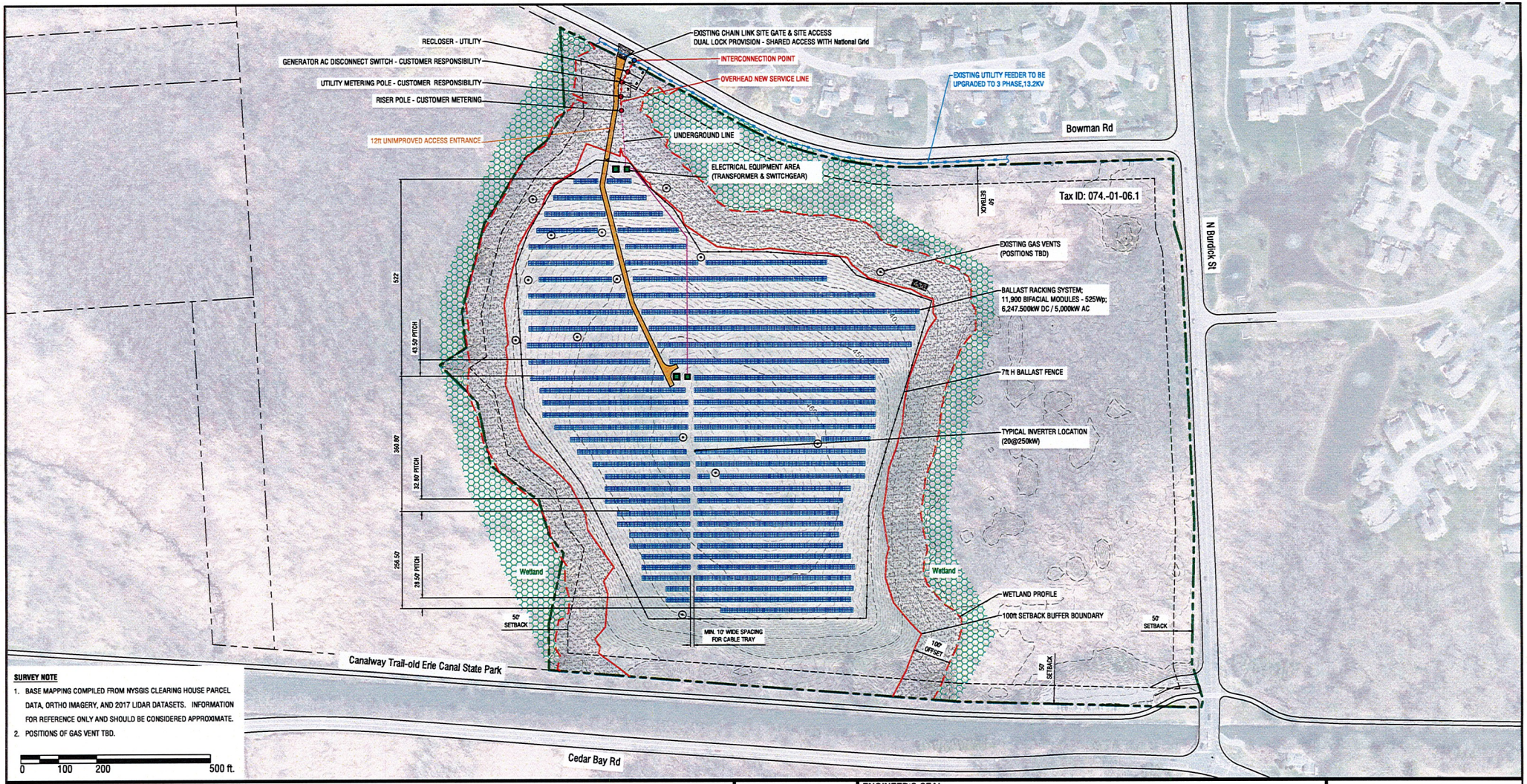
According to the New York State Department of Environmental Conservation (NYSDEC), "Any action or class of actions listed as Type II in 617.5 requires no further processing under SEQR. There is no documentation requirement for these actions, although it is recommended that a note be added to the Planning boards project file indicating that the project was considered under SEQR and met the requirement for a Type II action."

We would, therefore, respectfully suggest that it would be acceptable for the Town of Manlius to acknowledge the project classification as a Type II Action. Please contact me at 416-917 5667 should you have any questions or would like to discuss this any further.

Sincerely,
Melissa Clark

M. Clark

VP Business Development
Abundant Solar Energy Inc.
Melissa.clark@abundantsolarenergy.com



5701 Bowman Rd.,Town of Manlius, NY 13057

ABUNDANT SOLAR

PROJECT NAME: East Syracuse Landfill Solar Farm

SYSTEM SIZE: 6,247.500kW DC / 5,000kW AC

DATE: November 24, 2020

GPS LOCATION: 43.045908, -76.026251

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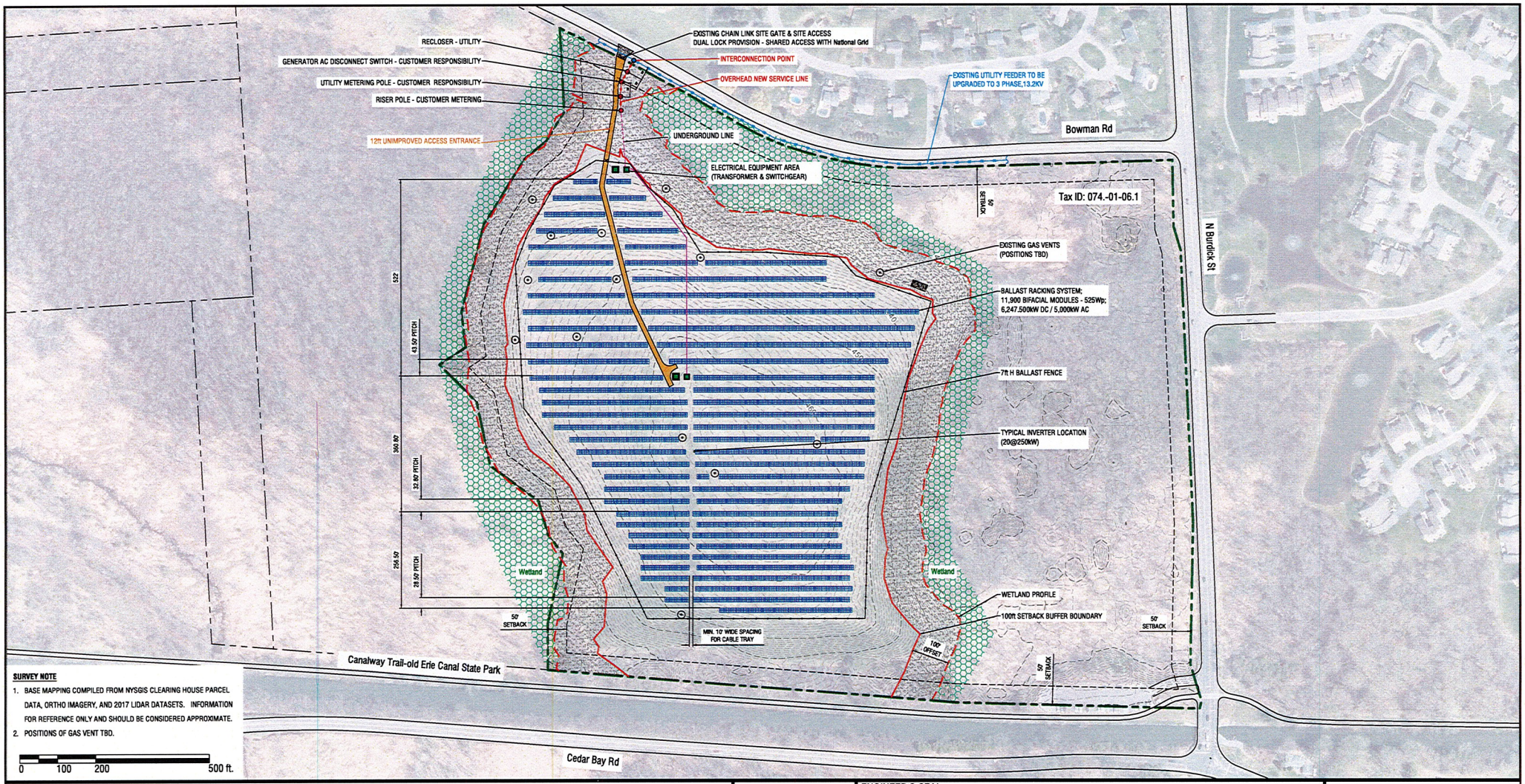
THIS DRAWING CANNOT BE MODIFIED AND / OR REPRODUCED WITHOUT THE CONSENT OF THIS OFFICE

ENGINEER'S SEAL

ABUNDANT
Solar Power Inc.

700 WEST METRO PARK
ROCHESTER, NY 14623
T: 416 494 9559
www.abundantsolarenergy.com



5701 Bowman Rd.,Town of Manlius, NY 13057

ABUNDANT SOLAR

PROJECT NAME: East Syracuse Landfill Solar Farm

SYSTEM SIZE: 6,247.500kW DC / 5,000kW AC

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ENGINEER'S SEAL

ABUNDANT
Solar Power Inc.

700 WEST METRO PARK
ROCHESTER, NY 14623
T: 416 494 9559
www.abundantsolarenergy.com

Short Environmental Assessment Form
Part 1 - Project Information

Instructions for Completing

Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information

Name of Action or Project:

Solar Project Manlius - M1

Project Location (describe, and attach a location map):

5701 Bowman Rd, Manlius, NY 13057, USA

Brief Description of Proposed Action:

Abundant Solar Power, Inc. is developing plans for a 6.25 MW DC/ 5 MW AC solar power photo-voltaic plant which will cover 17.5 -acres (tax parcel 074.-01-06.1). The project will generate clean renewable energy for the local community and surrounding areas. The plant will consist of approximately 660 tables with between 30 to 32 panels per table. This project will yield a panel count approximately 11,900. The solar table modules will be free-standing structures utilizing a ballast system as to not penetrate the land fill cap. To operate the plant, one transformer pad and one main switch gear pad will be installed on concrete pads. The maximum extent of ground disturbance will be approximately 0.5 acre.

Name of Applicant or Sponsor:	Telephone: 1-416-494-9559 ext.104
Abundant Solar Power (M1) LLC	E-Mail: elissa.clark@abundantsolarenergy.com

Address:

700 West Metro Park

City/PO:	State:	Zip Code:
Rochester	New York	14623

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval: Town Board - Land Lease & Power Purchase Agreements; Town Planning Board - Site Plan Approval; Town Code Enfrocement Officer - Building Permi; NYSERDA - Funding approval;	☐	☑

3. a. Total acreage of the site of the proposed action? +/- 17.5 acres
   b. Total acreage to be physically disturbed? +/- 0.5 acres
   c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 0 acres

4. Check all land uses that occur on, are adjoining or near the proposed action:

5. ☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☑ Commercial ☑ Residential (suburban)
   ☑ Forest ☐ Agriculture ☐ Aquatic ☐ Other(Specify):
   ☐ Parkland

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☐	☑	☐
b. Consistent with the adopted comprehensive plan?	☐	☐	☑

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape? This is a Town project and is supported by the municipality.	☐	☑
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: _____	☑	☐
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☑	☐
b. Are public transportation services available at or near the site of the proposed action?	☑	☐
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	☑	☐
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies: _____ _____	☐	☑
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: _____ _____	☑	☐
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: _____ _____	☑	☐
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	☑	☐
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	☐	☑
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☐	☑
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody? If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____ _____ _____	☑	☐

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☑ Forest ☐ Agricultural/grasslands ☐ Early mid-successional

☑ Wetland ☐ Urban ☑ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered? Northern Long-eared Bat, In...	☐	☑
16. Is the project site located in the 100-year flood plan? Floodplain is located on the same tax parcel but located outside of the project area (see attached floodplain map)	☐	☑
17. Will the proposed action create storm water discharge, either from point or non-point sources?	☐	☑
If Yes, a. Will storm water discharges flow to adjacent properties?	☐	☑
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?	☐	☑
If Yes, briefly describe: The storm water will be directed to adjacent wetlands and the Towns storm drains. Grass cover will mostly remain undisturbed.		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)? If Yes, explain the purpose and size of the impoundment:	☑	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: The parcel is a closed landfill owned by the Town of Manlius	☐	☑
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe:	☑	☐

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

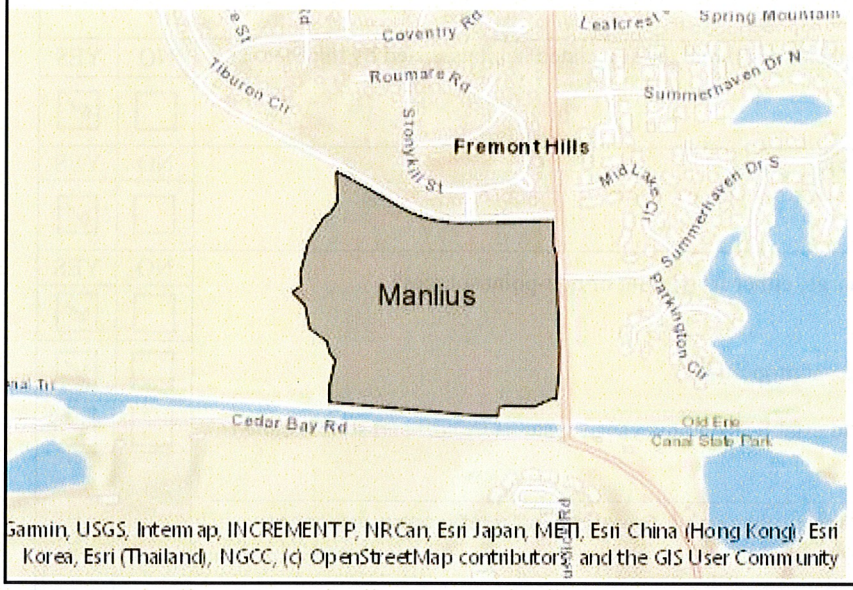
Applicant/sponsor/name: Abundant Solar Power (M1) LLC Date: 11/23/2020

Signature: _____ Title: President

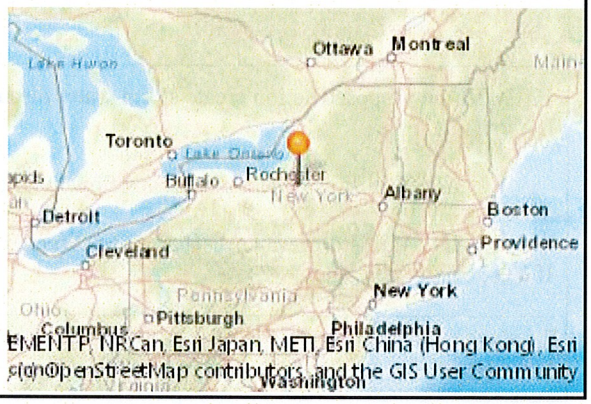
PRINT FORM

EAF Mapper Summary Report

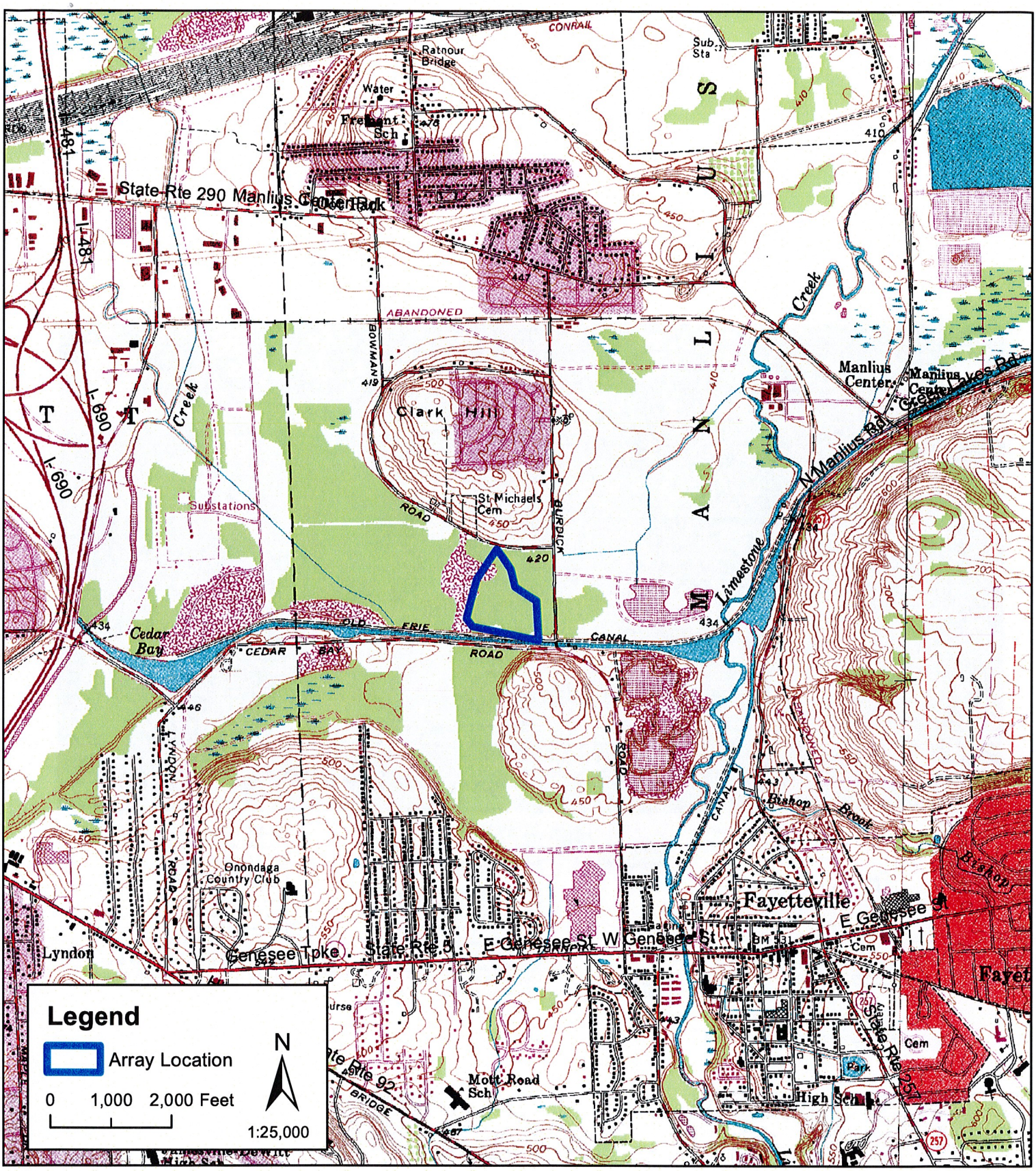
Monday, November 23, 2020 10:18 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	No
Part 1 / Question 12b [Archeological Sites]	Yes
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	Yes
Part 1 / Question 15 [Threatened or Endangered Animal - Name]	Northern Long-eared Bat, Indiana Bat
Part 1 / Question 16 [100 Year Flood Plain]	Yes
Part 1 / Question 20 [Remediation Site]	No



Data Sources: 1. USGS Quads: CUGIR 2. Roads: TIGER 2017 Prepared 11/23/2020 by: Abundant Solar Power Inc. Contact: 416-494-9559 www.abundantsolarenergy.com Justin Lam, GIS Analyst	Abundant Solar Power Inc. ABUNDANT	M1 Town of Manlius Onondaga County	USGS Map Onondaga QUAD Figure 1



PIN
Approximate location based on user input and does not represent an authoritative property location

MAP PANELS
Selected FloodMap Boundary
Digital Data Available
No Digital Data Available
Unmapped

OTHER AREAS
NO SCREEN Area of Minimal Flood Hazard Zone X
Effective LOMRs
Area of Undetermined Flood Hazard Zone D
Otherwise Protected Area
Coastal Barrier Resource System Area

SPECIAL FLOOD HAZARD AREAS
Without Base Flood Elevation (BFE) Zone A, V, A99
With BFE or Depth
Regulatory Floodway Zone AE, AO, AH, VE, AR

OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
Future Conditions 1% Annual Chance Flood Hazard Zone X
Area with Reduced Flood Risk due to Levee. See Notes. Zone X
Area with Flood Risk due to Levee Zone D

OTHER FEATURES
20.2 Cross Sections with 1% Annual Chance
17.5 Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature

GENERAL STRUCTURES
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall

Woodland Hills Subdivision

5280 Hoag Lane

Town of Manlius, NY

Tax ID No. 104.-01-39.2

RZE# 17061

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD, SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089

Draft Environmental Impact Statement

Original: Thursday, November 19, 2020

Prepared for:

Mr. Tom Douglas

Thomas Allen Homes

Developer

Lead Agency:

TOWN OF MANLIUS PLANNING BOARD

301 Brooklea Drive, Fayetteville, NY 13066

Contact:

Planning and Development Department -- (315) 637-8619

Date Accepted by Lead Agency: _____

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Exhibit 33 – 2017 Instructional Hiring Report

Exhibit 34 – 06/13/2019 Additional Subsurface Investigation Report Hoag Lane

*Indicates exhibits with Response Letter from Sponsor followed by original Comment Letter from Town Engineer

EXECUTIVE SUMMARY

This Draft Environmental Impact Statement ("**DEIS**") has been prepared in accordance with the requirements of the New York State Environmental Quality Review Act ("**SEQRA**") and its implementing regulations found at New York Codes, Rules and Regulations ("**NYCRR**"), Title 6, Part 617. The content with regard to the impacts addressed is specified by the Town of Manlius Planning Board (the "**Planning Board**" or the "**Board**"), acting as lead agency, resolution dated August 10, 2020, and as otherwise indicated in this DEIS.

As discussed herein, as part of the Environmental Impact Statement process and necessary evaluation of alternatives, the applicant and project sponsor, Hoag Road Development, LLC (the "**Sponsor**"), incorporates the design submission dated June 17th, 2020 and Revised July 1st, 2020 at Exhibit 01 (the "**Final Design**" or the "**Project**") as its proposed action.

The Sponsor has provided supporting information detailed in this DEIS to mitigate the potential environmental impacts of the Project (defined below). This Project Sponsor offers this document as a well-considered proposal that they feel sufficiently addresses the concerns previously identified by several entities during the SEQRA process.

Based on the Town of Manlius Zoning Code, Subdivision Review in New York State[1], NYSDEC Blue Book, Town Law §278 and design professionals (i.e. Licensed Landscape Architect and Licensed Civil Engineer) it is the sponsor's contention that the site is ideal for a residential subdivision development that meets NYS subdivision design principals based on the following reasons. First, the project site location is off the sightline of main routes in the Town of Manlius ("**Manlius**") such as Churchill Lane. Second, the project is considered "infill development" as defined by Municipal Research and Services Center (MRSC)[2] which states "Infill development is the process of developing vacant or under-used parcels within existing urban areas that are already largely developed." Third, project site has agricultural land of varying soil quality (Exhibit 02) that would require the use of significant quantities of fertilizers for active agriculture, and that has consequently been fallow for half of a century (Exhibit 03). Fourth, the number of proposed building lots are limited and the placement of them is unobtrusive to neighboring properties.

Therefore, it is the sponsor's contention that the current project proposal attempts to meet the current town code, complies with current state and local regulations, and potentially limits the impacts on the environment in the spirit of responsible site development.

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[1] New York Department of State. Division of Local Government Services. (2015) *Subdivision Review in New York State.* New York Department of State

[2] (http://mrsc.org/home/explore-topics/planning/development-types-and-land-uses/infill-development-completing-the-community-fabric.aspx#:~:text=Infill%20development%20is%20the%20process,the%20normal%20course%20of%20urbanization.)

The project sponsor feels that this proposal, with environmental concerns mitigated, will create substantially less of an environmental impact than a "no action" alternative (See **ALTERNATIVES**) or other alternative uses of the site as described below.

DESCRIPTION OF ACTION

The property that is the subject of the Final Design comprises approximately 30.04-acres of agricultural land. It is located wholly on the southern side of Hoag Lane, at 5280 Hoag Lane, opposite Shiraz Ln, in the Town of Manlius (the "TOWN"), Onondaga County, New York State. The property bears Tax Map Number 104.-01-39.2 (the "Project Site"). As shown on the Site Plans, dated August 08th, 2020 prepared by Keplinger Freeman Associates, the Sponsor proposes to create 20 new individual residential lots and one existing lot for a total of 21 lots. The existing structure formerly known as the "Rodgers Residence" will remain on the property as part of the subdivision. Roads, utilities and other site improvements are also included (such improvements, collectively, the "Improvements" and such development together with the Improvements, collectively, the ("project") and is located in the Restricted Agricultural Districts ("**R-A**)" zoning district.

The construction phase of the Project will cause a total disturbance of approximately 20 acres of land. The overall site construction has been broken into 7 phases with each phase limiting overall site disturbance to less than 7.82 acres of land. Individual home construction will begin during phase 7 and be completed at a later date based on sale of homes. All individual homes will be constructed with NYSDEC erosion control best management practices. Only two phases and a total of 12 weeks will exceed the 5-acre limit for coverage under the NYS SPDES General Permit for Construction Activity. This document provides a more detailed description of the estimated disturbance and how the estimated disturbance was calculated under the discussion of SEQR Item **1f** under SEQR Items Proposed Discussion and Mitigation Measures below.

Existing residences in the area obtain drinking water from public water mains owned by OCWA and sufficient water and connect ability are available in the Project Site vicinity. Sanitary sewer systems also exist in the vicinity of the Project Site on Shiraz Lane within the publicly owned right of way. According to Onondaga County Water/ Environment Protection, sufficient capacity exists within the sewer collection system and its ultimate treatment destination to accommodate the project. More information on utilities and their availability is presented under the discussion of **Environmental Setting**.

ENVIRONMENTAL and HISTORICAL SETTING

Project site is located within Onondaga County, Town of Manlius. Prior to European settlement of the region, the Onondaga Nation of the Haudenosaunee (Iroquois) Confederacy occupied the territory, along with other neighboring nations within the Confederacy. The seventeenth century was marked by contact and trade between the Onondaga and European traders and missionaries. Throughout the seventeenth and eighteenth centuries, the Onondaga were embroiled in European international wars. In 1779, military campaigns swept through the region in retaliation against Onondaga involvement in the American Revolutionary War.

After the war, the State confiscated all lands held by British loyalists in Central New York. The 1788 Treaty of Fort Schuyler granted New York State title to a vast swath of land held by the Onondaga Nation, including portions of what today comprises parts of Cayuga, Cortland, Onondaga, and Seneca counties. The State set aside the New Military Tract, a 1.5 million-acre tract of land in the Central New York area to compensate soldiers who fought in the Revolutionary War. The Tract was divided into 28 townships, each containing one hundred – 600-acre lots arranged in a uniform grid pattern. Although the Tract lands were set aside for veterans, many of them either neglected to claim their land or sold their land to speculators. Project site was located within Military Tract 76 of Manlius. By 1790, settlers from New England, New Jersey, Pennsylvania, and the Hudson Valley established incipient towns and villages.

Onondaga County was formed in 1794 from Herkimer and Tioga Counties, and named after the Onondaga Nation. Numerous creeks, rivers, and lakes throughout the county provided waterpower for early industries. The Onondaga and early American settlers both became involved in salt production at the southern end of Onondaga Lake. By 1795, the Onondaga relinquished all remaining land claims in exchange for an annuity and yearly allowance of salt. The Onondaga Reservation was established south of the lake, the last remaining Onondaga territory. As salt production rapidly increased, the New York State Legislature established the Onondaga Salt Springs Reservation (OSSR) in 1797 to regulate settlement along the salt marshes. Salt production quickly developed into a large commercial enterprise. In addition to the salt tax enacted in 1816, several hundred acres of OSSR lands were sold to in 1820 to support the Erie Canal building fund.

The Town of Manlius in Onondaga County was formed on March 5, 1794, shortly after the area's first European settlers arrived in 1790. The boundaries of the original township were later altered to create Onondaga in 1798, Salina in 1809, and DeWitt in 1835. Benjamin Morehouse was the first settler in 1789 (now DeWitt), followed by David Tripp in 1790.

The proximity and abundance of creeks and falls, including Butternut, Limestone, and Chittenango Creeks, fostered the early development of water-powered industries in Manlius. The first ceremonial ground-breaking for canal construction in Onondaga County was initiated by Elias Gumaer in Manlius. The construction of the Erie Canal through northern Manlius ensured the continued success of these mills and manufacturers throughout the nineteenth century, including J. Hamlin & Sons (1827, stone mills), Manlius Paper Mills (1830s), Hamlin & Sons (1871, cement and plaster mills), Empire Yarn Mills (1872), and Wood Manufacturing Company (1876, wagon and carpentry tools). The Erie Canal provided an extensive and accessible route to transport these goods and other products to regional and national markets. The New York Central Railroad and New York Barge Canal resulted in the decline of the canal system in DeWitt.

Site specific history shows an operational farm existing onsite from at least 1874 until the late 1960s when residential subdivisions began to displace agricultural lands in the Town of Manlius such as Cahill, Daley Farms, and Muirfield. Much of the current site conditions are a result of the agricultural abandonment allowing invasive successional species such as buckthorn and Norway maple to outcompete native flora that was maintained along the old farm boundaries as evidenced by the mature trees at the south and eastern property lines. Aerial photography (Exhibit 03) shows the operation of Hoag Lane farm as far back as 1955. Today the project site vicinity consists

mainly of residential and wooded land with one (1) 4,144 sq. ft. residence, built in 2003, existing on the project site.

A component of the cluster subdivision plan as exemplified by the Final Design is to protect natural features on the project site. The Town defines natural features as "reasonable requirements for the preservation of outstanding natural features may be specified. These include large trees or groves, watercourses and falls, historic spots, exceptional views and similar irreplaceable assets in which there is general public interest." Cluster development guidelines state that natural resources should be protected in conservation easements to restrict future development which are identified in the final design as forever wild easements. The Sponsor has identified five (5) natural features on the Project Site over the course of the design process. They include: two (2) water features, identified as an intermittent stream channel in the west portion of the project site that enters the sites southern property boundary and a ground water seep that occurs at the west end of the site's north boundary line; a natural knoll on the western portion of the property; a historic agricultural hedgerow along the southern property boundary; and a forested upland on the eastern portion of the property behind the existing house.

The project site topography gradually rises about 144-feet in elevation from west to east. Elevation ranges from approximately 638-feet above mean sea level at the western boundary closest to Churchill Road, to approximately 782-feet above mean sea level at a high point along the eastern boundary of the Project Site.

Slopes in excess of 25% cumulatively cover approximately .45-acres, or 1.4%, of the Project Site. As defined by Town Code Section 127-19:C, outlines criteria for "Buildable Lots" in the context of a subdivision approval. It states "A lot's buildable envelope, defined as the area of a lot that falls within the required setbacks shall include an area large enough to fit a reasonable building footprint which is: (2) no closer than 25 feet to slopes of 25% or more. The proposed final design meets these requirements as illustrated in L-201 25% shade slope plan.

Project Site general soil information was obtained from the Natural Resources Conservation Service. The Web Soil Survey (Exhibit 02) indicates onsite soils are predominantly Cazenovia silt loams and Ontario loam soils. Web Soil Survey and survey topographical data indicates that less than 10 percent of the site contain soils with slopes exceeding 15%. Additional, ground surveys were conducted by Kenney Geotechnical over the course of the design process and no mottling, bedrock, or groundwater were discovered. Summaries from these surveys (Exhibits 20 & 21) are described in "**Impacts and Mitigation"** below.

The primary land cover types on the Project Site include forestland, brushlands, abandoned agricultural and wetlands. Other communities present include residential uses for land to the north along Hoag Lane, northwest of the Project Site, lands south of the Project Site at the Churchill Court and forested areas to the east of the subdivision. All communities present on the Project Site are common to New York State. Brief descriptions of these communities as defined by the Full Environmental Assessment Form (FEAF) Workbook for each of the primary ecological communities in the area are explained below:

Forestland: *Forested areas are those that have mature trees growing.* Woods and treed hedgerows occur on the Project Site and the surrounding area and contain trees with a diameter at chest height in excess of 12 inches. Dominant or co-dominant tree species include sugar maple, basswood, black cherry, white ash, and American beech. Mid-story sized trees include eastern hophornbeam and saplings of overstory trees. The shrub layer is relatively sparse with the forestland, but is thick with buckthorn, dogwoods, and honeysuckle along treed hedgerows. Forest herbs include white trillium, meadow rue, and false Solomon's-seal. Bird species observed in forestland habitat include rose-breasted grosbeak and red-bellied woodpecker. Other wildlife species observed within forestland habitat include eastern chipmunk, eastern grey squirrel, and white-tailed deer. The portion of forestland on the eastern boundary of the project site contain trees that are mature and have the potential to provide habitat and food for different wildlife species. However, no rare, threatened, or endangered plant or animal species were observed or known to be in the Project Site. Much of the current forestland is under threat from increased white tail deer populations within the Town of Manlius that eat the young saplings of native hardwoods.

Abandoned agricultural: *Abandoned Agricultural cover types include former farm fields that have been allowed to grow to brush and shrubs, and overgrown orchards.* Project site is primarily this cover type based on field observation by RZ Engineering and Keplinger Freeman Associates. A majority of the development will affect these portions of the property. Most shrubs on the site are thickets of buckthorn, crabapple and other non-native invasive species introduced after the abandonment of the agricultural practices in the 1960s.

Wetlands: *Wetlands are known by many names such as swamps, marshes, bogs, and wet meadows. One thing all have in common is that they are areas saturated by surface or ground water to the point that they support distinctive vegetation that is adapted for life in wet soil conditions.* Environmental consultants, Environmental Resources, LLC, identified two (2) wetland resources on project site, one (1) 745+/- linear feet intermittent stream channel in the west portion of the project site that enters the sites southern property boundary and one (1) small 0.10 +/- acre ground water seep that occurs at the west end of the site's north boundary line in accordance with the methodology described in the 1987 Corps of Engineers Wetland Delineation manual. Intermittent streams are defined as "those with discernible channels which show evidence of annual deposition or scour, but which do not carry flow year-round (USDA and USDI 1994)." Whereas ground water seeps are defined as "locations where upwelling groundwater saturates the surface[3]." Environmental Resources, LLC found that these areas did not support NYS DEC regulated streams or wetlands (Exhibit 04). They did find, however, that the delineated intermittent stream and ground water seep are potential federal jurisdictional water resources under the Army Corps of Engineers and subject to their guidelines. The proposed final design indicates a 25' earthwork buffer from these features.

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[3] O'Driscoll, M., Dewalle, D., Humphrey, C., & Iverson, G. (2019). Groundwater Seeps: Portholes to Evaluate Groundwater's Influence on Stream Water Quality [Abstract]. Journal of Contemporary Water Research & Education, 166(1), 57-78. doi:10.1111/j.1936-704x.2019.03302.x

Several vegetative communities exist in and around the Project Site. They include successional shrubland and remaining pockets of mesic hardwood forest as defined by New York Natural Heritage Program[4]. These communities provide further evidence of the project site's negligible environmental impact on the broader community with a change in use intensity.

Successional Shrubland: Successional shrubland is defined by a shrubland that occurs on sites that have been cleared (for farming, logging, development, etc.) or otherwise disturbed. This community has at least 50% cover of shrubs. The project site is predominantly this vegetative community, approximately 15.7 acres or 52%.

Mesic Hardwood Forests: Mesic Hardwood Forests are defined by a species rich northern hardwood forest that typically occurs on well-drained, moist soils of circumneutral pH Calcium-rich indicator herbs are predominant in the ground layer and are usually correlated with calcareous bedrock, although bedrock does not have to be exposed. Where bedrock outcrops are lacking, surficial features such as seeps are often present. (Ecological Communities of New York State). What remains of the mesic forest is a result of agricultural clearing in the post-Revolutionary War period as described above. Mesic habitat found on-site is located along the southern property line and eastern area which as shown in the final design are placed within conservation/forever wild easements for protection against future development including smaller structures.

No historic or archaeological sites have been identified by the Town of Manlius in the project area. Furthermore, according to the New York State Historic Preservation Office ("**SHPO**") online database, no State or National register listed sites, or National register eligible sites, or districts occur on the Project Site or within .5 miles.

The Project Site and surrounding area are not within a SHPO archaeologically sensitive zone. SHPO provided a response to an RZ Engineering inquiry on 3/26/18 and concluded that *"the proposed subdivision will have no impact on cultural resources in or eligible for inclusion in the State and National Register of Historic Places"* (Exhibit 05).

Onondaga County has identified two Critical Environmental Areas ("**CEAs**") within the Town of Manlius and Village of Manlius. Both CEAs are contiguous and are located between Troop K Rd. and Sweet Rd. located approximately 1.25 miles southwest of the project site.

The NYSDEC Division of Fish and Wildlife, New York Natural Heritage Program, was consulted on April 6th, 2018 (Exhibit 06). Coordinator indicated no records of rare or State-listed animals or plants or significant natural communities at the Project Site. However, Northern Long Eared Bats were documented within 5 miles of the project site. DEC staff was contacted directly to determine

[4] Reschke, Carol, et al. Ecological Communities of New York State: a Revised and Expanded Edition of Carol Reschke's Ecological Communities of New York State ; Draft. New York Natural Heritage Program, N.Y.S. Dept. of Environmental Conservation, 2002.

protection requirements and email coordination was provided to show little to no impact on bat populations if tree removal was conducted according to regulations.

The United States Fish and Wildlife Services *New York Ecological Services Field Office* was consulted on March 16th, 2018 (Exhibit 07) to determine Federally listed threatened and endangered species that have been documented in the proposed project location. The following species were identified: Indiana Bat, Northern Long-Eared Bat, and Eastern Massassauga.

RZ Engineering, PLLC reviewed the Project Site with respect to known locations of species, site coverage, topography and uses, as well as the known habitats, activities and migrations of the species, and reported that an adverse impact is not anticipated on any of these species.

The Clean Air Act requires the United States Environmental Protection Agency ("**EPA**") to set National Ambient Air Quality Standards ("**NAAQS**") for pollutants considered harmful to public health and the environment. Regional sampling points, located 15 to 40-miles from the property, were within the acceptable levels established by the NAAQS for each tested parameter, including sulfur dioxide, inhalable particulates, carbon monoxide and ozone.

No local air monitoring data is available to further characterize air quality in the immediate vicinity of the Project Site. During construction, minor and temporary impacts to air quality may result from the operation of construction equipment and vehicles. Such impacts could occur as a result of emissions from engine exhaust and from the generation of fugitive dust during earthwork activities. The increased dust and emissions will not be of a magnitude or duration that will significantly impact local air quality. However, a dust control plan will be implemented by the applicant as part of the SWPPP for the project as necessary, to monitor airborne dust that could be generated during earthwork activities (such as grading and excavation of foundations) and as vehicles travel over exposed soil. In addition, the contractor will be required to maintain construction equipment/mufflers in good working order to minimize exhaust emissions.

The Project will have no impact on air quality once construction is complete because the Project is not a commercial or industrial facility that results in emissions or pollution that requires an air permit, and the emissions from vehicular traffic associated with twenty (20) new residences and the nonresidential conservation lot is considered negligible.

SITE INFRASTRUCTURE

Public water and sanitary sewer systems exist in the immediate area. Existing residences in the area obtain drinking water from municipally owned water mains and systems owned by Onondaga County Water Authority ("**OCWA**"). The overall anticipated water usage from the twenty (20) new residences is estimated to be 6,930 gpd to 11,550-gpd, using a typical household usage between 330 to-550 gpd at 110 gpd/bedroom per typical hydraulic loading rate found in the latest NYSDEC Design Standards Manual. OCWA concluded on July 6th, 2017 in letter that there was sufficient capacity for project (Exhibit 08).

Gravity or low-pressure sewer systems will be provided for each lot. Final design has not been completed, and therefore a final approval from the OCHD and Onondaga County Water

Environment Protection ("**OCWEP**") has not been obtained. Since both agencies have indicated their concurrence that adequate wastewater treatment facilities exist to accommodate the project, their approval will be based on submissions pending final plans by a Professional Engineer. OCWEP provided a capacity assurance letter on April 2nd, 2018 (Exhibit 09).

Project construction will temporarily generate increased traffic levels, as construction vehicles and personnel travel to and from the Project Site. Construction traffic will generally be limited to the hours of 7:00 a.m. to 5:00 p.m., Monday through Saturday. The increase in traffic is considered negligible and manageable and will be in accordance with the applicable town ordinance.

Construction vehicle turnaround and stacking will be restricted and will not be allowed on adjacent residential streets. Noise impacts will be minimized by requiring proper muffler equipment on vehicles, prohibiting truck drivers from using "jake" brakes (except in emergency situations) and prohibiting the excessive idling of vehicles.

There will be a slight increase in traffic following construction, associated with new residents traveling to and from their residences. Traffic data was collected by RZ Engineering and can be viewed in the Traffic Report (Exhibit 10). According to the DEC guidance (http://wunru.dec.ny.gov/permits/91776.html), the Project will result in a small impact (as opposed to a moderate to large impact) because "*the Project will add some level, but not substantial traffic to the area, and existing roads have the capacity to handle that level of traffic without reconfiguration.*"

Project Relationship to Local/Regional/State Zoning/Plans/Programs

The Project Site is zoned Restricted Agricultural Districts ("**R-A**)", which classification, per the Town zoning code, has the purpose of promoting agriculture and compatible open space uses by discouraging large-scale, residential development and those forms of commercial development that might conflict with agricultural use, while allowing small-scale, clean-industrial and service uses that complement agricultural enterprises. Notably, single-family residences are a use permitted by right in the R-A. Residential uses include Residential District R-1 ("**R-1**") and Residential District R-3 ("**R-3**"). Refer to Exhibit 11 for Town of Manlius zoning classifications.

New York State provides three categories of subdivision development as explained in *Subdivision Review in New York State*, they are conventional subdivision, cluster subdivision and conservation subdivision. Cluster subdivisions are a "technique authorized by State Statute whereby the local legislative body empowers the planning board, when approving subdivision plats, to modify the dimensional requirements of the zoning law to group or "cluster" structures or lots at a higher density on the most suitable portion of the land, leaving other areas open "to preserve the natural and scenic qualities of open lands"." A cluster density subdivision results in the preservation of open space and important environmental resources, while allowing for greater density and more development flexibility than is allowed for in conventional subdivisions. The submitted application presents a Final Design of a cluster density subdivision, which meets the Town of Manlius zoning regulations of the Restricted Agricultural District ("**R-A**") and Residential District R-3 ("**R-3**"). Whereas conventional subdivisions are those that show "the division of land into residential lots and streets laid out in strict accordance with the minimum zoning and subdivision

regulations and other applicable regulations." Finally, conservation subdivisions are "a type of cluster subdivision [which] is designed to permanently protect a large portion of a site with important environmental areas or cultural features, while clustering compact building lots on the remainder of the land. Conservation subdivision generically refers to the practice of compacting subdivision residential subdivision development whereby half or more of a parcel is set aside for open space or parkland."

After initial review of the proposed site, sponsor's team determined a cluster subdivision strategy was an appropriate use; instead of a conventional subdivision strategy as shown in early alternatives in the R-A zone (Exhibit 29). Project team based this conclusion on the general typography, site features and town requirements. The town and county were in general agreement with the approach with feedback coming from Planning Board on September 25th, 2017 planning board meeting (Exhibit 30) and Onondaga County planning agency (Exhibit 31). The sponsor has consistently upheld that the proposed project shall follow the guidelines set forth in cluster subdivision not a conservation subdivision due to the general quality of the land in question as evidenced by the lack of important cultural and environmental factors outlined above. It is important to note, a conservation subdivision was not mentioned as an interest of the town until recently when the Town engineer mentioned a conservation subdivision in the July 28th, 2020 dated Comment Letter from Town Engineer (Exhibit 16).

The Project is also subject to review under the Town of Manlius Planning Board, the Onondaga County Planning Board, and the 2010 Development Guide for Onondaga County. As of publication of this report, Manlius does not have a comprehensive plan but are in process of establishing a formal Plan review committee.

Approvals

This DEIS was prepared to facilitate the Planning Board's consideration of the Project, including the pending subdivision approval and other approvals discussed in this subsection. The Planning Board declared the revised project dated June 17th, 2020, as detailed in the revised package submitted to the Planning Board on July 1st, 2020 (the "**Final Project**"), an unlisted Action and identified the Planning Board as the lead agency for the SEQRA process.

The Sponsor is seeking site plan and subdivision approval for its Project, a 21-Lot Residential Cluster Subdivision. Development complies with the Town's zoning regulations set forth in Chapter 127 Subdivision of Land and Chapter 155 Zoning in the Town of Manlius Code Book.

The Onondaga County Health Department ("**OCHD**") and Onondaga Water Environment Protection Agency must approve the sanitary system design and construction. Onondaga County Water Authority will design, permit, and construct the water system for the project. The Project must also receive New York State Department of Environmental Conservation's ("**DEC**") General State Pollutant Discharge Elimination System ("**SPDES**") Storm Water Permit for Construction Activities due to its disturbance of over an acre of land, including a waiver for disturbance exceeding 5 acres.

Authorizations and/or Permits

The following authorizations, approvals and/or permits are required for this Project:

1. *Town of Manlius Planning Board:* Subdivision Approval, Site Plan Approval
2. *Onondaga County Planning Board:* Subdivision Approval, Site Plan Approval
3. *OCHD:* Approval for Sanitary Sewer Systems
4. *WEP:* Approval for Sanitary Sewer Systems
5. *DEC:* State Pollutant Discharge Elimination System (SPDES) General Permit for Storm Water Discharge from Construction Activities
6. *Town of Manlius MS-4*: Approval for exceeding 5 acres of soil disturbance

Purpose

The Project will preserve one (1) existing residential structure on the site and proposes to subdivide the remainder of the site into twenty (20) new additional residential home lots. The single-family residential lots are intended to be identified for sale to parties other than the Project Sponsor. The Project will also construct a new road, utilities, and other site improvements for dedication to the Town of Manlius and/or corresponding entities (such as an HOA).

Project Schedule

The total duration of the site improvements, infrastructure, and road construction under this Project from start to finish is estimated to last one year according to the Project Sponsors selected Contractor. Town of Manlius has specified that final road course to be installed within one (1) year of construction. The duration of home construction on the resulting lots will be determined by the rate at which the lots sell, which is unknown. See approximate construction timetable chart below:

Construction Timeline

Construction Stage	Duration	Undisturbed (ac.)	Disturbed (ac.)	Stabilized (ac.)
Total Site	One (1) Yr.	30.04	-	-
Stage 1	Six (6) Wks.	22.43	6.44	1.17
Stage 2	Six (6) Wks.	15.4	7.82	6.82
Stage 3	Six (6) Wks.	13.68	4.16	12.2
Stage 4	Two (2) Wks.	13.68	1.78	15.79
Stage 5	Two (2) Wks.	13.68	3.24	14.03
Stage 6	Two (2) Wks.	13.68	3.13	14.13

Notes: 1.) "Disturbed" Area – ongoing earthwork areas that exhibit exposed soil prior to mulching and seeding, 2.) "Stabilized" Area – earthwork areas that have been topsoiled, paved, subbase installed, mulched, and seeded., 3.) Approximate duration of each stage shown above. Actual stage duration is subject to environmental events (i.e. weather), site contractor response, field conditions, schedule and other contributing issues associated with construction.

Needs and Benefits

The marketing and sale of lots on this property is desirable, useful, and the right of the Sponsor. The Project Sponsor's contention that based on the sponsor's past experience in the Manlius residential real estate market, that the creation of new lots is desirable and useful to existing and/ or new residents of the community wishing to build on a lot within the Town of Manlius. The Sponsor asserts that the proposed Cluster Subdivision would be an environmentally friendly potential use of this parcel. The Sponsor outlines these benefits to the Planning Board, as lead agency, to take into consideration when evaluating the project. Also, the Sponsor has a need to obtain financial benefit from this land. The location of the property is best suited for single-family homes since the project is bordered by existing single-family residential neighborhoods in the Town of Manlius. Therefore, the proposed cluster development is the most compatible use and would have the least impact compared to other allowable uses as indicted by Town of Manlius Zoning Section 155-12. Other allowable uses include but are not limited to Two-Family Dwellings, Farms Farm Structures and Farming, Mobile Homes, and Rural occupations.

Another benefit, outlined in the **Impacts and Mitigation** section below, is the stormwater pollution protection plan developed by the sponsor's engineer (Exhibit 15). It contends that the improvements made to the site through the wet pond and drainage easements shall help to improve downstream water quality.

The proposed development will potentially add new students and tax base to the Fayetteville Manlius School District ("**FM District**"). Sponsor previously submitted the 2017 Instructional Hiring Report (Exhibit 33) indicating the declining enrollment trends district wide from 2011 to 2017. Therefore, it is the sponsors belief that the Woodland Hills development within the FM District can significantly add to the student base with a range of children grade levels as well as help support the school district through increased tax revenues. The sponsor notes that the Superintendent Letter (Exhibit 33) does indicate there are capacity concerns at the elementary level in the FM District but there is adequate capacity at the middle and high school levels.

As an additional project benefit to the community, the Sponsor has on his own accord with some suggestion by other parties including representatives of the Town of Manlius, chosen to designate "Forever Wild Areas" and buffers to adjacent properties. It is also important to note these Forever Wild Areas will preserve approximately 1/3 of the site, leaving it to remain in its natural state. Within these "Forever Wild Areas", five (5) natural land features as defined by Subdivision Review in New York State and the sponsor will be protected, they include the natural knoll on the western portion of the property, the intermittent stream, the ground water seep, historic hedgerow along southern buffer, and forested upland on the eastern portion of the property.

Impacts and Mitigation

Based on the Planning Board's review of Environmental Assessment Form ("**EAF**") Parts 1 and 2, the submitted documentation, public comments, the Planning Board determined the Original Project found seven positive SEQRA declarations during its review of the July 1st, 2020 Woodland Hills Subdivision Application (collectively, the "**Planning Board Impacts**"). All verbal and written public comments (collectively, the "**Public Hearing Comments**") received as

part of the July 27th, 2020 public hearing, continued and closed on August 10, 2020 (the "**July 2020 Hearing**") which are incorporated into the Planning Board Impacts and all of which, together, are summarized in the following general concerns. Exhibit 12 is a summary of the concerns as outlined in the Resolution Document prepared for the Draft Environmental Impact Statement for the Woodland Hills Subdivision dated August 10, 2020. Exhibit 12 sets forth a summary of and response to the Public Hearing Comments. The following list of concerns is a summary of each impact as outlined in Exhibit 12.

Concern 1. Impacts of Stormwater Surface Runoff on Offsite Areas

The Applicant has provided letter reports made by Kenny Geotechnical Engineering Services dated May 18th, 2020 and May 27th, 2020 (the "Kenny Geotechnical Report", Exhibits 23 & 24), which has been reviewed by the Town's Engineer/Consultant in conjunction with the other documents part of the July 1st**,** 2020 Submission, and the Town's Engineer/Consultant has determined that environmental impact of this Project on stormwater volume and run-off is significant due to the project being in *"an environmental sensitive area with the Muirfield Drive drainage basin and with the large earth moving operation with soils depicted as having high silt content by the applicant ... "*. While same may be mitigable, Town Engineer found that, " *Detail site specific plans on using on site soils susceptible of losing strength and requiring frost cover protection (outlined in the Kenney Geotechnical Report dated 5/18/20) are not addressed in the proposed scope of work by the applicant", and further found that a "waiver of NYS stormwater regulations for a 5-acre disturbance variance" is not recommended.*

Issues to be Addressed:

A) Analysis of the manner in which a reduction of volume of storm water run-off on the site, beyond that already provided, will affect the Muirfield Basin, downstream flooding, the local underlying geophysical topography and other storm water impacts; including but not limited to an analysis of pre-development run-off volumes not exceeding post-development volumes and including site specific plans requiring frost cover protection, plans for bio-retention facilities, rain gardens, to support the percolation testing as set forth in the Kenny Geotechnical Report ;

B) Analysis of storm water calculations for the site which do not include in the calculation the areas that are not disturbed/undeveloped as part of this Project.

Proposed Solutions for EIS

1. Discuss stormwater runoff volume.
2. Discuss the relationship of the projects surface runoff with the facility on Muirfield Drive.
3. Discuss the pre vs post runoff rates vs volumes and methodology used in the SWPPP to analyze stormwater runoff.
4. Discuss frost cover protection.
5. Discuss green infrastructure measures.
6. Discuss percolation results in the Kenney Geotech report.
7. Discuss downstream flooding.

1. *Discuss Stormwater Volume*. As part of the research in preparation of this document RZ Engineering has attempted to find formal written requirements for mitigation of runoff volume within the NYSDEC Stormwater Management Design Manual, January 2015 version, the USDA Technical Release 55 Document on Urban Hydrology for Small Watersheds, the NRCS TR-20 computer software and the Town of Manlius Stormwater regulations. There are no requirements within this professional standard guidance regarding mitigation of runoff volume. Particularly within the NYSDEC Stormwater Design Manual Chapters 3 and 4, TR-20 User Guide and TR-55 Manual no mitigation requirements are outlined or provided. In addition, no precedent or other requirements for reduction of runoff volume have been provided by the town after RZE sent a specific request per an email to the Town from RZE dated 4/10/20, item #5 (Exhibit 13). Runoff volume generally increases for every project developed on every site in every state in the country. As previously noted in our response letter to the town attorney (Jamie Sutphen) dated 6/15/20, item 10 (Exhibit 14), runoff volume is not typically an analysis point for stormwater management due to it increasing by default on most development projects. However, peak runoff rate is a better indicator of performance and flooding and is thereby the typical engineering analysis point used by the standard engineering publications previously listed above for stormwater analysis. The stormwater design manual does outline requirements for Runoff Reduction Volume, Water Quality Volume and Channel Protection volumes. The prepared SWPPP for the project (Exhibit 15) contains calculations within Appendices G and L that verify the current design meets those requirements. However, the applicant has not been provided and is not aware of any written or adopted requirement for mitigation of overall runoff volume required by the NYSDEC Stormwater Design Manual, TR-20 User Guide, TR-55 Manual, standard engineering practice or the Town's regulations.

2. *Discuss the relationship of the projects surface runoff with the facility on Muirfield Drive.* Significant attention has been paid to the stormwater facility located on Muirfield Drive. Within the resolution date August 10, 2020, during meetings with the Planning Board and in past comment letters, the town engineer has opined that in some way surface runoff somehow reaches this facility from the subject site. In addition, the town's engineer has previously insinuated that Karst Topography may transmit surface runoff to this facility in some way. As previously, noted in the August 7, 2020 engineering responses prepared by Keplinger Freeman Associates and RZ Engineering, PLLC, Section 2, item #1 (Exhibit 16) and in RZ Engineering's 4/10/20 email, item 5 (Exhibit 13) there is no evidence of Karst Topography on the subject site, in the vicinity of the subject site or in the vicinity of Muirfield Drive or the facility on Muirfield Drive. Further a Freedom of Information Law ("**FOIL"**) requested of the town on August 17th,2020 (Exhibit 17), revealed no mapping, testing, field data or other information on Karst Topography located anywhere near the subject site, Muirfield Drive or the areas between the site and Muirfield.

   As part of the July 1st, 2020 submission to the town the project team submitted detailed information on the overland flood route surface runoff would be required to take in order to reach the aforementioned facility on Muirfield Drive. This information was presented in Appendix O of the SWPPP (Exhibit 15). Land profiles presented in Appendix O reveal that several high and low points occur between the subject site discharge point and the

facility on Muirfield Drive. As has been stated in the aforementioned engineering response letter of 8/07/20 (Exhibit 16) several times, surface runoff does not travel uphill to the facility on Muirfield Drive. In addition, without any evidence of Karst Topography, underlying geophysical topography also does not support surface runoff travelling uphill to Muirfield Drive. It is important to note that any surface runoff would also be required to infiltrate through impervious road surfacing or several feet of soil (which is not permeable in the vicinity of the proposed SWMF proven by percolation data performed by Kenney Geotech presented in Exhibit 20 and on drawing L-100 Site Preparation Plan), as evident in the generous soil profile data in the area exhibited by information in Appendix A of the SWPPP (Exhibit 15), in order to reach this theoretical underlying geophysical topography. There is no available evidence to support the existence of any surface or underground pathways for runoff from the subject site to affect the facility on Muirfield Drive.

3. *Discuss the pre vs post runoff rates vs volumes and methodology used in the SWPPP to analyze stormwater runoff.* The Sponsor engaged with a Licensed Professional Engineer registered to practice engineering in NYS. RZ Engineering, PLLC employs staff that are Certified Professionals in Erosion and Sediment Control, Storm Water Quality and a Certified Erosion, Sediment and Stormwater Inspection by Independent National Professional Councils for each independent organization.

RZ Engineering utilized practices and procedures outlined in the NYSDEC Stormwater Management Design Manual, January 2015 version and the USDA Technical Release 55 Document on Urban Hydrology for Small Watersheds to analyze and estimate runoff rates and design stormwater management facilities for the project. As noted in our analysis, runoff rates are reduced by up to 20% due to installation of the proposed stormwater management facility (SWMF). Calculations verifying this reduction are presented in Appendices C, D and E of the SWPPP (Exhibit 15).

It has been suggested on several occasions in several comment letters from the town engineer (7/18/19 letter [Exhibit 18]: 1) SWPPP -comment d, 12/18/19 letter [Exhibit 32] 1) Additional Comments – bullet 7, and July 28th 2020 letter [Exhibit 16]: Section 7, bullets 3 and 4) that an alternative method of analysis nt supported by the above Manuals or Technical Documents be used for the site. Specifically, the town engineer has…….“*recommended PRDA-1a be broken into two sub-watersheds, developed and undisturbed, to better represent the actual runoff from the site*”, “*Additionally, (as we have always felt) the 2.6 acres of woods behind the existing house should be a separate and distinct sub-watershed, not part of the developed area*”, “*Time of Concentration assumptions by the applicant do not assist with local run-off issues*”, “*Comparison of the pre-development runoff and post-development runoff does not indicate a significant increase prior to treatment. Typically increases are substantial for new land development and these calculations should be confirmed*.”.

The above requests are not consistent with practices outlined in NYSDEC Stormwater Management Design Manual, January 2015 version or the USDA Technical Release 55 Document on Urban Hydrology for Small Watersheds. As previously noted in our

engineering responses to these statements (letters from the applicant's consultants dated 4/28/20, 6/15/20, 8/7/20 (Exhibits 18, 14, & 16 respectively) these requests require unjustifiable, flawed and alternative assumptions not based in the typical nationally accepted engineering analysis documentation listed above.

First, as a general practice, watershed delineation is based on topography, land contouring and/ or field conditions with data collected by a licensed land surveyor. It is not based on desired locations, arbitrary locations, property lines, disturbance limits or development limits. The TR-55 manual lists watersheds with storm sewers as one of its limitations due to these areas only handling a small portion of the larger watershed (similar to what the town engineer is suggesting). The USGS defines a watershed as "*an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel*". The USGS notes that "*all of the land that drains water to the outflow point is the watershed for that outflow location*". In our case, the outflow point is the discharge of the intermittent stream where it leaves the subject site at the northwestern most property corner adjacent to Churchill Lane. Therefore, the entire watershed must be analyzed to provide an accurate estimate of the peak flows, not just a portion arbitrarily selected to create a desired outcome. Not analyzing all the contributory areas (or the entire watershed) to a discharge point can provide inaccurate, misleading, and unrepresentative results. The analysis presented in the SWPPP provides analysis of the entire watershed, both onsite and offsite, both developed and undeveloped areas creating a more accurate representation of what the downstream discharge point will see. It also follows practices and procedures for analyzing runoff outlined in the engineering documentation mentioned above.

Secondly, the applicant's engineer cannot alter accepted engineering methodology outlined in the NYSDEC Stormwater Management Design Manual, January 2015 version or the USDA Technical Release 55 Document on Urban Hydrology for Small Watersheds to "*assist with local run-off issues*". The engineering methods listed above for analyzing runoff have been developed, utilized for years by thousands of design professionals, and been proven effective. They are generally accepted and followed around the country and do not make exceptions to accommodate for local requests.

Thirdly, time of concentration, can also be misrepresented and produce inaccurate or misleading results if not taken from the hydraulically most distant point within a watershed. Chapter 3 of the TR-55 manual states that Tc is "*the time for runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. Tc is computed by summing all the travel times for consecutive components of the drainage conveyance system*". Only analyzing portions of the Tc (or Tc components considered Tt or travel time) would misrepresent what the downstream discharge point of the watershed would see for peak flow rates. For instance, evaluating only the developed portion of the watershed and taking a Time of Concentration, measured only within this area (and ignoring other portions of the larger watershed contributory to the discharge point) would skew the results and misrepresent peak flow rates. The applicant contends that the town engineer has analyzed the Tc in this fashion when performing their own calculations, using only a segment Tt (travel time) not the entire Tc in their calculations.

Not using the "*hydraulically most distant point*" within the watershed to calculate the Tc is in direct conflict with methodology outlined in the TR-55 Manual and NYSDEC Stormwater Design Manual.

Fourthly, site specific hydraulic analysis is not based on typical results obtained by other projects. The analysis presented in the SWPPP (Exhibit 15) is for this subject site only and does not represent other sites with different hydraulic characteristics. Just because one site does not exhibit the same conditions as other sites (i.e. significant increases in runoff) does not disqualify the presented hydraulic analysis of this site. The presented analysis was performed in accordance with all documents listed within this section, good engineering practice and standard accepted engineering methodology.

It is important to note that the original cluster design (August 13th, 2017) had positioned our Stormwater Management Facility so as to allow intercept piped runoff from the adjacent subdivision Churchill Lane Cul-de-sac, which currently flows uncontrolled onto the subject property. Interception of this runoff also would allow incorporation of the runoff from Cahill Circle and areas contributory to it. This positioning of the SWMF would have allowed the Sponsor's Project to "assist with local issues" without violating definitions, practices, principals, methodology and analysis parameters set forth by the TR-55 Manual and NYSDEC Stormwater Design Manual. This positioning was abandoned after identification of the "intermittent stream" by Environmental Resources. The Applicant modified the Project Proposal to preserve this intermittent stream and a 25-foot buffer around it in the spirit of good Green Infrastructure practice outlined in Section 5 of the Stormwater Design manual.

4. *Discuss frost protection.* The Sponsor engaged with a Licensed Professional Engineer registered to practice geotechnical engineering in NYS. The geotechnical engineer hired by the sponsor prepared several reports as directed by the Town of Manlius engineer. The applicant contends that this concern has been taken out of context by the Town during its review of the Kenney Geotech report dated May 18th, 2020, Page 2 Paragraph 1 underline analysis and recommendations. Please note the paragraph says as follows "The on-site soils are suitable for re-use during earthwork provided that they are properly managed during construction. The till has a significant silt content and will lose strength if disturbed by saturation or freezing. Completed lifts of earthwork should be sealed with a smooth drum roller at the end of each workday." This quote was paraphrased from the report. In addition, page 2, 3, & 4 of the May 18th Kenney Geotechnical report specifically outlines exactly how to manage any soils with a high silt content.

5. *Discuss green infrastructure measures.* As noted in the SWPPP for the project (Exhibit 15) on page 13 of the pdf document Green Infrastructure practices are listed. These practices include Tree Planting, Conservation of Natural Areas and Rooftop Disconnection. The NYSDEC Stormwater Design Manual describes the benefits of these practices within Chapter 5 of the Document. Of specific interest to this project are sections 5.1.1 Preservation of Undisturbed Areas, 5.1.2 Preservation of Buffers, 5.1.3 Reduction of Clearing and Grading, 5.1.4 Locating Development in Less Sensitive Areas, 5.1.5 Open Space Design, 5.2 Planning for Green Infrastructure, Reduction of Impervious Cover, 5.3.1

Conservation of Natural Areas, 5.3.2 Sheet flow to Riparian Buffers or Filter Strips, 5.3.4 Tree Planting/Tree Pit and 5.3.5 Disconnection of Rooftop Runoff which are all met under the current project proposal. The following definitions from the NYSDEC Stormwater Design Manual exemplify how the project meets and/ or exceeds these Green Infrastructure requirements.

Section 5.1.1 Preservation of Undisturbed Areas*:* specifically refers to the project since the applicant has preserved important natural features and areas such as undisturbed forested and native vegetated areas (approximately 1/3 of the property), natural terrain, riparian corridors, wetlands and other important site features are delineated and are proposed to be placed into permanent conservation areas.

Section 5.1.2 Preservation of Buffers: which has been incorporated into the project by defining naturally vegetated buffers around the perimeter of the site and around the delineated groundwater seep, intermittent stream and wetlands.

Section 5.1.3 Reduction of Clearing and Grading: which is accomplished by the clustering of homes. Clearing and Grading is limited to the minimum amount needed for the development function, road access and infrastructure (e.g., utilities, wastewater disposal, stormwater management). Site foot-printing only disturbs the smallest possible land area on a site. Over 1/3 of the site remains in it's current state.

Section 5.1.4 Locating Development in Less Sensitive Areas: Development sites are located to avoid sensitive resource areas such as floodplains, steep slopes, erodible soils, wetlands, mature forests and critical habitat areas. Houses and roadways are located to fit the terrain and in areas that will create the least impact. The major land and water features on site (the groundwater seep, the intermittent stream, the 25% slopes and the earthen knoll located on the western portion of the property) are protected and remain untouched along with over 1/3 of the existing vegetation on the subject site.

Section 5.1.5 Open Space Design: This section includes conservation development, clustering or open space design incorporating smaller lot sizes to reduce overall impervious cover while providing more undisturbed open space and protection of water resources. The current design has been developed over the past three years in coordination with the board to incorporate these features.

Section 5.2 Planning for Green Infrastructure: Reduction of Impervious Cover. Previous versions of the project included longer driveways on flag lots and cul de sacs. Both of these practices outlined under sections 5.2.3 and 5.2.4 have been incorporated into the design.

Section 5.3.1 Conservation of Natural Areas: The purpose of this runoff reduction method is to retain the pre-development hydrologic and water quality characteristics of undisturbed natural areas (e.g. forest areas, stream and wetland buffers) by permanently conserving these areas on a site. Over 1/3 of the site has been preserved for this purpose. Areas designated for preservation are presented on drawing L-400 Layout Plan (Exhibit 01).

Section 5.3.2 Sheet flow to Riparian Buffers or Filter Strips: This practice involves use of vegetated filter strips or undisturbed natural areas such as riparian buffers can be used to treat and control stormwater runoff from some areas of a development. The use of this practice also contradicts the requests made by the town engineer regarding Tc in item #3 above.

Section 5.3.4 Tree Planting/Tree Pit: Conserving existing trees or planting new trees at new or redevelopment sites can reduce stormwater runoff, promote evapotranspiration, increase nutrient uptake, provide shading and thermal reductions, and encourage wildlife habitat. The technique is similar to riparian restoration but is generally conducted on a smaller scale. It is uniquely suited to new and redevelopment in urban and suburban areas. The proposed project incorporates both preservation of 1/3 of the existing vegetation on site and proposes 2 tree plantings on each lot.

Section 5.3.5 Disconnection of Rooftop Runoff: Direct runoff from residential rooftop areas to designated pervious areas to reduce runoff volumes and rates. This can be achieved by grading the site to promote overland vegetative filtering or by providing infiltration areas. The project conservatively, does not assume infiltration but directs runoff to grassed and vegetated lawn and swale areas.

No bio-retention facilities or rain gardens have been proposed for the project. They are not required to meet RRv and the project incorporates numerous other measures listed above. This is mainly due to the town's previous opposition to these practices and the difficulty associated with maintaining them. The sponsor's previous correspondence dated June 2020 response letter states that any reference to rain gardens have been removed from the plan notes and were never part of the proposed project. However, Engineer Review Letter dated July 28th, 2020, page 12 and 22 the town engineer strongly recommends adding the rain gardens back to the project. The applicant contends these measures are unnecessary, unmanageable and a burden to the homeowner and subsequently the town under most municipal stormwater management agreements.

6. *Discuss percolation results in the Kenney Geotechnical report.* The contractor will construct the stormwater feature in accordance with the Kenney Geotechnical report dated May 18th. Recommendations within Kenney geotechnical were specifically prepared to allow the SWMF to function as designed. The infiltration tests performed within the proposed area of the SWMF do not reveal any infiltrative properties. On the contrary they reveal the soils in the vicinity of the SWMF are all but non infiltrative. This supports the wet pond design proposed by the applicant. It should be noted that glacial till is the one of the most common soil materials available in NYS. Due to its low permeability, it is commonly used for landfill liners and caps and is accepted by the NYSDEC as such. Percolation tests are noted in the May 18th, 2020 Kenney Geotechnical Report (Exhibit 20).

7. *Discuss downstream flooding* The Sponsor is not obligated to mitigate downstream flooding off property. The SPDES General permit for Construction Activity within Part 1:C outlines requirements for discharges and treatment. Mitigating areas that may already have flooding issues downstream are not one of the permit requirements. In addition,

correspondence from Ms. Jennifer Ross at the NYSDEC Dam Safety division states “We also discussed that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100-year storm event”. It is important to note that the stormwater analysis contained in Appendices C, D and E of the SWPPP (Exhibit 15) estimate reductions in peak flows for all storm events from the subject site as a result of development and implementation of the proposed SWMF. This is in full compliance with the NYSDEC Stormwater Design Manual requirements. These reductions could actually and will likely benefit the town’s downstream flooding problems by reducing the peak runoff rates from the subject site. Also, the sponsor’s engineer (RZ Engineering) has previously addressed this issue in a response to the town engineer on 4/10/20 (Exhibit 13) item 3 and has offered to provide hydraulic data and modeling from the site to the town in their efforts to analyze any flooding downstream.

During research and preparation of this document it is interesting to note that several newspaper articles reference flooding specifically on Hoag Lane, within Muirfield Subdivision and Dawley Farms Subdivision. Records indicate flooding issues in these areas dating back to the 1970’s. Therefore, it can be anticipated that implementation of the Proposed Project’s Stormwater Pollution Prevention Plan (Exhibit 15) and SWMF will very likely help to improve these offsite pre-existing Town issues.

Concern 2. Impacts of Stormwater Management Facility

The Town's Engineer/Consultant has determined that due to the significant impact of stormwater implications created by the project, and the applicant has agreed, that the large stormwater holding area/impoundment proposed by the applicant on the site, and being approximately 16.5 feet deep ("Stormwater Impoundment") must be designed to the standards set forth by the Department of Environmental Conservation as if is same was delineated as a "Dam"; which design, to date, has not been provided.

Issues to be Addressed:

A) Analysis of the Storm water Impoundment as if designed to the standards set forth by the Department of Environmental Conservation Analysis for design of Dam, on the project site,
B) All matters of stormwater control, stability of any berms created by the design, run-off analysis with downstream impacts in the event of the Stormwater Impoundment failure. Actual detailed design will be required to complete this analysis.

Proposed Solutions for EIS

1. Discuss structural design of the Stormwater Management Facility.
2. Discuss the results of the Stormwater Management Facility on downstream areas including failure.

1. *Discuss structural design of the Stormwater Management Facility.* Engineering Design plans have been provided to the town as site plan drawings L-100 to L-901 (Exhibit 01). The Sponsor contends that the concern above makes assumptions of alternative fact not supported by the submission package presented on 6/17/20. The stormwater pond is not large, especially when compared to other facilities located within the Town of Manlius and its communities. It only contains a normal wet pool depth of 6 feet and a volume of water estimated at 0.59-acre feet. Only during large storm events will the depth be deeper than the 6-foot normal stage. The embankment is limited to 12.5 feet. Backup structural design calculations and recommendations for berm fill placement in accordance with section 8.0 of the NYS Guidelines for Design of Dams have been provided within Appendix A of the SWPPP (Exhibit 15). It is important to note that while this project has provided this additional information, Chapter 4 of the NYSDEC Stormwater Design manual (Uniform Stormwater Sizing Criteria) indicates that "Channel protection, overbank flood, and extreme storm requirements may be waived in some instances if the conditions specified in this chapter are met". "*For SMPs involving dams, follow Appendix A, Guidelines for Design of Dams* ***for safe passage of the design flood***." (footnote #1, pg 4-1). This would appear to indicate that the applicable standard would apply to hydraulic rates and passage of storm event peak flows during the "***design flood***" and not necessarily to structural analysis, failure analysis and other detailed reports required for actual dams. Further supporting this contention, Chapter 4 of the NYSDEC Stormwater Design manual (Uniform Stormwater Sizing Criteria), pg 12 also refers to the same requirement for safe overflow of the "design flood" –*" Detention structures involving dams must provide safe overflow of the design flood, as discussed in Appendix A: "Guidelines for the Design of Dams."* The applicant contends the current submission contains more than enough information to satisfy this flood requirement.
2. *Discuss the results of the Stormwater Management Facility on downstream areas including failure.* This item was discussed earlier within this document under **Concern 1, item 7** above.

Concern 3. Impact of Magnitude of Earthwork

The Town's Engineer/Consultant advises that the extent of the "cuts and fills" and earth movement during the construction of this project may have significant impact on the environment as indicated specifically but not limited to the following comments: a. *"Much of the site has been cleared prior to Planning Board approval and significant earthwork volumes (60,000 cubic yards cut and 40,000 cubic yards fill) are proposed. That relates to approximately 6,000 truck trips minimum on site. Cuts and fills average four feet. We recommend justification for significant earthwork and mass clearing for a conservation/cluster development. In addition, the applicant indicates over 8,000 cubic yards of structural fill material will be required for the project site. This does not include compost soil amendment that will be required for soil decompaction requirements of NYSDEC"; b. Based upon the recent test pit excavations; we feel rock may be present on site. TPS-5 encountered shale at 3 feet in an area where 4 feet of cut is proposed. TPS-8 was only excavated to a depth of 3 feet and photographs may indicate the presence of bedrock. Borings B-6 and B-7 indicate significant resistant at 7.5 to 8.5 feet of depth and may be indications of bedrock. B-1 and TPS-5 are in direct conflict with each other. Specified borrow material may not be available on the project site to meet the contours shown for the site.; It is recommended that a*

separate plan be prepared, as a field guidance, to outline how rocks encountered over 2 inches in size will be removed from the backfill (as dictated by the Kenney Geotechnical Report), the type of roller to be used on site for compaction, mitigation efforts to be used to control the soil water content to obtain optimum moisture content for compaction, etc.

Issues to be Addressed:

A) Analysis of the cuts and fills on the entirety of the site based upon the Kenny Geotechnical Report that provides there are particles of 2" or larger to be removed from the site and including analysis of disposal or crush and use on site including how same change the compaction, final elevation and grades on the site and including the extent of any fill materials that may be brought on the site; the impact of the cut and fill project on roads, overland stormwater and flow and utilities such as storm water and sewer piping.

Proposed solution for EIS

1. Analyze cuts and fills on the entirety of the site.
2. Discuss methods for removal of 2" material.
3. Discuss compaction methods.
4. Discuss how fill materials brought on site will affect compaction.
5. Discuss impacts of cuts and fills on roads and utilities.
6. Discuss impacts on fills by stormwater runoff.
7. Discuss project staging approach.

1. *Analyze cuts and fills on the entirety of the site.* Earthworx cut fill analysis software was utilized by Tobin construction to provide earthwork calculations (Exhibit 19). The earthwork estimating program is a detailed estimating software which will enable the project right of way, road, utilities, and stormwater facilities in accordance with the drawings. An as-built document will be provided at the completion of the project. Excavators, haul trucks, and large dozers are all equipped with GPS equipment for accurate grade control which is digitally connected to the grading information within a digital 3d site wireframe. The following numbers in the resolution stated as 60,000 cu. yds. cut and 40,000 cu. yds of fill, and 6000 truck trips are inaccurate and unrepresentative of actual construction activity. The correct quantities are 53,929 Fill and 39,308 Cut. The 14,500 cubic yard import will be balanced as outlined within Exhibit 19. According to the geotechnical report (Exhibit 20), the on-site soil material tested is suitable for use as on-site fill and will be tested as installed throughout the construction of the project. The on-site soils were tested based upon the Town Engineers direction per Woodland Hills Summary of outstanding Engineering Issues Letter, dated April 28th, 2020 (Exhibit 14). The imported material for pavement subbase and pipe trench liner material will include subbase material 301. The specification sections have been updated to include the Town of Manlius, NY Highway Specifications (Exhibit 26). This section was amended to include the testing frequency and methodology of on-site materials which will be shared with the Town of Manlius engineer/codes officer. All imported stone material will be provided by the local Jamesville Quarry.

The selected contractor, JK Tobin, with 30+ years of experience has not had to provide this on any other site development approvals in Central New York. This is worked out on the field with town review engineer and construction team.

Town engineer claimed *"TPS-5 encountered shale at 3 feet in an area where 4 feet of cut is proposed*" in SEQRA determination (Exhibit 25). Kenney Geotechnical states the weathered shale was encountered at 3 feet at TPS-6 location not TPS-5. Shale encountered at TPS-6 was "highly weathered" but is rippable as evidenced by photos in the report. No bedrock or refusal was found.

Town engineer claimed *"TPS-8 was only excavated to a depth of 3 feet and photographs may indicate the presence of bedrock"* in SEQRA determination (Exhibit 25). According to Page 12 of Geotechnical report (Exhibit 20) the purpose of that test pit was conducted to determine depth of organic topsoil requiring harvesting prior to replacement with fill materials. No bedrock or refusal conditions were found.

Town engineer opines, *"Borings B-6 and B-7 indicate significant resistant at 7.5 to 8.5 feet of depth and may be indications of bedrock"* in SEQRA determination (Exhibit 25). According to page 10 & 11 of the geotechnical report (Exhibit 20), Boring B-6 was augured to a depth of 6' below proposed road grade (bottom of boring elevation 691.00, existing grade 701.00, road grade 697.00). No bedrock or refusal conditions were found. The boring notes possible weather rock at a depth of 7.5 feet which is 1.5' below the depth of proposed excavation. The weather rock encountered by the test borings was decomposed to a degree that it was classified as a soil. Boring 7 was augured to a depth of 1' below proposed road grade (bottom of boring 711.00, existing grade 721.00, proposed grade 712.00). No bedrock or refusal conditions were found. Material was deemed to be rippable. Mitigation efforts to be utilized by the contractor to control the soil water content to obtain optimum moisture content for compaction to meet the specification testing criteria outlined within the 5/18/2020 Geotechnical Report (Exhibit 20). All testing results will be shared with the construction team and Town of Manlius engineer/code enforcement.

Town engineer claimed "*B-1 and TPS-5 are in direct conflict with each other"* in SEQRA determination (Exhibit 25). Sponsor's team contends that Town engineer is referring to TPS-6 not TPS-5 which is in another location (see above). TPS-5 and Boring 1 show similar information according to Kenney Geotechnical report. Boring 1 conducted on May 16th, 2019 excavated to a depth of 10' feet with a 3.25" HSA auger and discovered sandy silty clay with no shale (Exhibit 34) while TPS-5 conducted on April 30th, 2020 was dug to a depth of 7 feet with a CAT 220 and discovered sandy silty clay with no shale (Exhibit 20).

According to the contractor it is not out of the ordinary to move these quantities of dirt to construct a subdivision in CNY. All proposed roads have been designed below the town code 7% maximum slope. All lots are constructed with 4.1 side slopes within 25 feet of the constructed homes. The contractor cannot provide more detailed cut fill quantities until final home footprint and basement plans have been provided.

2. *Discuss methods for removal of 2" material.* A screener will be utilized on site to screen 2" material to meet town specifications. Seven (7) out of Eight (8) test pits showed adequate on-site material.

3. *Discuss compaction methods.* Refer to Kenney Geotechnical report (Exhibit 20) page 2 "The on-site soils are suitable for re-use during earthwork provided that they are properly managed during construction. The till has a significant silt content and will lose strength if disturbed by saturation or freezing. Completed lifts of earthwork should be sealed with a smooth drum roller at the end of each workday." Additionally, mitigation efforts to be used include the control of soil water content to obtain optimum moisture content for compaction, etc.: Water truck will be on -site.

4. *Discuss how fill materials brought on site will affect compaction.* According to Page 2-4 of the geotechnical report (Exhibit 20), the on-site soil material tested is suitable for use as on-site fill and will be tested as installed throughout the construction of the project. The on-site soils were tested based upon the Town Engineers direction per Woodland Hills Summary of outstanding Engineering Issues Letter, dated April 28th, 2020 (Exhibit 14). The imported material for pavement subbase and pipe liner material will include subbase material 301. The specification sections have been updated to include the Town of Manlius, NY Highway Specifications (Exhibit 26). This section was amended to include the testing frequency and methodology of on-site materials which will be shared with the Town of Manlius engineer/codes officer. All imported stone material will be provided by the local Jamesville Quarry.

5. *Discuss impacts of cuts and fills on roads and utilities.* See **Concern 3. Question 1** above.

6. *Discuss impacts on fills by stormwater runoff.* The applicant has provided calculations within the SWPPP (Exhibit 15) Appendix F showing the release from most pipe end section and the SWMF at non-erosive velocities. Where flows released from pipes or the SWMF exceed non-erosive velocities, rip rap aprons are provided to dissipate energy to non-erosive velocities. Rip Rap apron sizing calculations based on methodology presented in the **New York State Standards and Specifications for Erosion and Sediment Control** (Blue Book), dated November 2016 are also provided for these specific outlets within Appendix F. As an added protection all end sections, pipe outlets and spillways are fitted with rip rap aprons to protect against erosion. All newly filled areas will be covered with erosion protection stabilization measures (straw, hay or hydroseeding) immediately after construction. Long term all areas will be stabilized either with vegetation or with impervious surfaces. Generally, stormwater runoff is not impacted due to site cuts or fills outside of the short time period when the work is performed.

7. *Discuss project staging approach.* Project landscape architects typically provide one final grading plan for most projects but provided 7 staged grading plans at the Town engineer's request. Staging plans are L-102 to L-108 (Exhibit 01). Each stage represents the order in which site contractor shall construct the development. Stormwater features and rough grading are exhibited in the first 4 stages. Utilities, road, and lot construction shall occur in the final stages. Disturbance area for each stage was limited to the appropriate area,

approximately less than 7 acres per stage (max 7.82), as determined by the site contractor. This breakdown is beneficial to the town and Sponsor as it limits the total open construction area at any one time. Once a stage is complete, area shall be stabilized per the SWPPP (Exhibit 15) before the next stage shall commence. This shall limit the overall stormwater impacts as each stage is constructed. Final staging plan will stabilize all lots except for residences under construction.

Concern 4. Potential for Impacts due to Cut and Fill Operations

The extensive cut and fill operations, significant earth movement and significant stormwater retention work intended to be conducted on the site for this Project may have negative environmental impacts if not managed efficiently and effectively. Specific reference is made to the Kenney Geotechnical Report at numbers 3, 4, 5, 6 and 7.

Issue to be Addressed:

A) Analysis of the manner and methods, including on-site construction supervision, documentation and reporting will be utilized by the applicant to assure that the significant environmental impacts relating to earth movement, cuts and fills, Stormwater impoundment construction will be mitigated.

Proposed Solution for EIS

1. Sponsor to explain in detail how the operation will take place, including steps to be taken to minimize effects of construction.

1. *Sponsor to explain in detail how the operation will take place, including steps to be taken to minimize effects of construction.* Temporary storage containment and piping have been provided per staging plan to further reduce downhill stormwater impacts during construction. Calculations are provided in the SWPPP (Exhibit 15) Appendix E which model how this containment and piping will operate. Refer to L-200 grading plan for max cut and max fill within right of way. Project sponsor and contractor feel the 93,237 cu. yds. of material movement is not substantial. Site contractor has moved greater than 100,000 cu. yds. of soil in several past projects in Central New York. Contractor states earthwork programs are very subjective and can be 10,000 cu. yds off. Earthwork reports were provided to the town to provide context and an approximation of material movement across the site. Project sponsor has stated over several public meetings that excess natural material will not be imported/exported from site. Sponsor provided the town with staged plans. L-102 thru L-108 (Exhibit 01) at the bequest of the town engineer. This has not been provided in other subdivisions.

Concern 5. Potential for Existing Project to be in conflict with community goals for Cluster Development.

There is a potentially significant environmental impact based upon this Project being in material conflict with the community's goals of Cluster development as adopted in Chapter 127-12 of the

Town of Manlius Code pursuant to Section 278 of the Town Law of the State of New York to *"preserve the natural scenic qualities of open lands".* The Town Engineer Consultant advises that *"Much of the site has been cleared prior to Planning Board approval.* " The Town does not have jurisdiction over, nor does it require a permit, for the removal of trees and vegetation on the site as long as the ground was not disturbed. The clearing, which did not include land disturbance, occurred after this Board determined it would consider this site for Cluster Development. Further, the significant land clearing coupled with the proposed significant earth movement as set forth in finding number 3 above, may negatively affect the character or quality of existing community or neighborhood character.

Issue to be Addressed:

1. Analysis of the manner and methods which will be utilized by the applicant to assure that this project will meet the goal to preserve the natural and scenic quality of open lands, promote the most appropriate use of land and provide a benefit to the Town as required by Town Law Section 127-12 and Section 278 of the Town Law of the State of New York.

Proposed Solution for EIS

1. Sponsor to identify open lands on site that contain natural and scenic quality
2. Explain how open lands containing natural and scenic quality are preserved on site.
3. Explain how the project uses the land in accordance with Town Law Section 127-12 and benefits the town
4. Explain how the project complies with Town Law of the State of New York Section 278.
5. Explain which lands have been cleared on site when they were cleared and what permissions and discussions were had prior to clearing.

1. *Sponsor to identify site specific open lands on site that contain natural and scenic quality.* The sponsor has identified five (5) natural scenic qualities/ natural land features on the project site. They include the natural knoll on the western portion of the property, the intermittent stream, the ground water seep, the historical hardwood southern buffer area, and eastern wooded hill. Site features were selected by the sponsor based on their benefits illustrated in Section 5.1 of the NYSDEC Stormwater Design manual as identified in Concern 1.5 above. The intermittent stream and water seep were identified by Wetland specialists, Environmental Resources, LLC, in letter dated June 13th, 2019 (Exhibit 04). Once identified, the sponsor placed these areas within protected easements as indicated in the July 1st, 2020 dated site plans. *Pursuant to Town Law Section 298 and Subdivision Review guidelines open spaces should "ideally be specified by the local legislative body in the cluster regulations to guide both the applicant and the planning board. Absent such a provision, the planning board must determine an appropriate amount of open space based on the characteristics of the site and particularly when environmentally sensitive areas, such as wetlands, ponds or steep slopes are on the site"* However, at this time the Town Engineer nor the Planning Board have not identified natural features including the ones listed above as appropriate areas for preservation. All five (5) identified natural scenic qualities/ natural land features are protected on site through easements and covenants with individual property owners and HOA agreements. A sample agreement was presented to

the town on June 24th, 2019 (Exhibit 22) and it was understood by the Sponsor's belief that the broad points of the agreement were generally accepted by the Board such that each new property owner would have covenants placed on their land in perpetuality and would abide by all HOA stormwater regulations.

2. *Explain how open lands containing natural and scenic quality are preserved on site.* If the Town is dissatisfied with current code, the Sponsor encourages the Town Board to propose new code making the adjustments they would like to see for future Projects; This Cluster Density Subdivision has been designed to comply with or exceed all the requirements of Town of Manlius Law Section 127-12 Modification of Zoning requirements, 127-19 Design Standards for Lots, and other related code. Section 127-12 states that "the Town Planning Board may modify applicable provisions of Chapter 155, Zoning, and these subdivision regulations, subject to the approval of a plat or plats pursuant to these subdivision regulations, subject to the conditions specified in Town Law § 278 and such other reasonable conditions as the Town Planning Board may in its discretion add thereto. The purpose of any such authorization shall be to enable and encourage flexibility of design and development of land in such a manner as to promote the most appropriate use of land, to facilitate the adequate and economical provision of streets and utilities and to preserve the natural and scenic qualities of open lands. [Amended 3-22-2006 by L.L. No. 3-2006] B. This procedure, when authorized by resolution of the Town Board, may be followed at the discretion of the Planning Board if, in said Board's judgment, its application would benefit the Town. When authorized by resolution of the Town Board to utilize the powers granted by Town Law § 278, the Planning Board will be deemed to be invested with all of the powers provided by § 278, subject to all of the conditions specified therein. Cluster Density Subdivision Regulations include "*(1) No closer than 25 feet to the one-hundred-foot buffer of wetlands designated by New York State Department of Environmental Conservation or 25 feet from wetlands that fall under the jurisdiction of the U.S. Army Corps of Engineers unless the applicant can provide proof to the Planning Board that it has a permit to mitigate all or a portion of the wetlands so the site will be suitable for development; (2) No closer than 25 feet to slopes of 25% or more; (3) No closer than 25 feet to floodplains as defined by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, as amended; (4) No closer than 25 feet to permanent standing water; (5) No closer than 50 feet to a stream corridor (the stream as shown in blue on the U.S. Geological Survey topographical survey map); (6) No closer than 25 feet to a recorded easement(s) that restricts building; (7) Not in direct conflict with other physical features that the Planning Board finds would restrict appropriate use of the land for development purposes*." The "forever wild" lands have been preserved in perpetuity. Despite meeting code, it is our understanding that the Manlius Planning Board does not have the power to change the code and therefore, the applicant contends this concern is not applicable to the DEIS.

3. *Explain how the project uses the land in accordance with Town Law Section 127-12 and benefits the town.* The sponsor identified (5) natural features, described above, on the project site that Town Lawn 127-12 and the Manlius Town Code define as features that should be preserved. Sponsor revised the plans over the course of the project after each identification of a natural feature and provided a conservation easement. In the Final Design, building envelopes are situated within the middle of the project site to have the

least impact on natural features. The stormwater detention facility was shifted several times over the course of this project to place the basin outside of buffers defined in the Town Code §127-19. Also, project followed several Green Infrastructure practices as described above in Concern 1 to mitigate new development impacts. All design choices made had a positive benefit to the surrounding community including but not limited to providing stormwater quantity and quality, preserve existing screening, and providing new housing options within the town.

4. *Explain how this Project is compliant with Town Law of the State of New York Section 278.* This project is compliant with Town Law by meeting all local Manlius codes and meeting the guidelines set forth in Subdivision Review of NYS guide. Project team has identified natural features and provided a plan that exceeds the protections of these features which is a major tenant of the guidelines.

5. *Explain which lands have been cleared on site when they were cleared and what permissions and discussions were had prior to clearing.* Sponsor has not cleared land, only cut trees within the construction limits of the subdivision. This removal left roots and stumps intact so as not to disturb the site or its soils. The Town of Manlius defined clearing as "any activity that removes the vegetative surface cover". However, the Town attorney has previously stated during Planning Board meetings and within phone calls/emails dated March 7th, 2019 that approval is only required when a Land development activity is occurring which does not include tree cutting with the understanding that there is no stump grinding, root removal, etc. In addition, the clearing was done in conjunction with the town codes office, the town attorney and town engineer. Sponsor informed the Town that the tree cutting was necessary to mitigate the NYSDEC requirements for Long Eared Bat management (Exhibit 06). The March 2019 cutting was the last month of that calendar year to clear potential roosting trees that would be impacted by construction until the following October. Sponsor had anticipated that project approval was forthcoming and was attempting to mitigate Northern Long Eared Bat impacts later in the year. A phone call dated March 7th, 2019, between project Sponsor's Counsel and Planning Board Counsel notifies these parties of the clearing and provides a timetable and rationale for the removal (Exhibit 23). The sponsor hired local tree service, Kapper Landscaping, on March 21st, 2019 (Exhibit 27) to cut down trees above 4" but not remove stumps or brush. Project surveyor was on property at the time to ensure no cutting occurred past the Forever Wild easements noted on the submitted plans. Further, clearing did occur over the course of the review period to accommodate machinery necessary to provide the geotechnical report as requested by the Town engineer. At these times, crews did not disturb earth other than at testing locations. Existing vegetation remains on 9.35 acres of the ± 30-acre parcel as outlined on the project plans.

Concern 6. Potential for environmental impacts due to improper compaction of soil.

There may be negative environmental consequences to placement of utilities and homes on soils that have not been properly compacted. The Town Engineer/Consultant has advised: *"The on-site fill that is excavated and proposed to be used as backfill under the roads and utilities must have a*

stringent quality control program to ensure proper compaction; and further drawings provided by the applicant indicate" *No on site backfill material is to be placed under house footings, catch basins, or manholes as shown on the plans. These are to be placed on undisturbed soil as the project details indicate. Standard industry practice. Drawings require modifications to match this onsite requirement as depicted by the applicant.* "

Issue to be Addressed:

- **A.** Explain use of excavated soils on site;
- **B.** Explain where fills are located and how they are compacted.
- **C.** Analysis of the manner and methods for placement of each proposed house on fill areas, as well as placement of utilities and including effect of requirement of 95% compaction of soils on home site locations and including plan which demonstrate same.

Proposed solution for EIS

1. The Sponsor will identify areas where fill soils are to be used and how they will be compacted
2. Applicant will identify houses designated in fill areas and utilities designated for fill areas.
3. Analysis of the manner and methods for placement of each proposed house on fill areas, as well as placement of utilities and including effect of requirement of 95%compaction of soils on home site locations and including plan which demonstrate same.

1. *The Sponsor will identify areas where fill soils are to be used and how they will be compacted.* Refer to L-203 where 18-20 homes are proposed to be built on virgin soil. In the areas that fill is required we will meet the testing measures a frequency measures outlined in Town of Manlius. Per the request of the town engineer, on site materials were tested and found to be sufficient for filling. Testing frequency (Exhibit 24) has been provided by Kenney Geotechnical and provided to town previously dated June 15th, 2020 as well as shown on staging plans (L-102-L-108). If the Town is dissatisfied with the current code, the Sponsor encourages the Town Board to propose new code making the adjustments they would like to see for future projects.

2. *Applicant will identify houses designated in fill areas and utilities designated for fill areas.* Refer to L-202 Cut & Fill Road and Basement Study Plan, 18-20 homes will be built on virgin soil.

3. *Analysis of the manner and methods for placement of each proposed house on fill areas, as well as placement of utilities and including effect of requirement of 95% compaction of soils on home site locations and including plan which demonstrate same.* According to the geotechnical report (Exhibit 20), the on-site soil material tested is suitable for use as on-site fill and will be tested as installed throughout the construction of the project. The on-site soils were tested based upon the Town Engineers direction per Woodland Hills Summary of outstanding Engineering Issues Letter, dated April 28th, 2020 (Exhibit 14). The imported material for fill below basement slabs will include approved on-site tested soils. Please note that all home foundation wall footings will be constructed on undisturbed

subgrade (no fill). The specification sections have been updated to include the Town of Manlius, NY Highway Specifications (Exhibit 26). This section was amended to include the testing frequency and methodology of on-site materials which will be shared with the Town of Manlius engineer and codes officer. Page 3 of the Geotechnical Report (Exhibit 20) includes recommendations for winter construction.

Concern 7. Potential for environmental impacts due to Traffic and Noise.

During construction, negative environmental impacts may occur by reason of significant neighborhood traffic control and noise.

Issue to be Addressed:

A. Analysis of manner and methods, for control of neighborhood construction traffic during period of significant earth movement and construction of infrastructure including proposed time frames for such work to assure compliance with the Town Noise ordinance and manner and method to mitigate adverse environmental impacts of the dust and construction traffic.

Proposed solution for EIS

1. *The Sponsor will outline manner and methods for control of construction traffic in the local neighborhood*
2. *The Sponsor will outline times of permitted construction activity.*
3. *The Sponsor will outline compliance with the noise ordinance*
4. *The Sponsor will outline how dust and construction traffic will be mitigated.*

1. *The Sponsor will outline manner and methods for control of construction traffic in the local neighborhood.* All traffic will primarily use Hoag Lane as the Town collector route to reach the project site at the eastern most address along Hoag Lane. All construction traffic will park, load, and unload on the project site within the designated construction staging areas as shown on L-101 Stormwater Preparation Plan and the following Construction staging plans L-102 through L-108 (Exhibit 01).

2. *The Sponsor will outline times of permitted construction activity.* The sponsor plans to abide by all Town of Manlius permitted work times as described in Section Chapter 86 Noise Control stating no construction noise shall occur "between the hours of 9:00 p.m. the preceding night and 7:00 a.m. on Monday through Saturday, and between the hours of 9:00 p.m. the preceding night and 9:00 a.m. on Sundays and federal holidays." Prior written approval shall be received for any work to occur outside of these times and neighbors will be notified if required by construction.

3. *The Sponsor will outline compliance with the noise ordinance.* The sponsor will abide by all Town of Manlius noise ordinances as outlined in Chapter 86 stating, "No person shall conduct or permit to be conducted construction and/or the operation of machinery, equipment and/or domestic power tools, including lawn mowers, sanders, grinders, and

leaf blowers between the hours of 9:00 p.m. the preceding night and 7:00 a.m. on Monday through Saturday, and between the hours of 9:00 p.m. the preceding night and 9:00 a.m. on Sundays and federal holidays, so as to cause unnecessary noise across a real property line." and *"Sounds created by the exercise of commercial activities to the extent that such sounds are already controlled by the Town of Manlius through site plan approval, special permit or otherwise."* Site construction noise is permittable with the approved project and within the aforementioned work times.

4. *The Sponsor will outline how dust and construction traffic will be mitigated.* Contractor will adhere to NYSDEC guidelines and SWPPP (Exhibit 15) specifications at the request of the town engineer. Dust monitoring stations have been added to the staging plans L-101 thru L-108 (Exhibit 01). Dust monitoring has not been added on other projects to the best of sponsor's knowledge or is not a frequent request across Central New York. SWPPP references a project that utilized dust monitoring in Elmira , NY (Southern Tier) at a DEC remediation site. All construction traffic and parking will be located on site. No parking will be allowed along Hoag Lane. Access will only be allowed at the intersection of Hoag and Shiraz on as shown on drawings.

Environmental Assessment Form Determinations

The Planning Board completed a review of EAF Parts 1 and 2 (Exhibit 12), along with the Project documentation presented and comments from the public. Based on this, the Planning Board determined the following to be moderate to large impacts from Part 2 of the EAF as presented in the Planning Board's SEQRA Determination (Exhibit 25). The numbering system below follows that of Part 2 of the EAF with associated "concerns" for each SEQR item referenced to concerns outlined in the ***Impacts and Mitigation*** section above and listed below.

The Planning Board has found positive SEQRA declarations during its review of June 17, 2020 Woodland Hills Subdivision Application. The positive declarations can be summarized as pertaining to six basic issues. The Board's concerns as follows:

1. *Impacts of Stormwater Surface Runoff on Offsite Areas;*
2. *Impacts of Stormwater Management Facility;*
3. *Impact of Magnitude of Earthwork;*
4. *Potential for Impacts due to Cut and Fill Operations;*
5. *Potential for Existing Project to be in conflict with community goals for Cluster Development.;*
6. *Potential for environmental impacts due to improper compaction of soil;*
7. *Potential for environmental impacts due to Traffic and Noise.*

Below are tables showing each Concern and which SEQR items are specific to each concern. Following the Table of Concerns is a discussion of each item and how the proposed Project addresses, proposes to address or mitigates each concern. This section is intended to permit the Sponsor to expand upon the Concern summaries outlined earlier in this document.

Concern 1 & 2

FEAF Question	Magnitude of Impact	Duration of Impact	Likelihood of Impact	Importance of Impact	Board Concern	Category
4h. The proposed action may result in new or additional use of ground water, or may have the potential to introduce contaminants to ground water or an aquifer	Moderate to Large Impact	No Comment	No Comment	Very Important	1. Impacts of Stormwater Surface Runoff on Offsite Areas; 2. Impacts of Stormwater Management Facility	Water

Board Rationale: *The Unique direct infiltration into the Limestone substrate creates potential for groundwater issues.*

Concern 5

FEAF Question	Magnitude of Impact	Duration of Impact	Likelihood of Impact	Importance of Impact	Board Concern	Category
7. The proposed action may result in a loss of flora or fauna	No moderate to large Impacts were noted in sub-questions a-j	Long term – unavoidable	Definitely will occur	Very important	5.Potential for Existing Project to be in conflict with community goals for Cluster Development.;	Land

Board Rationale: *Removal of trees from the site.*

FEAF Question	Magnitude of Impact	Duration of Impact	Likelihood of Impact	Importance of Impact	Board Concern	Category
17h. The proposed action is not consistent with adopted land use plans. Please See Attached Addendum for findings.	Moderate to Large Impact	Long Term as a result of heavy storms	Possible to occur	Very important	5.Potential for Existing Project to be in conflict with community goals for Cluster Development.;	Land

Board Rationale: *Section 127-12 of the Town of Manlius law sets forth criterion for Cluster Development (278 Town Law) and project shows inconsistency with Site Plan due to potential failure to preserve natural and scenic qualities of open lands and show benefit to the Town.*

FEAF Question	Magnitude of Impact	Duration of Impact	Likelihood of Impact	Importance of Impact	Board Concern	Category
18f. The proposed project is inconsistent with the existing community character. Proposed action is inconsistent with the character of the existing natural landscape	Moderate to large	Long Term	Definitely will occur	Very important	5.Potential for Existing Project to be in conflict with community goals for Cluster Development.;	Land

Board Rationale: *Section 127-12 of the Town of Manlius law sets forth criterion for Cluster Development (278 Town Law) and project shows inconsistency with Site Plan due to potential failure to preserve natural and scenic qualities of open lands and show benefit to the Town.*

FEAF Question	Magnitude of Impact	Duration of Impact	Likelihood of Impact	Importance of Impact	Board Concern	Category
18g. The proposed project is inconsistent with the existing community character. Potential non-compliance with standards of Cluster Development	Moderate to Large impact.	Long Term	Definitely will occur	Very important	5.Potential for Existing Project to be in conflict with community goals for Cluster Development.;	Land

Board Rationale: *Section 127-12 of the Town of Manlius law sets forth criterion for Cluster Development (278 Town Law) and project shows inconsistency with Site Plan due to potential failure to preserve natural and scenic qualities of open lands and show benefit to the Town.*

Concern 7

FEAF Question	Magnitude of Impact	Duration of Impact	Likelihood of Impact	Importance of Impact	Board Concern	Category
15f. Impact on Noise, Odor and Light – Please see attached addendum for findings.	Moderate to Large impact.	Long Term as a result of heavy storms	Possible to occur	Fairly important – without mitigation	7. Potential for environmental impacts due to Traffic and Noise	Community Plan

Board Rationale: *During Construction there will be temporary intervals of noise exceeding ambient noise levels relating to typical construction noise activity; and/or noise in violation of the noise ordinance of the Town.*

FEAF Question	Magnitude of Impact	Duration of Impact	Likelihood of Impact	Importance of Impact	Board Concern	Category
15a. Impact on Noise, Odor and Light – The proposed action may produce sound above noise levels established by local regulation	Moderate to large Impact	Temporary – construction related noise	Possibly will occur	Fairly important – without mitigation	7. Potential for environmental impacts due to Traffic and Noise	Community Plan

Board Rationale: *The potential for construction operations and equipment to exceed acceptable noise levels.*

SEQRA ITEMS PROPOSED DISCUSSION AND MITIGATION MEASURES

4h. The proposed action may result in new or additional use of ground water, or may have the potential to introduce contaminants to ground water or an aquifer

The specific concerns (outlined in ***Impacts and Mitigation*** section) voiced by the board for this SEQR item include:

1. The Unique direct infiltration into the Limestone substrate creates potential for groundwater issues.

Rationale for this determination of a large impact voiced by the Town Planning Board include:

- The Applicant has provided letter reports prepared by Kenny Geotechnical Engineering Services dated May 18, 2020 and May 27, 2020 (the "Kenny Geotechnical Report"), which has been reviewed by the Town's Engineer/Consultant in conjunction with the other documents part of the July 1, 2020 Submission, and the Town's Engineer/Consultant has

determined that environmental impact of this Project on stormwater volume and run-off is significant due to the project being in "an environmental sensitive area with the Muirfield Drive drainage basin and with the large earth moving operation with soils depicted as having high silt content by the applicant ... ". While same may be mitigable, Town Engineer found that, " Detail site specific plans on using on site soils susceptible of losing strength and requiring frost cover protection (outlined in the Kenney Geotechnical Report dated 5/18/20) are not addressed in the proposed scope of work by the applicant", and further found that a "waiver of NYS stormwater regulations for a 5-acre disturbance variance" is not recommended.

- The Town's Engineer/Consultant has determined that due to the significant impact of stormwater implications created by the project, and the applicant has agreed, that the large stormwater holding area/impoundment proposed by the applicant on the site, and being approximately 16.5 feet deep ("Stormwater Impoundment") must be designed to the standards set forth by the Department of Environmental Conservation as if is same was delineated as a "Dam"; which design, to date, has not been provided.

Discussion and Mitigation Measures Proposed:

The Sponsor contends that the premise for positively declaring item 4h is based on alternative facts and lacks evidence to support its declaration. As previously noted in Concern 1, item #2, there is no evidence that surface runoff enters any limestone substrate. The board did not identify any of this questions subitems as moderate to large impacts. In addition, instructions from the SEQR workbook on question 4 item h provides examples of projects that may have a moderate to large impact. The SEQR workbook guidance states……

There may be other impacts identified by the reviewing agency that are not addressed by the above questions. If so, they should be identified and briefly described here. Some proposed actions may have beneficial impacts on the environment. The reviewing agency can use the 'other' category for that purpose, too.

Examples of 'other impacts' to groundwater:

- *Mining operations may alter hydrology, may place the water table closer to potential contamination, or may change the groundwater recharge rate.*

The Sponsor contends that the proposed project does not meet any of the example criteria based on the non-transmissive and non-infiltrative nature of the soils in the vicinity of the SWMF. There is no evidence of any exposure to the “limestone substrate” and all geotechnical testing does not reveal any presence of limestone substrate on site. Evidence of limestone substrate or exposure to it does not exist in any location on the site and based on an exhaustive geotechnical investigation there is no reason to anticipate any will be encountered during construction or upon completion of the project. In addition, the generous soil profile that exists over the entire site, the lack of ground water in any of the test boring or excavation locations, the absence of any evidence of Karst Topography on site or in the area and the location of the facility on Muirfield drive located uphill of the subject site further support the Sponsor’s contention there is no interaction with any limestone substrate. Furthermore, all Geotechnical data and testing does not appear to support the boards rationale for considering this a moderate to large impact as described by examples within the SEQR workbook.

7. The proposed action may result in a loss of flora or fauna the specific concerns (outlined in ***Impacts and Mitigation*** section) voiced by the board for this SEQR item include:

1. The magnitude of the earthwork on the site will require removal of trees from the site;

Rationale for this determination of a large impact voiced by the Town Planning Board include:

- The Town Engineer Consultant advises that "Much of the site has been cleared prior to Planning Board approval. " The Town does not have jurisdiction over, nor does it require a permit, for the removal of trees and vegetation on the site as long as the ground was not disturbed. The clearing, which did not include land disturbance, occurred after this Board determined it would consider this site for Cluster Development. Further, the significant land clearing coupled with the proposed significant earth movement, may negatively affect the character or quality of existing community or neighborhood character.

Discussion and Mitigation Measures Proposed:

It is the Sponsor's contention that some of the premises used for justification of positively declaring item 7 are based on alternative facts and lack evidence to support its declaration as an impact. The statement that much of the site has been cleared is misleading and not supported by current field conditions. Approximately, 1/3 of the site, 9.35 acres, has been preserved in accordance with the project plans submitted to the board on June 17th, 2020. As previously noted in the sponsor's August 7th, 2020 Comment response letter (Exhibit 16) the applicant has not cleared land, only cut trees within the construction limits of the subdivision. This cutting left roots and stumps intact so as not to disturb the site or its soils. The Town of Manlius defined clearing as "any activity that removes the vegetative surface cover". However, the Town attorney has previously stated during Planning Board meetings and within phone calls/emails dated March 7th, 2019 (Exhibit 23) that approval is only required when a land development activity is occurring which does not include tree cutting with the understanding that there is no stump grinding, root removal, etc. In addition, the clearing was done in conjunction with the town codes office, the town attorney and town engineer. Sponsor informed the Town that the tree cutting was necessary to mitigate the NYSDEC requirements for Long Eared Bat management (Exhibit 06). The March 2019 cutting was the last month of that calendar year to clear potential roosting trees that would be impacted by construction until the following October. Sponsor had anticipated that project approval was forthcoming and was attempting to mitigate Northern Long Eared Bat impacts later in the year. A phone call dated March 7th, 2019, between project Sponsor's Counsel and Planning Board Counsel notifies these parties of the clearing and provides a timetable and rationale for the removal (Exhibit 23). The sponsor hired local tree service, Kapper Landscaping, on March 21st, 2019 (Exhibit 27) to cut down trees above 4" but not remove stumps or brush. Project surveyor was on property at the time to ensure no cutting occurred past the Forever Wild easements noted on the submitted plans. Further, clearing did occur over the course of the review period to accommodate machinery necessary to provide the geotechnical report as requested by the Town engineer. At these times, crews did not disturb earth other than at testing locations. Lastly, as noted above in the **ENVIRONMENTAL and HISTORICAL SETTING** section that the majority of

vegetation within the developed area is primarily brush and not trees larger than 4" in caliper. The board did not identify any of this questions subitems as moderate to large impacts.

15a. Impact on Noise, Odor and Light – The proposed action may produce sound above noise levels established by local regulation

The specific concerns (outlined in ***Impacts and Mitigation*** section above) voiced by the board for this SEQR item include:

1. Potential for environmental impacts due to Traffic and Noise.

Rationale for this determination of a moderate to large impact voiced by the Town Planning Board include:

- There is a potential for construction operations and equipment to exceed acceptable noise levels.

Discussion and Mitigation Measures Proposed:

The applicant has agreed to perform construction activity in accordance with the SWPPP prepared for the project (Exhibit 15) and in accordance with all applicable Town of Manlius ordinances, codes, and regulations. In addition, the applicant contends that the board's basis for positive declaration is based on alternative facts. The SEQR workbook provided guidance on how to answer this question and states…….

Small Impact:

A small impact could occur under one or more of these circumstances:

- *If the project produces noise but those levels are below regulated levels.*
- *If the project produces noise, but those levels are below, or even above regulated levels and they are temporary and will occur only during a short-term construction phase.*

The applicant contends that the project clearly falls under bullet point #2 and should have been marked as a small impact.

15f. Impact on Noise, Odor and Light – Please see attached addendum for findings.

The specific concerns (outlined in ***Impacts and Mitigation*** section above) voiced by the board for this SEQR item include:

1. Potential for environmental impacts due to Traffic and Noise.

Rationale for this determination of a moderate to large impact voiced by the Town Planning Board include:

- During Construction there will be temporary intervals of noise exceeding ambient noise levels relating to typical construction noise activity; and/or noise in violation of the noise ordinance of the Town.

Discussion and Mitigation Measures Proposed:

As noted in SEQR item 15a above, the applicant contends this question was marked incorrectly as moderate to large and should be considered a small impact based on NYSDEC SEQR Workbook Guidance.

17c. The proposed action is not consistent with adopted land use plans. The proposed action is inconsistent with local land use plans or zoning regulations.

The specific concerns (outlined in ***Impacts and Mitigation*** section above) voiced by the board for this SEQR item include:

1. Section 127-12 of the Town of Manlius law sets forth criterion for Cluster Development (278 Town Law) and project shows inconsistency with Site Plan due to potential failure to preserve natural and scenic qualities of open lands and show benefit to the Town.

Rationale for this determination of a moderate to large impact voiced by the Town Planning Board include:

- There is a potentially significant environmental impact based upon this Project being in material conflict with the community's goals of Cluster development as adopted in Chapter 127-12 of the Town of Manlius Code pursuant to Section 278 of the Town Law of the State of New York to "preserve the natural scenic qualities of open lands".

Discussion and Mitigation Measures Proposed:

The sponsor contends that the project addresses numerous Cluster characteristics, many of which are outlined by the Subdivision Review in New York State, the NYSDEC as good Green Infrastructure and Clustering practices, and the Town of Manlius Town Code. The Sponsor throughout the project development has acted in a way to preserve the greatest quantity of preservable natural features. When natural features were identified by the sponsor through environmental studies or community concern, they were placed within proposed conservation easements and lot lines, building envelopes, roadways, and utilities were relocated to further reduce impacts on these features. As described prior in this report, five (5) natural features were identified by the project sponsor based on section §127-19 of the Town code. They include the natural knoll on the western portion of the property, the intermittent stream, the ground water seep, the historical hardwood southern buffer area, and eastern wooded hill. To date, the sponsor has not received guidance from the town identifying whether these features are acceptable to protect as defined in their own code or any other natural features they feel require protection. Sponsor is open to protecting any features the Town requests if it can be explained as having a net positive impact of the community. It is important to note that although some community members, subjectively, feel the project site is worthy of preservation status the site is not indicative of exemplary New

York State ecological communities and is in fact a reclaimed agricultural field that has gone unmanaged for decades. The project site since let fallow is primarily infested with invasive understory species such as calleray pear and buckthorn that outcompete native flora. Also, these thickets, which are located within the subdivision development area not conservation easements, need to be managed as described by NYSDEC to help mitigate and reduce White-Tailed Deer populations in the Town. Uncontrolled deer populations have caused an increase in native flora consumption, tick-borne illnesses, and property damage. The removal of these thickets will remove essential hiding spots for the deer that are unnavigable by the town looking to reduce these populations. It is for these reasons, the sponsor contends they have persevered as much scenic and quality natural features, roughly a 1/3 of the site, as they possibly can as illustrated in the final design.

17h. The proposed action is not consistent with adopted land use plans. Please See Attached Addendum for findings.

The specific concerns (outlined in ***Impacts and Mitigation*** section above) voiced by the board for this SEQR item include:

1. Section 127-12 of the Town of Manlius law sets forth criterion for Cluster Development (278 Town Law) and project shows inconsistency with Site Plan due to potential failure to preserve natural and scenic qualities of open lands and show benefit to the Town.

Rationale for this determination of a moderate to large impact voiced by the Town Planning Board include:

- There is a potentially significant environmental impact based upon this Project being in material conflict with the community's goals of Cluster development as adopted in Chapter 127-12 of the Town of Manlius Code pursuant to Section 278 of the Town Law of the State of New York to "preserve the natural scenic qualities of open lands".

Discussion and Mitigation Measures Proposed:

This item has been previously discussed above within SEQR item 17c above. In addition, this question refers to compliance with existing Community and Land Use Plans. The Town of Manlius has not adopted a Community Plan, Land Use Plan or Comprehensive Plan. The NYSDEC has provided guidance for answering this question in the SEQR workbook. The guidance states……

In order to answer this Part 2 question, the reviewing agency should become familiar with what, if any plans exist, and what the vision, goals, recommendations, and mapped land use plans may be included. For help in determining if your municipality has adopted land use plans, check their website, and contact the municipal clerk, code enforcement officer (or building inspector), or planning board clerk. Contacting local resources is the best way to identify adopted plans and to help you determine if a municipality has an adopted comprehensive plan.

If one or more adopted plans are in place, the reviewing agency should research the plan(s) and any accompanying maps in order to determine the goals and strategies that apply to the project site, and if there are any specific recommendations applicable to the project site. Some plans are general in nature and do not make specific

recommendations for individual locations in a community. Others are very specific, and text or maps exist indicating exactly what is planned for a particular location.

It also states…….

Note that Question 17 asks if the proposed project is NOT consistent with adopted plans. Reviewing agencies will need to first review the plans. Then you may need to ask and answer sub-questions (a) through (h) below, in order to determine if "the action is consistent with adopted land use plans". If, after reviewing those plans, you decide that the action IS consistent with the plan, then check "No" to this question and move to Question 18. However, if you find that the proposed action is NOT consistent with those plans, then answer sub-questions (a) through (h) to evaluate the size of potential impacts resulting from that inconsistency.

The applicant contends that this item is not applicable since the Town of Manlius has not adopted a plan and no adopted plan is available for comparison.

18f. The proposed project is inconsistent with the existing community character. Proposed action is inconsistent with the character of the existing natural landscape.

The specific concerns (outlined in ***Impacts and Mitigation*** section above) voiced by the board for this SEQR item include:

1. Inconsistent with the character of natural Landscape/ removal of significant land features.

Rationale for this determination of a moderate to large impact voiced by the Town Planning Board include:

- There is a potentially significant environmental impact based upon this Project being in material conflict with the community's goals of Cluster development as adopted in Chapter 127-12 of the Town of Manlius Code pursuant to Section 278 of the Town Law of the State of New York to "preserve the natural scenic qualities of open lands".

Discussion and Mitigation Measures Proposed:

This item has been previously discussed under SEQR item 17c above. In addition, the applicant contends that the board has incorrectly checked this as a moderate to large impact. The SEQR workbook states……

Small Impact:

There may be a small impact if:

- *The project site is located in an area that already has a diversity of vegetation and mix of cover types and where land uses, and the proposed use are similar to or already found nearby.*
- *The project activities do not have other significant adverse environmental impacts and the structures are sited in such a manner (such as with very large setbacks or significant buffering) so that the visual character of the natural landscape is not noticeably different.*
- *The change to the natural landscape is small in size, and not in sharp contrast to the broader area*

The project clearly is described by bullet number 1. The project is infill development located within and surrounded by other residential areas. This indicates that the project should be classified as a small impact according to SEQR guidance.

18g. Potential Non-Compliance with standards of Cluster Development.

The specific concerns (outlined in ***Impacts and Mitigation*** section above) voiced by the board for this SEQR item include:

1. Potential for non-compliance with standards for Cluster Development

Rationale for this determination of a moderate to large impact voiced by the Town Planning Board include:

- There is a potentially significant environmental impact based upon this Project being in material conflict with the community's goals of Cluster development as adopted in Chapter 127-12 of the Town of Manlius Code pursuant to Section 278 of the Town Law of the State of New York to "preserve the natural scenic qualities of open lands".

Discussion and Mitigation Measures Proposed:

As noted in SEQR item 17c above and under Concern 1, item 5, the applicant contends that the project addresses numerous Cluster characteristics, many of which are outlined by the Subdivision Review in New York State, NYSDEC as good Green Infrastructure and Clustering practices, and Town of Manlius Town Code. The cluster subdivision is defined as "a cluster division should accomplish the above purposes by reducing the lot size and bulk requirements contained in the zoning law, while clustering homes in those areas where they will have the least impact on natural or cultural features. The agricultural lands, open space, or sensitive areas are then permanently preserved through the use of conservation easements. The cluster principle can be applied not only to large developments but also to smaller subdivisions, enabling the subdivided lots to be smaller than the zoning would normally require, provided that compensating buildable land is placed under open space conservation easement to maintain the overall density at or below the level permitted by the zoning law."[5] The Sponsor contends the Final Design plan dated July 1st, 2020 is a Cluster subdivision based on the above references and definition. The sponsor has taken all recommendations from Planning Board, community members, and town engineer to provide a plan that reduces the zoning requirements of the existing property, preserves a third of the open space of the existing property, and reduces the overall infrastructure needed to construct the same conventional subdivision.

Unavoidable Environmental Impacts

The Design will result in the alteration of approximately ±20-acres of a wooded/ shrubland development. The development will increase the total impervious surface area of the property

[5] (Cluster Development, Residential, 1991), *Town of Clinton*

compared to existing conditions as is typical of a 21-lot subdivision. However, 31% of the project site will be protected in "forever Wild" easements.

- *Noise:* During the construction of the 21-lot cluster subdivision, heavy equipment and back up alarms will be a temporary increase in the ambient noise level. This will last sporadically for approximately twelve months during normal working hours. Likewise, the construction of the homes will produce construction noises that will last the duration of their construction which may be six months. Much of this construction noise is during the initial earthwork stages of the Project and during home construction. Much of the interior construction to occur produces less noise beyond the property line. After the construction is completed, the noise produced for this site will be similar to the existing suburban residential ambient noise levels.
- *Dust:* Depending on the time of year the subdivision improvements are made, the dust level should be minimal with best management practices implemented should it be during a dry period. Similar to the construction of the homes, the dust produced during the build would be minimal. These are temporary conditions with minimal dust if any created after the construction phases are completed. Refer to dust monitoring plans in SWPPP dated August 7th, 2020 for further mitigation measures taken by project. Town engineer requested dust monitoring plan to be included, however dust monitoring plans are rare in this part of state.
- *Earth Disturbance:* The majority of the earth disturbance is done during the approximately twelve-month period the stormwater, road and utilities are built. The entire site will be stabilized at this point prior to home development. Each house will be constructed in accordance with Lot DEC lot development Dec plans. Since the May 4th, 2018 submission package, the Sponsor and Site contractor have maintained that the overall site earthwork will balance cuts and fills. The most recent earthwork, dated February 17th, 2020 approximation calls for 14,829.9 yds^3 of Fill material to be brought in, or 1,060 dump trucks. Refer to above answer for earthwork. The basin and road will be backed up by an as-built. The construction of the homes will have minimal, short term earth disturbance. Best management practices will be implemented to reduce any negative impacts of earth disturbance.
- *Construction Vehicle Traffic:* Construction traffic will be a temporary condition during the approximately twelve-month modification of the subdivision and the period anticipated to build the 20 homes. Most of the construction traffic activities for the subdivision will occur within the 1-year grading, utility, and road construction. The home construction traffic activities will include the delivery of materials and workers arriving on site which will occur on-site. The majority of traffic will arrive and depart via Hoag Lane (a town collector street) having limited impact on minor roads. A negligible increase in traffic will result from the addition of 20 residential lots as reported in the updated August 15th, 2019 Traffic Impact study by R.Z. Engineering.

ALTERNATIVES

Explored Alternatives Summary

The Sponsor's application has undergone numerous modifications and adjustments during the three-year review process with the Planning Board to address and mitigate concerns identified by the Sponsor, the Town, and the public, resulting in the Final Design.

The nature of the property uses in the Project Site vicinity support a Cluster subdivision for the construction of single-family homes as the most appropriate alternative use for the Project Site. The Project is more consistent with and will produce less impact to and deviation from the current uses of the properties in the Project Site vicinity than any of the other permissible R-A uses.

The two most likely alternative uses of the property, agricultural use and Ag-Tourism would create toxic runoff issues in the former case while Ag-Tourism would greatly increase commercial traffic. The size of the Project Site, when compared to modern day farms, renders use of the Project Site for agricultural purposes undesirable. The quality of the soil types are not conducive for traditional agricultural crops without the application of significant quantities of fertilizers. In addition, this alternate use does not reflect the need for the Project as expressed by the Sponsor.

Additional alternative uses include but are not limited to two-family dwellings, mobile homes, and physician offices. Two-family dwellings would not be an appropriate use as the added density of populating the project with duplexes would have a negative impact on surrounding property values and increase traffic significantly, it is estimated given the current codes the project would triple the number of households for the proposed development. Mobile homes are subject to §155-21 of Town code under R-A zoning but could potentially be approved for the site. However, they would be detrimental to the surrounding property values and would increase traffic significantly given the number of mobile homes that could potentially be included on the site. Also, utilities would need to accommodate the increased load from the number of mobile homes and additional sanitary districts would need to be formed. Lastly, in-home professional offices are an applicable use subject to a special permit. However, this use would increase traffic levels, added parking requirements, and overall be detrimental to the existing character of the community.

A zone change to a more commercially favorable zone also does not fit the Project Site. A zone change would not conform to the surrounding zoning and would not have been favorably received by the Town.

In contemplating the Project Site layout, design, and economic viability, several combinations of alternative uses and square footages were considered, including a conventional subdivision and several open space subdivision designs. As detailed in this DEIS, the Sponsor has developed the Final Design (Exhibit 01), a cluster density subdivision that requires a simple road design and that preserves the existing natural features described previously, western knoll, intermittent stream, groundwater seep, south property line historical buffer, and upland woods.

As part of the "**Original Design**" an alternative design was submitted. In the ***ALTERNATIVE #*** Sections, below, Sponsor discusses the major changes to each plan as the project evolved through public discussion, planning board comment, and consumer interest. All of these Alternatives, including Alternative 10 ("**Final Project**") which meets code, was rejected by the Planning Board.

Alternative 1: No changes to the existing private driveway and Existing Residence

See Exhibit 1 for existing site conditions. The Sponsor has the right to monetize this land, the option of no changes to the existing private driveway had the Sponsor pursue the remaining economic options consistent with this alternative. These economic options include but not limited to reselling the property or establishing agricultural practices contingent to Town of Manlius zoning. Since Manlius contains several families owned farms that would be the alternative considered in conjunction with active residence. The obligation of State agencies, as a matter of policy, is to encourage the maintenance of viable farming in agricultural districts. Therefore, active farming utilizing the existing private driveway is a permitted and viable alternative.

However, it has a significantly greater negative environmental impact to the community and water quality than the impact of the proposed subdivision.

- The existing soils are poor for the viability of traditional agricultural crops suited to this region. The slopes and soils would be expected to produce approximately 4.5 tons per acre. The resulting perpetual agricultural runoff due to open soil and use of fertilizers would be detrimental to the town's water quality and aforementioned downstream flooding.
- Clearcutting the site a portion of the parcel with good soils that could support traditional crops—in order to resume agriculture would have a vastly more significant visual impact than the proposed road and homes. The visual open scar created would be in stark contrast to the vegetated adjoining areas of the neighboring parcels.
- The *annual* tilling of 30 acres are subject to a one-time disturbance under this proposal would produce exponentially more soil runoff over time than that which could result under this proposal, and would require no mitigation.
- As noted by the town engineer on several occasions' removal of vegetation and exposure of open soils (such as those conditions experienced by planting crops) would increase runoff to downstream areas and likely allow more erosion of onsite soils and utilized chemical or manure type fertilizers or contaminating downstream waterways and lands and causing odors to neighboring properties.

***Alternative* 2: Original Conventional Plan (July 13th, 2017 – November 01st, 2017)**

Between July 2017 and November 2017, the sponsor worked with Manlius and Planning Board regarding a 25-lot subdivision of the Rogers property. Sponsor was encouraged by Manlius to pursue a Cluster subdivision for the project. Alternative 2 was developed to show maximum lot coverage of the property in accordance with cluster subdivision law as indicated by Town Law Section 278. Meeting Minutes from September 25th, 2017 note Attorney Frateschi explained "under conventional zoning the applicant has to show this Board and the Engineer, through a surveyor how many lots he can get on the site plan that shows he can get 25 conventional lots in 25 acres." The plan provided to the board was a surveyor prepared plat plan showing 25 lots with 40,000 sf minimum area and 150' frontages.

This alternative involved the maximum cut and fill, maximum disturbance to surrounding vegetated areas, and maximum impact for road construction. Alternative was determined to be an acceptable conventional plan at the time.

***Alternative 3:* Original Cluster Plan – 25 Lots (August 13th, 2017)**

Alternative 3 was based on Town input, cluster planning guidelines, and sponsor's need to maximize economic value of property. The existing house property would be subdivided along with 24 new building lots with buffer/forever wild areas set aside at the west and east boundaries. Two additional parcels would be owned and operated by a Homeowners Association **("HOA")** to maintain a stormwater facility at the Western end of the property and a public park located at the entrance of the subdivision. Two (2) new roads would be dedicated to the Town. This cluster was based on the Sponsor developing a 25-lot conventional plat plan that met the required 40,000 sf minimum and 150' frontage per lot requirement for R-1 zoning. Lots on the Alternative 3 lots varied in size to not exceed the minimums of R-3 Zoning and provide for a range in unit options that is designated for in Cluster planning. This was the alternative that was the result of meeting the requests of several Planning Board Members during successive Planning Board meetings.

This alternative offered minimal impact from road construction, but this alternative was eventually rejected by the Planning Board and community for being too dense. The Planning Board did not revisit this alternative.

Alternative 4: Cluster Version 2 "Public Park" Option – 25 lots **(December 01st, 2017)**

Alternative 4 built upon the previous alternative with revised grading, open space calculations, and preliminary SWPPP calculations for the Planning Board's review. 25 lots were still being considered at this time. Green Space was provided at the Eastern boundary, Northwestern boundary and entrance area public park accounting for 24% of the total project site.

This alternative offered minimal impact from road construction, but this alternative was eventually rejected by the Planning Board and community for being too dense. Planning Board members brought up concerns such as fencing along Hoag Lane, additional soil testing, sewer profiles, parkland adoption, and fire department access at the December 11th, 2017 meeting. This alternative was rejected by the Planning Board with the Chairman requesting "a plan that meets code". Project Sponsor believed the site plan met the requisite code of R3 zoning requirements other than a misunderstanding over §127-19 design standards for lots. Project team took several letters, emails, and meetings to get clarification on Town design requirements of this section of code.

Alternative 5: Cluster Version 3 "Public Park" – 24 lots **(January 26th, 2018)**

Alternative 5 provided "full" construction documentation for the Public Park Cluster plan. Plans showed limits of storm detention/wet pond, open space easements, concept park plan, and lot grading. Updated grading resulted in the reduction of 25 lots to 24 lots (including the existing home).

This alternative offered minimal impact from road construction, but this alternative was eventually rejected by the Planning Board and community for being too dense. Planning Board members brought up concerns such as buffer areas behind lots 4-12, if conventional subdivision could be constructed, and fire access at February 12th, 2018 meeting.

Alternative 6: Cluster Version 4 – Park removed – 24 lots **(March 29th, 2018)**

Following Engineer concerns noted in meeting minutes from February 2nd, 2018 (Exhibit 38, Comment 18), Alternative 6 removed the public park option from the plan. Cluster development maintained the 23+1 subdivision. Buffer/ green space area was added to the north and south property lines of the property at the request of community members, town engineer, and planning board. New open space along the North and South property lines accounted for 20% of the total site's land use along with already proposed open space protected areas.

This alternative offered minimal impact from road construction, but this alternative was eventually rejected by the Planning Board and community for being too dense. Planning Board members brought up concerns such as impacts on the local schools, stormwater easement ownership, and unanswered questions on the SEQRA at the May 14th, 2018 meeting.

Alternative 7: Cluster Version 5 "No Offsite Trucking" – 24 lots **(June 01st, 2018)**

Plan was revised again due to concerns around construction traffic. Community did not want cut and fill material to leave the project site. Fill area utilized rear properties of existing house, lot 3, and lot 4. Area was liberally sized based on general discussion with site contractor in the event that more space was needed. Site contractor initial estimates stated earthwork could be balanced on site. Engineer requested cut-fill analysis to be performed to demonstrate how much material would be moved around site.

This alternative offered minimal impact from road construction, but this alternative was eventually rejected by the Planning Board and community for being too dense.

Alternative 8: Cluster Version 6 - 21 lots **(October 23rd, 2018)**

The sponsor after reviewing community comments, planning board comments, and engineering comments reduced the number of lots from 24 to 21 lots (20 Prosed new lots + 1 existing lot). Green/ Open space areas increased in preservation. The Cul-de-sac, utility locations, overall road length were reduced.

This alternative offered maximum impact from road construction. This alternative was accepted by the Planning Board and Engineer as the maximum number of lots that could be constructed on the property. As stated at the July 22nd meeting "Member Gilbert made a motion, seconded by Member Mento and carried unanimously to adopt the resolution to have the maximum number of lots on the property be 21 according to the resolution attached hereto."

Alternative 8.1: Conventional Version 2 – 21 lots **(October 23rd, 2018)**

Conventional plan was revised to illustrate the maximum 21 that could be developed on the site meeting the Town's requirements of steep slopes, blank, and blank. Conventional plan still meets the R-1 zoning requirements of 40,000 SF and 150 frontage requirements. Lots were appropriately sized for the surrounding neighborhood and protected vegetated areas. Conventional plan required does not limit open space or paving area.

This alternative offered maximum impact from road construction. This alternative was accepted by the Planning Board and Engineer as the maximum number of lots that could be constructed on the property. As stated at the July 22nd meeting "Member Gilbert made a motion, seconded by Member Mento and carried unanimously to adopt the resolution to have the maximum number of lots on the property be 21 according to the resolution attached hereto."

***Alternative 9: Cluster Version 7 – Wetland Survey* (June 14th, 2019)**

Community members expressed concern after investigating the property that wetlands existed within the project site. The sponsor contends these wetlands were created by the town's lack of stormwater management within upstream subdivisions. Upstream lands currently sends piped stormwater runoff uncontrolled onto the subject site creating this intermittent stream, however, the Sponsor agreed to investigate further. The sponsor hired Environmental Resources, LLC (Gene Pellet) to assess the project site for potential wetlands. Two (2) army corps of engineer wetlands identified as an intermittent stream and ground water seep were found on the western edge of the project side near previously protected knoll. The intermittent stream was a by-product of stormwater flowing from neighboring properties on Churchill Ct. (Exhibit 04). Project was updated to abide by Army Corps of Engineers guidelines for Wetlands and the Town of Manlius Town Code §127-19 and other attributing ordinances. The resulting alterations to the plan reduced impervious area, increased open space, and preserved natural features. The Applicant modified the Project Proposal to preserve this intermittent stream and a 25-foot buffer around it in the spirit of good Green Infrastructure practice outlined in Section 5 of the Stormwater Design manual.

This alternative offered minimal impact from road construction and open space based on the new findings. This alternative was not accepted by the Planning Board and Engineer at the June 24th, 2019 Planning Board meeting because documents needed to be further reviewed. However, this alternative met code and reduced the amount of required earthwork by approximately 40% and saved ±9 acres of vegetation.

***Alternative 10: Cluster Version 8 – Final changes to layout (*December 18th, 2019)**

Sponsor provided Alternative 10 at the request of the Town engineer once all final comments were met from the July 19th, 2019 Engineer Letter. Minor edits were made to the plans in response to the Engineer comments including but not limited to water line angles, depth of catch basins, minor grade changes to western housing lots, and other minor housekeeping items.

This alternative offered minimum impact from road construction. This alternative was accepted by the Planning Board and Engineer as the maximum number of lots that could be constructed on the property. As stated at the July 22nd meeting "Member Gilbert made a motion, seconded by Member Mento and carried unanimously to adopt the resolution to have the maximum number of lots on the property be 21 according to the resolution attached hereto."

Alternative 11: Cluster Version 8.3 –Current Version (August 07th, 2020)

Minor alterations to notes and details were made for final submission to Manlius on August 7th, 2020 based on spelling and reference issues identified by the Town Engineer in his July 28th, 2020

Review. Two (2) additional submissions were made to the Town between December 18th and August 07th to address minor comments/confusion between Town and Engineer and the Sponsor. These submissions also included additional backup data, testing and justification for the design at the request of the town board and their engineer. Design of all project features from last submission were maintained through this submission.

2020
CONTRACT DOCUMENTS
WOODLAND HILLS - 21 LOT HOUSING SUBDIVISION
TOWN OF MANLIUS PLANNING BOARD
TOWN OF MANLIUS, ONONDAGA COUNTY, NY

SUPERVISOR
EDMOND J. THEOBALD

DEPUTY SUPERVISOR
KAREN GREEN

PLANNING BOARD
JOSEPH LUPIA JR. - CHAIRMAN
FRED GILBERT
ANN KELLY
MIKE LEROY
FRANK MENTO
ARNOLD POLTENSON
RICHARD ROSSETTI

PLANNING BOARD CLERK
LISA BEEMAN

HIGHWAY SUPERINTENDENT
ROBERT CUSHING

TOWN ATTORNEY
TIM FRATESCHI, ESQ.

PLANNING BOARD ATTORNEY
JAMIE LYNN SUTPHEN, ESQ.

TOWN ENGINEER
DOUG MILLER, P.E.,



LOCATION PLAN
NOT TO SCALE

LIST OF DRAWINGS-REVISION SET

S-01	SITE SURVEY
L-000	TITLE SHEET
L-100	SITE PREPARATION AND BORING PLAN
L-101	SWPPP PLAN
L-102	CONSTRUCTION STAGING # 1 PLAN
L-103	CONSTRUCTION STAGING # 2 PLAN
L-104	CONSTRUCTION STAGING # 3 PLAN
L-105	CONSTRUCTION STAGING # 4 PLAN
L-106	CONSTRUCTION STAGING # 5 PLAN
L-107	CONSTRUCTION STAGING # 6 PLAN
L-108	CONSTRUCTION STAGING # 7 PLAN
L-200	GRADING and DRAINAGE PLAN
L-201	SHADE SLOPE PLAN
L-202	RIGHT OF WAY & BASEMENT SUMMARY
L-300	UTILITIES PLAN
L-400	LAYOUT PLAN
L-401	PLANTING PLAN
L-500	DETAILS
L-501	DETAILS
L-502	WET POND SECTION AND DETAILS
L-503	EXCAVATION AND BACKFILLING DETAILS
L-504	WALL DETAILS
L-600	ROAD AND SANITARY PROFILES
L-700	CONVENTIONAL SITE PREPARATION PLAN
L-701	CONVENTIONAL SWPPP PLAN
L-702	CONVENTIONAL GRADING AND DRAINAGE PLAN
L-703	CONVENTIONAL SLOPE PERCENTAGE PLAN
L-704	CONVENTIONAL UTILITIES PLAN
L-705	CONVENTIONAL LAYOUT PLAN
L-800	SPECIFICATIONS
L-801	SPECIFICATIONS
L-900	COMMUNITY BASIN STUDY
L-901	ARCHITECTURAL SAMPLES

SPECIFICATIONS

SECTION 31 1000 - SITE DEMOLITION
SECTION 31 1001 - SITE PREPARATION
SECTION 31 1413 - TOPSOIL
SECTION 31 2213 - ROUGH GRADING
SECTION 31 2216 - FINE GRADING
SECTION 31 2301 - SITEWORK EXCAVATION, BACKFILLING & COMPACTING
SECTION 31 2500 - EROSION CONTROL (<5 AC.)
SECTION 31 2501 - EROSION,SEDIMENT & POLLUTION CONTROL (>5 AC.)
SECTION 32 1100 - BASE COURSES
SECTION 32 1216 - ASPHALT PAVEMENT
SECTION 32 9200 - LAWNS
SECTION 32 9300 - PLANTINGS
SECTION 32 9310 - WILDFLOWER SEEDING
SECTION 33 1300 - DISINFECTION
SECTION 33 3100 - SANITARY
SECTION 33 02722 - SANITARY SEWERS
SECTION 33 4000 - STORM DRAINAGE

APPROVED BY AUTHORIZATION
OF THE PLANNING BOARD

JOSEPH LUPIA JR. - CHAIRMAN DATE

SANITARY SEWER SYSTEM
APPROVED BY ONONDAGA COUNTY
DEPARTMENT
OF WATER ENVIRONMENT PROTECTION

COMMISSIONER DATE

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109,
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK — SCOTT L. ZOSS — 079945 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL. BD	11/30/18

△- Symbol Indicates Revision Issued

No.	Rev	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

LICENSED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED
Title:

TITLE SHEET

L-000

Plotted By:
Date Plotted:
Drawing File:

Monday, August 10, 2020 11:25:04 AM

DEEP HOLE TEST RESULTS

DH -1 LAT/LONG: N43.0180/ W75.9836 EX. EL.=697.6, FN. EL.=692.1 0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-66" SANDY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -2 LAT/LONG: N43.0176/ W75.9835 EX. EL.= 688.2, FN. EL.= 681.6 0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-80" SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -3 LAT/LONG: N43.0170/ W75.9849 EX. EL.=672.5, FN. EL.=666.5 0"-12" TOPSOIL 12"-48" GRAVEL LOAM 48"-72" GRAVELLY SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -4 LAT/LONG: N43.0170/ W75.9829 EX. EL.=703.0, FN. EL.=697.0 0"-12" TOPSOIL 12"-36" SANDY SILT LOAM 36"-72" SILTY CLAY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -5 LAT/LONG: N43.0172/ W75.9804 0"-6" TOPSOIL 6"-36" SANDY LOAM 36"-66" SANDY SILT LOAM W/ COBBLES	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY REPRESENTATIVES OF RZ ENGINEERING & KEPLINGER FREEMAN ASSOCIATES

PERCOLATION TEST RESULTS

PIT# / LAT/LONG	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1 N43.0183/ W75.9831	24" - SANDY LOAM EX. EL.= 710.5, FN. EL.= 708.5	35 MINUTES/INCH
PT-2 N43.0181/ W75.9832	24" - SILT LOAM EX. EL.= 705.0, FN. EL.= 703.0	GREATER THAN 120 MIN/INCH
PT-3 N43.0165/ W75.9851	24" - SANDY SILT LOAM EX. EL.= 685.0, FN. EL.= 683.0	3 MINUTES/INCH
PT-4 N43.0168/ W75.9853	24" - SANDY SILT LOAM EX. EL.= 681.4, FN. EL.= 679.4	21 MINUTES/INCH
PT-5[2] N43.0169, W75.9844	14' - SANDY SILTY CLAY EX. EL.= 678.4, FN. EL.= 664.4	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

INFILTRATION TEST RESULTS

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
OPT-1 N43.0170/ W75.9855	18' - SANDY CLAY EX. EL.= 664.0, FN. EL.= 646.0	0 MINUTES/INCH
OPT-2 N43.0170/ W75.9853	25.3' - SILT LOAM EX. EL.= 671.3, FN. EL.= 646.0	0 MINUTES/INCH
OPT-3 N43.0168/ W75.9857	24' - SANDY SILT LOAM EX. EL.= 670.0, FN. EL.= 646.0	0 MINUTES/INCH

NOTES:
1. CONDUCTED JANUARY 11, 2018 BY A REPRESENTATIVE OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

BORING TEST RESULTS

B-1 LAT/LONG: N43.0180 / W75.9829 0"-6" TOPSOIL 6"-24" SILTY CLAY 24"-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-2 LAT/LONG: N43.0175 / W75.9830 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-3 LAT/LONG: N43.0170 / W75.9839 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-4[2] LAT/LONG: N43.0169 / W75.9843 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-5 LAT/LONG: N43.0166 / W75.9840 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-6 LAT/LONG: N43.0169 / W75.9827 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B-7 LAT/LONG: N43.0171 / W75.9814 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-8 LAT/LONG: N43.0175 / W75.9823 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-9[2] LAT/LONG: N43.0169 / W75.9843 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-9 WAS CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. B-9 IS A REVISION TO B-4.
3. GLACIAL TILL - ACCUMULATIONS OF UNSORTED, UNSTRATIFIED MIXTURES OF CLAY, SILT, SAND, GRAVEL, AND BOULDERS

16

ADDITIONAL BORING TEST RESULTS

TPS -1 EX. EL.= 676.0, FN. EL.= 666.0 LAT/LONG: N43.0171 / W75.9844 0'-1.5' TOPSOIL 1.5'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -2 EX. EL.= 674.0, FN. EL.=664.0 LAT/LONG: N43.0169 / W75.9845 01-1.5' TOPSOIL 1.5'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -3 EX. EL.= 680.0, FN. EL.=670.0 LAT/LONG: N43.0167 / W75.9844 0'-1' TOPSOIL 1'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -4 EX. EL.=681.0, FN. EL.=671.0 LAT/LONG: N43.0169 / W75.9816 0'-1' TOPSOIL 1'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -5 EX. EL.=716.0, FN EL.=709.0 LAT/LONG: N43.0181 / W75.9829 0'-1' TOPSOIL 1'-7' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -6 EX. EL.=704.0, FN. EL.= 699.0 LAT/LONG: N43.0169 / W75.9826 0'-1' TOPSOIL 1'-3' BROWN SILTY GRAVEL 3'-5' GREY HIGHLY WEATHERED SHALE	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -7 EX. EL.=722.0, FN. EL.=715.0 LAT/LONG: N43.0169 / W75.9816 0'-1' TOPSOIL 1'-7' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -8 EX. EL.=683.0, FN. EL.=680.0 LAT/LONG: N43.0172 / W75.9831 0'-1' TOPSOIL 1'-3' BROWN SANDY SILT	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED APRIL 30TH, 2020 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. AND J.K. TOBIN.
2. SEGUIN LAND SURVEYING LOCATED TEST POINTS ON STATE PLANE 83 AND DATUM NAD83.

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL PER STAGED DRAWINGS.
3. EXISTING VEGETATION SHALL BE REMOVED IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, REMOVED MATERIAL SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE. REFER TO LAYOUT PLANS FOR LIMITS OF PROPOSED FOREVER WILD AREAS.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION UPON RECEIPT OF SITE PLAN APPROVAL AND PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT PER OCWA REQUIREMENTS. PROJECT DRAWINGS TO BE SUBMITTED TO OCWA UPON RECEIPT OF SITE PLAN APPROVAL FOR DECOMMISSIONING AND WATER SYSTEM DESIGN. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. APPROVED BY TOWN ON MARCH 7TH, 2019. REMOVAL OCCURRED MARCH 13TH, 2019. THE STUMPS, DOWNED TREES AND BRANCHES SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.
9. INSTALL ORANGE CONSTRUCTION FENCE (OCF) PER DETAIL 8/L-500 WITHIN 25' OF ALL WETLANDS AS IDENTIFIED IN WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 CONDUCTED BY ENVIROMENTAL RESOURCES, LLC.

LEGEND

X-HOAG-LEGEND

EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-#	DEEP HOLE
		FENCE
		UTILITY POLE
W	W	WATER LINE
		FIRE HYDRANT
EX ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY / PLANT TYPE	PLANT KEY
		VEGETATION
	UD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	FM 3" LPS	SANITARY PIPE-LOW PRESSURE
E/T		OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	ST MH	STORM STRUCTURE
	DI	INLET
	CB MH	CATCH BASIN/MANHOLE
	CO	CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6' 10' 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' 15' 10'	OUTLET PROTECTION FOR 8"- 12" PIPE
	X Y 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.

2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.

8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.

9. DIG SAFELY NEW YORK TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.

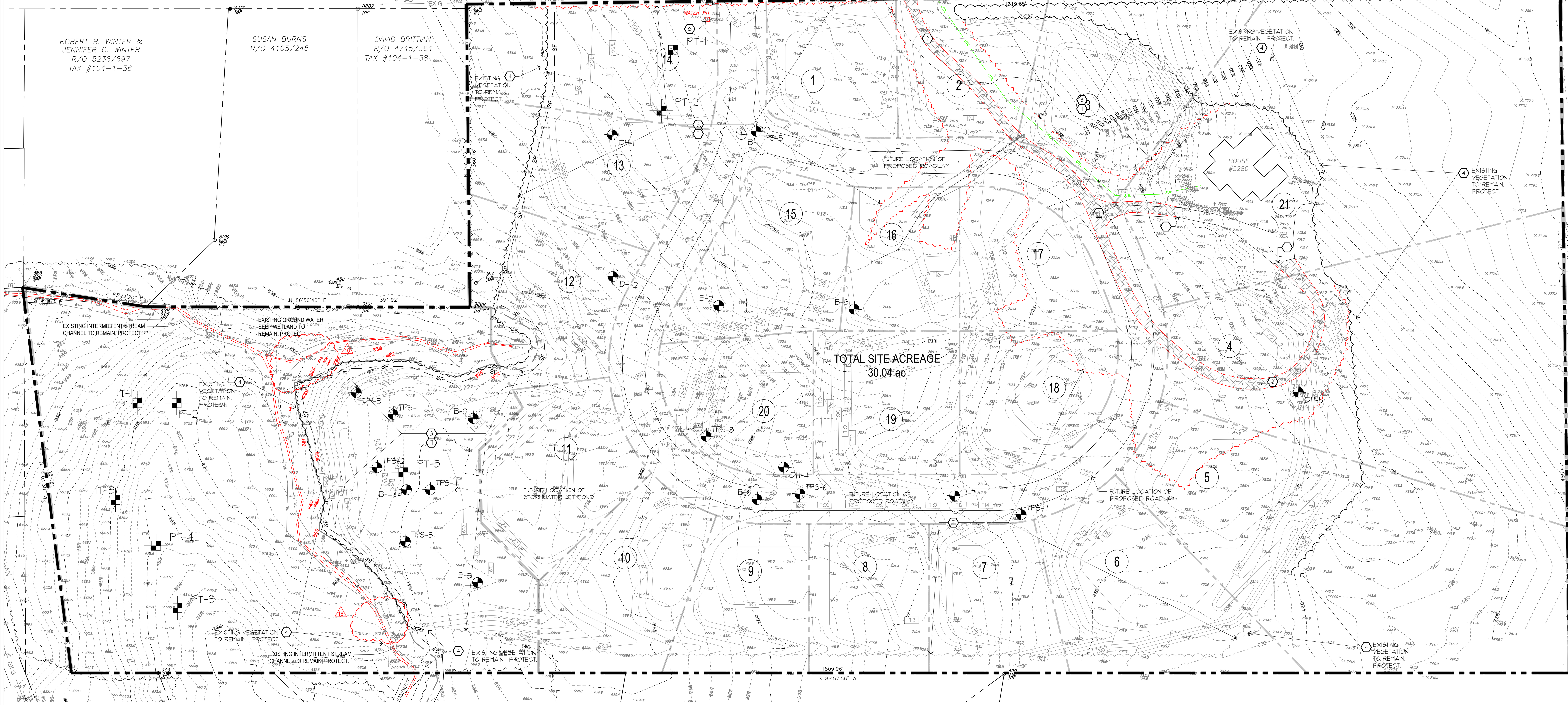
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.

11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.

12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

13. SEE GEOTECHNICAL REPORTS ENTITLED EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED MAY 18TH, 2020 & MAY 27TH, 2020 RESPECTIVELY, FOR DETAILED GEOTECHNICAL INFORMATION AND SOIL PLACEMENT RECOMMENDATIONS.

14. SEE WETLAND REPORT ENTITLED WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 FOR WETLAND IDENTIFICATION, LOCATION AND RECOMMENDATIONS.



1 L-100 **SITE PREPARATION PLAN**

SCALE IN FEET 0 50 100 150 N

Friday, August 7, 2020 2:31:33 PM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK RUDY L. ZONA 079543 LICENSED PROFESSIONAL ENGINEER
UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION — △ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19	16	16	MANLIUS- PLAN SUBMISSION	08/07/20
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19	17	17		
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19	18	18		
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19	19	19		
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19	20	20		
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19	21	21		
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20	22	22		
				15	15	NOTE REMOVAL (NOTE 10)	07/30/20	23	23		

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

EROSION CONTROL NOTES and EROSION CONTROL SEQUENCING

X-SWPPP-EC-NOTES-HOAG

EROSION AND SEDIMENT CONTROL NOTES:

1. PRIOR TO THE START OF CONSTRUCTION AND UNTIL ALL DISTURBED AREAS ARE STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES, AS SHOWN ON THE SITE PLAN AND AS OTHERWISE REQUIRED,, SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR, AND SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL AND THE SWPPP PREPARED FOR THE PROJECT, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
2. BARE SOILS SHALL BE MULCHED WITH HAY AT A RATE OF TWO TONS PER ACRE WITHIN 7 DAYS OF EXPOSURE, IF CONSTRUCTION ON AN AREA IS SUSPENDED, THE AREA SHALL BE SEEDED IMMEDIATELY.
3. SITE PREPARATION SHALL INCLUDE:
   - A. SEEDBED PREPARATION - SCARIFY IF COMPACTED, REMOVE DEBRIS AND OBSTACLES SUCH AS ROOTS OR STUMPS.
   - B. SOIL AMENDMENTS
     1. LIME TO pH 6.0
     2. FERTILIZE WITH 600 LBS OF 5-10-10 OR EQUIVALENT PER ACRE (14 LBS/100 SQ FT).
   - C. SEED MIXTURES
     1. TEMPORARY SEEDINGS
        - a. RYEGRASS (ANNUAL OR PERENNIAL) @ 30 LBS/ACRE (0.7 LBS/1000 SQ FT).
        - b. CERTIFIED "AROOSTOCK" WINTER RYE (CEREAL RYE) @ 100 LBS/ACRE (2.5 LBS/1000 SQ FT).
     2. PERMANENT SEEDINGS
        - a. ROUGH OR OCCASIONALLY MOWED AREAS:

	LBS/ACRE	LBS/1000 SQ FT
EMPIRE BIRDSFOOT (TREFOIL OR COMMON)	8	0.20
WHITE CLOVER PLUS*	8	0.20
TALL FESCUE PLUS	20	0.45
REDTOP	2	0.05
RYEGRASS (PERENNIAL)	5	0.10

*ADD INOCULANT IMMEDIATELY PRIOR TO SEEDING

   - D. METHOD OF SEEDING: BROADCASTING, DRILLING WITH CULTIPACK TYPE SEEDER OR HYDROSEEDING ARE ACCEPTABLE.
4. DISTURBED AREAS SHALL BE SEEDED AS NOTED ABOVE AND MULCHED WITH CLEAN STRAW AS OUTLINED IN THE NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL. ON SLOPES GREATER THAN 3:1 SEEDED AREAS SHALL BE STAKED WITH JUTE MESH OR SODDED.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE STREET PAVEMENT AREAS CLEAN OF DIRT AND DEBRIS.
6. ACCESS TO DISTURBED AREAS SHALL BE LIMITED TO THE AREAS SHOWN ON THE PLAN. THE CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AT THE LOCATION SHOWN ON THE PLAN. NO ACCESS IS PERMISSIBLE FROM BEACH ROAD.
7. ANY EXISTING DRAINAGE FACILITIES DISRUPTED BY CONSTRUCTION OR IMPACTED BY INSTALLATION OF EROSION CONTROL MEASURES SHALL BE REPLACED TO MATCH EXISTING CONDITIONS OR BETTER.
8. TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES - AS SEDIMENT ACCUMULATES TO ½ THE DEPTH OF THE STORMWATER BASIN, SEDIMENT SHALL BE REMOVED AS OUTLINED IN THE NYS GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL.
9. DIRECT ACCESS SHALL BE PROVIDED TO ALL BASIN/POND AREAS FOR MAINTENANCE AND REHABILITATION.
10. ALL DESIGN AND MAINTENANCE MEASURES OUTLINED IN THE SWPPP PREPARED FOR THIS PROJECT SHALL BE IMPLEMENTED AND CARRIED OUT BY THE PARTIES DEEMED RESPONSIBLE FOR THOSE DUTIES.
11. THE PERMITEE & ITS SUBCONTRACTORS ARE RESPONSIBLE FOR MEANS & METHODS OF EROSION CONTROL FACILITIES DURING CONSTRUCTION. IT SHOULD BE NOTED THAT FACILITIES ON THIS DRAWING ARE CONSIDERED MINIMUM & ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS CONSTRUCTION PROGRESSES. THE PERMITEE & ITS SUBCONTRACTORS ARE RESPONSIBLE FOR ANY ADDITIONAL MEASURES DEEMED NECESSARY BY THE ENGINEER, TOWN OR NYSDEC.
12. PROVIDE EROSION CONTROL MEASURES AS NOTED ON THE PLANS AND AS OTHERWISE REQUIRED TO PREVENT EROSION AND SEDIMENTATION ONTO ADJOINING PROPERTY, STREETS, WATERWAYS, AND ON SITE IMPROVEMENTS BEYOND THE LIMITS OF WORK. COMPLY WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL" AND THE NYSDEC'S "REDUCING THE IMPACTS OF STORMWATER RUNOFF FROM NEW DEVELOPMENT".
13. MAINTENANCE - THE CONTRACTOR SHALL INSPECT ALL DRAINAGE STRUCTURES AND EROSION CONTROLS ON A WEEKLY BASIS AND AFTER ALL STORMS (½" RAINFALL OR GREATER) INCLUDING BUT NOT LIMITED TO THE FOLLOWING: REPLACING DAMAGED OR SILTED IN EROSION CONTROLS, CLEANING OUT STRUCTURES, AND STABILIZING ERODED OR WASHED OUT SLOPED AREAS.
14. CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE, LAWNS HAVE BECOME ESTABLISHED AND ALL SOURCES OF EROSION HAVE BEEN PERMANENTLY STABILIZED.
15. CONTRACTOR SHALL PROVIDE DUST CONTROL IN ACCORDANCE WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL."

EROSION CONTROL and CONSTRUCTION STAGING AND SEQUENCE:

THE PROJECT WILL CREATE A TOTAL SITE DISTURBANCE OF APPROXIMATELY 20.81± ACRES AND WILL BE CONSTRUCTED IN APPROXIMATELY SEVEN (7) STAGES. THE SITE DISTURBANCE WILL BE PHASED TO LIMIT THE POTENTIAL FOR EROSION AND SEDIMENTATION ISSUES DURING THE CONSTRUCTION PROCESS. REFER TO SHEETS L-102 THRU L-108 STAGING PLANS FOR DISTURBANCE LIMITS IN EACH STAGE. BELOW IS A LISTING OF THE ANTICIPATED STAGES:

STAGE 1- PROPOSED STORMWATER BASIN & ROUGH GRADING

1. STAGE 1 TO CONSIST OF CONSTRUCTION PROPOSED WET POND AND APPLICABLE PROPOSED STORMWATER CONVEYANCE ONLY.
2. PRIOR TO ANY SITE DISTURBANCE, CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT THE INTERSECTION OF SHIRAZ AND HOAG LANE AS SHOWN ON THE DRAWING.
3. SILT FENCE - INSTALL PERIMETER SILT FENCE AS SHOWN ON PLAN PRIOR TO EARTHWORK. SILT FENCE SHALL BE UTILIZED ONLY AS A TEMPORARY MEASURE. DISTURBED AREAS SHALL BE SEEDED IMMEDIATELY FOLLOWING THE COMPLETION OF ANY EARTHWORK.
4. CLEARING AND GRUBBING - REMOVE ALL TREES, STUMPS AND BRUSH WITHIN STAGE 1 PRIOR TO EARTHWORK.
5. STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN. DOWNED TREES, BRANCHES, STUMPS AND VEGETATION TO BE CHIPPED AND BLENDED WITH STRIPPED TOPSOIL. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
6. EXCAVATE PROPOSED WET POND AND WET SWALES. WET POND AND WET SWALES TO BE USED AS A TEMPORARY SEDIMENT BASIN(S). PROVIDE RIP RAP STONE PROTECTION APRONS AND SPILLWAYS AT OUTLET LOCATIONS AS SHOWN ON THE DRAWING. FINE GRADE, SEED AND MULCH WITHIN SEVEN (7) DAYS OF DISTURBANCE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
7. REFER TO DRAWING L-102 FOR STAGING PLAN.

STAGE 2- SITE ROUGH GRADING

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-103 FOR STAGING PLAN.

STAGE 3- SITE ROUGH GRADING (CONT.)

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-104 FOR STAGING PLAN.

STAGE 4- FINAL ROUGH EARTHWORK

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-105 FOR STAGING PLAN.

STAGE 5- UTILITY INSTALLATION

1. PROVIDE DRAINAGE STRUCTURES AND PIPING, INCLUDING DRAINAGE INLET PROTECTION AS SHOWN ON THE DRAWING.
2. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 6- ROAD BASE AND KICKUP GUTTERS

1. EXCAVATE AND FILL REST OF SITE AREAS FOR ROADWAY. FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF DISTURBANCE.
2. PLACE ROAD SUBBASE.
3. AREAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE
4. REMOVE TEMPORARY CONSTRUCTION ENTRANCE AFTER ASPHALT BINDER COURSE IS PLACED.
5. CLEAN STORMWATER POND AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
6. FINE GRADE, SEED, AND PLANT STORMWATER POND AS NOTED ON THE PLANTING PLAN AND ON THE DETAILS.
7. INSTALL POND AND SWALE OUTLET PIPE(S) WITH STRUCTURES AND TRENCHING AFTER 80% VEGETATIVE STABILIZATION IS ACHIEVED.
8. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 7- FINE GRADING AND LOT IMPROVEMENTS

1. CLEAR VEGETATION ON RESIDENTIAL LOTS TO BE CONSTRUCTED. STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN AND / OR AGREED UPON LOCATION WITH OWNER. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
2. PREPARE BUILDING PAD AND DRIVEWAY AREA SUBGRADE.
3. FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
4. CLEAN STORMWATER BMP'S AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
5. SEE DRAWING L-108 DETAIL 2 FOR INDEPENDENT LOT EROSION CONTROL PLANS.
6. SEE DRAWING L-108 FOR STAGING PLAN.

FINAL CLEAN UP & PREVENTATIVE MAINTENANCE

1. REMOVE AND/OR MAINTAIN STOCKPILE AREAS.
2. REMOVE EROSION CONTROL MEASURES FROM STABILIZED AREAS.
3. FINAL CLEAN UP - REMOVE EROSION CONTROL MEASURES AND CLEAN OUT ALL DRAINAGE STRUCTURES, PIPES, POND AND SWALES AFTER LAWN IS WELL ESTABLISHED. OWNER IS RESPONSIBLE FOR MAINTAINING SITE UPON PROJECT CLOSEOUT.
4. CONTRACTOR, ARCHITECT, AND OWNER TO REVIEW SITE FOR COMPLETION. CONTRACTOR TO ADDRESS FINAL COMMENTS ON PUNCH LIST FROM ARCHITECT AND SWPPP INSPECTION REPORTS.

SOIL RESTORATION NOTES

1. ACCORDING TO SECTION 5 OF THE NYS STORMWATER DESIGN MANUAL, SOIL RESTORATION PRACTICES MUST BE APPLIED ACROSS THE SITE IN AREAS OF SOIL DISTURBANCE. SOIL RESTORATION WILL BE COMPLETED IN ACCORDANCE WITH TABLE 4.6 ON PAGE 4.53.
2. SOIL RESTORATION REQUIREMENTS PER TABLE 4.6 OF NYS BLUEBOOK, 2016:

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT
NO SOIL DISTURBANCE	RESTORATION NOT PERMITTED
MINIMAL SOIL DISTURBANCE	RESTORATION NOT REQUIRED
AREAS WHERE TOPSOIL IS STRIPPED ONLY - NO CHANGE IN GRADE	HSG A&B - APPLY 6 INCHES OF TOPSOIL HSG C&D AERATE* AND APPLY 6 INCHES OF TOPSOIL
AREAS OF CUT OR FILL (PHASE 1-4)	HSG A&B - AERATE AND APPLY 6 INCHES OF TOPSOIL HSG C&D - APPLY FULL SOIL RESTORATION**
HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY IN ZONE 5-25 FEET AROUND BUILDINGS BUT NOT WITHIN A 5 FOOT PERIMETER AROUND FOUNDATION WALLS) (PHASE 7)	APPLY FULL SOIL RESTORATION (DECOMPACTION AND COMPOST ENHANCEMENT)
AREAS WHERE RUNOFF REDUCTION AND/OR INFILTRATION PRACTICES ARE APPLIED	RESTORATION NOT REQUIRED, BUT MAY BE APPLIED TO ENHANCE THE REDUCTION SPECIFIED FOR APPROPRIATE PRACTICES.

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT
REDEVELOPMENT PROJECTS	SOIL RESTORATION IS REQUIRED ON REDEVELOPMENT PROJECTS IN AREAS WHERE EXISTING IMPERVIOUS AREA WILL BE CONVERTED TO PERVIOUS AREA.

*AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COULTERS MAKING A NARROW SLIT IN THE SOIL, A ROLLER WITH MANY SPIKES MAKING INDENTATIONS IN THE SOIL, OR PRONGS WHICH FUNCTION LIKE A MINI-SUB-SOILER.

**PER "DEEP RIPPING AND DE-COMPACTION, DEC 2008". SEE APPENDIX 1 IN SWPPP, DATED 06/15/2020.

3. GENERAL SOIL RESTORATION PRACTICE IMPLEMENTATION:

DURING PERIODS OF RELATIVELY LOW TO MODERATE SUBSOIL MOISTURE, THE DISTURBED SUBSOILS ARE RETURNED TO ROUGH GRADE AND THE FOLLOWING SOIL RESTORATION STEPS APPLIED:

1. APPLY 3 INCHES OF COMPOST OVER SUBSOIL.
2. TILL COMPOST INTO SUBSOIL TO A DEPTH OF AT LEAST 12 INCHES USING A CAT-MOUNTED RIPPER, TRACTORMOUNTED DISC, OR TILLER, MIXING, AND CIRCULATING AIR AND COMPOST INTO SUBSOILS.
3. ROCK-PICK UNTIL UPLIFTED STONE/ROCK MATERIALS OF FOUR INCHES AND LARGER SIZE ARE CLEANED OFF THE SITE.
4. APPLY TOPSOIL TO A DEPTH OF 6 INCHES.
5. VEGETATE AS REQUIRED BY APPROVED PLAN.
6. COMPOST SHALL BE AGED, FROM PLANT DERIVED MATERIALS, FREE OF VIABLE WEED SEEDS, HAVE NO VISIBLE FREE WATER OR DUST PRODUCED WHEN HANDLING, PASS THROUGH A HALF INCH SCREEN AND HAVE A pH SUITABLE TO GROW DESIRED PLANTS.

FIGURES 5.16 AND 5.17 TO THE BELOW SHOW TWO ATTACHMENTS USED FOR SOIL DECOMPACTION. TILLING (STEP 2 ABOVE) SHOULD NOT BE PERFORMED WITHIN THE DRIP LINE OF ANY EXISTING TREES OR OVER UTILITY INSTALLATION THAT ARE WITHIN 24 INCHES OF THE SURFACE.

Figure 5. 16 Soil aerator implement



Figure 5. 17 Soil aerator implement



4. AT THE END OF THE PROJECT AN INSPECTOR SHOULD BE ABLE TO PUSH A 3/8" METAL BAR 12 INCHES INTO THE SOIL JUST WITH BODY WEIGHT.
5. THE CONTRACTOR MUST KEEP THE SITE FREE OF VEHICULAR AND FOOT TRAFFIC OR OTHER WEIGHT LOADS. CONSIDER PEDESTRIAN FOOTPATHS. (SOMETIMES IT MAY BE NECESSARY TO DE-THATCH THE TURF EVERY FEW YEARS)
6. ALL SOIL RESTORATION SHALL BE IN ACCORDANCE WITH NYSDEC REGULATIONS AND THE APPROVED SWPPP FOR THE PROJECT.

STORMWATER POLLUTION PREVENTION PLAN

PROJECT DESCRIPTION PROJECT SCOPE INCLUDES THE SITEWORK NECESSARY TO CONSTRUCT TWENTY (20) PROPOSED RESIDENTIAL HOMES AND ONE (1) EXISTING HOME. SITEWORK INCLUDES THE EXTENSION OF A SANITARY LINE, INSTALLATION OF ALL UTILITIES AND THE CONSTRUCTION OF A WET POND TO MITIGATE THE INCREASE IN STORM RUNOFF.

SPEDES REQUIREMENTS THE PROJECT REQUIRES A NOI (NOTICE OF INTENT) AND SWPPP (STORM WATER MANAGEMENT PREVENTION PLAN) TO COMPLY WITH NYSDEC'S SPEDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. ELIGIBILITY IS BASED UPON A CONSTRUCTION DISTURBANCE AREA WHICH IS GREATER THAN (1) ACRE. THE PROJECT SITE DISTURBED AREA IS APPROXIMATELY 21 ACRES. RZ ENGINEERING HAS SUBMITTED THE (N.O.I.) NOTICE OF INTENT TO BE AUTHORIZED TO DISCHARGE STORM WATER UNDER THIS PERMIT. THE SWPPP WILL BE SUBMITTED TO THE SITEWORK CONTRACTOR PRIOR TO CONSTRUCTION AND BE AVAILABLE ON THE PROJECT SITE DURING CONSTRUCTION. THE CONTRACTOR WILL ALSO MAINTAIN THE REQUIRED LOG BOOK COMPLETE WITH DOCUMENTATION OF WEEKLY SITE INSPECTIONS. ALSO, A 5 ACRE DISTURBANCE LETTER IS REQUIRED TO SUBMIT ALONG WITH THE NOTICE OF INTENT (N.O.I.).

STORM WATER MANAGEMENT REPORT SUMMARY THE STORM WATER MANAGEMENT REPORT SUBMITTED WILL BE REVIEWED BY THE TOWN ENGINEER, DOUG MILLER WITH MILLER ENGINEERS. THE STORM IMPROVEMENTS HAVE BEEN DESIGNED IN ACCORDANCE WITH NYSDEC's PHASE II STORMWATER MANAGEMENT AND STORM WATER DRAINAGE COMPUTATION REQUIREMENTS AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS. STORMWATER MANAGEMENT REPORT WILL BE MADE AVAILABLE IF REQUESTED.

EXISTING PROPERTY DESCRIPTION THE EXISTING PROPERTY CONSISTS OF MAINLY WOODED AREAS WITH ONE EXISTING HOUSE LOCATED AT THE NORTHEAST OF THE PROPERTY. 4" CALIPER VEGETATION HAS BEEN CUT DOWN TO STUMPS AS OF MARCH 2019 WITH TOWN APPROVAL. REMAINING TREES AND VEGETATION UNLESS OTHERWISE IDENTIFIED AS GREEN SPACE WILL BE REMOVED PER STAGING PLANS.

SITE INFORMATION

SOIL TYPE - HYDROLOGIC SOIL TYPE C. REFER TO SWPPP FOR DETAILED SOILS INFORMATION.

RECEIVING WATER BODY - LIMESTONE CREEK

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER.
AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

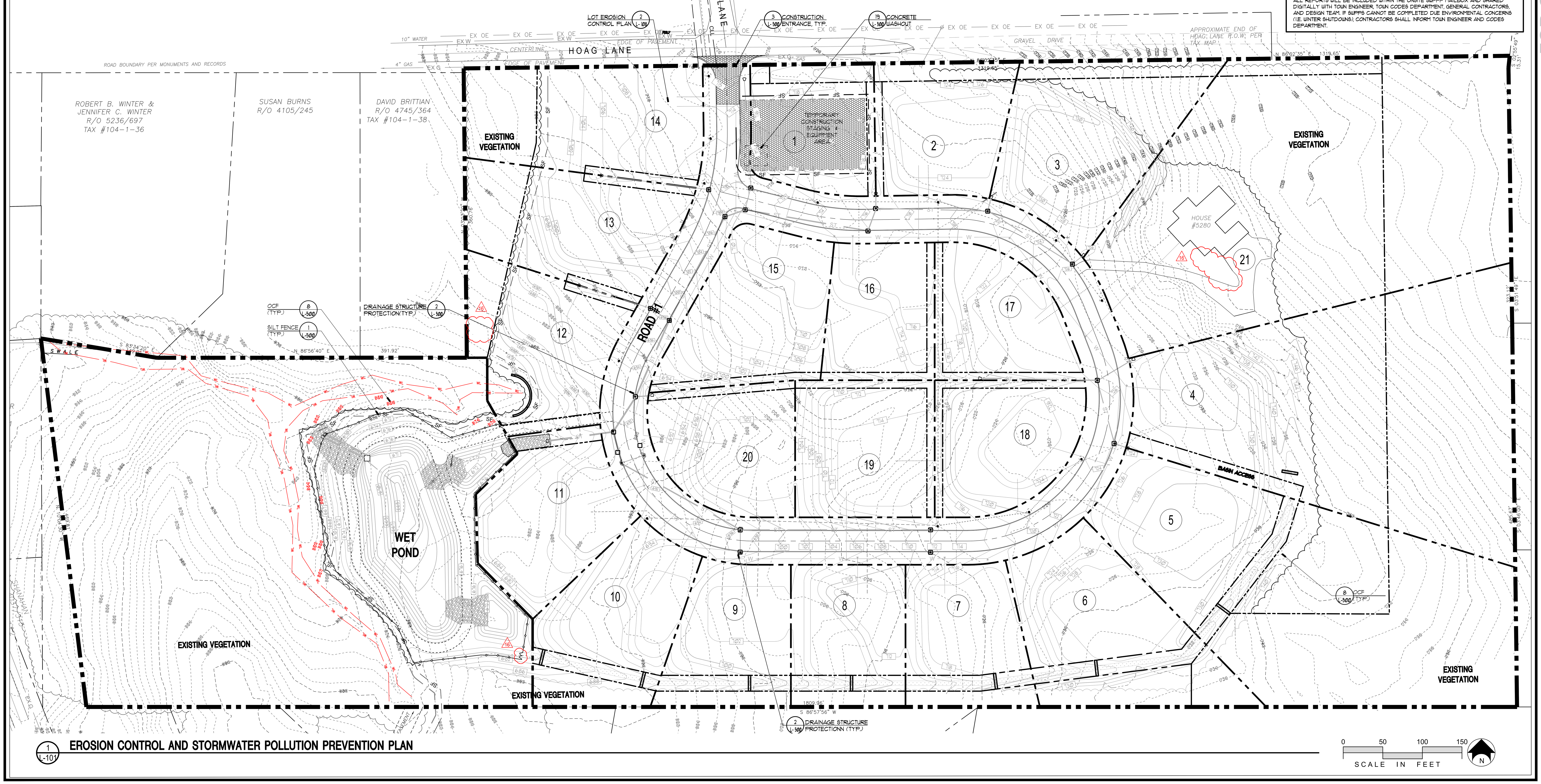
STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

DUST MONITORING PLAN

1. UNIT LOCATION AND DETAIL SHOWN ON PHASING PLANS. SEE DETAIL 8/L-501 FOR SUPPLIER AND MODEL*.
2. REFER TO SWPPP APPENDIX R, DATED 06/15/20 AS PREPARED BY RZ ENGINEERING FOR ADDITIONAL DUST MONITORING PROCEDURES.

SITE INSPECTIONS

1. DEVELOPERS SWPPP INSPECTORS (KFA/RZ) SHALL INSPECT THE SITE TWICE PER WEEK. ALL REPORTS WILL BE INCLUDED WITHIN THE ONSITE SWPPP MAILBOX AND SHARED DIGITALLY WITH TOWN ENGINEER, TOWN CODES DEPARTMENT, GENERAL CONTRACTORS, AND DESIGN TEAM. IF SWPPS CANNOT BE COMPLETED DUE ENVIRONMENTAL CONCERNS (I.E. WINTER SHUTDOWNS), CONTRACTORS SHALL INFORM TOWN ENGINEER AND CODES DEPARTMENT.



1 L-101 **EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN**

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Friday, August 7, 2020 2:35:52 PM

Plotted By:
Date Plotted:
Drawing File:

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STATE OF NEW YORK RUDY L. ZONA 079543 LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION — △ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19	16	16	MANLIUS- PLAN SUBMISSION	08/07/20
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19	17	17		
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19	18	18		
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				15	15	NOTE REMOVAL (NOTE 10)	07/30/20	23	23		

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
EROSION CONTROL AND STORM WATER POLLUTION PREVENTION PLAN

L-101

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOWN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. NOTE OMITTED.

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SWPPP LEGEND

X-HOAG-SWPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-503 FOR DETAILS)
- OCF — ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
- SS — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) WKS.	22.43	6.44	1.17
STAGE 2	SIX (6) WKS.	15.40	7.82	6.82
STAGE 3	SIX (6) WKS.	13.68	4.16	12.20
STAGE 4	TWO (2) WKS.	13.68	1.78	15.79
STAGE 5	TWO (2) WKS.	13.68	3.24	14.03
STAGE 6	TWO (2) WKS.	13.68	3.13	14.13
STAGE 7	THREE (3) WKS.	13.68	PER LOT	PER LOT

NOTES:

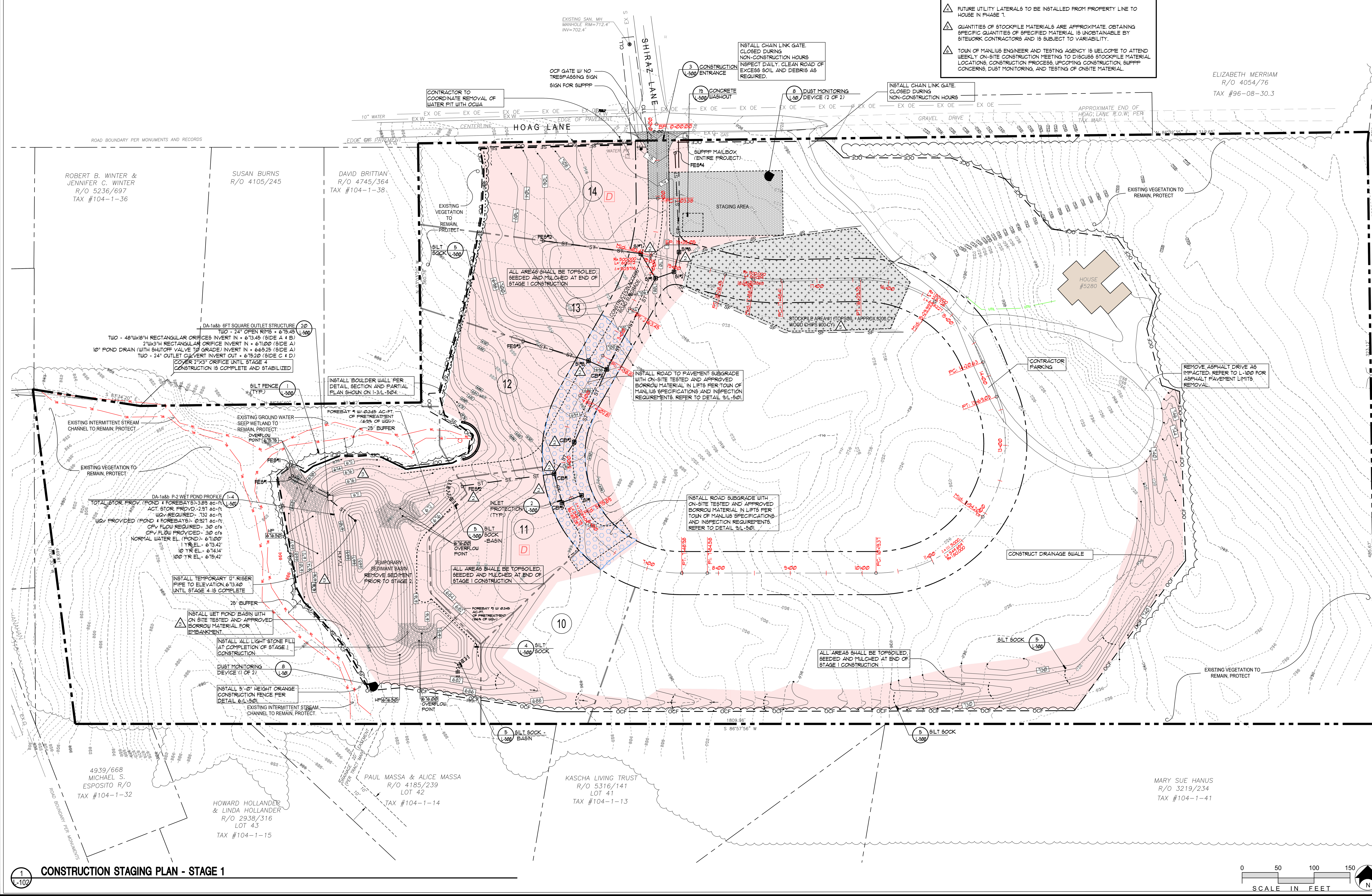
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/27/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION. INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B&C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B&C
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. B&C
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER , GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. D&E

NOTES:

- A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
- B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
- C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 06/15/20.
- D. NOTE OMITTED. 16
- E. ~~LICENSED SURVEYOR~~ TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
- F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-102 **CONSTRUCTION STAGING PLAN - STAGE 1**

Friday, August 7, 2020 2:44:43 PM

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK RUDY L. ZONA 079543 LICENSED PROFESSIONAL ENGINEER
UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

Symbol Indicates Revision Issued

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 1

L-102

Plotted By:
Date Plotted:
Drawing File:

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTOR'S DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOUN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. NOTE OMITTED. (6)

SWPPP LEGEND

X-HOAG-SUPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-503 FOR DETAILS)
- OOF — OOF — ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
- SS — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

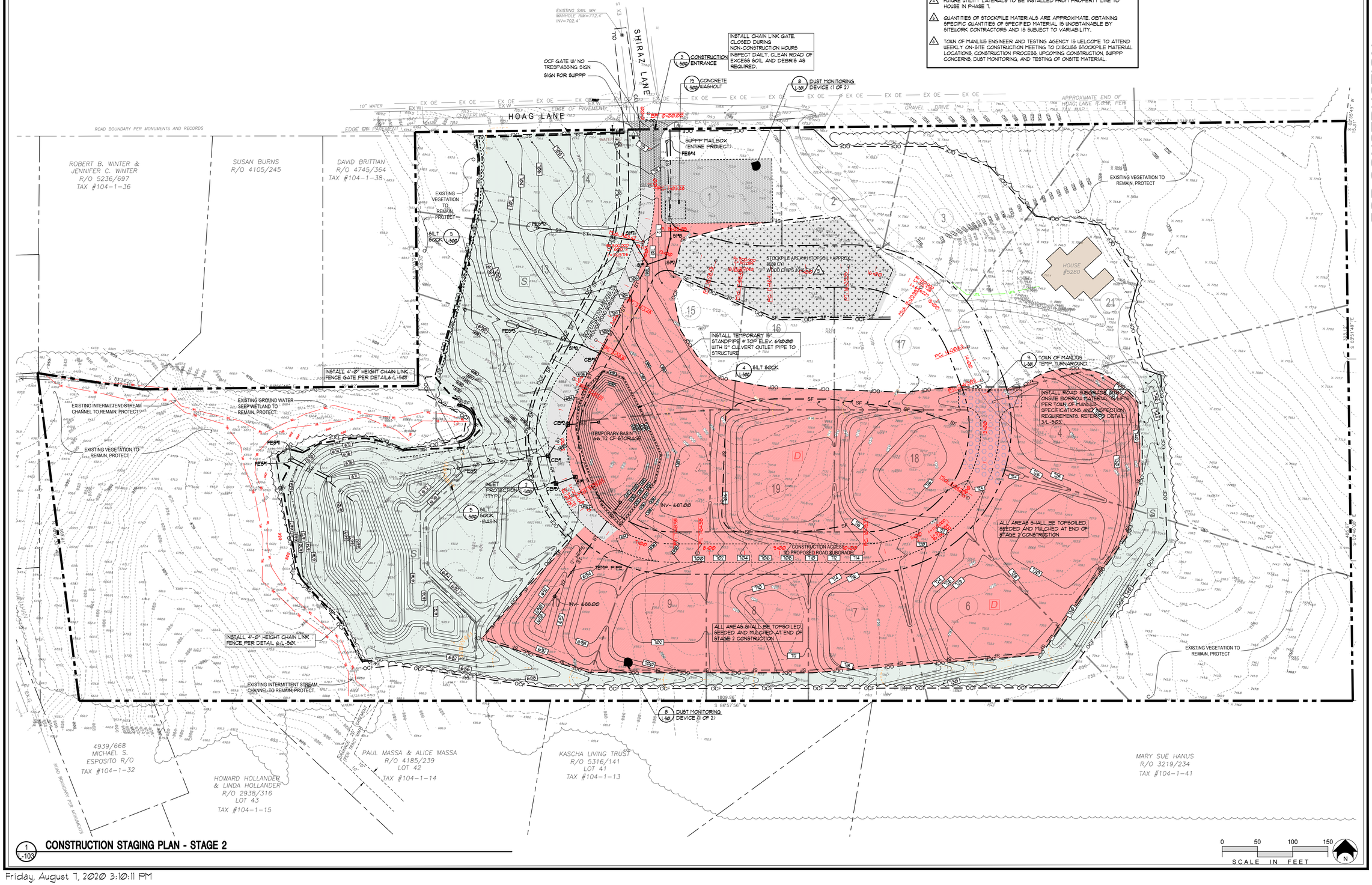
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.24 (AC.)	-	-
STAGE 1	SIX (6) WKS.	22.43	6.44	1.17
STAGE 2	SIX (6) WKS.	15.40	7.82	6.82
STAGE 3	SIX (6) WKS.	13.68	4.16	12.20
STAGE 4	TWO (2) WKS.	13.68	1.78	15.79
STAGE 5	TWO (2) WKS.	13.68	3.24	14.03
STAGE 6	TWO (2) WKS.	13.68	3.13	14.13
STAGE 7	THREE (3) WKS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOUN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SUPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION. INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. B4C
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER, GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. B4E

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SUPPP APPENDIX R, DATED 06/15/20.
D. NOTE OMITTED. (6)
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-103 **CONSTRUCTION STAGING PLAN - STAGE 2**

Friday, August 7, 2020 3:10:11 PM

Posted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6329 FLY ROAD SUITE 109, EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109, EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK — RUDY L. ZOLO — 079945 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	02/26/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.- 21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS-PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001417 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 370550
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 2

L-103

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
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TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOUN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. NOTE OMITTED. /8

SWPPP LEGEND

X-HOAG-SWPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO I-503 FOR DETAILS)
- OOF — OOF — ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
- SS — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

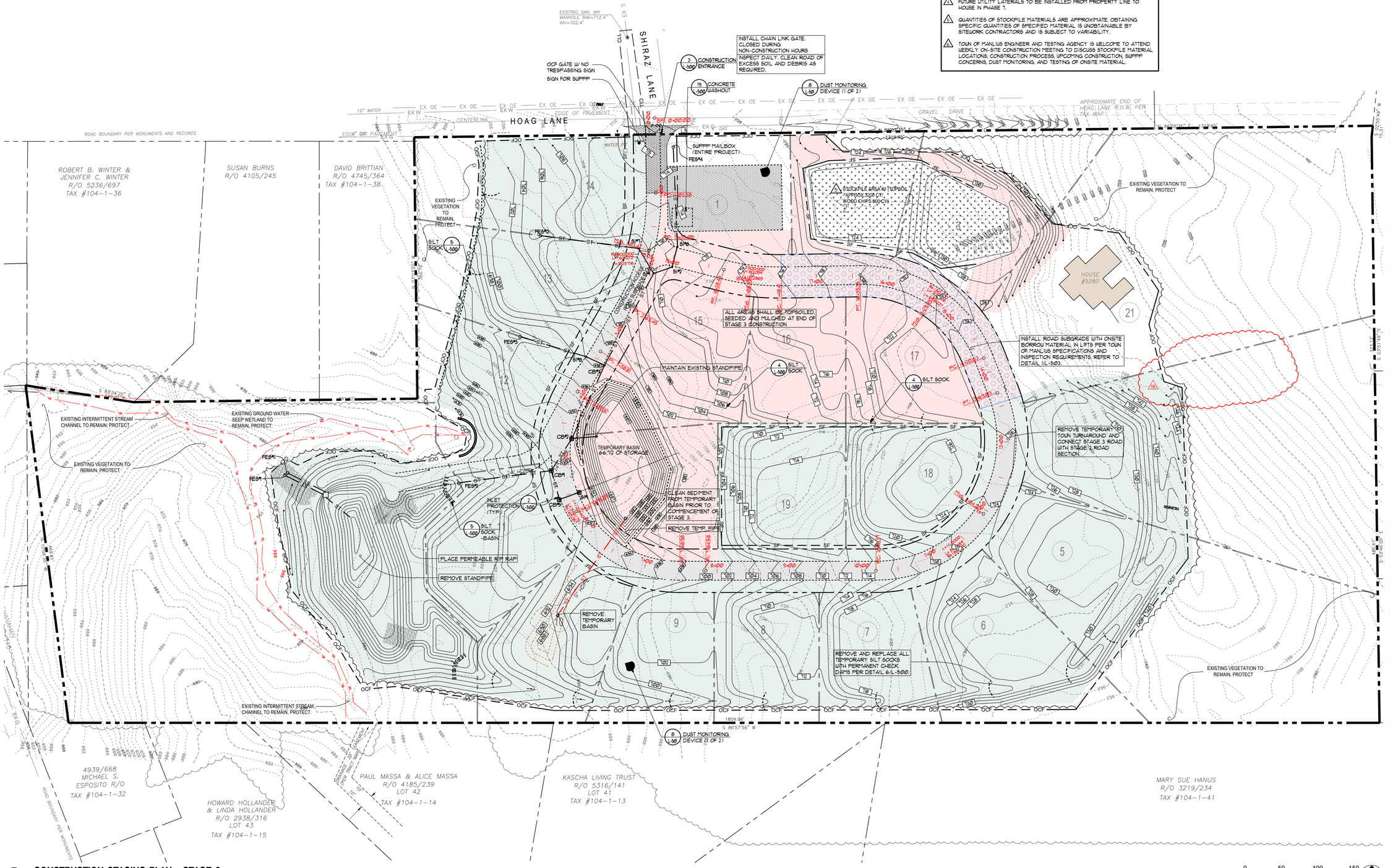
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.24 (AC.)	-	-
STAGE 1	SIX (6) WKS.	22.43	6.44	1.17
STAGE 2	SIX (6) WKS.	15.40	7.82	6.82
STAGE 3	SIX (6) WKS.	13.68	4.16	12.20
STAGE 4	TWO (2) WKS.	13.68	1.78	15.79
STAGE 5	TWO (2) WKS.	13.68	3.24	14.03
STAGE 6	TWO (2) WKS.	13.68	3.13	14.13
STAGE 7	THREE (3) WKS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOUN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION. INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. B4C
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROU OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER, GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. B4E

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 06/15/20.
D. NOTE OMITTED. /8
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-104 **CONSTRUCTION STAGING PLAN - STAGE 3**

Friday, August 7, 2020 3:12:49 PM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6329 FLY ROAD SUITE 109, EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109, EAST SYRACUSE, NY 13057
PH: 315-432-1089 FAX: 315.445.7981

STATE OF NEW YORK — ROBERT L. RUSH — 079945 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING-MANLIUS	03/29/18
4	4	PUBLIC HEARING-MANLIUS	05/04/18
5	5	PUBLIC HEARING-MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

⚠ Symbol Indicates Revision Issued

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

LICENSED LANDSCAPE ARCHITECT — SCOTLEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 3705D
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 3

L-104

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTOR'S DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOWN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. ~~NOTE OMITTED.~~ /16\

SWPPP LEGEND

X-HOAG-SWPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-503 FOR DETAILS)
- OF — OF — ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
- SS — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

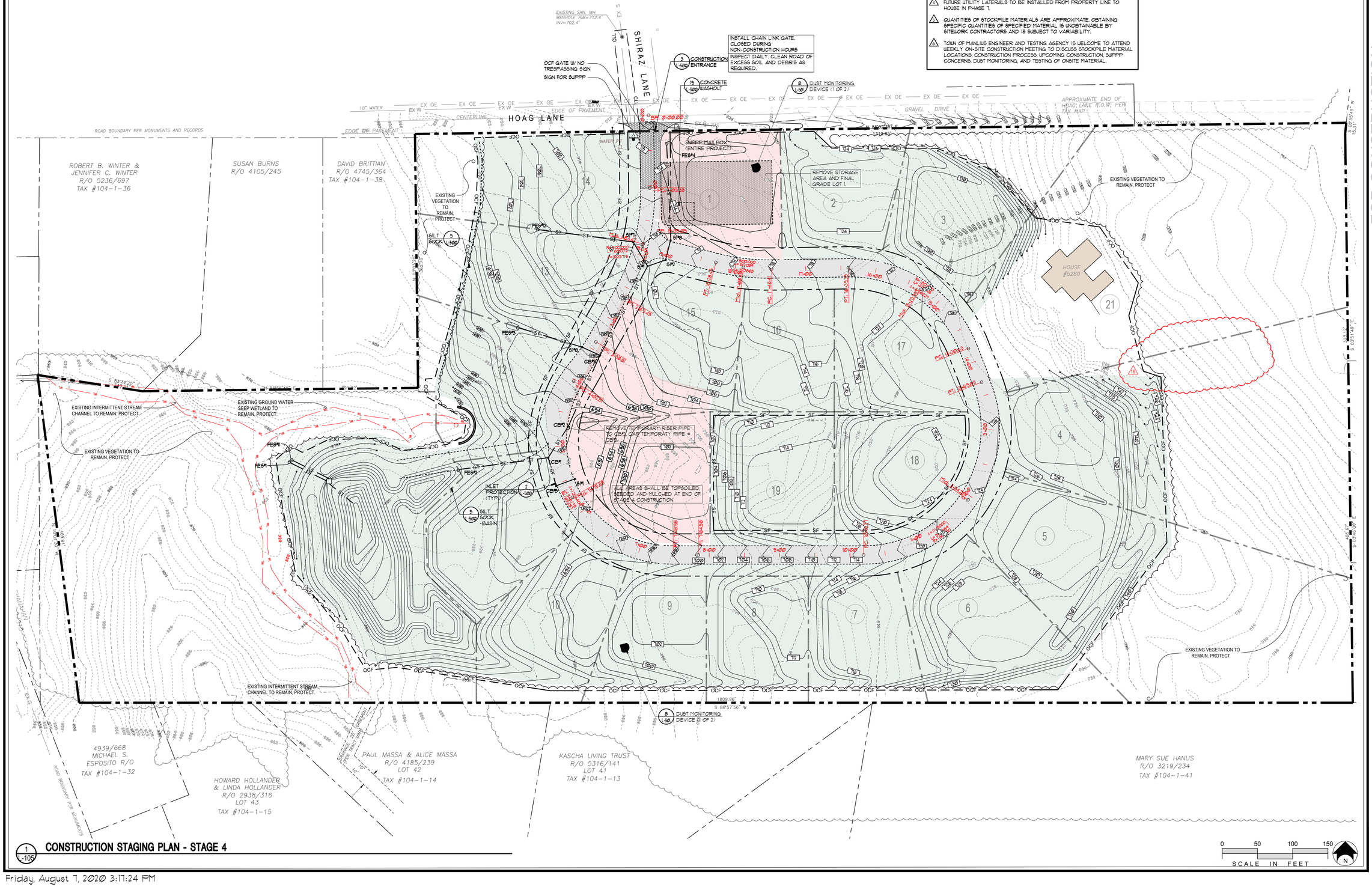
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) WKS.	22.43	6.44	1.17
STAGE 2	SIX (6) WKS.	15.40	7.82	6.82
STAGE 3	SIX (6) WKS.	13.68	4.16	12.20
STAGE 4	TWO (2) WKS.	13.68	1.78	15.79
STAGE 5	TWO (2) WKS.	13.68	3.24	14.03
STAGE 6	TWO (2) WKS.	13.68	3.13	14.13
STAGE 7	THREE (3) WKS.	13.68	PER LOT	PER LOT

NOTES:
/1\ APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
/2\ SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
/3\ STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
/4\ FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
/5\ QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
/6\ TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. B4C
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER, GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. D1E

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 06/15/20.
D. ~~NOTE OMITTED.~~ /16\
E. ~~LICENSED SURVEYOR~~ TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



KEPLINGER FREEMAN ASSOCIATES
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EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK SCOTT L. ZOLL 079945 LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION
△ Symbol Indicates Revision Issued

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
	8	21 LOT SITE PLAN REVISIONS	01/04/19
	9	MANLIUS- PLAN SUBMISSION	06/14/19
	10	MANLIUS- PLAN SUBMISSION	07/12/19
	11	MANLIUS- PLAN SUBMISSION	09/23/19
	12	MANLIUS- PLAN SUBMISSION	12/18/19
	13	MANLIUS- PLAN SUBMISSION	12/18/19
	14	MANLIUS- PLAN SUBMISSION	06/15/20
	15	NOTE REMOVAL (NOTE 10)	07/30/20
	16	MANLIUS- PLAN SUBMISSION	08/07/20
	17		
	18		
	19		
	20		
	21		
	22		
	23		

STATE OF NEW YORK SCOTT LEE FREEMAN 100147 LICENSED LANDSCAPE ARCHITECT

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 4

L-105

Printed By:
Date Plotted:
Drawing File:

Friday, August 7, 2020 3:17:24 PM

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOUN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. NOTE OMITTED. /16

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA

INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS

TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

SWPPP LEGEND

X-HOAG-SUPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-503 FOR DETAILS)
- OCF — ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
- SS — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) MOS.	22.43	6.44	1.17
STAGE 2	SIX (6) MOS.	15.40	7.82	6.82
STAGE 3	SIX (6) MOS.	13.68	4.16	12.20
STAGE 4	TWO (2) MOS.	13.68	1.78	15.79
STAGE 5	TWO (2) MOS.	13.68	3.24	14.03
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STAGE 7	THREE (3) MOS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 9/27/19.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOUN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION. INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
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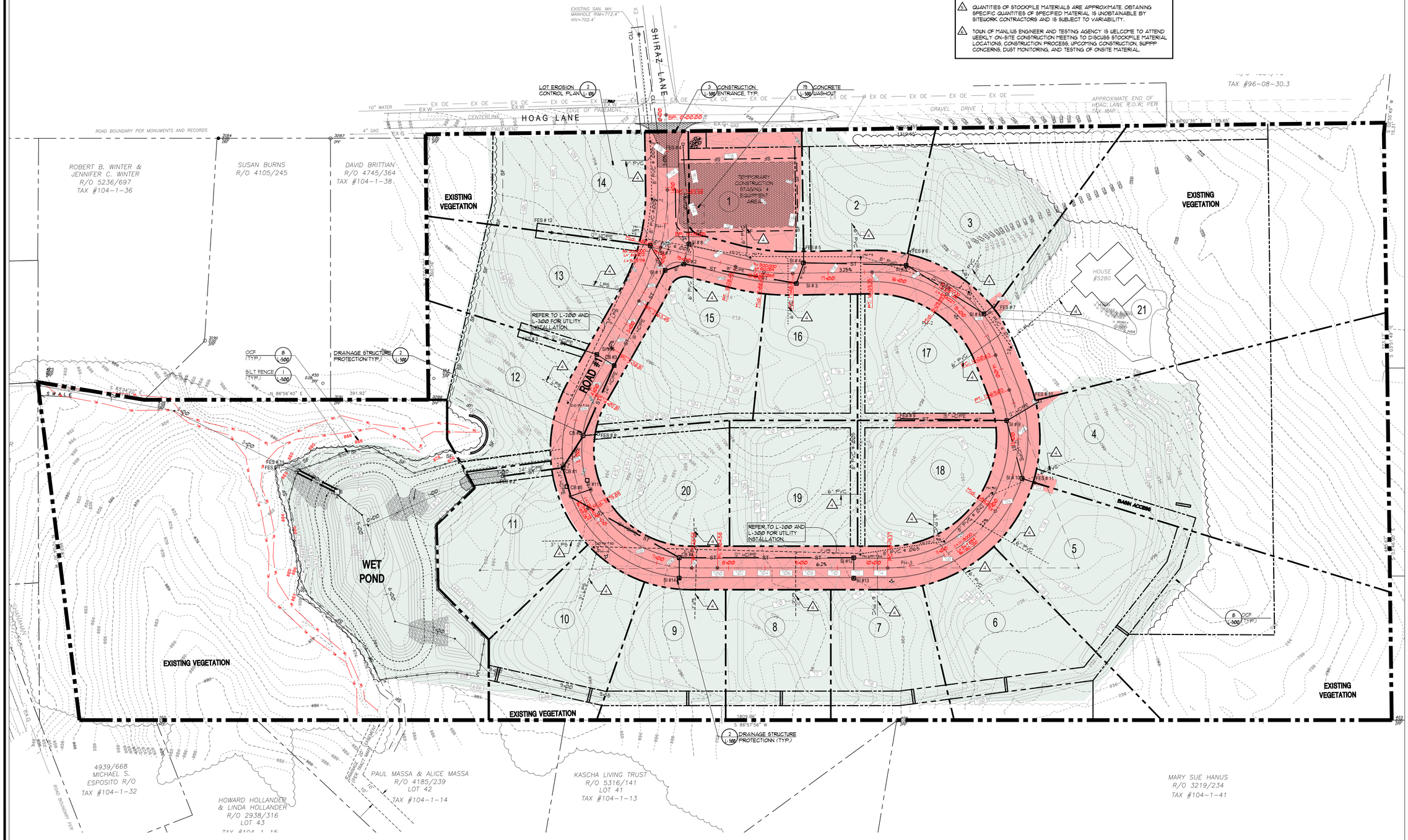
NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SUPPP APPENDIX R, DATED 06/05/20. /1
D. NOTE OMITTED. /16
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-106 **CONSTRUCTION STAGING PLAN - STAGE 5**

SCALE IN FEET 0 50 100 150

Friday, August 7, 2020 3:26:25 PM

Plotted By:
Date Plotted:
Drawing File:

KLEINGER FREEDMAN ASSOCIATES
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STATE OF NEW YORK — RUDY L. ZOLLA — 079845 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	TOWN REV.-21 LOTS-MANLIUS	06/01/18
6	6	MANLIUS-21 HOME LOTS-PL. BD	10/23/18
7	7		11/30/18

△ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE-16)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

JESSE ELDRED LANDSCAPE ARCHITECT — 001413 — STATE OF NEW YORK — LICENSED

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 5

L-106

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
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	tests*	tests*	days**	tests**
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Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

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3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. NOTE OMITTED. /10

SWPPP LEGEND

X-HOAG-SUPPP LEGEND

- SF — SILT FENCE
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CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

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TOTAL SITE	ONE (1) YR.	30.24 (AC.)	-	-
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2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
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CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. BMC
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. BMC
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. BMC
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
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NOTES:
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C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SUPPP APPENDIX R, DATED 06/15/20.
D. NOTE OMITTED. /10
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
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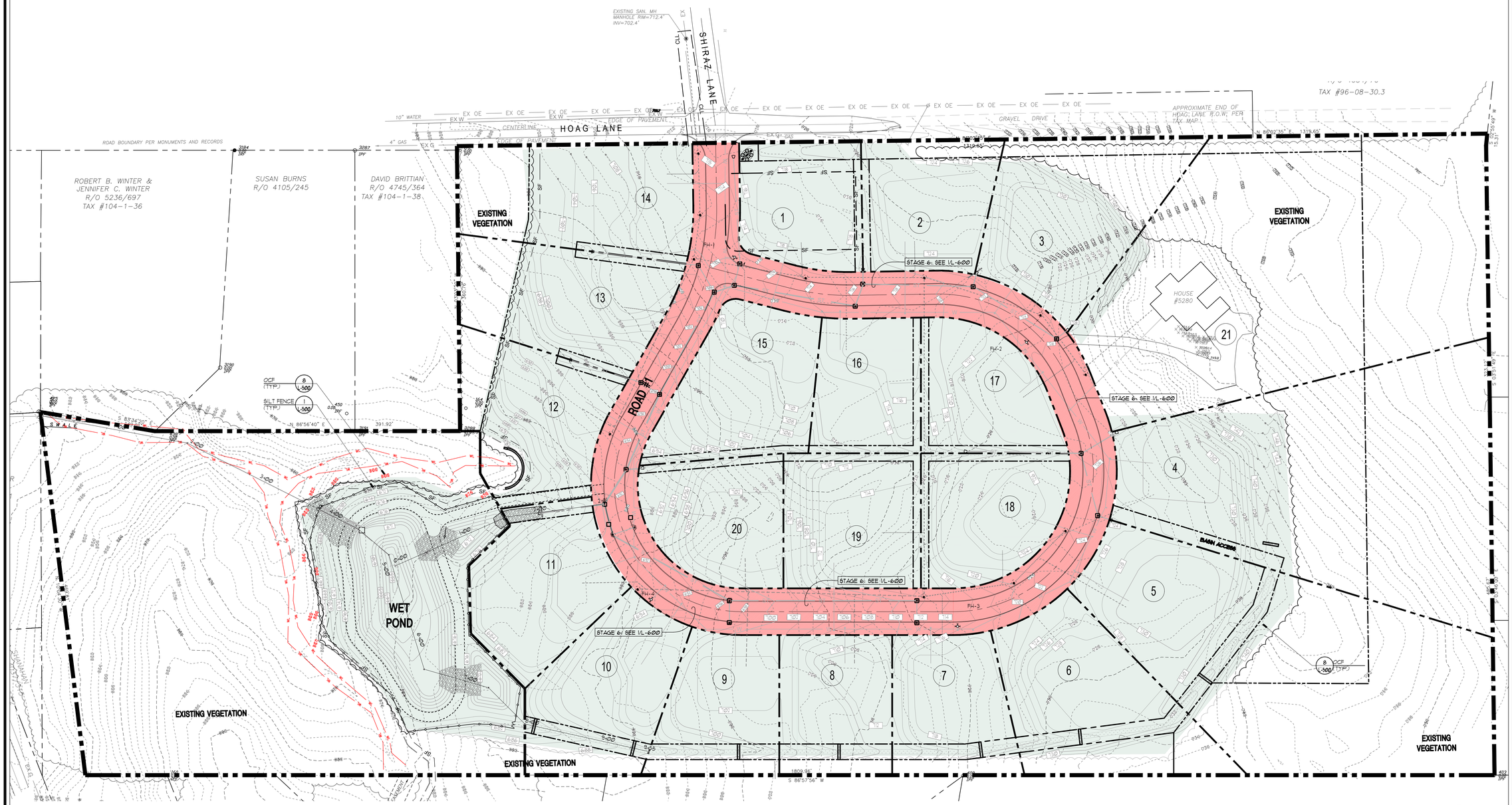


1 / L-107 CONSTRUCTION STAGING PLAN - STAGES 6

SCALE IN FEET 0 50 100 150

KFA KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
220 W GENESEE ST SUITE 200 SYRACUSE, NEW YORK 13202
PHONE 315.471.1820 FAX 315.471.1821

RZ Engineering, PLLC
6320 FLY ROAD SUITE 105
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK — SCOTT L. ZOLLO — 079945 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BDI	11/30/18

⚠ - Symbol Indicates Revision Issued

No.	Rev	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

LICENSED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001417 — STATE OF NEW YORK

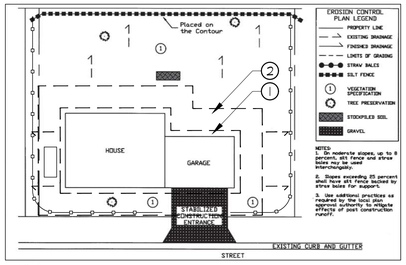
Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 6

L-107

Plotted By:
Date Plotted:
Drawing File:

Friday, August 7, 2020 3:29:20 PM



NOTES:
1- FOUNDATION ZONE: @-5 FEET FROM EDGE OF BUILDING. DRAINAGE IMPROVEMENTS AROUND FOUNDATION.
2- SOIL RESTORATION ZONE: 5'-25' FEET FROM EDGE OF BUILDING. REFER TO SOIL RESTORATION NOTES ON L-1@1.
3-POST CONSTRUCTION NOTES TO BE PROVIDED TO HOA/ HOMEOWNERS.

2 / L-108 LOT EROSION CONTROL PLAN
NOT TO SCALE

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

SWPPP LEGEND
X-HOAG-SUPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-5@3 FOR DETAILS)
- OCF — ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
- SS — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOUN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. NOTE OMITTED. /16

CONSTRUCTION STAGING
X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) MS.	22.43	6.44	1.17
STAGE 2	SIX (6) MS.	15.40	7.82	6.82
STAGE 3	SIX (6) MS.	13.68	4.16	12.20
STAGE 4	TWO (2) MS.	13.68	1.78	15.79
STAGE 5	TWO (2) MS.	13.68	3.24	14.03
STAGE 6	TWO (2) MS.	13.68	3.13	14.13
STAGE 7	THREE (3) MS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/27/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 1.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOUN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SUPPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

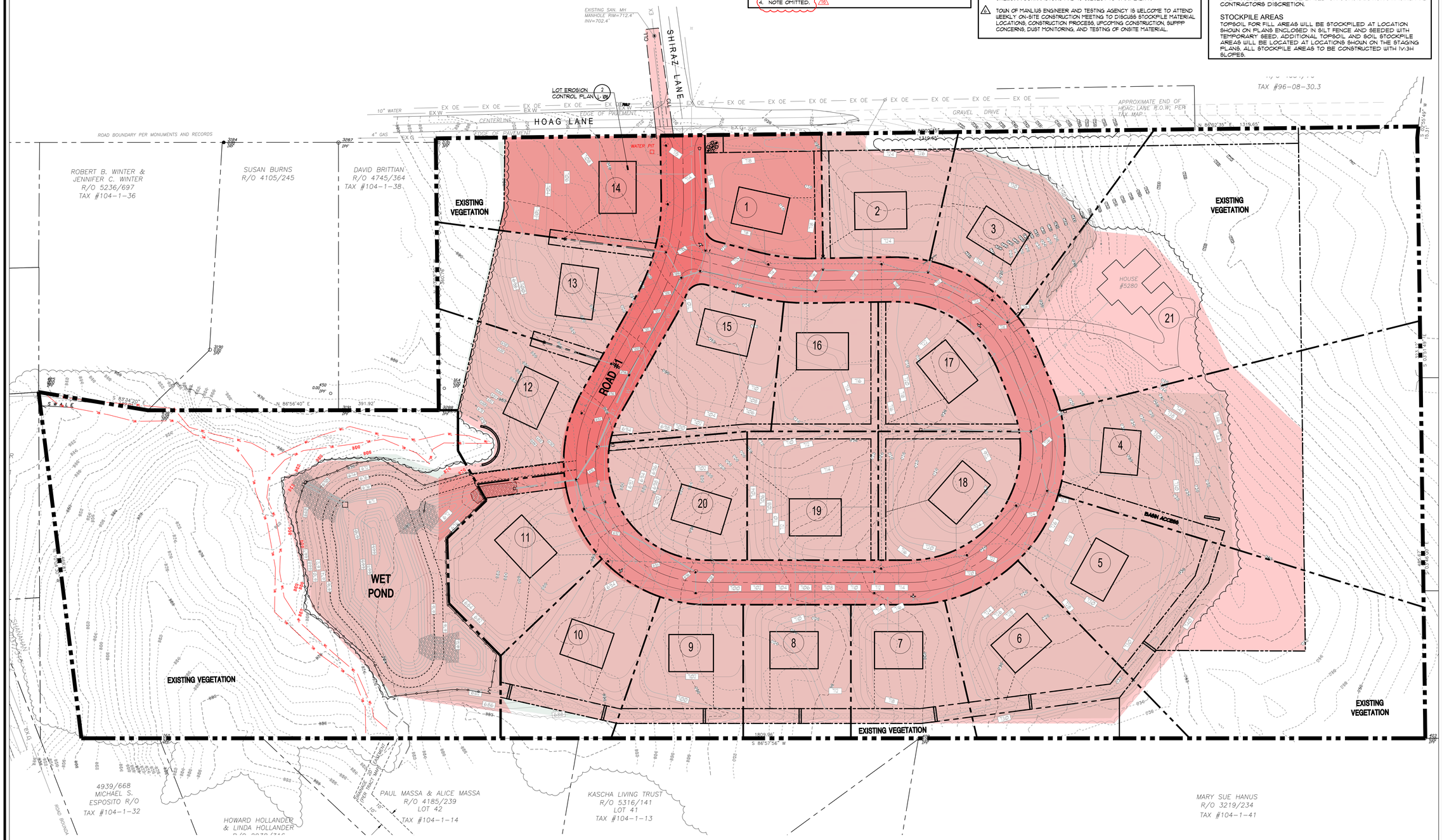
1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION. INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. B4C
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER , GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. D4 E

NOTES:
A. REFER TO L-1@1 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SUPPP APPENDIX R, DATED 06/@6/@@.
D. NOTE OMITTED. /16
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.



1 / L-108 CONSTRUCTION STAGING PLAN - STAGE 7

0 50 100 150 SCALE IN FEET

Friday, August 7, 2020 3:44:28 PM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK — RUDY L. ZOSS — 075945 — LICENSED PROFESSIONAL ENGINEER
UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION
⚠ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date
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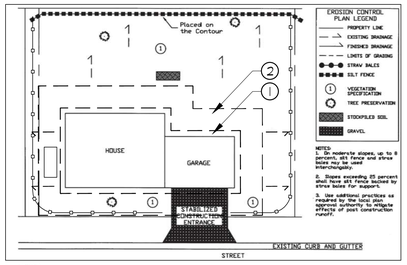
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 7

L-108



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2 / L-108 LOT EROSION CONTROL PLAN
NOT TO SCALE

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
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Stage 2	1	1	3	82
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
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SWPPP LEGEND
X-HOAG-SWPPP LEGEND

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- SEDIMENT TRAP # CB/INLET
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- CONSTRUCTION ENTRANCE
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4. NOTE OMITTED. /16

CONSTRUCTION STAGING
X-HOAG-ZONING-REVISED

DISTURBANCE AREA

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CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	3Ø.Ø4 (AC.)	-	-
STAGE 1	SIX (6) WKS.	22.43	6.44	1.17
STAGE 2	SIX (6) WKS.	15.4Ø	7.82	6.82
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STAGE 4	TWO (2) WKS.	13.68	1.78	15.79
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STAGE 6	TWO (2) WKS.	13.68	3.13	14.13
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2. SEE DRAWING L-2Ø2 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 9/27/2Ø.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
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7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. D1E

NOTES:
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D. NOTE OMITTED. /16
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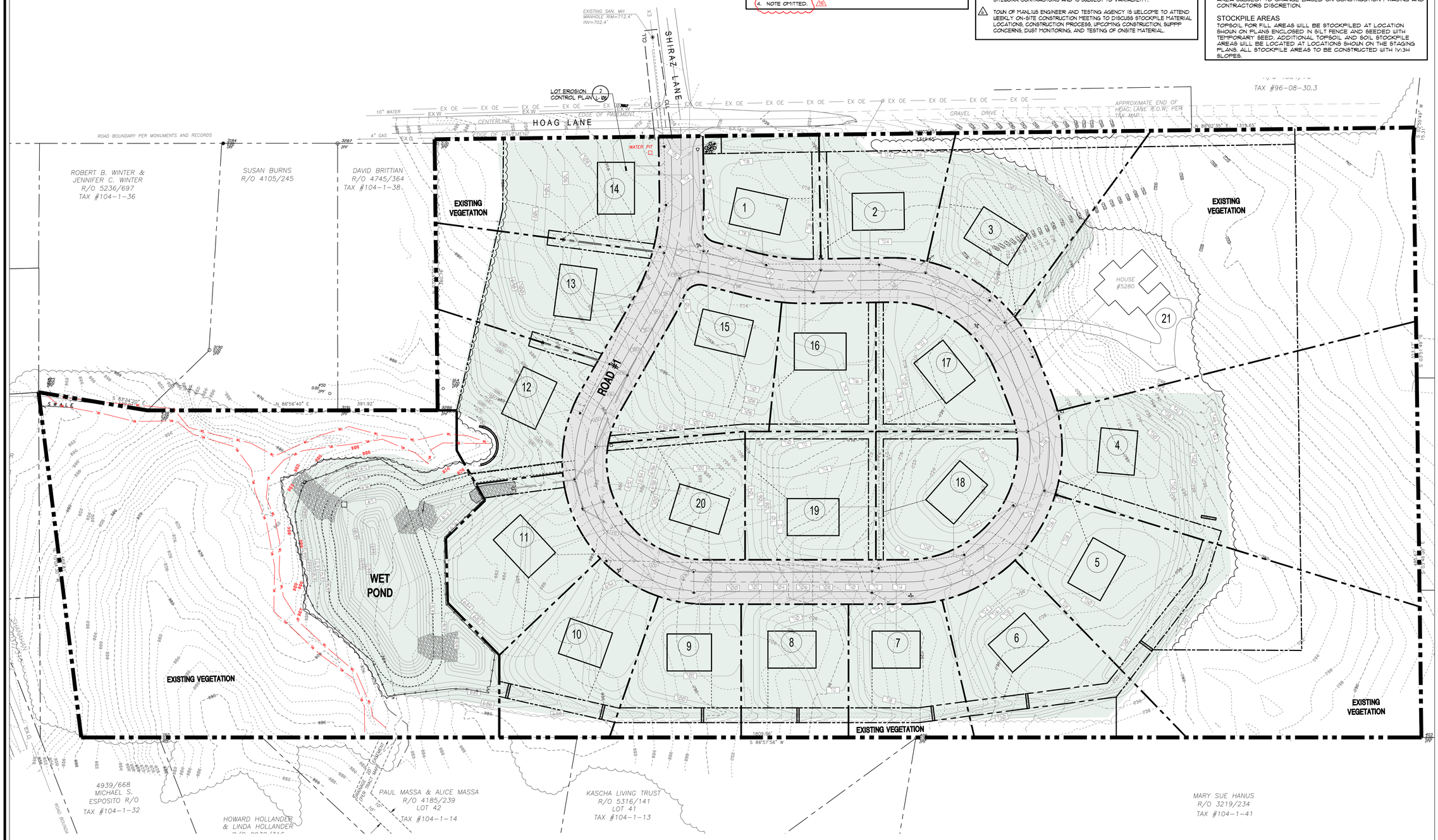

1 / L-108 CONSTRUCTION STAGING PLAN - STAGE 7

SCALE IN FEET 0 50 100 150

KEPLINGER FREEMAN ASSOCIATES
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PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK — ROBT L. ZOLIN — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

No.	Rev.	Description	Date
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
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5	5	PUBLIC HEARING- MANLIUS	06/01/18
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7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 16)	07/30/20

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 3708Ø
Date: DECEMBER | 2Ø17
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 7

L-108

Plotted By:
Date Plotted:
Drawing File:

Monday, August 10, 2020 9:43:36 AM

STORM STRUCTURE SCHEDULE

X-HOAG-STORM-CHART

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES # 1	FLARED END SECTION 2	N/A	-	24"-665.00
DA-1A&B	10' DIA. OUTLET STRUCTURE 1	675.45	REFER TO DETAIL FOR ORIFICE INFORMATION	665.20
FES # 2	FLARED END SECTION 2	N/A	-	(E)-24"-676.00
CB # 1	CATCH BASIN - 6'-0" 3	691.72	(NE)-24"-684.50 (S)-24"- 685.00 UD- 689.20	(W)-24"-684.50
CB # 2	CATCH BASIN - 4'-0" 3	692.75	(NE)-24"-688.75 (E)-15"-688.50 UD- 691.00	(SW)-24"-687.50
CB # 3	CATCH BASIN - 4'-0" 3	697.72	(W)-12"-690.90 (NE)-18"-694.00 UD- 696.25	(SW)-24"-690.80
SI # 1	STORM INLET 4	707.75	(NW)-12"-702.10 (NE)-18"-702.10	(S)-18"-700.00
SI # 2	STORM INLET 4	710.75	(N)-12"-706.75 (E)-18"-707.25	(SW)-18"-706.00
SI # 3	STORM INLET 4	715.90	(N)-15"-711.50 UD-714.50	(W)-18"-711.25
SI # 4	STORM INLET 4	716.05	(N)-12"-713.50 (E)-12"-713.50 UD- 714.50	(S)-15"-712.00
SI # 5	STORM INLET 4	721.50	(N)-12"-718.00 (SE)-12"-718.50 UD- 718.00	(W)-12"-717.00
SI # 6	STORM INLET 4	725.75	(NE)-12"-722.10 UD- 722.75	(NW)-12"-722.00
FES # 7	FLARED END SECTION 2	N/A	-	12"-725.00
FES # 3	FLARED END SECTION 2	N/A	12" - 691.50	-
FES # 12	FLARED END SECTION 2	N/A	12" - 704.00	-

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
SI # 7	STORM INLET 4	709.75	UD-707.00 12"-703.20	(SE)-12"-703.10
SI # 8	STORM INLET 4	710.55	(N)-10"-708.00 UD-708.91	(S)-12"-707.50
FES # 4	FLARED END SECTION 2	N/A	10"-713.00	-
FES # 5	FLARED END SECTION 2	N/A	12"-715.00	-
FES # 6	FLARED END SECTION 2	N/A	12"-721.00	-
FES # 8	FLARED END SECTION 2	N/A	-	15"-689.00
FES # 9	FLARED END SECTION 2	N/A	-	15"-718.00
SI # 9	STORM INLET 4	726.10	(NE)-12"-720.00 (S)-12"-720.00 UD- 724.10	(W)-15"-719.50
SI # 10	STORM INLET 4	724.65	(SE)-12"-721.65 UD-721.65	(N)-12"-721.50
FES # 11	FLARED END SECTION 2	N/A	12" - 722.00	
FES # 10	FLARED END SECTION 2	N/A	12"- 722.00	-
CB # 5	CATCH BASIN - 4'-0" 3	691.42	(E)-10"-685.50 (SE)-18"-685.50 UD- 687.50	(N)-24"-685.25
CB # 4	CATCH BASIN - 4'-0" 3	696.72	(S)-10-"-693.75 (E)-12"-693.75 UD- 694.90	(NW)-18"-693.25
SI # 12	STORM INLET 4	711.75	(S)-12"-708.25 UD-708.25	(W)-12"-708.00
SI # 13	STORM INLET 4	711.75	UD-709.40	(N)-12"-708.50
SI # 11	STORM INLET 4	691.42	UD-687.50	(W)-10"-686.00
SI # 14	STORM INLET 4	696.72	UD-694.90	(N)-10"-693.90
SI # 15	STORM INLET 4	697.72	(W) - 691.05 UD-696.00	(E)-12"-691.00
FES # 11	FLARED END SECTION 2	N/A	24"- 665.00	-

NOTES:
1. INSTALL OUTLET STRUCTURE PER DETAIL 20/L-500.
2. INSTALL FLARED END SECTION PER DETAIL 15/L-500.
3. INSTALL STORM INLET PER DETAIL 13/L-500.
4. INSTALL CATCH BASIN PER DETAIL 11/L-500.
5. INSTALL STORM PIPING TRENCH DETAIL PER DETAIL 12/L-500 & 3/L-503 IN FILL AREAS

GENERAL BUILDING LOT NOTES

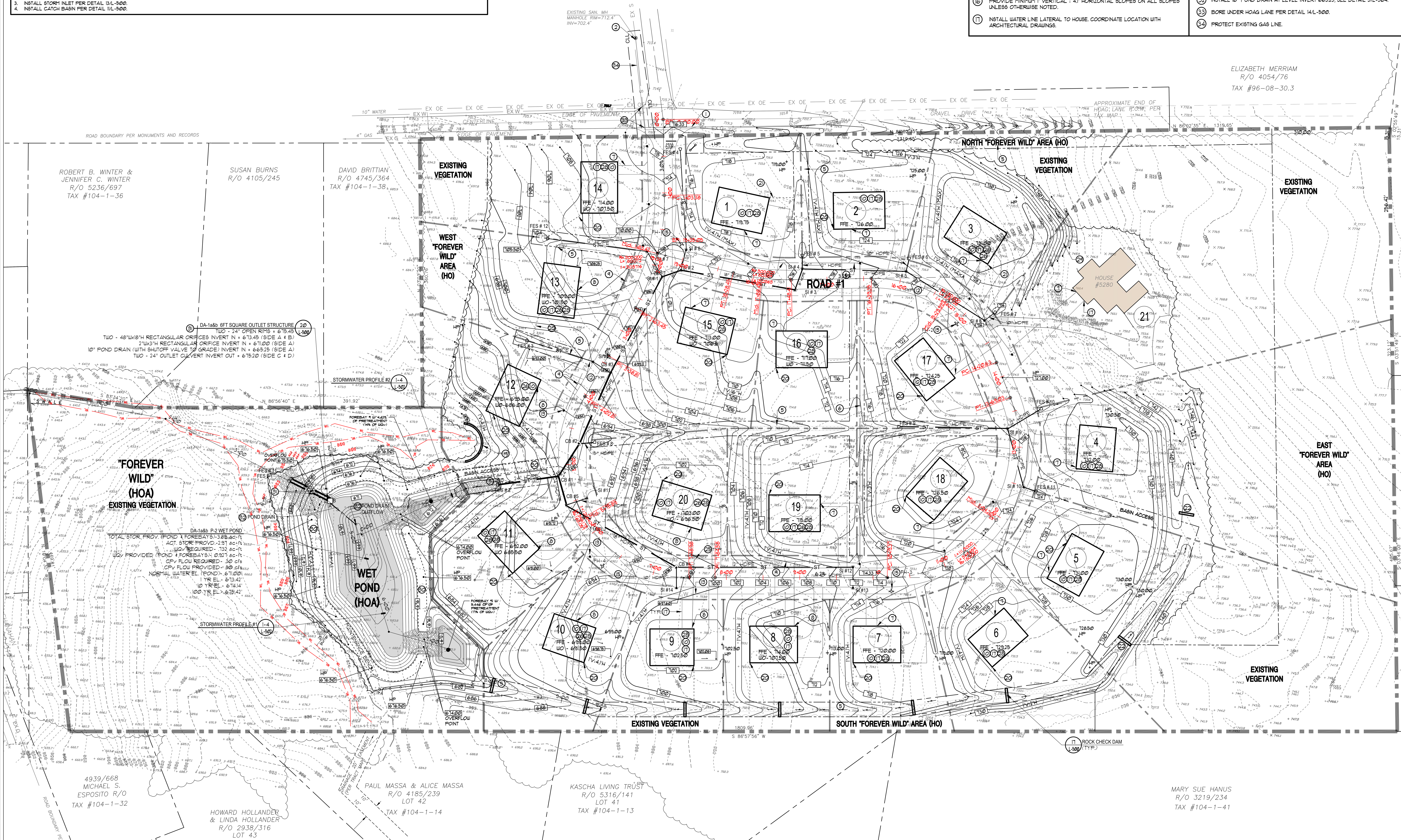
SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (1/4" PER FT.). ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS & PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501. FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS). REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4.1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT. RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 20/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-102 THRU L-108 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT. 16
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE SOIL.
30. MAINTENANCE ACCESS. NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" WDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 1'V:8'H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 L-200 **GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS**

Friday, August 7, 2020 3:51:48 PM

Plotted By:

Date Plotted:

Drawing File:

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION — Symbol Indicates Revision Issued

No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19	16	16	MANLIUS- PLAN SUBMISSION	08/07/20
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19	17	17		
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19	18	18		
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19	19	19		
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19	20	20		
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19	21	21		
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20	22	22		
				15	15	NOTE REMOVAL (NOTE 10)	07/30/20	23	23		

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CLUSTER GRADING and DRAINAGE PLAN- 21 LOTS

L-200

SHADE RELIEF LEGEND - TOWN OF MANLIUS

§ 127-19: C FOR PURPOSES OF DETERMINING A BUILDABLE LOT IN THE CONTEXT OF A SUBDIVISION APPROVAL, A LOT'S BUILDING ENVELOPE, DEFINED AS THE AREA OF A LOT THAT FALLS WITHIN THE REQUIRED SETBACKS, SHALL INCLUDE AN AREA LARGE ENOUGH TO FIT A REASONABLE BUILDING FOOTPRINT, WHICH IS:

(2) NO CLOSER THAN 25 FEET TO SLOPES OF 25% OR MORE.

= AREAS GREATER THAN OR EQUAL TO 25% SLOPES.

HOAG LANE

SHIRAZ LANE

ROBERT B. WINTER & JENNIFER C. WINTER R/O 5236/697 TAX #104-1-36

SUSAN BURNS R/O 4105/245

DAVID BRITTIAN R/O 4745/364 TAX #104-1-38

ELIZABETH MERRIAM R/O 4054/76 TAX #96-08-30.3

4939/668 MICHAEL S. ESPOSITO R/O TAX #104-1-32

HOWARD HOLLANDER & LINDA HOLLANDER R/O 2938/316 LOT 43 TAX #104-1-15

PAUL MASSA & ALICE MASSA R/O 4185/239 LOT 42 TAX #104-1-14

KASCHA LIVING TRUST R/O 5316/1141 LOT 41 TAX #104-1-13

MARY SUE HANUS R/O 3219/234 TAX #104-1-41

HOUSE #5280

BARN ACCESS

1 L-201 **25% SHADE RELIEF PLAN**

SCALE IN FEET 0 50 100 150

Friday, August 7, 2020 4:00:59 PM

KEPLINGER FREEDMAN ASSOCIATES
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FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

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1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
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6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
	8	21 LOT SITE PLAN REVISIONS	01/04/19
	9	MANLIUS- PLAN SUBMISSION	06/14/19
	10	MANLIUS- PLAN SUBMISSION	07/12/19
	11	MANLIUS- PLAN SUBMISSION	09/23/19
	12	MANLIUS- PLAN SUBMISSION	12/18/19
	13	MANLIUS- PLAN SUBMISSION	12/18/19
	14	MANLIUS- PLAN SUBMISSION	06/15/20
	15	NOTE REMOVAL (NOTE 19)	07/30/20
	16	MANLIUS- PLAN SUBMISSION	08/07/20

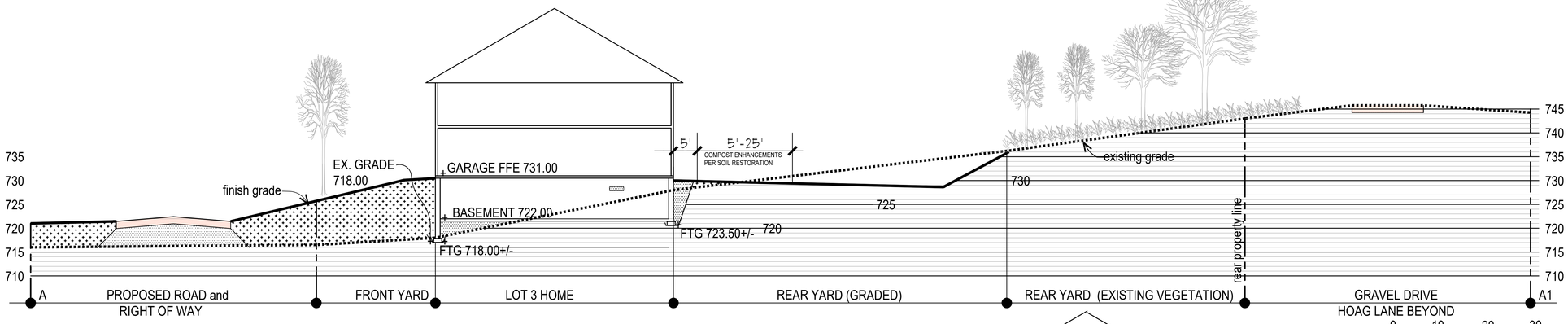
Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:

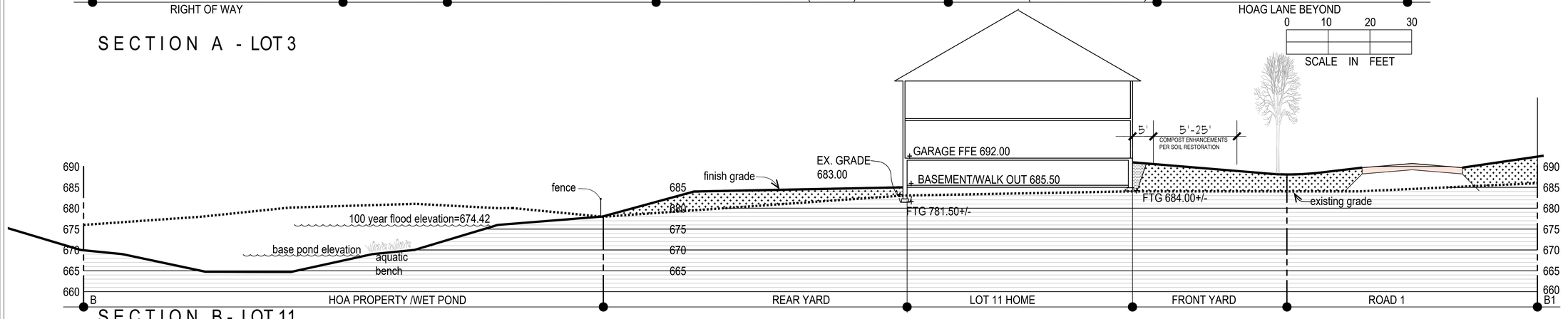
25% SLOPE RELIEF PLAN

L-201

Plotted By:
Date Plotted:
Drawing File:



SECTION A - LOT 3



SECTION B - LOT 11

0 10 20 30

SCALE IN FEET

CUT/FILL BASEMENT SLAB REVIEW

CUT AREAS (basement or walk out concrete slab constructed in areas of cut)

FILL AREAS (basement or walk out concrete slab areas requiring fill)

BUILDING SLABS REQUIRING FILL WILL BE BROUGHT UP TO BASEMENT SLAB ELEVATIONS IN LIFTS PER PROJECT SPECIFICATIONS.

FOOTER DEPTH REVIEW

FFE - FINISH FLOOR ELEVATION - THE FFE'S SHOWN ON PLANS DEPICT THE ELEVATION OF THE GARAGES FOR EACH PROPOSED HOME. THE REMAINDER OF THE FIRST FLOOR HOME'S CAN VARY UNIT TO UNIT AND ARE NOT SHOWN ON THE PLAN. THE FOOTINGS FOR ALL UNITS WILL STEP UP FROM THE DEEP FOOTING ELEVATIONS SHOWN.

FOOTING LOCATION DEPTH - EACH LOT INCLUDES ELEVATION OF THE EXISTING GRADE, BASEMENT/WALKOUT ELEVATION AND FOUNDATION FOOTING AT THE DEEPEST FOOTING LOCATION. HOME BUILDER INTENDS TO CONSTRUCT FOOTINGS ON NATIVE SOIL FOR ALL LOTS. 19 OF THE 20 PROPOSED HOME LOTS WILL HAVE FOOTINGS CONSTRUCTED ON EXISTING GRADE WITH FOOTING DEPTHS WHICH DO NOT EXCEED 4'-0", THERE ARE TWO LOTS (#2 AND #3) WHICH REQUIRE FOOTINGS TO BE CONSTRUCTED DEEPER THAN THE TYPICAL 4'-0" DEPTH.

BUILDING FOOTER ELEVATIONS ARE APPROXIMATE. PLAN SHOWS DEEPEST FOOTING FOR EACH LOT AND IN ALL CASES WILL STEP UP WITH EXISTING GRADE BELOW BASEMENT/WALKOUT ELEVATION.

RIGHT OF WAY CUT/FILL DEPTH REVIEW

RIGHT OF WAY CUT/FILL ANALYSIS - THE ENTIRE ROAD LENGTH IS 1924 LINEAR FEET AND INCLUDES (2) SECTIONS OF CUT (ROAD SECTION 1 AND 3) AND (2) SECTIONS OF FILL (ROAD SECTIONS 2 AND 4).

ROAD SECTION #1 (CUT)- TOTAL LENGTH IS 441 LINEAR FEET AND AVERAGES 2.4' DEPTH OF CUT.

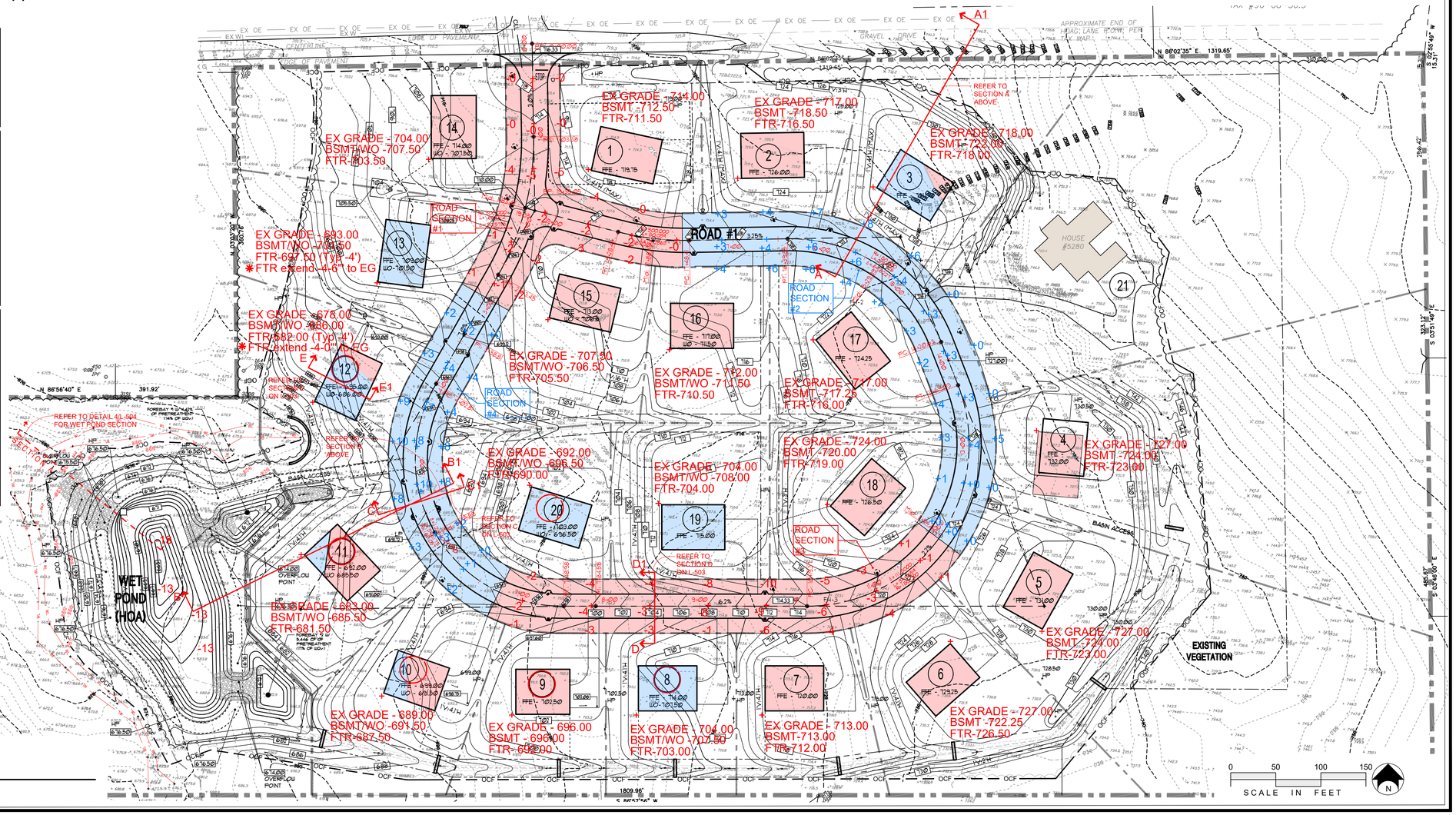
ROAD SECTION #2 (FILL)- TOTAL LENGTH IS 566 LINEAR FEET AND AVERAGES 4.8' DEPTH OF FILL.

ROAD SECTION #3 (CUT)- TOTAL LENGTH IS 515 LINEAR FEET AND AVERAGES 4.5' DEPTH OF CUT.

ROAD SECTION #4 (FILL)- TOTAL LENGTH IS 382 LINEAR FEET AND AVERAGES 4.8' DEPTH OF FILL.

NOTES:
1) THERE IS ONE (1) APPROXIMATE 6000 SF SECTION OF ROAD WHICH EXCEEDS 8' FILL. (STATION 43+34 TO 5+30B).

2) THE TOTAL AVERAGE CUT DEPTH IS 3.6'. THE TOTAL AVERAGE FILL DEPTH IS 4.4'.



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STATE OF NEW YORK — KURT L. ZONA — 079945 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△ Symbol Indicates Revision Issued

No.	Rev.	Description	Date
15	16	MANLIUS- PLAN SUBMISSION	08/07/20
16	17		
17	18		
18	19		
19	20		
20	21		
21	22		
22	23		
23			

ISSUED AND REVISIONS NOTIFICATION

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6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

No.	Rev.	Description	Date
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12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20

LICENSED PROFESSIONAL ENGINEER — SCOTT E. FREEMAN — 090144 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 3170S0
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
RIGHT OF WAY, BASEMENT SLAB and FOOTER SUMMARY

L-202

Plotted By:
Date Plotted:
Drawing File:

Friday, August 7, 2020 4:55:28 PM

HOAG LANE DEVELOPMENT
SEWER SYSTEM TYPE

X-HOAG-SEWER

	SEWER SYSTEM TYPE	LOT NUMBERS
	FORCE MAIN SYSTEM SEWER	8, 9, 10, 11, 12, 13, 20 + (7) TOTAL
	GRAVITY SYSTEM SEWER	1, 2, 3, 4, 5, 6, 7, 14, 15, 16, 17, 18, 19, 21 + (14)

SANITARY MANHOLE SCHEDULE

NOTES REFER TO SHEETS L-300

MANHOLE #	STRUCTURE TYPE	RIM ELEVATION	INVERT ELEVATIONS	
			IN	OUT
EX MH.	EXISTING	712.40		702.40 (EX)
MH# 1	MANHOLE[1]	715.20	8" @ 702.50 (S)	8" @ 703.20 (N)
MH# 2	MANHOLE[1]	712.00	8" @ 703.71 (S)	8" @ 703.61 (N)
MH WITH# 3	MH. W/ FORCED MAIN[2]	708.00	8" @ 704.25 (E) 3" @ 705.15 (S)	8" @ 704.15 (N)
MH# 4	MANHOLE[1]	714.00	8" @ 705.10 (E)	8" @ 705.00 (W)
MH# 5	MANHOLE[1]	720.00	8" @ 705.95 (E) 8" @ 705.95 (S)	8" @ 705.88 (W)
MH# 6	MANHOLE[1]	724.00	8" @ 714.70 (SE)	8" @ 714.60 (NW)
MH# 7	MANHOLE[1]	726.00		8" @ 720.00 (NW)
MH WITH# 5A	MH. W/ FORCED MAIN[2]	712.00	3" @ 708.80 (W) 8" @ 707.90 (E)	8" @ 707.80 (N)
MH# 5B	MANHOLE[1]	720.20	8" @ 715.20 (E)	8" @ 715.10 (W)
MH# 5C	MANHOLE[1]	723.50		8" @ 718.50 (SW)
C/O MH# 5D	CLEAN OUT MH	692.00		3" @ 684.50 (E)
C/O MH# 3A	CLEAN OUT MH	693.50		3" @ 689.50 (NE)

NOTES:
1) INSTALL SANITARY MANHOLE PER DETAIL 1/L-500.
2) INSTALL SANITARY MANHOLE WITH FORCED MAIN PER DETAIL 10/L-501.

GRADING, DRAINAGE and UTILITIES NOTES

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16. PROVIDE MINIMUM 1' VERTICAL : 4.1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
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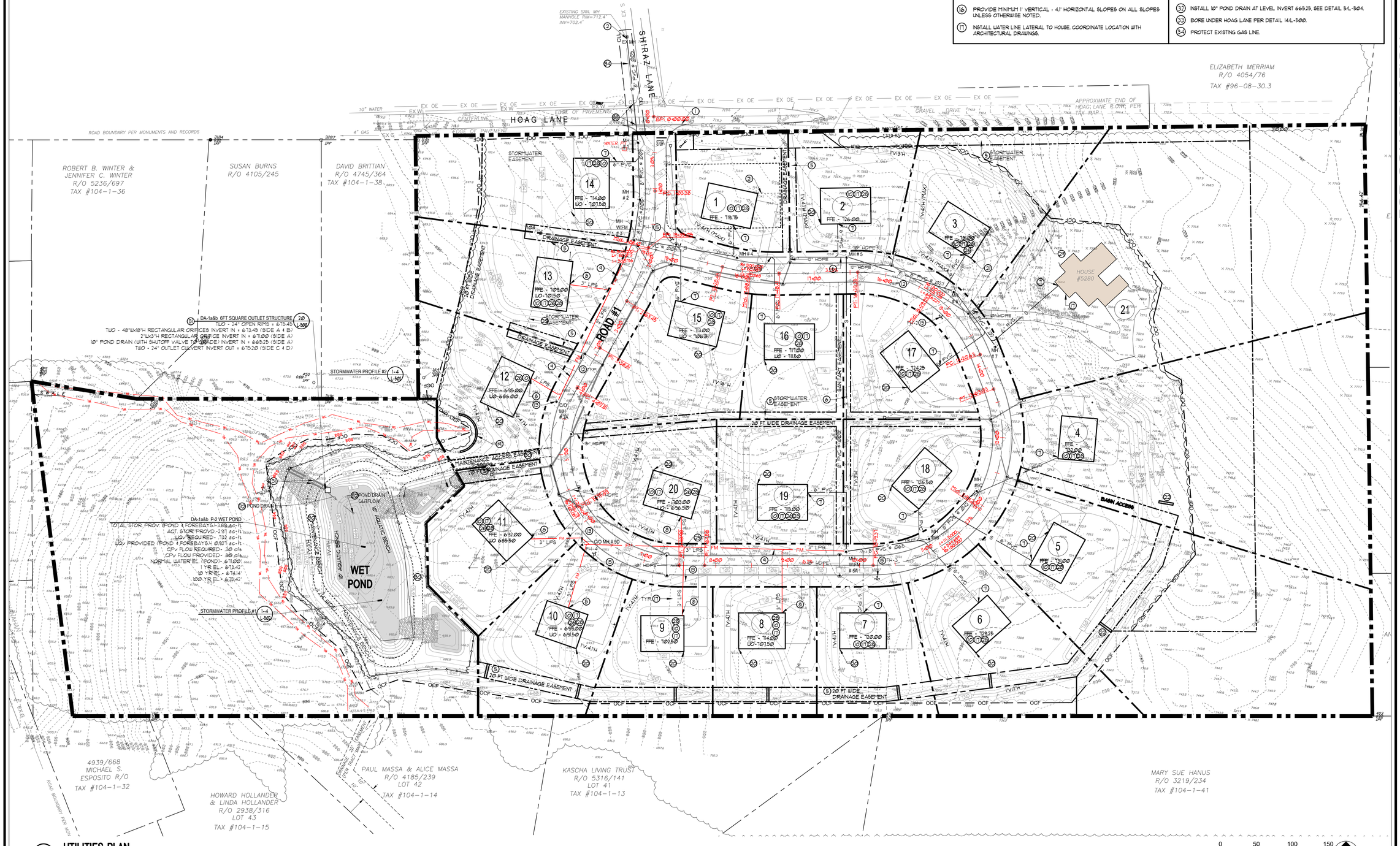
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE SOIL.
30. MAINTENANCE ACCESS: NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" WIDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 1V:8H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 L-300 **UTILITIES PLAN**

Friday, August 7, 2020 4:58:59 PM

Plotted By:
Date Plotted:
Drawing File:

KLEINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK — RUDY L. ZOLA — 079845 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION																							
No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19	15	15	NOTE REMOVAL (NOTE 19)	07/30/20												
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19																
3	3	PUBLIC HEARING- MANLIUS	02/26/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19																
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19																
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19																
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19																
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20																

△- Symbol Indicates Revision Issued



Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 3170.50
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
UTILITIES PLAN

L-300



2 L-400 **ENTRANCE MONUMENT SIGN**

SIGN SCHEDULE

X-SIGN-SCHEDULE

KEY	SIGN PLATE		SIGN SIZE MOUNTING HT.	N.Y.S.D.O.T. MULT.C.D. NO. / COMMENTS
A	STOP	STOP SIGN	24" X 24" 7'-0" HT.	SIGN NO. R1-1C COLORS: RED BACKGROUND, WHITE TEXT AND BORDER

NOTES:
1. REFER TO TRAFFIC CONTROL SIGN DETAIL FOR INSTALLATION.
2. ALL REGULATORY SIGNS SHALL CONFORM TO THE MOST CURRENT N.Y.S.D.O.T. "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES."

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

X-HOAG-ZONING-REVISED

1. ZONING

- TAX MAP #104.-01-39.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - ••• ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - ••• ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE 2§16). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY BeGUN LAND SURVEYING, P.L.L.C. AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KFA.
  HTTPS://WWW.DOS.NY.GOV/LG/PUBLICATIONS/SUBDIVISION%20REVIEW%20IN%20NYS.PDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 23 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R1) FRONTAGE: 150'-0" MIN: 150'-0"
LOT AREA: MINIMUM 40,000 SF

(R3) FRONTAGE: 100'-0" MIN: 100'-0" AVG: 110'- 0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING, OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1,324,224.00
"FOREVER WILD" AREA	9.35	408,303.11
(A) EAST "FOREVER WILD" AREA	3.66	159,767.97
(B) SOUTH "FOREVER WILD" AREA	.55	24,047.43
(C) WEST "FOREVER WILD" AREA	.56	24,511.97
(D) NORTH "FOREVER WILD" AREA	.39	17,218.69
(E) HOA "FOREVER WILD" AREA	4.19	182,697.05

NOTES:
1. 31% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/15/2020.

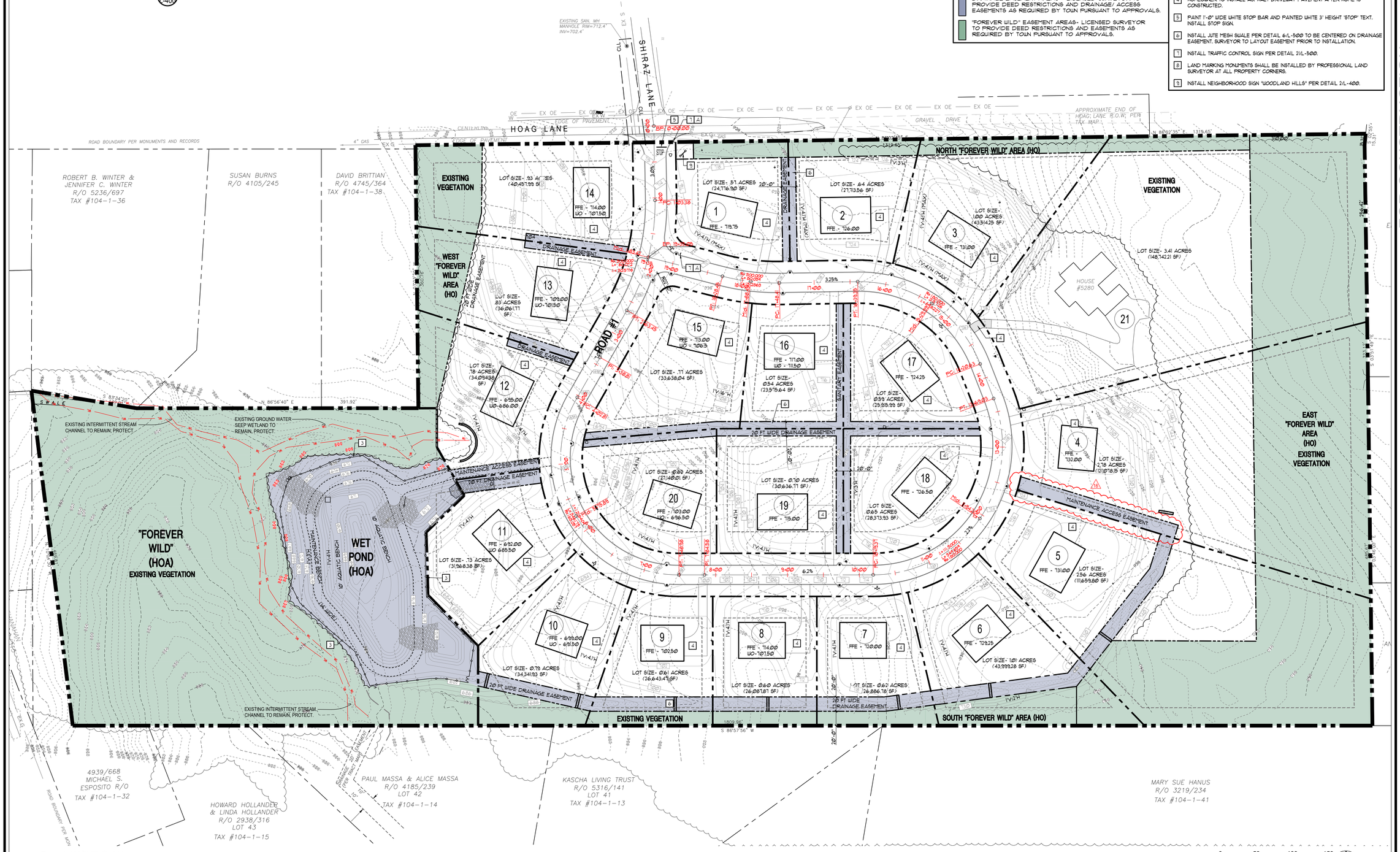
LEGEND NOTES

- DRAINAGE EASEMENT AREAS - LICENSED SURVEYOR TO PROVIDE DEED RESTRICTIONS AND DRAINAGE/ ACCESS EASEMENTS AS REQUIRED BY TOWN PURSUANT TO APPROVALS.
- "FOREVER WILD" EASEMENT AREAS- LICENSED SURVEYOR TO PROVIDE DEED RESTRICTIONS AND EASEMENTS AS REQUIRED BY TOWN PURSUANT TO APPROVALS.

LAYOUT NOTES

X-LAYOUT-NOTES

1. DIMENSIONS ARE PARALLEL AND PERPENDICULAR TO THE PROPERTY LINE.
2. NOTE REMOVED.
3. INSTALL NYS POOL COMPLIANT FENCE PER DETAIL 6/L-501 IN PHASE I (L-102).
4. HOMEOWNER TO INSTALL ASPHALT DRIVEWAY PAVEMENT AFTER HOME IS CONSTRUCTED.
5. PAINT 1'-0" WIDE WHITE STOP BAR AND PAINTED WHITE 3' HEIGHT 'STOP' TEXT. INSTALL STOP SIGN.
6. INSTALL JUTE MESH SWALE PER DETAIL 6/L-500 TO BE CENTERED ON DRAINAGE EASEMENT. SURVEYOR TO LAYOUT EASEMENT PRIOR TO INSTALLATION.
7. INSTALL TRAFFIC CONTROL SIGN PER DETAIL 21/L-500.
8. LAND MARKING MONUMENTS SHALL BE INSTALLED BY PROFESSIONAL LAND SURVEYOR AT ALL PROPERTY CORNERS.
9. INSTALL NEIGHBORHOOD SIGN "WOODLAND HILLS" PER DETAIL 2/L-400.



1 L-400 **LAYOUT PLAN**

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Monday, August 10, 2020 8:31:27 AM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK RUDY L. ZONA 079845 LICENSED PROFESSIONAL ENGINEER

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FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BDI	11/30/18

Symbol Indicates Revision Issued

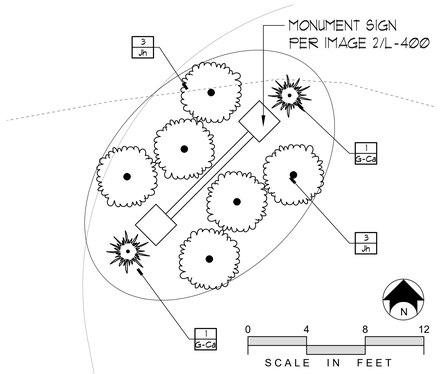
No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

THIS ITEM IS ISSUED UNDER THE DIRECTION OF SCOTT LEE FREEMAN LICENSED LANDSCAPE ARCHITECT 001413 STATE OF NEW YORK

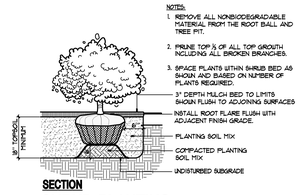
Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
LAYOUT PLAN

L-400

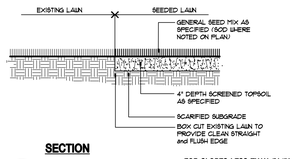


8 L-401 **ENTRANCE PLANTING PARTIAL PLAN**



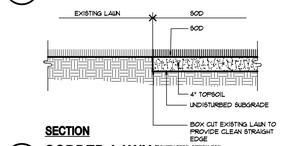
SECTION

4 L-401 **SHRUB PLANTING** NOT TO SCALE 32-9300-02



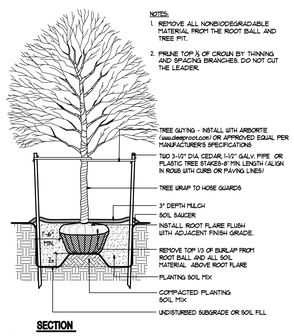
SECTION

5 L-401 **SEEDED LAWN** NOT TO SCALE FOR SLOPES LESS THAN 1V:4H AS INDICATED ON PLANS 32-9200-01A



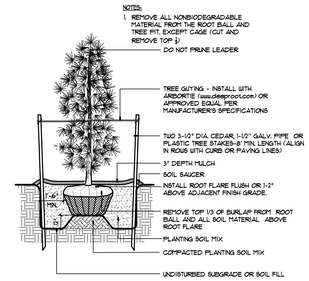
SECTION

6 L-401 **SODDED LAWN** NOT TO SCALE CONTRACTOR OPTION FOR LATE FALL STABILIZATION 32-9200-01B



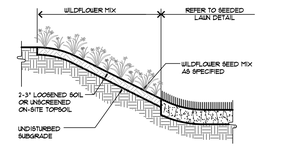
SECTION

3 L-401 **TREE PLANTING** NOT TO SCALE 32-9300-01



SECTION

2 L-401 **EVERGREEN PLANTING** NOT TO SCALE 32-9300-03



SECTION

7 L-401 **WILDFLOWER MIX/SEEDED LAWN** NOT TO SCALE 32-9200-10

PLANT LIST

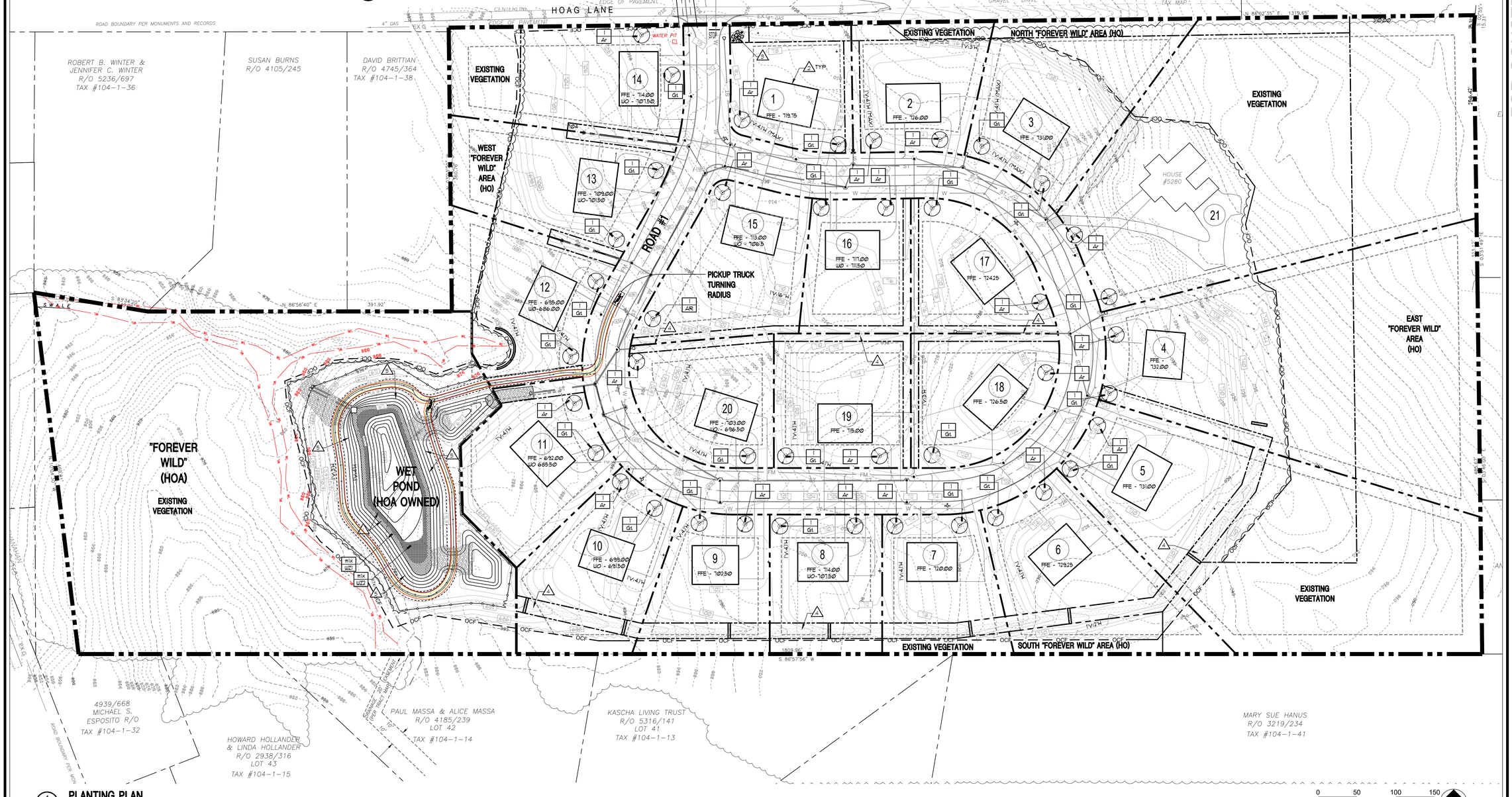
KEY	COMMON NAME	BOTANICAL NAME	CALIPER	HEIGHT	CONDITION
TREES					
Ar	BOWHALL MAPLE	ACER RUBRUM 'BOWHALL'	2"-3" CAL.	6'-8'	B\&B
Bn	RIVER BIRCH	BETULA NIGRA	2"-3" CAL.	8' min.	B\&B (CLUMP)
Gt	STREET KEEPER HONEYLOCUST	GLEDITSIA TRIACANTHOS 'DRAVES'	2"-3" CAL.	6'-8'	-
Ac	SINGLE STEM SERVICEBERRY	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	2"-3" CAL.	6'	B\&B (CLUMP)
EVERGREENS					
Jh	ANDORRA JUNIPER	JUNIPERUS HORIZONTALIS 'YOUNGSTOUN'	-	1'-2'	#3 CONT.
Pa	NORWAY SPRUCE	PICEA ABIES	-	6'-8'	#3 CONT.
Pa	EASTERN WHITE PINE	PINUS STROBUS	-	6'-8'	-
To	EMERALD GREEN ARBORVITAE	THUJA OCCIDENTALIS 'SMARAGD'	-	48"	3 GAL
SHRUBS \& GRASSES					
Cs	'KELSEI' REDTWIG DOGWOOD	CORNIS SERICEA 'KELSEI'	-	-	3 GAL
G-Ca	'KARL FOERSTER' FEATHER REED GRASS	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	-	-	1 GAL

PLANTING KEY NOTES

1. INSTALL WZI AND WZ2 PER PLANT SCHEDULE/(WET POND ONLY)
2. TOWN TO APPROVE LANDSCAPE DESIGN FOR LOTS PRIOR TO CONSTRUCTION.
3. PLANTINGS AT ENTRANCE PER PARTIAL PLAN 8/L-401.
4. INSTALL JUTE MESH PER DETAIL 6/L-500.
5. INSTALL WILDFLOWER/ PERENNIAL RYE MIX PER SPECIFICATION SECTION 32 9310 WITHIN HOA OWNED WET POND AREA.

PLANTING SCHEDULE (WET POND ONLY)

KEY	COMMON NAME	BOTANICAL NAME		CALIPER	HEIGHT	CONDITION
(WZI) WETLAND ZONE 1 PLANTS - 0-6" STANDING WATER						
WCl	LURID SEDGE	CAREX LURIDA	PLUGS	EQUALLY MIXED, 3' O.C.		
WCs	TUSSOCK SEDGE	CAREX STRICTA	PLUGS	EQUALLY MIXED, 3' O.C.		
WCv	FOX SEDGE	CAREX VULPINOIDEA	PLUGS	EQUALLY MIXED, 3' O.C.		
WIv	BLUEFLAG IRIS	IRIS VERSICOLOR	PLUGS	EQUALLY MIXED, 3' O.C.		
WSc	WOOLGRASS	SCIRPUS CYPERINUS	PLUGS	EQUALLY MIXED, 3' O.C.		
(WZ2) WETLAND ZONE 2 PLANTS - 6-12" STANDING WATER						
WAp	WATER PLANTAIN	ALISMA PLANTAGO-AQUATICA	PLUGS	EQUALLY MIXED, 3' O.C.		
WPv	ARROWLEAF	PELTANDRA VIRGINICA	PLUGS	EQUALLY MIXED, 3' O.C.		
WPc	PICKERAL-WEED	PONTEDERIA CORDATA	PLUGS	EQUALLY MIXED, 3' O.C.		
WSl	COMMON ARROWHEAD	SAGITTARIA LATIFOLIA	PLUGS	EQUALLY MIXED, 3' O.C.		
WLt	LIZARD'S-TAIL	SAURURUS CERNUUS	PLUGS	EQUALLY MIXED, 3' O.C.		
WSt	SOFT-STEM BULRUSH	SCIRPUS TABERNAEMONTANI	PLUGS	EQUALLY MIXED, 3' O.C.		
WSa	AMERICAN BURREED	SPARGANIUM AMERICANUM	PLUGS	EQUALLY MIXED, 3' O.C.		



1 L-401 **PLANTING PLAN**

KEPLINGER FREEMAN ASSOCIATES
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HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

No.	Rev	Description	Date
16	16	MANLIUS- PLAN SUBMISSION	08/07/20

△- Symbol Indicates Revision Issued

No.	Rev	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 19)	07/30/20

ISSUED AND REVISIONS NOTIFICATION

No.	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

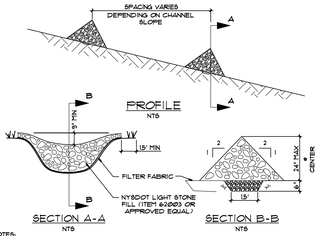
Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
PLANTING PLAN

L-401

Posted By:
Date Posted:
Drawing File:

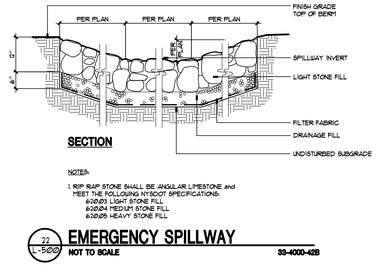
Monday, August 10, 2020 9:01:57 AM



NOTES:
1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADIES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSURE THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 15 FEET BEYOND THE DITCH BANKS TO PREVENT OUTFLANKING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.
6. MAXIMUM DRAINAGE AREA 2 ACRES.
7. REFER TO NYS STANDARDS & SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROLS FOR ADDITIONAL GUIDANCE.

SECTION

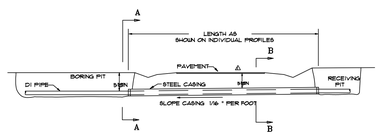
17 L-500 ROCK CHECK DAM
NOT TO SCALE — 31-1001-06



SECTION

NOTES:
1. RIP RAP STONE SHALL BE ANGULAR LIMESTONE and MEET THE FOLLOWING NYSDOT SPECIFICATIONS:
   620203 LIGHT STONE FILL
   620204 MEDIUM STONE FILL
   620205 HEAVY STONE FILL

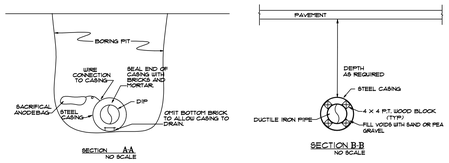
22 L-500 EMERGENCY SPILLWAY
NOT TO SCALE — 33-4000-42B



PROFILE (SHOWN FOR CROSS-SECTION REFERENCE ONLY)
NO SCALE



WOOD BLOCKING DETAIL
NO SCALE

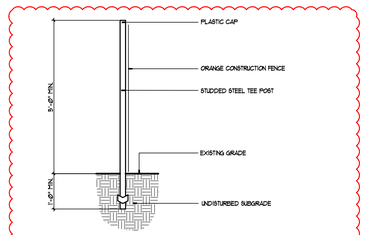


	PIPE DATA			
	CARRIER PIPE		CASING PIPE	
NOMINAL SIZE OF PIPE	8"	12"	16"	24" Ø
OUTSIDE DIAMETER (MAX / MIN)	9.05" / 8.85"	13.20" / 13.06"	18.78"	24.78
INSIDE DIAMETER	8.35"	12.46"	16"	24"
WALL THICKNESS	Ø.33"	Ø.37"	Ø.375"	Ø.375"
WEIGHT PER FOOT	29 lbs. ±	48 lbs. ±	80 lbs. ±	106 lbs. ±
MATERIAL	DUCTILE IRON		STEEL	
PROCESS OF MANUFACTURE	CENTRIFUGAL CAST		ERW	
SPECIFICATION	ANSI A21.51 AWWA C151		ASTM A-139 GRADE B (NO INTERD)	
GRADE OF CLASS	CLASS 52		SCHEDULE 40	
TYPE OF JOINT	MECHANICAL JOINT		WELDED	
TYPE OF COATING	INT. - CEMENT LINED EXT. - ASPHALT		NONE	
CATHODIC PROTECTION	NONE		ANODE BAG	
SEAL AT END OF CASING	N/A		BRICK AND MORTAR	
METHOD OF INSTALLATION	N/A		BORE & JACK	

SECTION

14 L-500 BORING BENEATH ROADWAYS
NOT TO SCALE — 33-3913-25

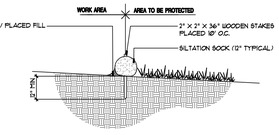
6 L-500 DETAIL OMITTED
NOT TO SCALE



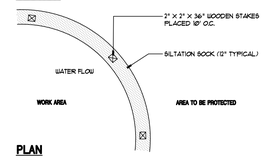
NOTES:
1. SEE PLAN FOR LOCATION OF CONSTRUCTION FENCE.
2. CONSTRUCTION FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES. CONTRACTOR SHALL LAYOUT WITH GPS PRIOR TO PERFORMING WORK WITHIN APPLICABLE CONSTRUCTION SPACE.
3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR-GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.
4. STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.
5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

SECTION

8 L-500 ORANGE CONSTRUCTION FENCE (OCF)
NOT TO SCALE



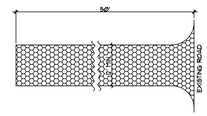
SECTION

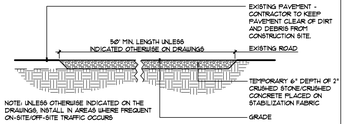


PLAN

NOTES:
1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

4 L-500 SILTATION SOCK SEDIMENT CONTROL
NOT TO SCALE — 31-2600-01





NOTE: UNLESS OTHERWISE INDICATED ON THE DRAWINGS, INSTALL IN AREAS WHERE FREQUENT ON-SITE/OFF-SITE TRAFFIC OCCURS

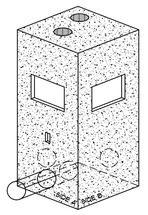
NOTES:
1. WIDTH-TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
2. FILTER CLOTH-WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
3. SURFACE WATER-ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
4. MAINTENANCE-THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
6. REFER TO SUPPP. SECTION 1 FOR NYS STANDARDS AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE.

SECTION

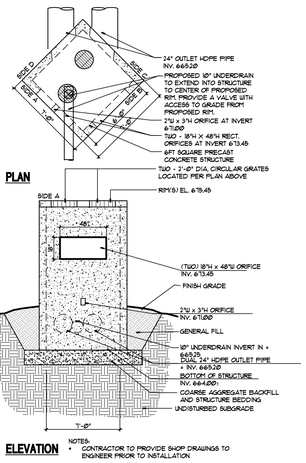
5 L-500 CONSTRUCTION ENTRANCE (MUDRACK)
NOT TO SCALE — 31-1001-04

SIGN SCHEDULE			X-SIGN-SCHEDULE
KEY	SIGN PLATE	SIGN SIZE MOUNTING HT.	N.Y.S.D.O.T. MU.T.C.D. NO. / COMMENTS
A	STOP SIGN	24" X 24" 7'-0" HT.	SIGN NO: R1-1C COLORS: RED BACKGROUND, WHITE TEXT AND BORDER

NOTES:
1. REFER TO TRAFFIC CONTROL SIGN DETAIL FOR INSTALLATION.
2. ALL REGULATORY SIGNS SHALL CONFORM TO THE MOST CURRENT N.Y.S.D.O.T. "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES."



ISOMETRIC



PLAN

ELEVATION

NOTES:
- CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER PRIOR TO INSTALLATION

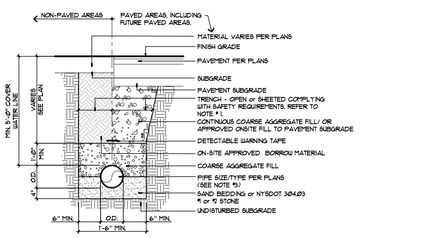
20 L-500 OUTLET STRUCTURE
NOT TO SCALE — 33-4000-80

SECTION - PAVED AREAS

SECTION - NON-PAVED AREAS

NOTES:
1. FABRICATE SIGN PANELS OF .080 ALUMINUM.
2. ALL SIGNS SHALL BE FASTENED TO OR MOUNTED ON POST WITH GALVANIZED BOLTS, NUTS AND WASHERS.
3. FOR FURTHER INFORMATION, REFER TO THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
4. COORDINATE SIGN LOCATION TO AVOID UTILITIES.

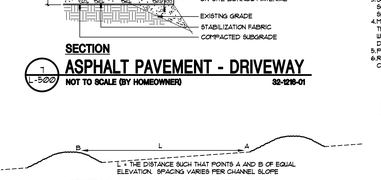
21 L-500 TRAFFIC CONTROL SIGN
NOT TO SCALE — 32-4000-01



SECTION

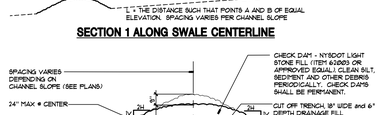
NOTES:
1. TRENCH DEPTHS, WIDTHS, SHEETING, SHORING, BRACING and CUTBACK SLOPES TO BE DETERMINED BY THE CONTRACTOR and COMPLY WITH OSHA, NEW YORK STATE DEPARTMENT OF LABOR, NEW YORK STATE INDUSTRIAL CODE and ALL OTHER APPLICABLE SAFETY STANDARDS.
2. REFER TO PLAN FOR PAVED and NON PAVED DETAILS.
3. INSTALL TRACER WIRE AROUND WATER LINE. TRACE WIRE SHALL BE #2 AWG COPPER CLAD STEEL, HIGH STRENGTH, WITH MINIMUM 450 LB BREAK LOAD WITH MINIMUM 30 MIL. HDPE INSULATION THICKNESS.

12 L-500 PIPE BEDDING
NOT TO SCALE — FOR STORM, SANITARY, AND WATER PIPE — 33-4000-20A



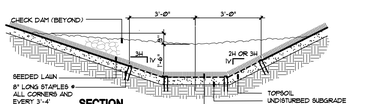
SECTION

7 L-500 ASPHALT PAVEMENT - DRIVEWAY
NOT TO SCALE (BY HOMEOWNER) — 32-1216-01



SECTION 1 ALONG SWALE CENTERLINE

SECTION 2 ALONG SWALE CENTERLINE

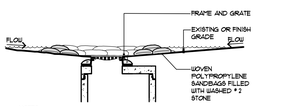


SECTION

NOTES

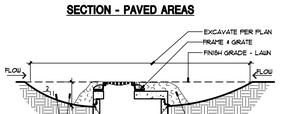
1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSURE THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 15 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.
6. MAXIMUM DRAINAGE AREA 2 ACRES.

6 L-500 JUTE MESH SWALE W/ CHECK DAM
NOT TO SCALE — 31-1001-03B



NOTES:
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER SANDBAG PLACEMENT.
2. SANDBAGS TO BE PLACED ON EXISTING GRADE AND STACKED IF NECESSARY TO ELIMINATE DEBRIS FROM ENTERING STRUCTURE.
3. CONTRACTOR SHALL USE A WOVEN POLYPROPYLENE SANDBAG FILLED WITH DRAINAGE FILL (GABBED ¾" STONE) OR AN APPROVED EQUAL.
4. CONTRACTOR SHALL MAINTAIN, REPAIR and REPLACE DAMAGED OR WORN SANDBAGS.

SECTION - PAVED AREAS



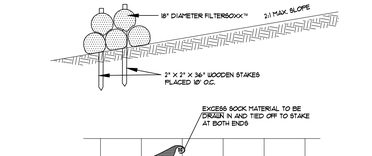
NOTES:
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY DRAINAGE FILL (GRAVEL).
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES. FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.
5. MAXIMUM DRAINAGE AREA 1 ACRE
6. CONTRACTOR MAY UTILIZE ANY APPROPRIATE STORM DRAIN INLET MEASURE WHICH COMPLIES WITH NYS STANDARDS & SPECIFICATIONS FOR EROSION & SEDIMENT CONTROL. REFER TO SUPPP. SECTION 1 FOR NYS STANDARDS & SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION.
7. AFTER TOPSOIL and FINE GRADING, CONTRACTOR SHALL PLACE 18" x 18" SQUARE OF SOD AROUND STRUCTURE.

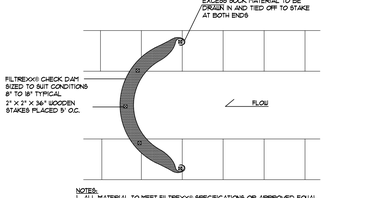
SECTION - UNPAVED AREAS

2 L-500 DRAINAGE STRUCTURE PROTECTION
NOT TO SCALE — 31-1001-02

SECTION

11 L-500 CATCH BASIN (CB)
NOT TO SCALE — 33-4000-02





NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS OR APPROVED EQUAL.
2. CHECK DAMS SHALL BE USED IN AREAS THAT DRAIN 10 ACRES OR LESS.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM SHALL BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREXX CERTIFIED™ INSTALLER OR APPROVED EQUAL.

PLAN

5 L-500 CHECK DAM (FILTREXX®)
NOT TO SCALE — 33-4000-01A

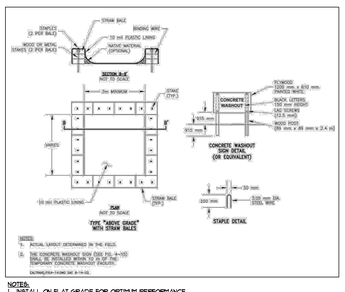
NOTES:
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER SANDBAG PLACEMENT.
2. SANDBAGS TO BE PLACED ON EXISTING GRADE AND STACKED IF NECESSARY TO ELIMINATE DEBRIS FROM ENTERING STRUCTURE.
3. CONTRACTOR SHALL USE A WOVEN POLYPROPYLENE SANDBAG FILLED WITH DRAINAGE FILL (GABBED ¾" STONE) OR AN APPROVED EQUAL.
4. CONTRACTOR SHALL MAINTAIN, REPAIR and REPLACE DAMAGED OR WORN SANDBAGS.

SECTION - PAVED AREAS

NOTES:
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY DRAINAGE FILL (GRAVEL).
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES. FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.
5. MAXIMUM DRAINAGE AREA 1 ACRE
6. CONTRACTOR MAY UTILIZE ANY APPROPRIATE STORM DRAIN INLET MEASURE WHICH COMPLIES WITH NYS STANDARDS & SPECIFICATIONS FOR EROSION & SEDIMENT CONTROL. REFER TO SUPPP. SECTION 1 FOR NYS STANDARDS & SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION.
7. AFTER TOPSOIL and FINE GRADING, CONTRACTOR SHALL PLACE 18" x 18" SQUARE OF SOD AROUND STRUCTURE.

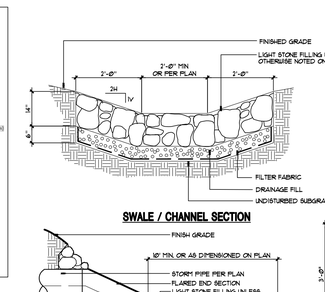
SECTION - UNPAVED AREAS

1 L-500 SILT FENCE (SF)
NOT TO SCALE — 31-1001-01

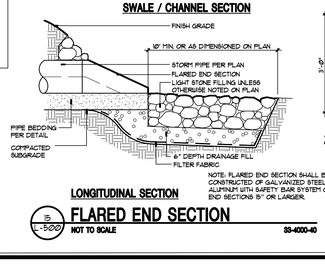


NOTES:
1. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE.
2. ALL CONCRETE WASHOUT FACILITIES SHALL BE INSPECTED DAILY. DAMAGED OR LEAKING FACILITIES SHALL BE DEACTIVATED AND REPLACED IMMEDIATELY. EXCESS RAINWATER THAT HAS ACCUMULATED OVER HARDENED CONCRETE SHOULD BE PUMPED TO A STABILIZED AREA SUCH AS GRASS FILTER STRIP.
3. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF STORAGE CAPACITY OF THE STRUCTURE IS FILLED. ANY EXCESS WASH WATER SHALL BE PUMPED INTO A CONTAINMENT VESSEL AND PROPERLY DISPOSED OF OFF SITE.
4. DISPOSE OF HARDENED MATERIAL AND WASH WATER IN A CONSTRUCTION/DEMOLITION FILL, LANDFILL, ON-SITE DISPOSAL THAT HAS BEEN ALLOWED IF THIS HAS BEEN APPROVED AND ACCEPTED AS PART OF THE SUPPP. IN THE CASE, THE MATERIAL SHOULD BE RECYCLED AS SPECIFIED, OR BURIED AND COVERED WITH A MINIMUM OF 2 FEET OF CLEAN COMPACTED EARTHFILL THAT IS PERMANENTLY STABILIZED TO PREVENT EROSION.
5. THE PLASTIC LINER SHALL BE REPLACED WITH EACH CLEANING OF WASHOUT FACILITY.
6. INSPECT THE PROJECT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON-DESIGNATED AREAS.

19 L-500 CONCRETE WASHOUT
NOT TO SCALE — 31-3001-10

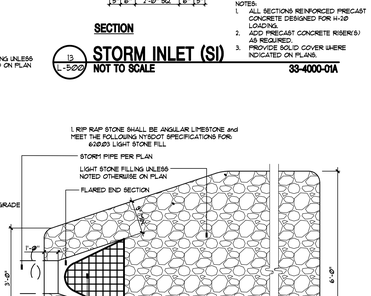


SWALE / CHANNEL SECTION



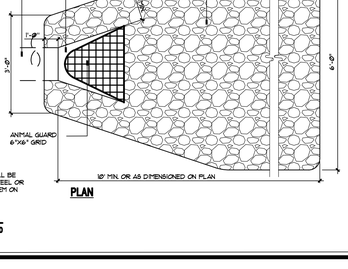
LONGITUDINAL SECTION

15 L-500 FLARED END SECTION
NOT TO SCALE — 33-4000-40



NOTES:
1. ALL SECTIONS REINFORCED PRECAST CONCRETE DESIGNED FOR H-20 LOADING.
2. ADD PRECAST CONCRETE RISER(S) AS REQUIRED.
3. PROVIDE SOLID COVER WHERE INDICATED ON PLANS.

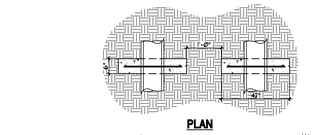
13 L-500 STORM INLET (SI)
NOT TO SCALE — 33-4000-01A

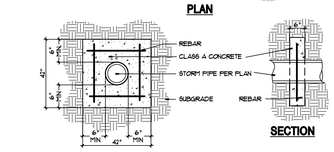


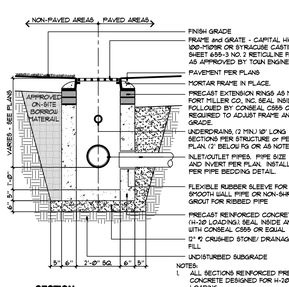
PLAN

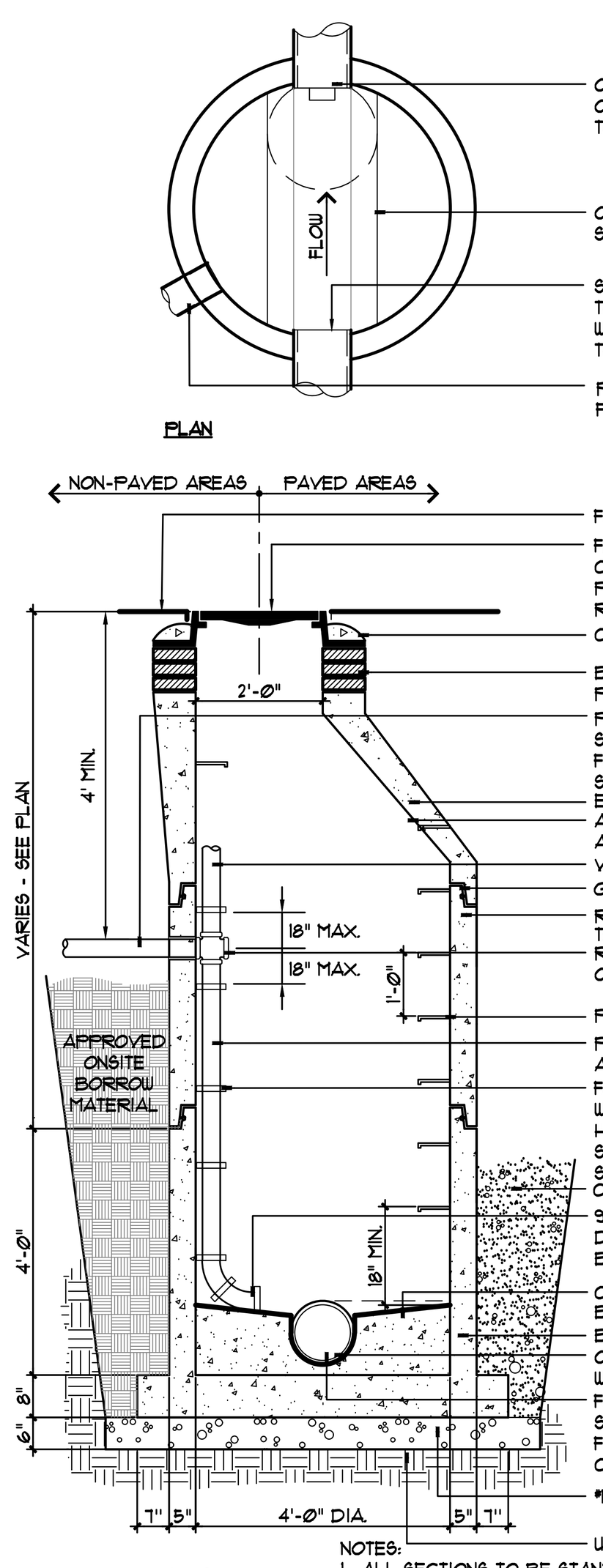
NOTE: FLARED END SECTION SHALL BE CONSTRUCTED OF GALVANIZED STEEL OR ALUMINUM WITH SAFETY BAR SYSTEM ON END SECTIONS 5' OR LARGER.

16 L-500 PROFILE
DUAL ANTI SEEP CONCRETE COLLAR
NOT TO SCALE — 33-1216-03a



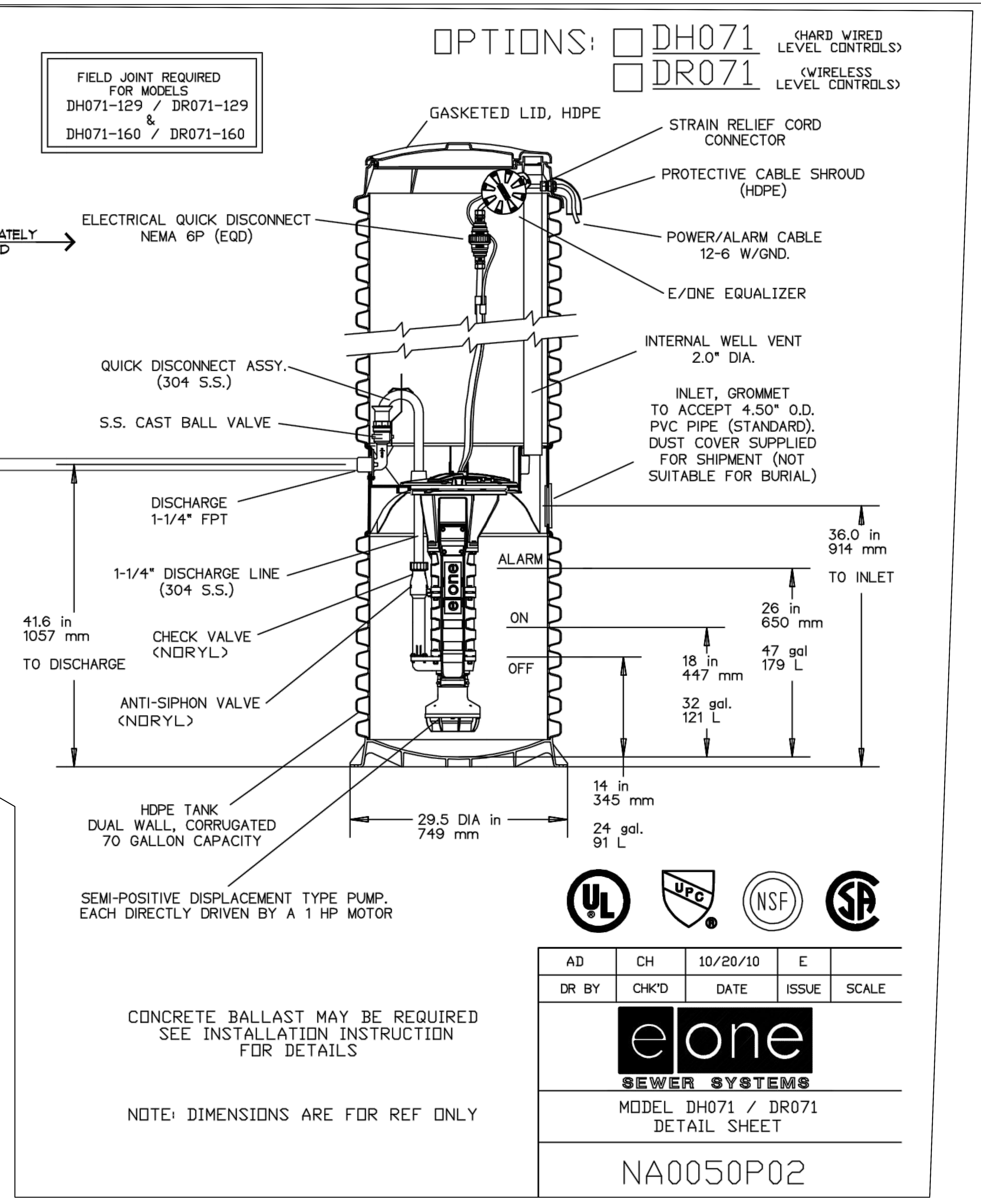



NON-PAVED AREAS
PAVED AREAS
FINISH GRADE
FRAME & GRATE - CAPITAL HIGHWAY MATERI



NOTES:
1. ALL SECTIONS TO BE STANDARD REINFORCED CONCRETE.
2. INSTALL NON-SHRINK GROUT IN ALL SECTION JOINTS.
3. FOR SEWERS 8" THROUGH 12" IN DIAMETER.

10 L-501 SANITARY MANHOLE W/ LPS CONNECTION (MH #3 & #5A)
NOT TO SCALE 33-3913-01B



NOTES:
1. DETAIL SHOWS TYPICAL UNIT ONLY. DESIGN AND SPECIFICATIONS BY EONE OR APPROVED EQUAL.
2. CONTRACTOR TO SUBMIT SHOP DRAWINGS/DESIGN FOR PUMPS AND LOW PRESSURE SEWER SYSTEM FROM MANUFACTURER FOR RZE / TOWN ENGINEER REVIEW PRIOR TO CONSTRUCTION.
3. BATTERY BACKUP BY HOMEOWNER (OPTIONAL)

7 L-501 SANITARY PUMP STATION
NOT TO SCALE

SANITARY NOTES

1. SANITARY SEWER MAIN SHALL BE SIZED PER PLAN DIAMETER, PVC SEWER PIPE, ASTM D-3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. SEWER PIPE SHALL BE LAID TRUE TO LINE AND GRADE WITH NO DEVIATION FROM TRUE LINE AND GRADE GREATER THAN 1/4-INCH.

2. CONNECTION OF NEW 8-INCH SEWER TO EXISTING MANHOLE SHALL NOT BE COMMENCED BEFORE NOTICE IS GIVEN TO THE TOWN OF MANLIUS. THE OPENING IN THE MANHOLE WALL FOR THE NEW SEWER SHALL BE "CORE DRILLED" AND BE OF ADEQUATE SIZE SUCH THAT THE PIPE SHALL BE MADE WATER TIGHT WITH "LINKSEAL".

3. SEWER LATERALS SHALL BE 6-INCH DIAMETER, PVC SEWER PIPE, ASTM D-3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. WYE BRANCHES SHALL BE USED FOR ALL LATERAL CONNECTIONS. ALL SEWER LATERALS SHALL BE EXTENDED TO THE SEWER RIGHT-OF-WAY. MINIMUM SLOPE FOR SEWER LATERALS SHALL BE 2% (1/4 "FT.) PER ONONDAGA COUNTY PLUMBING CODE.

4. THE EXCAVATION SHALL BE A MINIMUM OF ONE (1) FOOT EACH SIDE OF THE PIPE AND SHALL BE A MINIMUM OF SIX (6) INCHES BELOW THE BOTTOM OF THE PIPE. THE CONTRACTOR SHALL PROVIDE ALL DRAINS, DITCHES, PUMPS, WELLS, WELL POINTS, SUMPS, CUTOFF TRENCHES, SHEETING OR OTHER EQUIPMENT AND STRUCTURES NECESSARY TO CONTROL THE FLOW OF SURFACE WATER OR GROUNDWATER INTO THE EXCAVATION SUCH THAT NO STANDING WATER EXISTS IN THE EXCAVATION AT SIX (6) INCHES BELOW THE BOTTOM OF THE PIPE.

5. PIPE BEDDING SHALL BE #1 WASHED STONE AND SHALL EXTEND FROM 6-INCHES BELOW THE BOTTOM OF THE PIPE TO 1-FOOT ABOVE THE TOP OF THE PIPE. PIPE BEDDING SHALL BE SHAPED AND COMPACTED TO CONFORM THE BARREL OF THE PIPE. THE REMAINDER OF THE BACKFILL SHALL BE COMMON FILL FREE OF ROCKS LARGER THAN 6-INCHES IN DIAMETER, FROZEN MATERIAL, ROOTS, STUMPS OR OTHER ORGANIC MATERIAL. COMPACTION OF 95% OF THE STANDARD PROCTOR FOR ALL BACKFILL MATERIALS IS REQUIRED IN AREAS UNDER PROPOSED PAVEMENT. R.O.C. IS REQUIRED UNDER ROADS.

6. MANHOLES SHALL BE MADE OF PRECAST CONCRETE SECTIONS CONFORMING TO ASTM C-478. THE MANHOLE SECTIONS SHALL BE JOINED WITH AN "O" RING GASKET MEETING ASTM C-443 AND SHALL BE PARGED INSIDE AND OUT WITH NON-SHRINK GROUT. THE TOP SECTION SHALL BE AN "ECCENTRIC TAPER TOP".

7. ALL SANITARY SEWER CONNECTIONS TO MANHOLES SHALL BE MADE WITH FLEXIBLE RUBBER SLEEVES WITH STAINLESS STEEL HARDWARE.

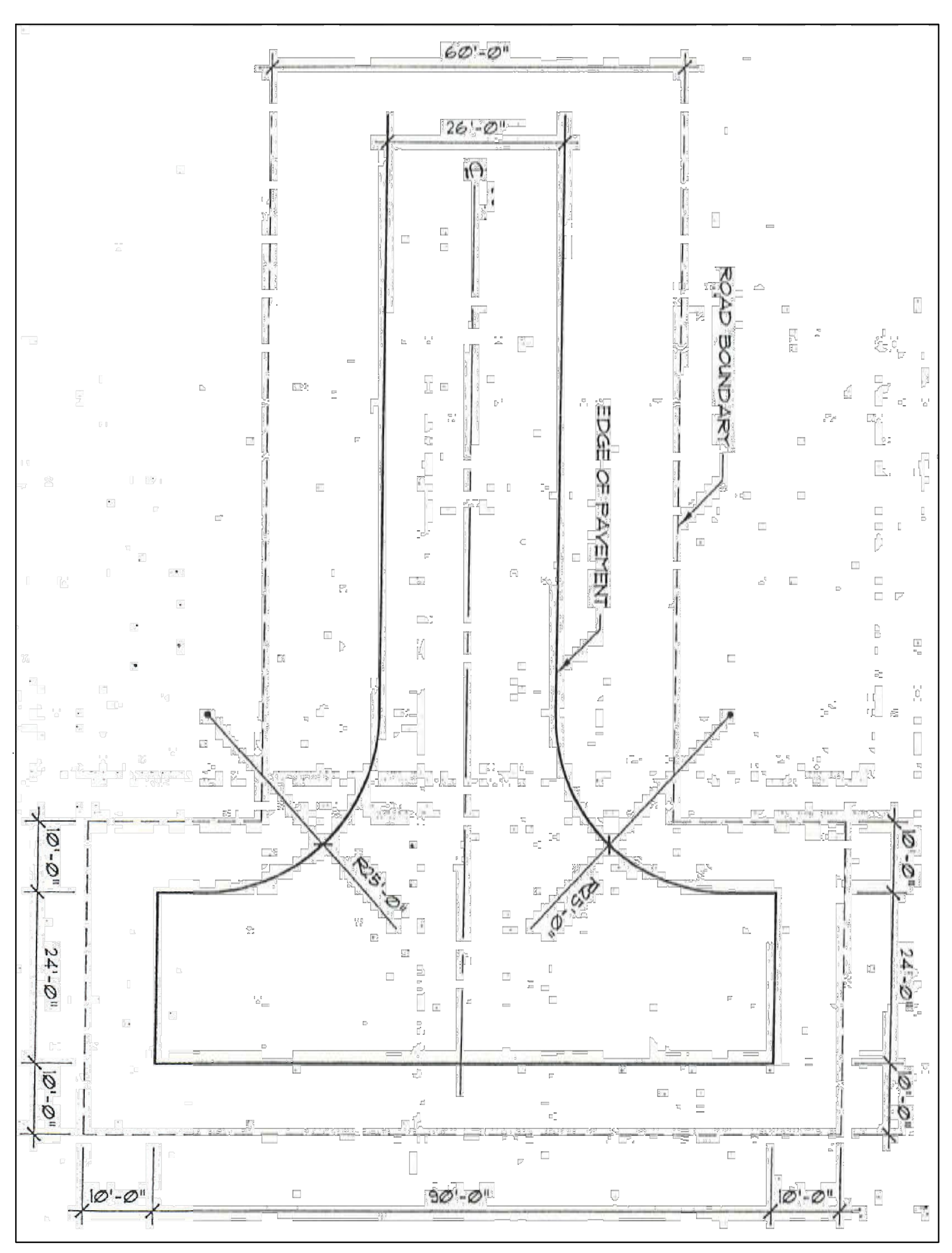
8. THE FLOW CHANNEL IN EACH MANHOLE SHALL BE CAREFULLY SHAPED TO MATCH THE INVERTS AND PIPE SIZES WHICH CONNECT TO THE MANHOLE TO CREATE A SMOOTH AND GRADUAL SLOPE AND CURVATURE SUCH THAT FLOW THROUGH THE MANHOLE IS LAMINAR AND UNINTERRUPTED.

9. MANHOLE FRAMES AND COVERS SHALL BE CAST IRON CONFORMING TO ASTM A-48 CLASS 30 AND HAVE A 24-INCH OPENING. MANHOLE FRAME AND COVER SHALL BE SYRACUSE CASTINGS MODEL NO. 1104B OR EQUAL. MANHOLES SHALL BE PROVIDED WITH STEPS MADE OF STEEL REINFORCED COPOLYMER IN COMPLIANCE WITH ASTM C-478, PARA 11.

10. THE COMPLETED SEWER SHALL BE LAMPED TO VERIFY STRAIGHTNESS, (MANHOLES TO BE INCLUDED IN TEST) CHECKED FOR DEFLECTION WITH A "GO-NO-GO" MANDREL AND TESTED FOR LEAKAGE BY LOW PRESSURE AIR. THE "GO-NO-GO" TEST SHALL DEMONSTRATE THAT NO DEFLECTION GREATER THAN 5% HAS OCCURRED. THE LOW PRESSURE AIR TEST SHALL BE IN ACCORDANCE WITH UNI-B-5. THE MAXIMUM ALLOWABLE PRESSURE DROP SHALL BE 1.0 PSIG AT A TEST PRESSURE OF 5.0 PSIG OBSERVED FOR 10 MINUTES.

11. CONTRACTOR SHALL CONTACT UFPO 48 HOURS BEFORE THE START OF ANY EXCAVATION AND SHALL NOTIFTY THE TOWN ENGINEER 72 HOURS BEFORE COMMENCEMENT OF CONSTRUCTION.

12. ALL SANITARY SEWER STRUCTURES, TEMPORARY STUBBED ENDS AND LATERAL ENDS SHALL BE MARKED WITH 2" X 4" 'S EXTENDING 4' ABOVE FINISHED GRADE AND THE TOP 12 INCHES OF THE 2" X 4" SHALL BE PAINTED OR SPRAYED RED.



NOTES:
1. REFER TO STAGING PLANS 1-4 (L-102 THRU L-105) FOR TURN AROUND LOCATIONS.

9 L-501 TOWN OF MANLIUS - TEMPORARY TURNAROUND AND EASEMENT
NOT TO SCALE


aeroqual

DUST SENTRY

Near reference real-time particle monitor for specific dust fractions

Designed for those who need to monitor and manage specific outdoor dust and particulate emissions continuously and in real-time.

The Dust Sentry is a nephelometer-based instrument that delivers defensible and accurate mass measurement for PM_{10}, $PM_{2.5}$, PM_1, or TSP.

MCERTS certified and SCAQMD 1466 pre-approved.

What is it?
- A weather-proof nephelometer-based monitor with integrated solar shielding for outdoor monitoring of dust and particulates
- A modular and configurable monitoring platform for measurement and compliance of a specific dust and particulate designation, and the option to integrate environmental sensors e.g. wind, noise, weather, and solar
- A flexible communications platform that transfers real-time data wirelessly, and gives you access through an API
- A web interface accessed via browser on any device, see all your data in one place and set email / SMS alerts on parameters of concern

What can it measure?
- Specific dust fraction, wind and noise

PM_{10} $PM_{2.5}$ PM_1 TSP dB

Who is it for?
- **Industrial operators** who need a cost-effective and robust solution to manage and control dust and particulates from site activities within regulatory or permitted limits:
  - Construction and remediation
  - Quarry and mine operators
  - Port and bulk handling terminals
  - Waste management sites
- **Environmental consultants** who require defensible particulate measurement for their clients air quality permits
- **Regulatory authorities** who require deployable, rapid response incident monitoring
- **EHS managers** who need to demonstrate that they are providing a safe environment for the people in their care
- **Researchers** who are on a limited budget and want to collect accurate, scientifically robust data

sales@aeroqual.com aeroqual.com

Specifications | Dust Sentry

Particle Module	Sizes	Range	Accuracy	Resolution	Lower Detectable Limit (2σ)
Nephelometer	PM_1, $PM_{2.5}$, PM_{10} or TSP	0 to 60,000 µg/m³	<±(2 µg/m³ + 5 % of reading)	0.1 ug/m³	<1 µg/m³

System Specifications	
Control System	Embedded fanless PC, Intel Atom N2600, 1.6 GHz, 2 GB RAM, 32 GB SSD, Ubuntu Linux Operating System
Communications	Standard: WIFI, Ethernet (LAN) Optional: Cellular IP HSPA 4G modem
Software	Connect: Runs on embedded PC, access via browser (IE, Firefox, Chrome, Safari) Cloud: Runs on secure 'cloud' servers, accessed via web browser Connect / Cloud Features: configuration, diagnostics, journal, calibration and data acquisition, plus SMS and email alerts (optional), auto data export via FTP and email (optional), and data export API (optional)
Data logging	32 GB Hard Drive (> 5 years data storage)
Outputs	2 x Relay (optional) 4 x 4-20mA (optional)
Averaging period	1 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 hr, 2 hr, 4 hr, 8 hr, 12 hr, 24 hr
Power requirements*	100-260 VAC (standard): 21 W / 30 W * Regulated 12 VDC (if required): 21 W / 30 W
Enclosure	Lockable IP65 GRP cabinet with integrated aluminium solar shield armour
PM Sampling System	Inlet: Omni-directional 36 cm (14.1 inches) heated inlet; Optional sharp cut cyclones for PM10, PM2.5 or PM1 size selection Pump: 12 V brushless DC diaphragm Optics: 670nm laser, near-forward scattering nephelometer with sheath air protection
Dimensions	483 H x 330 W x 187 D mm (19 H x 13 W x 7.4 D inches) Includes solar shield armour & mounting brackets
Weight*	< 13 kg (28.6 lbs)
Environmental operating range	-10 °C to +50 °C (14 °F to 122 °F)
Mounting	Pole, tripod and wall mounting brackets included
47mm Sample Filter (Optional)	47mm filter for particle loading analysis
Factory Integrated & Tested Sensors (Optional)	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Met One MSO (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation)

* Configuration used for power and weight calculations: base unit, nephelometer, PM_{10} sharp cut, modem, heater off / heater on

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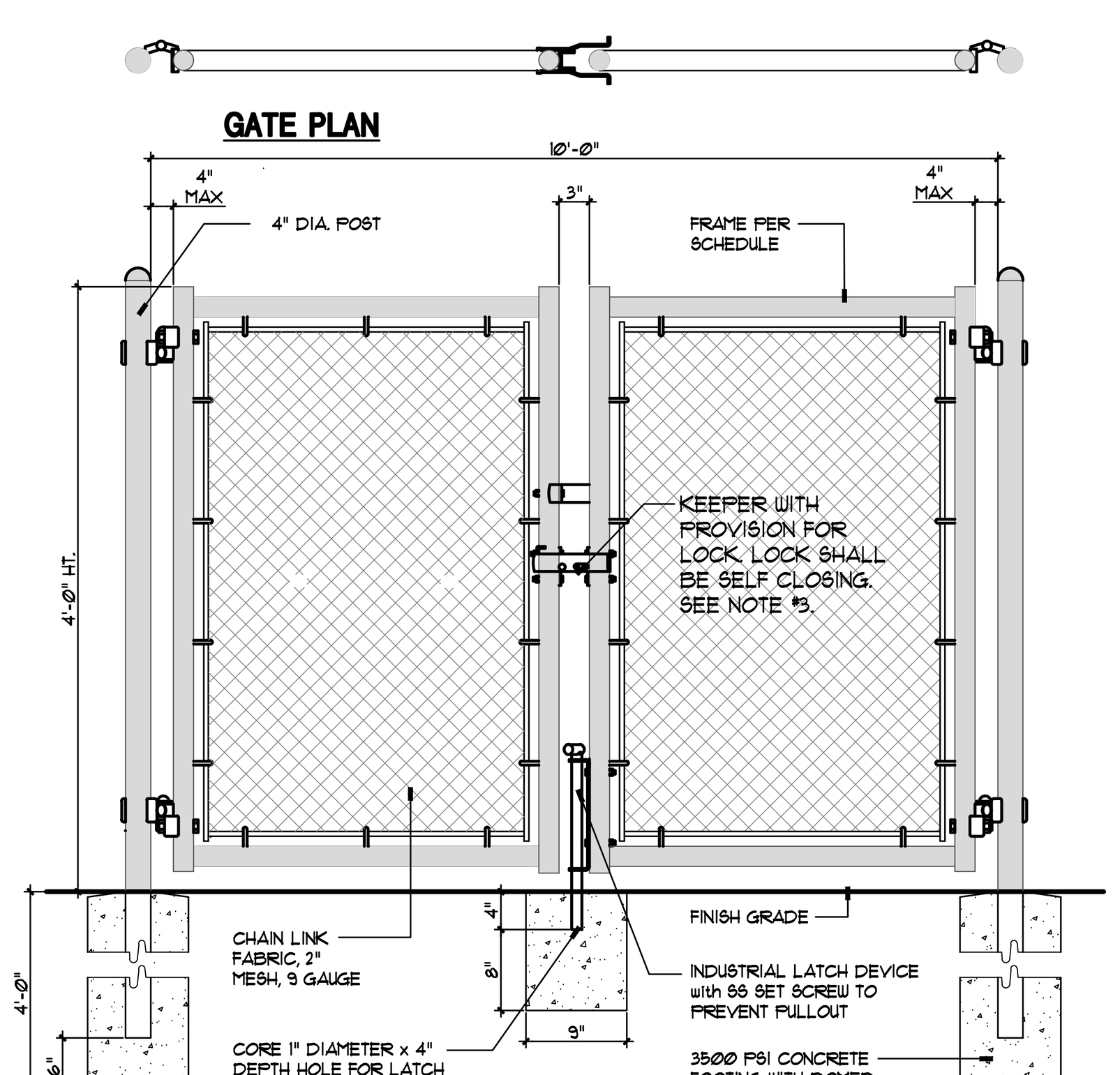
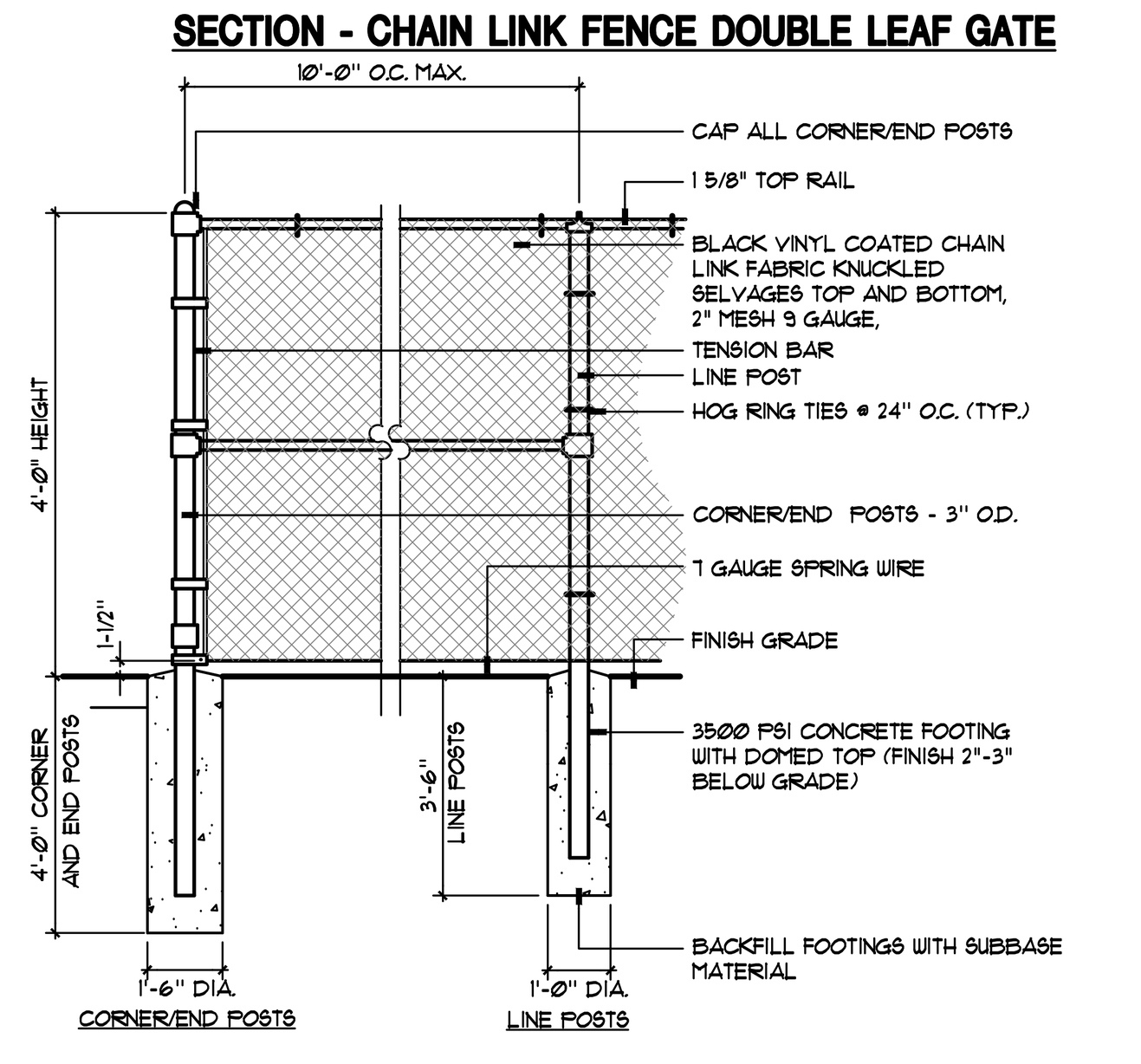
NOTES:
1. ALL DUST MONITORING SHALL BE PERFORMED PER SWPPP, DOCUMENTED WITHIN CONSTRUCTION REPORTS AND AS SHOWN ON STAGING PLANS. ALL REPORTS SHALL BE FORWARDED TO TOWN OF MANLIUS.

8 L-501 DUST MONITORING DEVICE (OR APPROVED EQUAL)
NOT TO SCALE



NOTES:
1. CHAIN LINK FENCE SHALL BE BLACK VINYL COATED.
2. TOP OF FOOTING SHALL BE 2" BELOW FINISH GRADE IN LAWN AREAS.
3. FENCE LOCK KEY SHALL BE PROVIDED TO TOWN BY HOA WHICH IS TO BE ESTABLISHED. GATE SHALL BE LOCKED AT ALL TIMES OTHER THAN DURING INSPECTIONS OR MAINTENANCE.
4. ALL FENCE AND GATE COMPONENTS TO COMPLY WITH PARTS 720 AND 744 OF THE NEW YORK STATE UNIFORM FIRE PREVENTION AND BUILDING CODE, AS AMENDED INCLUDING BUT NOT LIMITED TO MESH, POSTS, LOCK, AND HINGES.

SECTION - CHAIN LINK FENCE DOUBLE LEAF GATE

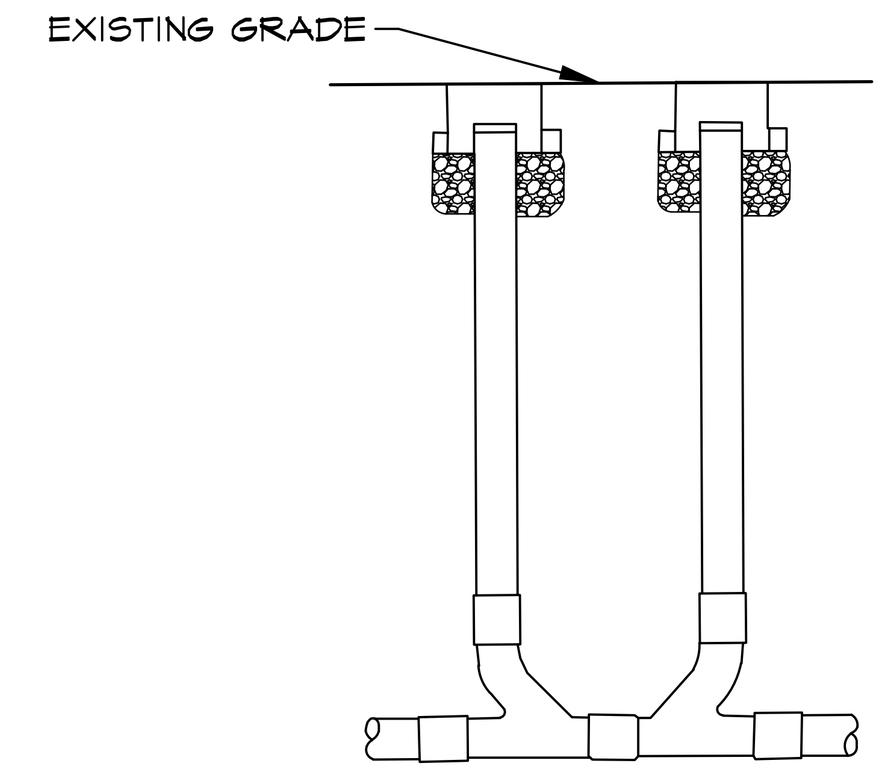


POST SCHEDULE		
FABRIC HEIGHT	LINE POST O.D.	END / CORNER POST O.D.
4'	2"	2 1/2"

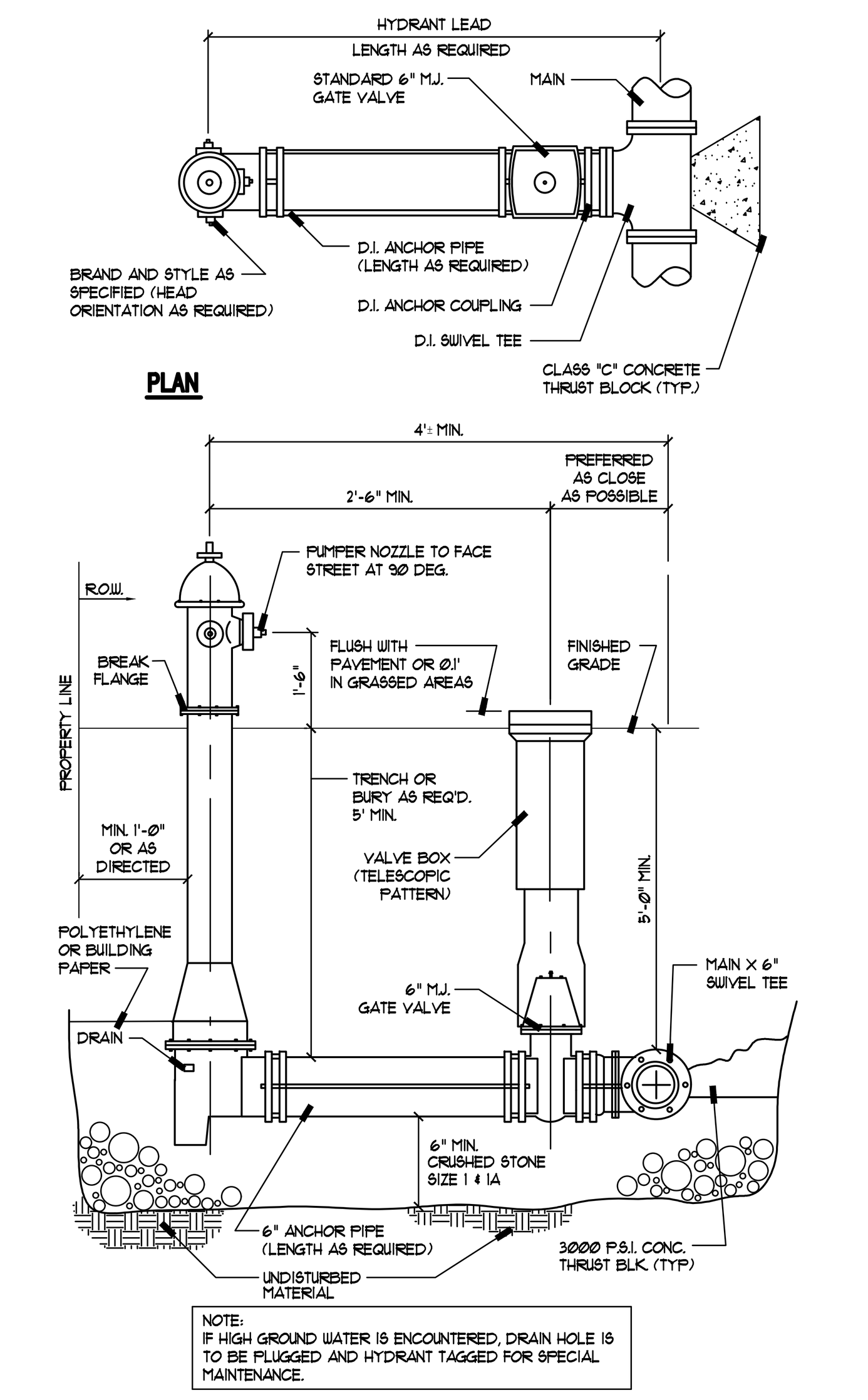
NOTES:
1. HOLD TOP OF FOOTING AT ASPHALT BINDER SUBGRADE WHEN C.L. FENCE FOOTINGS ARE LOCATED IN ASPHALT PAVEMENT.

SECTION - CHAIN LINK FENCE

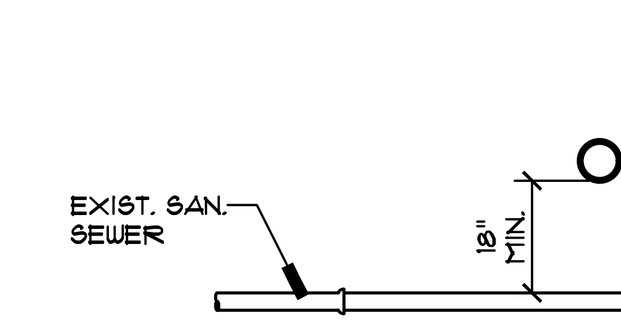
6 L-501 CHAIN LINK FENCE - VINYL CLAD FENCE AND GATE
NOT TO SCALE 32-3113-01B



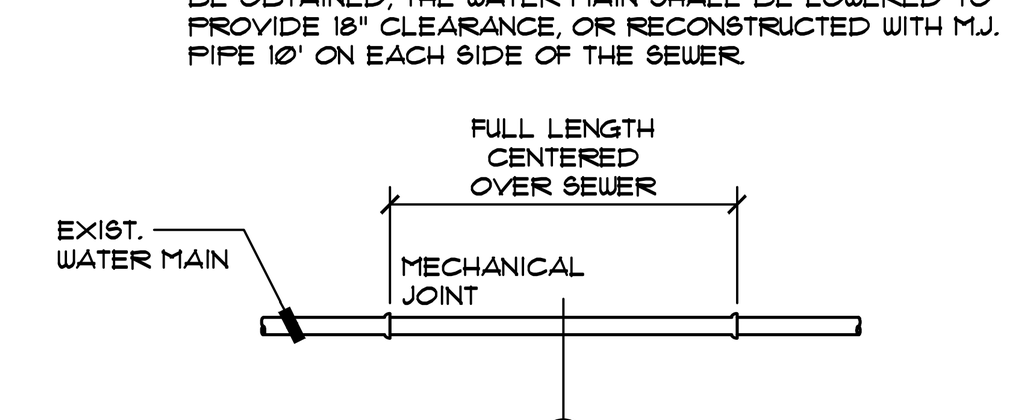
5 L-501 BACK TO BACK WYE CLEANOUT
NOT TO SCALE



4 L-501 HYDRANT INSTALLATION DETAILS
N.T.S. DHYDRANT



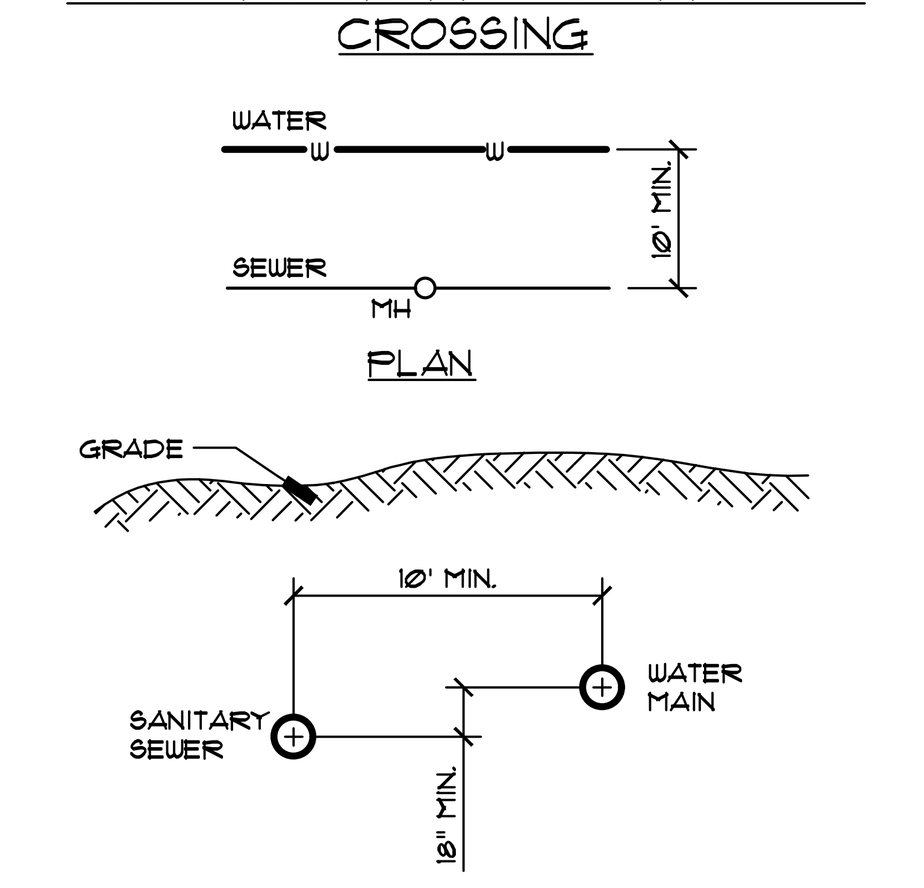
NOTE:
WHEREVER REQUIRED VERTICAL CLEARANCE CANNOT BE OBTAINED, THE WATER MAIN SHALL BE LOWERED TO PROVIDE 18" CLEARANCE, OR RECONSTRUCTED WITH M.J. PIPE 10' ON EACH SIDE OF THE SEWER.



NOTE:
CLEARANCE REQUIREMENTS SHALL BE AS OUTLINED IN PART 8.6 OF BULLETIN 42, "RECOMMENDED STANDARDS FOR WATER WORKS".

SECTIONS

SANITARY SEWER & WATER MAIN CROSSING

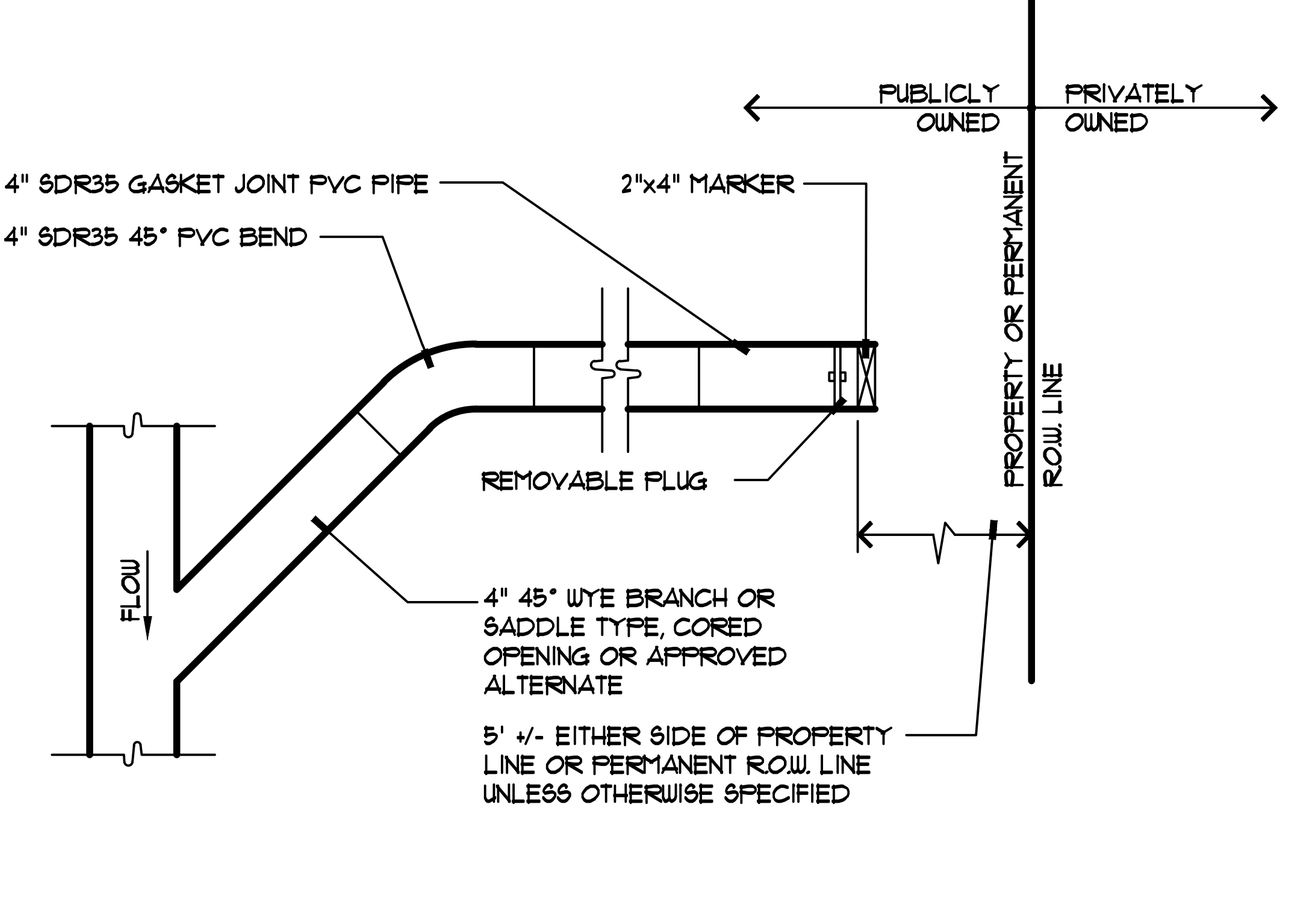


HORIZONTAL & VERTICAL SEPARATIONS

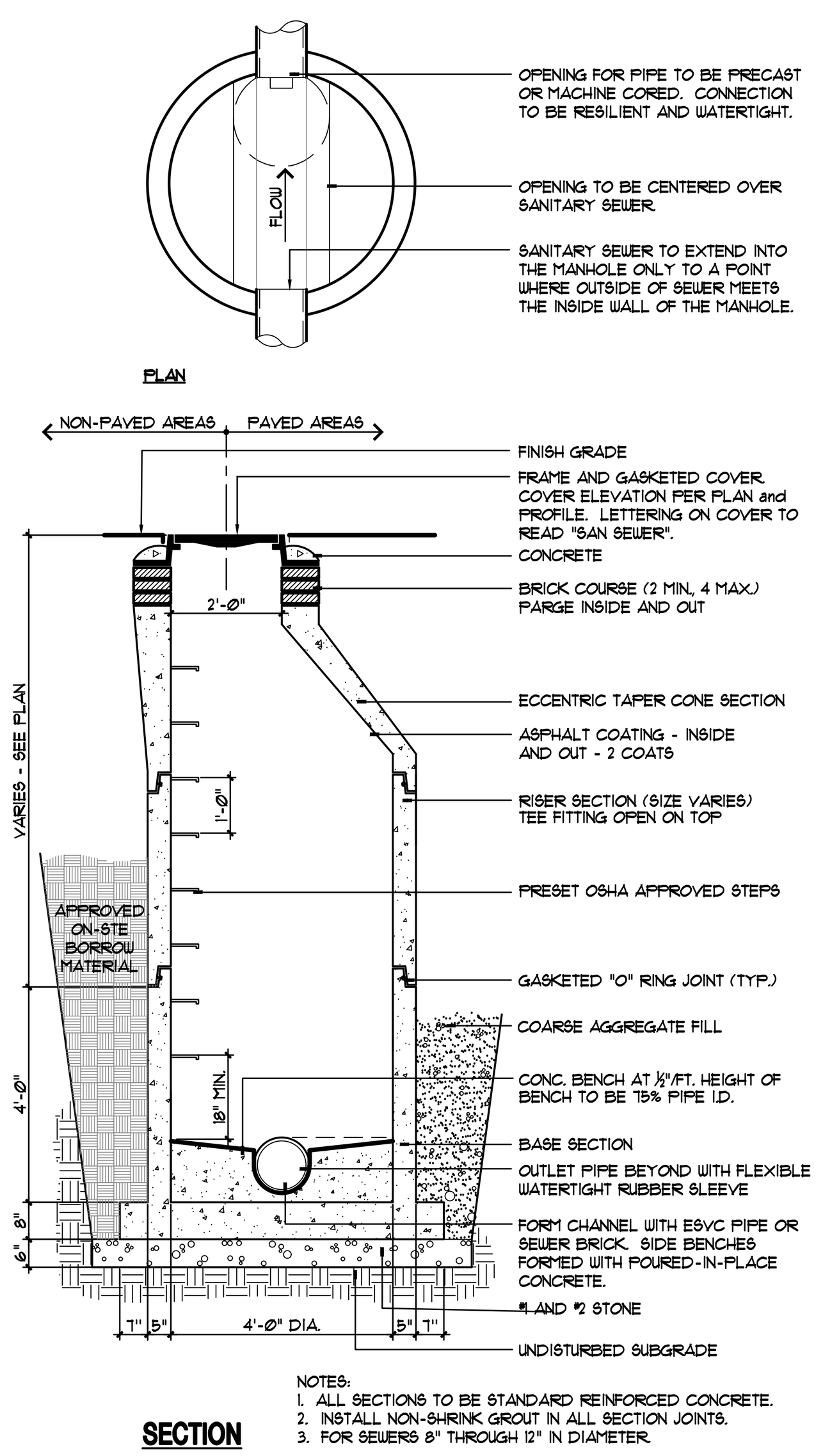
SECTION

PARALLEL SANITARY SEWER & WATER MAIN

3 L-501 SEPARATION BETWEEN SEWER AND WATER LINES
N.T.S. D2660-07



2 L-501 MAIN CONNECTION-GRAVITY LATERAL
NOT TO SCALE SAN-STNDRD-LTRL



NOTES:
1. ALL SECTIONS TO BE STANDARD REINFORCED CONCRETE.
2. INSTALL NON-SHRINK GROUT IN ALL SECTION JOINTS.
3. FOR SEWERS 8" THROUGH 12" IN DIAMETER.

1 L-501 SANITARY MANHOLE (#1, 2, 4, 5, 6, 7, 5B, 5C)
NOT TO SCALE D2660-01B

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK RUDY L. ZONA 079543 LICENSED PROFESSIONAL ENGINEER
UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION — △ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

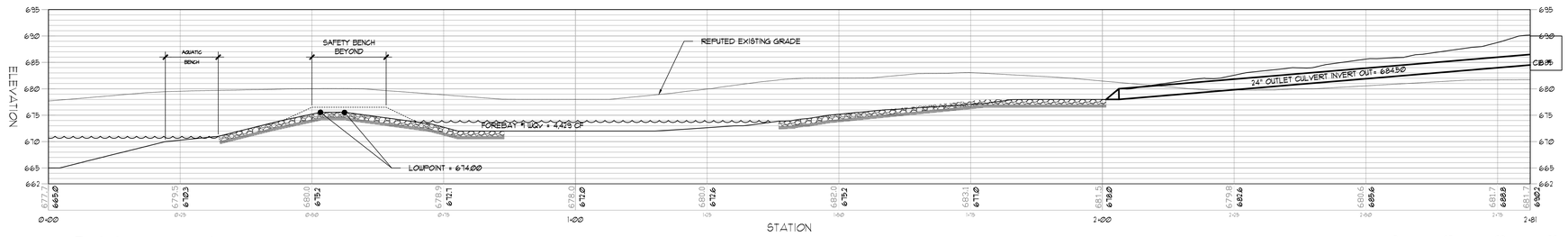
Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title: DETAILS

L-501

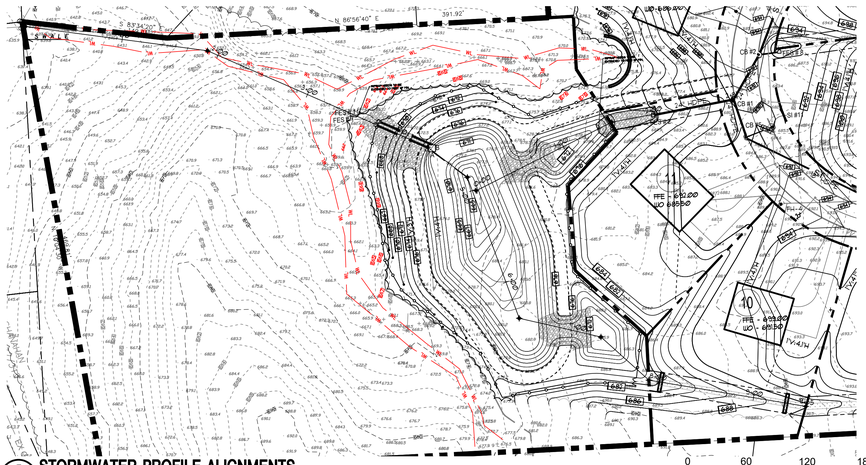
Plotted By:
Date Plotted:
Drawing File:

Monday, August 10, 2020 9:10:22 AM



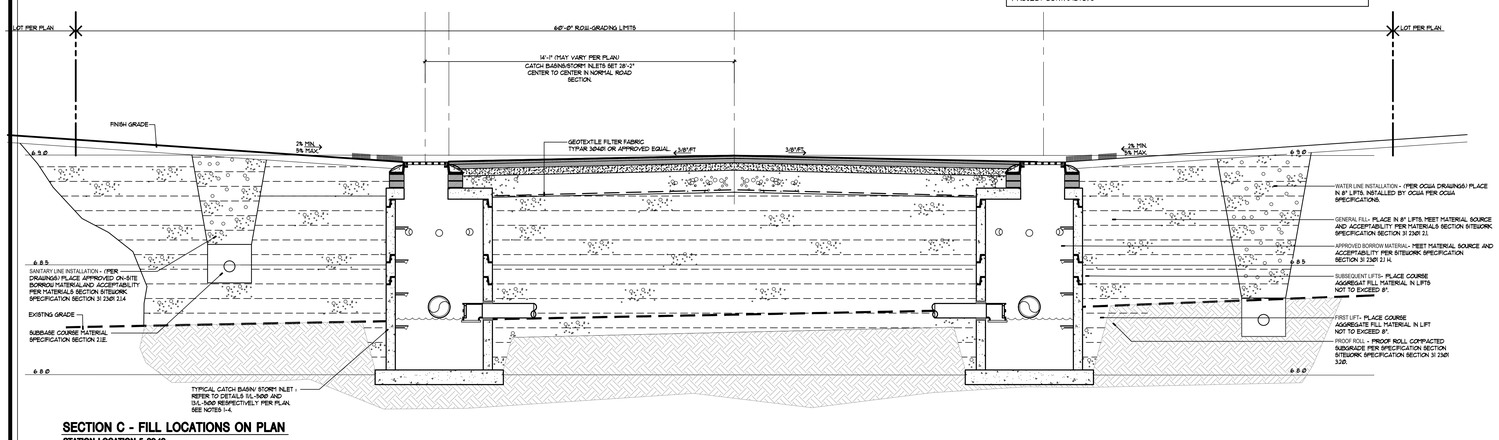
4 L-502 **STORMWATER PROFILE #2**
HORIZONTAL SCALE: 1 : 10
VERTICAL SCALE 1 : 10

0 10 20 30

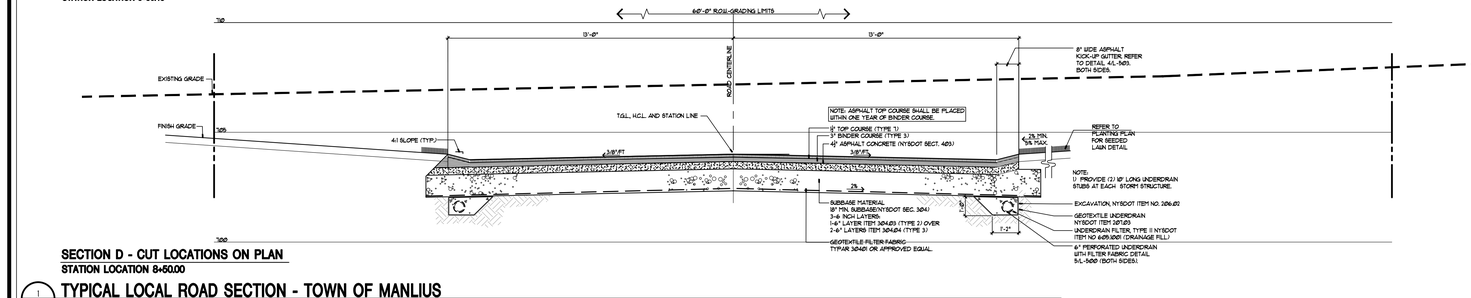


NOTES:
1. CATCH BASIN RIM SHALL BE 03' BELOW EDGE OF PAVEMENT.
2. ALL RISERS FOR CATCH BASIN TO BE PRECAST.
3. EXTENSION RINGS AS MANUFACTURED BY FOR MILLER CO. INC.
4. SEAL INSIDE BLOCK BOND FOLLOWED BY CONSEAL CS65 OR EQUAL.

MATERIALS TESTING, COMPACTION, PROOFROLLING AND SITEWORK SPECIFICATIONS DOCUMENTATION
1 - DEVELOPERS TESTING AGENCY, KENNY GEOTECHNICAL TO SHARE ALL BORROW MATERIAL TESTING AND COMPACTION REPORTS WITH TOWN OF MANLIUS ENGINEER AND CODES OFFICER.
2 - WEEKLY TESTING REPORTS TO BE SHARED WITH DEVELOPER, TOWN ENGINEER, CODES OFFICER AND DESIGN ENGINEER (RZE) AND SUFFP INSPECTOR (KFA) WITHIN SUFFP REPORT. SUFFP REPORT TO BE DISTRIBUTED DIGITALLY THROUGH E-MAIL (DROPBOX) WITH HARD COPIES PROVIDED ON SITE WITHIN SUFFP MAILBOX.
3 - DESIGN TEAM HAS REVISED TOWN OF MANLIUS SPECIFICATIONS WITH TOBIN CONSTRUCTION THE PROJECT CONTRACTOR.



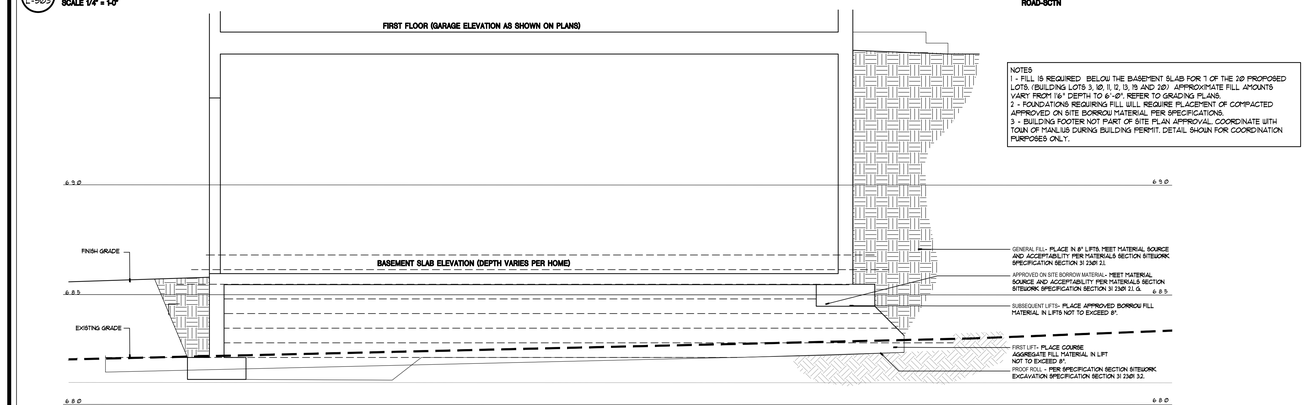
SECTION C - FILL LOCATIONS ON PLAN
STATION LOCATION 5+39.43



SECTION D - CUT LOCATIONS ON PLAN
STATION LOCATION 8+50.00

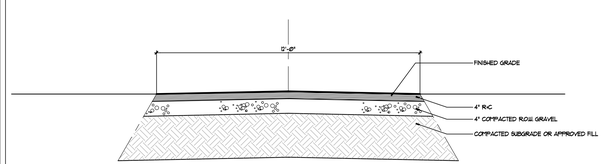
TYPICAL LOCAL ROAD SECTION - TOWN OF MANLIUS
1 / L-503
SCALE 1/4" = 1'-0"

ROAD-SCTN



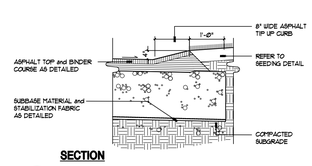
SECTION C - FILL LOCATIONS PER GRADING PLAN L-200
STATION LOCATION 4+50.00

TYPICAL FOUNDATION IN FILL CONDITION
2 / L-503
SCALE 1/4" = 1'-0"



SECTION F - ACCESS EASEMENT

BASIN ACCESS ROAD
3 / L-503
SCALE 1/4" = 1'-0"



SECTION

ASPHALT KICK-UP GUTTER
4 / L-503
NOT TO SCALE **32-1218-11**

SECTION 31 2301 – SITEWORK EXCAVATION, BACKFILLING AND COMPACTING

PART 1 GENERAL

1.1 TOWN OF MANLIUS, NY HIGHWAY SPECIFICATIONS - INCLUDED

1.2 EXAMINATION OF EXISTING GRADES

A. EXAMINE GRADES AND NOTIFY ARCHITECT OF DISCREPANCIES, IF ANY, BEFORE PROCEEDING. START OF WORK IMPLIES ACCEPTANCE OF EXISTING GRADES.

1.3 SUBMITTALS

A. **MATERIAL CERTIFICATES** (MC) INCLUDING A CERTIFIED LABORATORY SIEVE ANALYSIS (LA) BEARING NAME AND LOCATION OF QUARRY. SAMPLE (S) OF MATERIAL REQUIRED (APPROXIMATE VOLUME 1FT³) IN A WATERPROOF CONTAINER PERMANENTLY LABELED TO SHOW SOURCE. SUBMIT FOR THE FOLLOWING MATERIALS:
   1. SUBBASE MATERIAL: (MC), (LA) INCLUDING MOISTURE/DENSITY CURVES AND (S)
   2. COARSE AGGREGATE FILL: (MC) AND (S)
   3. DRAINAGE FILL: (MC), (LA) AND (S)
   4. APPROVED ON SITE BORROW MATERIAL
B. **MANUFACTURERS DATA** (MD) AND PRODUCT SAMPLE (S) REQUIRED FOR THE FOLLOWING MATERIALS:
   1. STABILIZATION FABRIC: (MD) AND (S)

1.4 DEFINITIONS

A. **DEVELOPER'S ENGINEER**: REFERS TO THE PROFESSIONAL ENGINEER EMPLOYED BY THE DEVELOPER TO SUPERVISE THE WORK OF THE DEVELOPER AND THEREAFTER CERTIFY TO THE TOWN THAT THE ITEMS OF WORK CONSTRUCTED BY THE DEVELOPER ARE BUILT IN ACCORDANCE WITH THE APPROVED PLANS. AT COMPLETION OF ALL WORK, A COMPLETE SET OF "AS-BUILT" DRAWINGS SHALL BE SUBMITTED TO THE TOWN. THIS SET OF DRAWINGS SHALL BE CERTIFIED AS BEING CORRECT BY THE DEVELOPER'S ENGINEER.
B. **TOWN ENGINEER**: IS THAT PERSON OR FIRM EMPLOYED OR RETAINED BY THE TOWN TO REPRESENT AND/OR ADVISE THE TOWN IN ALL MATTERS OF AN ENGINEERING NATURE.
C. **HIGHWAY SUPERINTENDENT:** REFERS TO THE SUPERINTENDENT OF HIGHWAYS EMPLOYED BY THE TOWN.
D. **DEVELOPER**, IS THAT PERSON, COMPANY OR CORPORATION THAT IS THE OWNER OF THE LANDS AS SHOWN ON THE FINAL APPROVED SUBDIVISION PLAN. THE DEVELOPER WILL BE RESPONSIBLE FOR FULL COMPLIANCE TO THESE SPECIFICATIONS AS WELL AS ANY EXISTING SUBDIVISION AND ZONING REGULATIONS OF THE TOWN OF MANLIUS. THE DEVELOPER WILL REQUIRE ANY CONTRACTOR EMPLOYED BY HIM TO PERFORM THE CONSTRUCTION WORK TO COMPLY WITH THE ABOVE MENTIONED SPECIFICATIONS AND REGULATIONS.
E. **ROADWAY**, IS THAT PORTION OF THE RIGHT-OF-WAY THAT IS DISTURBED FOR PURPOSES OF CONSTRUCTING THE ROAD SECTION INCLUDING PAVEMENT, GUTTER, DITCHES AND BACK SLOPES.
F. **TESTING AGENCY**: REFERS TO TOWN OF MANLIUS APPROVED TESTING AGENCY TO PERFORM ALL SERVICES LISTED WITHIN SPECIFICATION FOR TESTING OF SUBGRADES, ROW FILL PLACEMENT AND FILL/BASIN EMBANKMENT PLACEMENT. INCLUDES TESTING OF APPROVED ON-SITE BORROW MATERIAL.

1.5 PLANS

A. PLANS SHOWING ORGINAL GROUND ELEVATIONS AND FINISHED GRADES, CENTERLINE PROFILES, TYPICAL CROSS-SECTION AND PROPOSED DRAINAGE FACILITIES SHALL BE SUBMITTED TO THE TOWN BOARD AND THE HIGHWAY SUPERINTENDENT BEFORE FINAL APPROVAL CAN BE GIVEN. NO CONSTRUCTION SHALL BE COMMENCED UNTIL SUCH APPROVAL HAS BEEN GIVEN.

1.6 STANDARDS (see Town Subdivision Regulations Chapter 127)

A. **GRADES**, THE ROAD SHALL NOT BE LESS THAN 1.0% NOR MORE THAN 7% FOR MINOR ROADS AND 5% FOR CUL-DE-SACS AND HAMMERHEAD TURN AROUNDS UNLESS OTHERWISE APPROVED BY THE HIGHWAY SUPERINTENDENT. THE ROAD GRADE AT INTERSECTIONS SHALL NOT EXCEED 3% FOR A DISTANCE OF 100 FEET IN ANY DIRECTION FROM THE POINT OF INTERSECTION.
B. **RIGHT-OF-WAY:** THE RIGHT OF WAY WIDTH SHALL NOT BE LESS THAN 60 FEET IN WIDTH AND WITH A 60 FOOT RADIUS AT THE CUL-DE-SAC TURN AROUNDS. THE BACK SLOPE FROM THE EDGE OF THE ROADWAY TO THE RIGHT-OF-WAY SHALL NOT EXCEED 5% WHEREVER PRACTICAL AND SHALL BE GRADED TO CONFORM IN GENERAL WITH THE ROAD GRADE.
C. **CURVES:** THE HORIZONTAL CURVE SHALL NOT EXCEED A MINIMUM RADIUS OF 150 FEET ON MINOR STREETS AND CUL-DE-SACS. LONGER RADII ARE REQUIRED FOR MAJOR STREETS AS STATED IN THE SUBDIVISION REGULATIONS.
D. **DRAINAGE**: THE PATTERN OF DRAINAGE SHALL BE INCLUDED IN ALL ROAD PLANS. THIS PLAN TO CLEARLY INDICATE: THE DIRECTION OF FLOW OF ALL SURFACE WATER; 2) THE LOCATION, SIZE, AND TYPE OF DRAINAGE STRUCTURE; AND 3) NOTATION AS TO FINAL POINT OF DISCHARGE OF THE SURFACE WATER. NO STORM DRAINS SHALL BE LESS THAN 12 INCHES IN DIAMETER. DEVELOPERS MUST MAKE SUITABLE ENTRANCES TO PRIVATE DRIVEWAYS, AND DRIVEWAY CULVERTS SHALL BE INSTALLED WHEN DIRECTED BY THE HIGHWAY SUPERINTENDENT. CATCH BASINS SHALL BE INSTALLED ALONG THE GUTTER AT 400 FOOT INTERVALS OR LESS WHEN CONSIDERED NECESSARY BY THE HIGHWAY SUPERINTENDENT AND/OR THE TOWN ENGINEER.
   1. STORM SEWERS FOR RESIDENTIAL SUBDIVISIONS SHALL BE DESIGNED BASED A 10 YEAR FREQUENCY AND AS OUTLINED BY CURRENT NYSDEC RULES AND REGULATIONS. SPECIAL STRUCTURES AND FACILITIES SUCH AS DETENTION BASINS MAY BE REQUIRED BY THE TOWN ENGINEER WHEN CONDITIONS WARRANT.
   2. FINISH GRADE OF ALL LOT CORNERS MUST BE INDICATED ON THE FINAL PLAN. ROUGH GRADING OF INDIVIDUAL LOTS SHALL BE WITHIN 6" OF THE INDICATED FINISH ELEVATION. BUILDING PERMITS WILL NOT BE ISSUED UNTIL THIS HAS BEEN ACCOMPLISHED.
   3. REQUIREMENTS AS MANDATED BY ALL REGULATORY AGENCIES IN ADDITION TO THOSE OF THE TOWN MUST BE COMPLIED WITH. ALL NECESSARY PERMITS MUST BE OBTAINED BY THE DEVELOPER.
E. **UTILITIES**, ALL UTILITIES SHALL BE LOCATED WITHIN THE ROAD RIGHT-OF-WAY OF THE TOWN OF MANLIUS WHEREVER POSSIBLE. EASEMENTS CONTAINING UTILITIES AND DITCHES OUTSIDE THE RIGHT OF WAY MUST BE PROPERLY DESCRIBED AND WILL BE SUBJECT TO APPROVAL BY THE TOWN PLANNING BOARD. ALL UTILITIES, INCLUDING LATERALS, TO BE INSTALLED BEFORE CONSTRUCTION OF THE SUB-BASE COURSE.
F. **HIGHWAY AGREEMENT GUARANTEE:** A CERTIFIED CHECK, BOND, OR OTHER SECURITY ACCEPTABLE TO THE TOWN IN THE AMOUNT AGREED UPON WITH THE HIGHWAY SUPERINTENDENT, AS TO THE VALUE OF THE WORK TO BE PERFORMED BY THE DEVELOPER, SHALL BE DEPOSITED WITH THE TOWN CLERK OF THE TOWN OF MANLIUS BEFORE ANY BUILDING PERMIT IS ISSUED, TO INSURE COMPLETION AS TO TIME AND SPECIFICATIONS. THIS DEPOSIT SHALL BE RETURNED AT THE TIME OF SATISFACTORILY COMPLETION OF THE WORK AS INDICATED BY THE HIGHWAY SUPERINTENDENT. A CERTIFIED CHECK, BOND, OR OTHER SECURITY ACCEPTABLE TO THE TOWN IN THE AMOUNT OF 5% FOR THE ROADWAY CONSTRUCTION COST WILL BE OFFERED AS A RETAINER FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE OF THE ROAD BY THE HIGHWAY SUPERINTENDENT AS A GUARANTEE AGAINST ANY REPAIRS WITHIN THE PERIOD.
G. **SIGNAGE**, ALL PROPOSED TRAFFIC CONTROL AND STREET IDENTIFICATION SIGNAGE SHALL BE SUBMITTED WITH FINAL ENGINEERING DRAWINGS FOR REVIEW AND APPROVAL BY THE HIGHWAY SUPERINTENDENT AND SHALL BE COMPLETED IN ACCORDANCE WITH THE NEW YORK STATE MANUAL OF UNIFORMTRAFFIC CONTROL DEVICES, LATEST EDITION.

1.7 TIMING

A. INSTALL DRAINAGE SYSTEM PRIOR TO OR CONCURRENT WITH ROAD EXCAVATION TO PREVENT/LIMIT DOWNSTREAM FLOODING AND EROSION/SEDIMENTATION, TO ALLOW TRENCH OR GENERAL FILL SETTLEMENT, AND TO ALLOW INSTALLATION OF SUBBASE MATERIALS FOR CONSTRUCTION.

1.8 GENERAL DEWATERING

A. THE CONTRACTOR SHALL DEWATER ALL EXCAVATIONS WHEN WATER HAS ENTERED THE EXCAVATION OR AT THE DIRECTION OF THE ENGINEER. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT NECESSARY TO COMPLETE THE WORK.

1.9 USAGE OF ELECTRONIC DOCUMENTS FOR MACHINE CONTROL EQUIP.

A. THE CONTRACTOR MAY USE ANY TYPE OF GPS MACHINE CONTROL EQUIPMENT AND SYSTEMS THAT RESULTS IN ACHIEVING THE PROPOSED GRADING REQUIREMENTS. THE CONTRACTOR SHALL CONVERT THE ELECTRONIC DATA PROVIDED BY THE ARCHITECT INTO THE FORMAT REQUIRED BY THEIR SYSTEM.

PART 2 PRODUCTS

2.1 MATERIALS

A. **GENERAL FILL/EXCAVATED SUBSOIL/SOIL FILL**: APPROVED, FREE OF FROST TRASH, STUMPS, TREES, ROOTS, SOD, MUCK, ETC. IF SUITABLE EXCAVATED MATERIAL IS INSUFFICIENT TO MEET FILL REQUIREMENTS, FURNISH ADDITIONAL MATERIAL AT CONTRACTOR'S EXPENSE, SUBJECT TO APPROVAL BY TESTING AGENCY. THOROUGHLY BREAK UP AND CONDITION SOILS FOR LAYERED PLACEMENT AND COMPACTION IN FILL AREAS.
B. **DRAINAGE FILL**: CRUSHED STONE OR WASHED CRUSHED GRAVEL. NYSDOT #1, TABLE 703-4. CLEAN, DURABLE, OF UNIFORM QUALITY THROUGHOUT.

STANDARD ASTM SIEVE SIZE% PASSING BY WEIGHT	
1" (25 MM)	100
1/2" (12.5 MM)	90-100
1/4" (6.3 MM)	0-15

C. **STABILIZATION FABRIC**: GEOTEXILE FILTER FABRIC TYPAR 3401 OR APPROVED EQUAL
D. **SUBBASE COURSE MATERIAL**: CRUSHED LIMESTONE CONFORMING TO NYSDOT SECTION 304-2.02 SUBBASE COURSE TYPE 2 WELL GRADED FROM COARSE TO FINE TO PRODUCE TIGHTLY BONDED MATERIAL WHEN COMPACTED, AND FREE FROM SOIL, ORGANIC MATERIALS OR OTHER CONTAMINATION.

STANDARD ASTM SIEVE SIZE% PASSING BY WEIGHT	
2" (50 MM)	100
1/4" (6.3 MM)	25-65
NO. 40 (.425 MM)	5-40
NO. 200 (.075 MM)	0-10

E. **TOPSOIL**: UTILIZE ON-SITE TOPSOIL
F. **OVERSIZED SUBBASE COURSE MATERIAL**: CRUSHED LIMESTONE CONFORMING TO NYSDOT SECTION 304, SUBBASE COURSE, TYPE 1 GRADATION WITH 100% PASSING A 3" SIEVE AND WELL GRADED FROM COARSE TO FINE TO PRODUCE A RIGIDITY BONDED MATERIAL WHEN COMPACTED, AND FREE FROM SOIL, ORGANIC MATERIAL OR OTHER CONTAMINANTS.
G. **APPROVED ON-SITE BORROW MATERIAL** SIEVE ANALYSIS REVIEW PERFORMED BY TESTING AGENCY, TOWN OF MANLIUS SELECTED TESTING AGENCY. REFER TO COMPACTION TESTING REQUIREMENTS SECTION 3.10.

PART 3 EXECUTION

3.1 ROUGH GRADING OF ROADS

A. **GENERAL**, THE DEVELOPER SHALL REMOVE ALL ROCK, EARTH AND OTHER MATERIAL REQUIRED BY THE PLANS FOR THE FULL WIDTH OF THE ROADWAY. HE SHALL DISPOSE OF THIS MATERIAL AS REQUIRED. EARTH EMBANKMENTS SHALL BE CONSTRUCTED TO ESTABLISHED LINES AND GRADES FOR THE FULL WIDTH OF THE ROADWAY AT THE LOCATION SHOWN ON THE PLANS. EMBANKMENT MATERIAL SHALL BE NATURAL SOIL, FREE FROM EXCESSIVE MOISTURE, FROST, STUMPS, TREE ROOTS, SOD, MUCK, MARL, VEGETATION OR OTHER UNSUITABLE MATERIAL.
B. **STRIPPING:** PRIOR TO THE COMMENCEMENT OF EXCAVATION OF FILL, STRIPPING SHALL BE CONDUCTED TO REMOVE ALL TOPSOIL, ROOTS, ORGANIC MATTER, RUBBISH OR OTHER DEBRIS FOR THE FULL WIDTH OF THE PAVEMENT AND ADJACENT DISTURBED LAND.
C. **MATERIALS TO BE USED:** IF THERE IS NOT SUFFICIENT EXCAVATED MATERIAL OF A SUITABLE QUALITY AT THE SITE TO COMPLETE THE EMBANKMENT, SUBGRADES AND BACKFILLING TO THE REQUIRED LINES AND GRADE, THE DEVELOPER SHALL BORROW THE NECCESSARY ADDITIONAL MATERIALS. THE SOURCE AND ACCEPTABILITY OF THE BORROW MATERIAL SHALL BE SUBJECT TO APPROVAL OF THE TOWN ENGINEER OR THE HIGHWAY SUPERINTENDENT. THE DEVELOPER SHALL REQUEST APPROVAL OF THE PROPOSED BORROW AREAS AT LEAST FIVE DAYS BEFORE TAKING ANY MATERIAL FROM SUCH AREAS. ALL TEST PITS, EXPLORATIONS AND LABORATORY TESTS REQUIRED BY THE HIGHWAY SUPERINTENDENT OF TOWN ENGINEER SHALL BE DONE BY THE DEVELOPER AT HIS OWN EXPENSE. PLACING: IN GENERAL, EMBANKMENT MATERIALS SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING EIGHT INCHES IN THICKNESS MEASURED PRIOR TO COMPACTION. STONES, IF ANY, SHALL NOT EXCEED FOUR INCHES IN GREATEST DIMENSION AND SHALL BE WELL DISTRIBUTED THROUGH THE MASS. EACH LAYER OF EMBANKMENT MATERIAL SHALL BE ROUGHLY TAMPERED OR ROLLED TO THE REQUIRED DEGREE OF COMPACTION AT OPTIMUM MOISTURE CONTENT BY SHEEPSFOOT OR PNEUMATIC ROLLERS, MECHANICAL TAMPERS OR VIBRATORS. SUCCESSIVE LAYERS SHALL NOT BE PLACED UNTIL THE LAYER UNDER CONSTRUCTION HAS BEEN THOROUGHLY COMPACTED. TRUCKS OR OTHER HEAVY EQUIPMENT SHALL NOT BE OPERATED OVER PIPELINES UNTIL A MINIMUM OF 18 INCHES OF BACKFILL ABOVE THE CROWN OF THE PIPE HAS BEEN PLACED AND PROPERLY COMPACTED.
D. **COMPACTION CONTROL:** EMBANKMENT SHALL HAVE A MINIMUM DRY DENSITY OF 95 PERCENT OF THE MAXIMUM DRY WEIGHT DENSITY IN POUNDS PER CUBIC FOOT AS DETERMINED BY THE AASHO STANDARD DENSITY TEST OR THE PROCTOR COMPACTION TEST. COMPACTION TESTS SHALL BE PERFORMED ON A DAILY BASIS OR AS MAY BE DEEMED NECESSARY BY THE HIGHWAY SUPERINTENDENT OF THE TOWN ENGINEER. SUCH TESTS SHALL BE PERFORMED BY QUALIFIED LABORATORY PERSONNEL AT THE DEVELOPER'S EXPENSE. WHEN THE TEST RESULTS INDICATE THAT INSUFFICIENT COMPACTION HAS BEEN OBTAINED IN ANY LAYER, THE DEVELOPER SHALL TAKE SUCH ACTION AS THE HIGHWAY SUPERINTENDENT OR THE TOWN ENGINEER MAY DIRECT TO MODIFY OR ALTER THE MOISTURE CONTENT OF THE SOIL, TO PROVIDE ADDITIONAL COMPACTION OR OTHERWISE TO INCREASE THE IN-PLACE SOIL DENSITY.

3.2 PREPARATION OF SUBGRADE

A. THE DEVELOPER SHALL PREPARE THE SUBGRADE TO RECEIVE THE PAVEMENT IN CONFORMITY WITH THE LINES AND GRADES AS SHOWN ON THE PLANS. BEFORE THE SUB-BASE COURSE MATERIAL IS PLACED UPON THE SUBGRADE, IT SHALL BE SHAPED TO LINE AND GRADE AND COMPACTED WITH AN APPROVED SELF-PROPELLED ROLLER WEIGHING NOT LESS THAN 10 TONS. ALL HOLLOWS AND DEPRESSIONS WHICH DEVELOP UNDER ROLLING SHALL BE FILLED WITH ACCEPTABLE GRANULAR MATERIAL SHALL AGAIN BE ROLLED. GRANULAR MATERIALS USED TO FILL DEPRESSIONS SHALL CONSIST OF APPROVED HARD, DURABLE PARTICLES 100% OF WHICH SHALL PASS A 2-INCH SIEVE AND NOT MORE THAN 5% OF WHICH SHALL PASS NO. 200 SIEVE. THIS PROCESS OF SHAPING AND ROLLING AND FILLING SHALL BE REPEATED UNTIL NO DEPRESSIONS DEVELOP. THE SUBGRADE SHALL NOT BE MUDDY OR OTHERWISE UNSATISFACTORY WHEN THE SUB-BASED MATERIAL IS PLACED UPON IT. IF SOFT SPOTS DEVELOP DURING THE ROLLING, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE GRANULAR MATERIAL ABOVE.

3.3 ROAD CONSTRUCTION

A. TOWN OF MANLIUS DETAILS OF ROAD CONSTRUCTION SHALL BE INSTALLED AS SHOWN WITHIN THE CONSTRUCTION DOCUMENTS
   1. SD-1 TYPICAL ROAD CROSS SECTION (1/L-503)
   2. SD-2 TYPICAL ROAD CROSS SECTION WITH CATCH BASIN LOCATION (1/L-503)
   3. SD-3 STANDARD CATCH BASIN (11/L-500)
   4. SD-4 TEMPORARY PAVED TURN AROUND AND EASEMENT (9/L-501)

3.4 SPECIAL CONDITIONS

A. ROUGH GRADING MUST BE COMPLETED BEFORE THE CONSTRUCTION OF UTILITIES IS COMMENCED.
B. THE SUBGRADE MUST BE INSPECTED AND APPROVED BY THE HIGHWAY SUPERINTENDENT BEFORE THE SUB-BASE COURSE IS PLACED.
C. THE SUB-BASE COURSE MUST BE INSPECTED AND APPROVED BY THE HIGHWAY SUPERINTENDENT BEFORE THE BINDER COURSE IS PLACED.
D. THE TOP COURSE OF ASPHALT PAVEMENT SHALL NOT BE PLACED UNTIL PERMISSION IS OBTAINED FROM THE HIGHWAY SUPERINTENDENT.
E. NO CERTIFICATE OF OCCUPANCY FOR HOUSES CONSTRUCTED ON NEW ROADS WILL BE ISSUED UNTIL THE ROAD CONSTRUCTION IS COMPLETED AND NECESSARY APPROVALS OBTAINED. APPROVAL TO BE OBTAINED FROM THE HIGHWAY SUPERINTENDENT. A LETTER OF CERTIFICATION BY THE DEVELOPS ENGINEER WILL BE REQUIRED UNDER CIRCUMSTANCES WHERE THE HIGHWAY SUPERINTENDENT HAS NOT INSPECTED AND APPROVED THE CONSTRUCTION PROCEDURES OUTLINED ABOVE.

3.5 GENERAL

A. BANKS AND SIDES: ANGLE OF RECLINE OR SHEATHING, SHORING, AND BRACING AS REQUIRED FOR SAFETY AND CONFORMING TO ALL APPLICABLE LAWS, RULES, REGULATIONS AND CODES.
   1. UNCLASSIFIED EXCAVATION
A. INCLUDES ALL EARTH AND MISCELLANEOUS MATERIAL ENCOUNTERED.
B. CUT TO EXACT ELEVATIONS AND GRADE. IF SOIL BECOMES SATURATED AND LOSES ITS STRUCTURE IN AN AREA, CEASE WORK IN THAT AREA, AFTER ESTABLISHING POSITIVE SURFACE DRAINAGE, UNTIL SURFACE DRIES. WHEN THE AREA HAS STABILIZED, CONTINUE EXCAVATION TRANSPORT TO FILL AREAS.
C. STOCKPILED SOILS, PILE IN MANNER AND LOCATION THAT WILL NOT IMPEDE THE WORK OF ANY OTHER CONTRACTOR, AS DIRECTED BY STAGED PLANS.

3.6 UNCLASSIFIED EXCAVATION FOR STRUCTURES

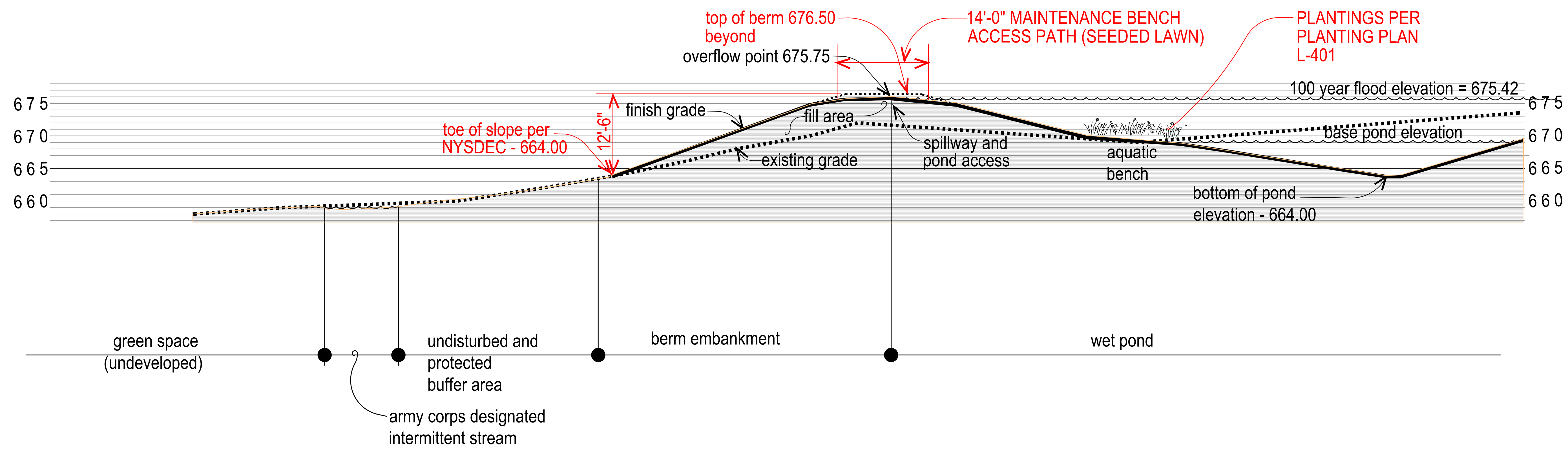
A. INCLUDES ALL EARTH AND MISCELLANEOUS MATERIAL ENCOUNTERED.
B. EXCAVATE TO DEPTH AS SHOWN ON DRAWINGS. TRANSPORT TO FILL AREAS OR REMOVE FROM SITE.
C. EXCESS DEPTH BACKFILL TO PROPER ELEVATIONS WITH APPROVED ON SITE BORROW MATERIAL.
D. CLEARANCE SUFFICIENT FOR FORM WORK TO BE PERFORMED. BANKS AND SIDES - ANGLE OF RECLINE OR SHEETING, SHORING, AND BRACING AS REQUIRED FOR SAFETY AND CONFORMING TO ALL APPLICABLE LAWS, RULES, REGULATIONS AND CODES. REMOVE BEFORE BACKFILLING.
E. REMOVE LOOSE MATERIAL AND DEBRIS FROM EXCAVATION SO ALL FOOTINGS REST ON SOLID, UNDISTURBED SOIL.
F. REMOVE WATER DURING EXCAVATION FOR FOUNDATIONS BY DITCHING OR PUMPING SO THAT NO WATER STANDS.
G. INSURE THAT MOVEMENT OF EQUIPMENT IN THE EXCAVATION DOES NOT CAUSE WORKING AND PUMPING OF THE UNDERLYING SOIL WHICH IS NOT TO BE EXCAVATED. SHOULD THE EQUIPMENT USED CAUSE EXCESSIVE WORKING, USE OTHER METHODS OF EXCAVATION TO MAINTAIN THE DESIGN BEARING CAPACITY OF THE SOIL.

3.7 UNCLASSIFIED TRENCH EXCAVATION

A. INCLUDES ALL EARTH AND MISCELLANEOUS MATERIAL ENCOUNTERED.
B. EXCAVATE TO EXACT DEPTH AND GRADE ALLOWING CLEARANCE FOR PIPE BEDDING AS REQUIRED.
C. TRANSPORT EXCESS TO FILL AREAS OR STOCKPILE AREAS.
D. PUMP AS REQUIRED TO DEWATER EXCAVATION.

3.8 GENERAL FILLING REQUIREMENTS

A. THE SUBGRADE TO RECEIVE FILL SHALL BE FIRM AND STABLE AND SHOULD NOT EXHIBIT MUD, ORGANIC MATERIAL, TOPSOIL, STANDING WATER, DEBRIS OR FROZEN MATERIAL. WHERE APPLICABLE, SUBGRADE SHOULD BE PROOFROLLED AND REMEDIATED (IF NECESSARY) APPROVED SUBGRADE SHOULD BE IMMEDIATELY PROTECTED BY PLACEMENT OF THE PLANNED FILL.
B. FILL MATERIAL SHALL BE PLACED ON A SATISFACTORY AND APPROVED SUBGRADE IN A MANNER TO MINIMIZE SEGREGATION. THE FILL SHOULD BE PLACED IN NEARLY HORIZONTAL 8" LIFTS COMMENCING AT THE LOWEST FILL AREA ELEVATION AND PROCEEDING WITH EACH LIFT UPWARD AND OUTWARD FROM THE LOWER LIFT. THE MOISTURE CONTENT OF THE MATERIAL SHALL BE ADJUSTED PRIOR TO APPLICATION OF COMPACTION SUCH THAT IT IS WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT. THE FIRST LIFT SHALL BE PLACED TO A LOOSE THICKNESS NOT TO EXCEED 8". THIS FIRST LIFT SHALL THEN BE COMPACTED TO AN IN-PLACE DENSITY NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY. UNLESS NOTED OTHERWISE IN THIS SPECIFICATION SECTION.
C. NO SUBSEQUENT LIFT SHALL BE PLACED UNTIL THE UNDERLYING LIFT HAS BEEN ADEQUATELY COMPACTED TO A STABLE AND UNIFORM MASS.
D. TRENCH BACKFILL
   1. MATERIALS:
      a. UNDER LAWNS AND UNDER PLANTING BEDS: APPROVED EXCAVATED SUBSOIL MATERIAL.
      b. UNDER PAVEMENT SECTION: APPROVED ON-SITE BORROW MATERIAL. REFER TO DETAILS ON L-503.
   2. PLACE: DO NOT PLACE ON FROZEN GROUND. PLACE IN 6" LAYERS FROM CUSHION SAND OR FILTER MATERIAL TO SUBGRADE. NO BOULDERS OR STONES OVER 4". TAMP EACH 6" LAYER WITH MECHANICAL TAMPER. ADJUST FILL TO SMOOTH SUBGRADE.
   3. COMPACTION: UNIFORMLY SPREAD EACH LAYER, MOISTEN OR DRY AS REQUIRED, AND THEN COMPACT SO UNIT DRY WEIGHT OF THE COMPACTED MATERIAL MEETS OR EXCEEDS 95% OF THE MAXIMUM MODIFIED PROCTOR DENSITY BASED ON ASTM D 1557 PROCEDURES.
E. FILL AT STRUCTURES
   1. MATERIALS:
      a. FILL UNDER PAVEMENT SUBGRADE - APPROVED ON-SITE BORROW MATERIA



SECTION A - WET POND @ OVERFLOW

HOAG LANE SUBDIVISION

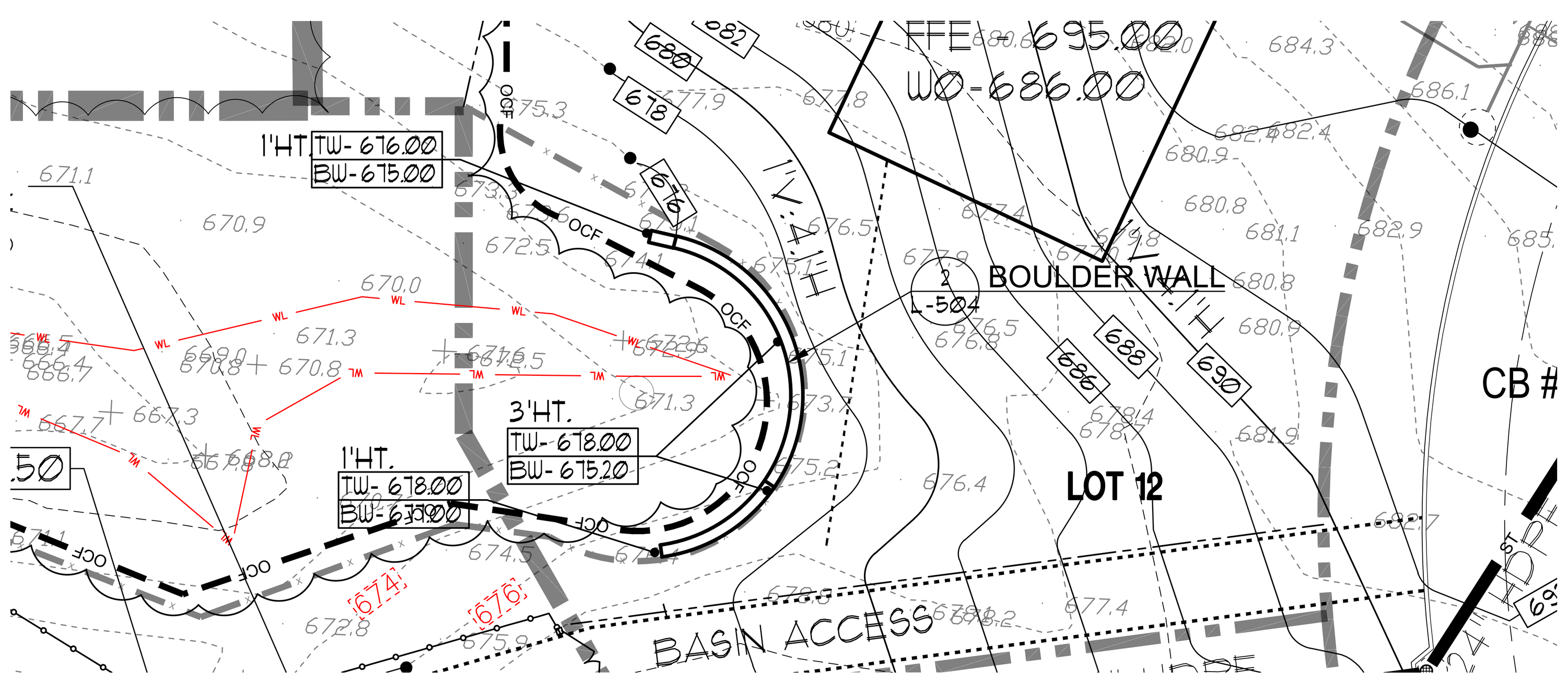
RZ ENGINEERING/KEPLINGER FREEMAN ASSOCIATES

MARCH 26, 2020

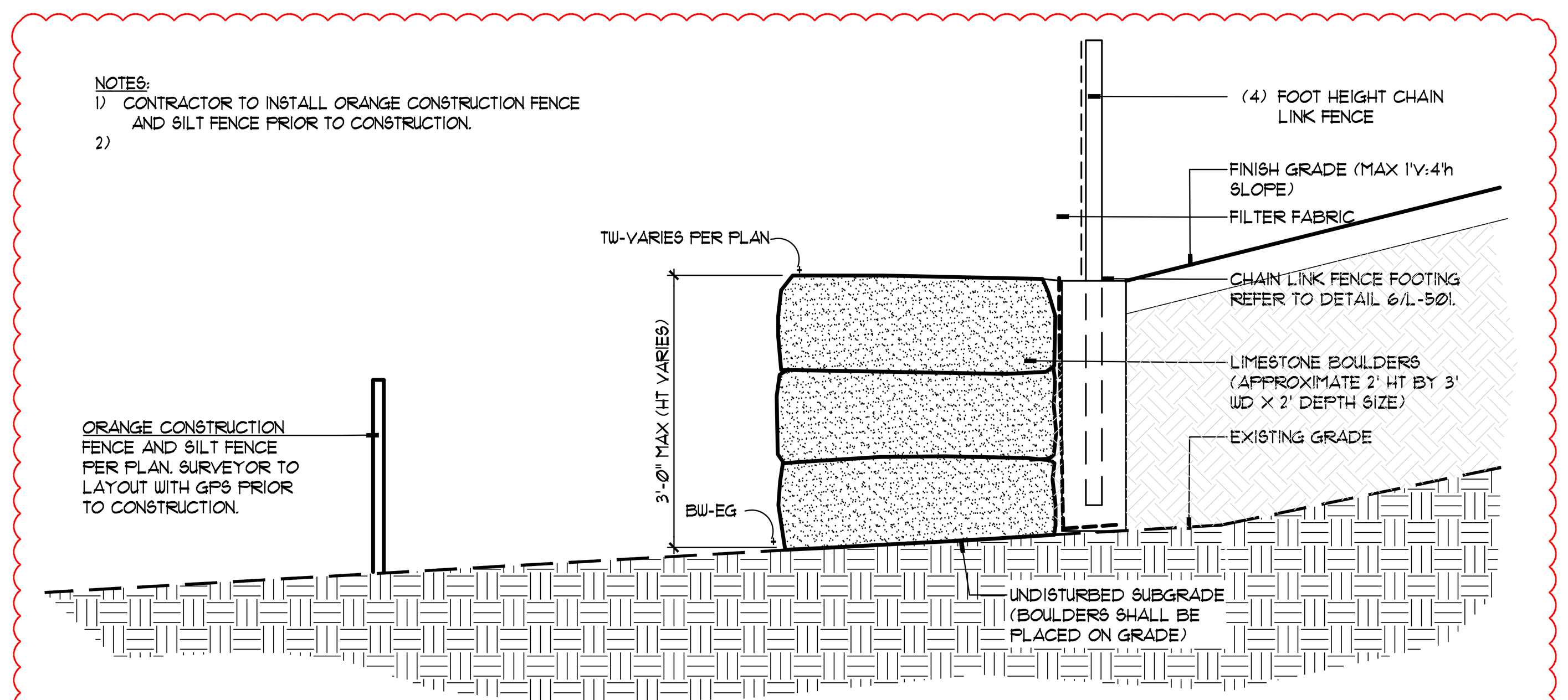
0 10 20 30

SCALE IN FEET

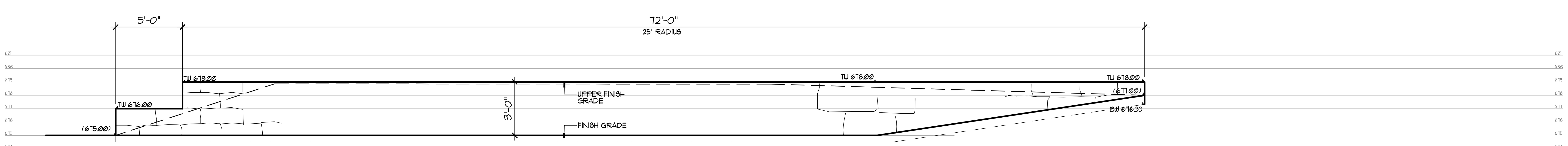
4 L-504 WET POND PROFILE
SCALE: 1" = 20'



3 L-504 BOULDER WALL - PARTIAL PLAN
SCALE: 1" = 20'



2 L-504 BOULDER RETAINING WALL
SCALE 1/2"=1'-0"



1 L-504 BOULDER RETAINING WALL - SECTION
SCALE 1/4"=1'-0"

INLINE WATER LEVEL CONTROL STRUCTURE™ INSTALLATION INSTRUCTIONS

Important! **—To minimize seepage, align stoplogs firmly against one side of the stoplog track.**
—Stoplogs must remain in track during structure installation.
—Structures are intended for gravity flow: Low pressure and some seepage may occur.

1.) EXCAVATION AND GRADING

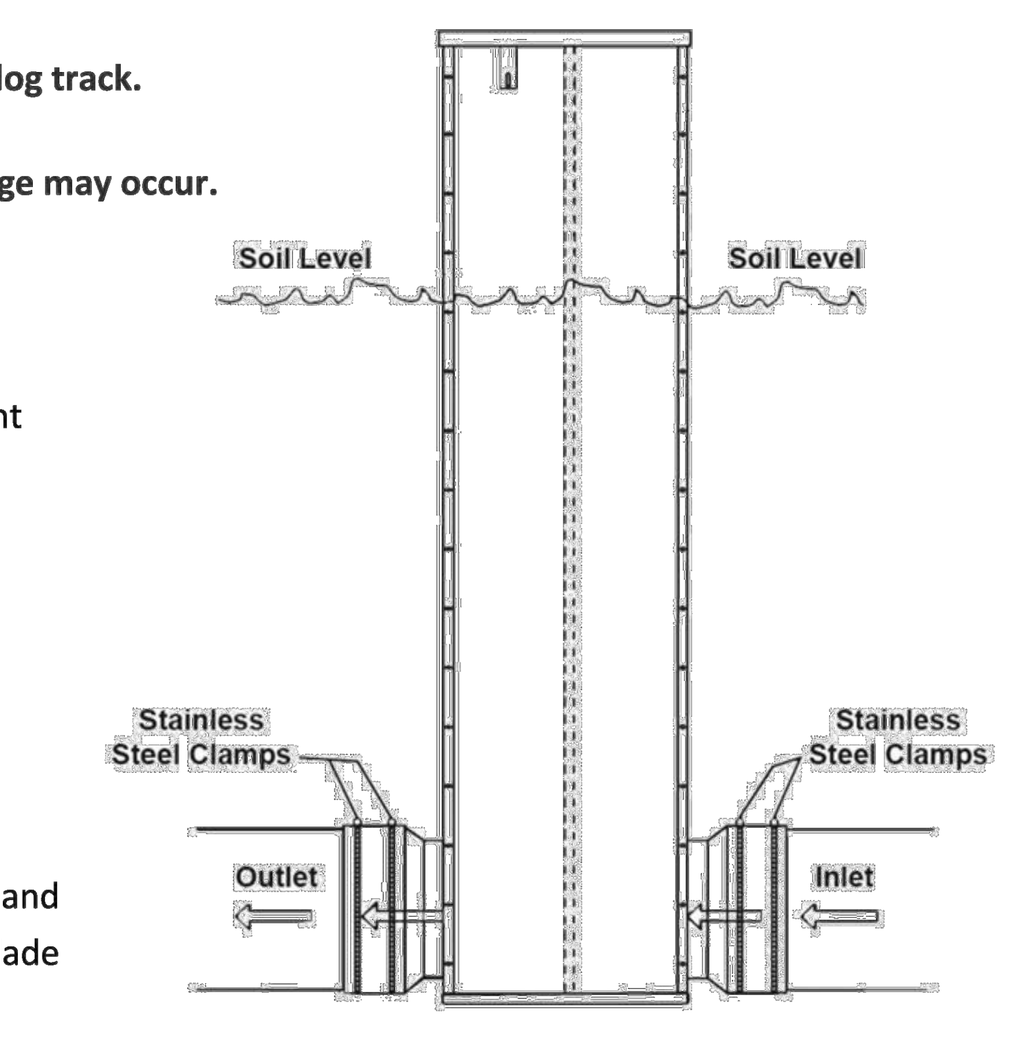
Structure base, inlet pipe, & outlet pipe must be set on compacted soil or fill sand to provide a solid, stable base. This will reduce settling and reduce stress or misalignment of pipe connections.

2.) PIPE CONNECTION

Remove stainless steel clamps from inside structure. Place pipe inside flex couplers and tighten SS clamps.

3.) BACKFILL AND COMPACTION

Level structure vertically before placing backfill. Backfill around control structure by hand in 6" lifts. Hand tamp only - **do not** mechanically compact. **Do not** use a backhoe or blade to place backfill directly against the water control structure.
—Seal on stoplog faces downstream/outlet side of structure.



Excessive compaction may cause structural damage or failure.

- Either the inlet or inline structure may be used for primary or secondary outlet, with larger pipe or emergency spillway as primary.
- Inline structure removes subsurface water.
- On the inline installation, the inlet end of the pipe should be held off the bottom of the impoundment to allow for siltation, and be protected with an inlet guard. The outlet end of the structure should be protected with a rodent guard.
- In a controlled drainage or subsurface irrigation application, the structure nearest the outlet should be installed with a minimum of 20' of non-perforated pipe on the downstream end. Anti-Seep Collars are recommended.

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www.agridrain.com
info@agridrain.com
— Since 1976 —

Manufactured by: Agri Drain CORPORATION

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www.agridrain.com · email: info@agridrain.com

Inline Water Level Control Structure™

- Available in manual or automated.
- Constructed of rugged ½" PVC with lockable plastic lid.
- Stainless steel screws and custom anodized aluminum corner extrusions used for strength and durability.*
- Flexible couplers allow PVC, plastic pipe, or other materials to be easily attached. *(Please specify type of pipe when ordering.)*
- Stoplogs made of PVC in 5" and 7" heights for adjustability. (Maintenance recommended: Remove stoplogs and grease seal with white lithium grease. Ensure there is no debris in the tracks or along the bottom of the structure. Replace stoplogs after greasing.)
- ***Important!*** To minimize seepage, align stoplogs firmly against one side of the stoplog track.
- Stoplogs must remain in track during structure installation.
- Structures are not pressure rated.
- Structures are intended for gravity flow: Low pressure and some seepage may occur.
- 5-year warranty on all standard structures.
- Customized or special orders will carry a 1-year warranty on workmanship and material and are nonreturnable.

**For water that is caustic, acid, corrosive, salt, or pH below 5 pH or above 9 pH, please notify us of your requirements to ensure structures are built with compatible hardware. For these applications, Agri Drain recommends stainless steel.*

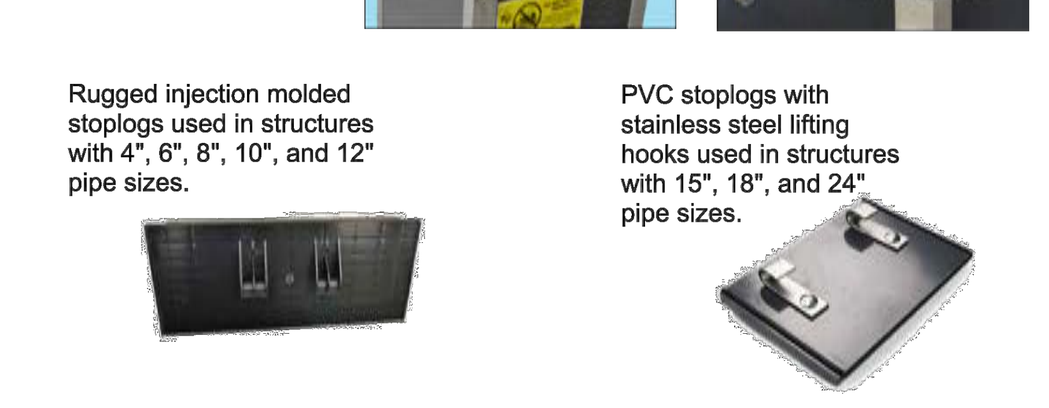




Comes with a handle to install and remove stoplogs.

Stoplog seal ensures a tight fit to prevent leakage.

Inline Water Level Control Structure™			
Pipe Size	Available Heights	Width	Depth
4"	2' - 12'	8"	10"
6"	2' - 12'	8"	10"
8"	2' - 12'	11 5/8"	12"
10"	2' - 12'	14"	16"
12"	2' - 12'	16"	20"
15"	2' - 12'	20"	24"
18"	2' - 12'	24"	28"
24"	3' - 10'	31"	39"



Rugged injection molded stoplogs used in structures with 4", 6", 8", 10", and 12" pipe sizes.

PVC stoplogs with stainless steel lifting hooks used in structures with 15", 18", and 24" pipe sizes.

Stoplog Retainer

Hold extra stoplogs up & out of the way!

- Stainless steel retainer hooks to lowest stoplog that you want to hold up within your Inline Water Level Control Structure™.
- 10' of 3/16" nylon rope (included) attaches to the retainer and secures to the inner brace bar near the top of the structure.



Manufactured by: Agri Drain CORPORATION

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Water Level Control Structures

The **Water Level Control Structures** manufactured by *Agri Drain Corp.* are constructed of rugged 1/2"-thick PVC sheets, connected at the corners by means of specially extruded anodized aluminum profiles sealed with waterproof caulking and secured with stainless steel screws.* The bottom of the structure is sealed with either a 1/2"- or 1"-thick PVC sheet (dependent upon structure size) and also utilizes waterproof caulking for sealant and stainless steel screws to hold it in place. **For water that is caustic, acid, corrosive, salt, or pH below 5 pH or above 9 pH, please notify us of your requirements to ensure structures are built with compatible hardware. For these applications, Agri Drain recommends stainless steel.*

The stoplogs* are constructed of PVC and utilize a seal that mates against the downstream surface of the extruded aluminum track and the top of the stoplog that it rests upon. The stoplogs are equipped with hooks to facilitate their removal by means of a special handle/hook assembly. **Important!* To minimize seepage, align stoplogs firmly against one side of the stoplog track. Stoplogs must remain in track during structure installation.

In order to obtain inch-by-inch water level adjustment capabilities, the stoplogs are built in two heights: 5" and 7" tall. This allows for various combinations and nearly infinite adjustability. An additional, 7"-tall stoplog is specified with a sticker stating "Bottom Board", and this stoplog must be placed in the bottom of the structure. Examples: 7"+7"=14", 5"+5"+5"=15", 5"+5"+7"=17", 5"+7"+7"=19", 5"+5"+5"+5"=20", etc.

The means of connecting to the downstream and upstream pipe is a flexible rubber sewer coupler. It will accommodate corrugated plastic tubing, PVC pipe, corrugated metal pipe or virtually any other conduit material.

The units are available in two different types. The first type (Inlet) is designed to be installed on the upstream end of the conduit so the water must enter the structure before it enters the pipe. The Inlet must be anchored down when installed or it may have the tendency to float. The second type (Inline) is designed to be installed in the pipe line, so the water enters the pipe, then flows into the box, over the stoplogs, then out the downstream side of the structure. The Inline structure is equipped with a lockable plastic lid and is available in manual or automated. Both structures come with a handle to remove, install, or adjust the stoplogs.

The structures are manufactured in various sizes based on diameter of the conduit and engineered to provide a minimum of 30% greater capacity than the conduit it is connected to. They are available in heights to suit the specific installation.

INLINE WATER LEVEL CONTROL STRUCTURE™ SHIPPING WEIGHTS								
Pipe	HEIGHT							
Size	2'	3'	4'	5'	6'	8'	10'	12'
4"	50U	64U	81U	102U	121T	216T	244T	278T
6"	52U	66U	83U	103U	164T	222T	272T	320T
8"	64U	84U	105U	176T	198T	264T	320T	392T
10"	79U	107U	168T	210T	238T	300T	375T	458T
12"	99U	157T	190T	242T	294T	366T	480T	542T
15"	154T	222T	270T	322T	382T	502T	614T	722T
18"	191T	236T	340T	402T	450T	592T	710T	834T
24"	N/A	348T	454T	524T	600T	766T	946T	N/A

INLET WATER LEVEL CONTROL STRUCTURE™ SHIPPING WEIGHTS					
Pipe	HEIGHT				
Size	2'	3'	4'	5'	6'
4"	26U	38U	51U	64U	76U
6"	35U	41U	52U	67U	78U
8"	37U	51U	67U	86U	132T
10"	49U	62U	85U	130T	150T
12"	55U	76U	125T	164T	152T
15"	82U	126T	158T	196T	216T
18"	110T	150T	186T	224T	250T
24"	178T	192T	248T	310T	336T

UPS=U
TRUCK LINE=T

Larger CMP structures also available. Call for details on custom sizes and pricing.

5 L-504 AGRIDRAIN - POND DRAIN
SCALE: 1" = 20'

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STATE OF NEW YORK · RUDY L. ZONA · 079543 · LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION — △ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19	16	16	MANLIUS- PLAN SUBMISSION	08/07/20
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19	17	17		
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19	18	18		
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19	19	19		
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19	20	20		
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19	21	21		
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20	22	22		
				15	15	NOTE REMOVAL (NOTE 10)	07/30/20	23	23		

REGISTERED LANDSCAPE ARCHITECT · SCOTT LEE FREEMAN · 001473 · STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
POND & WALL DETAILS

L-504

Plotted By:
Date Plotted:
Drawing File:

Monday, August 10, 2020 9:22:23 AM

STORM STRUCTURE SCHEDULE

X-HOAG-STORM-CHART

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES #1	FLARED END SECTION [2]	N/A	-	24"-665.00
DA-1A&B	10' DIA. OUTLET STRUCTURE [1]	675.45	REFER TO DETAIL FOR ORIFICE INFORMATION	665.20
FES #2	FLARED END SECTION [2]	N/A	-	(E)-24"-676.00
CB #1	CATCH BASIN - 6'-0" [3]	691.72	(NE)-24"-684.50 (S)-24"- 685.00 UD- 689.20	(W)-24"-684.50
CB #2	CATCH BASIN - 4'-0" [3]	692.75	(NE)-24"-688.75 (E)-15"-688.50 UD- 691.00	(SW)-24"-687.50
CB #3	CATCH BASIN - 4'-0" [3]	697.72	(W)-12"-690.90 (NE)-18"-694.00 UD- 696.25	(SW)-24"-690.80
SI #1	STORM INLET [4]	707.75	(NW)-12"-702.10 (NE)-18"-702.10	(S)-18"-700.00
SI #2	STORM INLET [4]	710.75	(N)-12"-706.75 (E)-18"-707.25	(SW)-18"-706.00
SI #3	STORM INLET [4]	715.90	(N)-15"-711.50 UD-714.50	(W)-18"-711.25
SI #4	STORM INLET [4]	716.05	(N)-12"-713.50 (E)-12"-713.50 UD- 714.50	(S)-15"-712.00
SI #5	STORM INLET [4]	721.50	(N)-12"-718.00 (SE)-12"-718.50 UD- 718.00	(W)-12"-717.00
SI #6	STORM INLET [4]	725.75	(NE)-12"-722.10 UD- 722.75	(NW)-12"-722.00
FES #7	FLARED END SECTION [2]	N/A	-	12"-725.00
FES #3	FLARED END SECTION [2]	N/A	12" - 691.50	-
FES #12	FLARED END SECTION [2]	N/A	12" - 704.00	-

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
SI #7	STORM INLET [4]	709.75	UD-707.00 12"-703.20	(SE)-12"-703.10
SI #8	STORM INLET [4]	710.55	(N)-10"-708.00 UD-708.91	(S)-12"-707.50
FES #4	FLARED END SECTION [2]	N/A	10"-713.00	-
FES #5	FLARED END SECTION [2]	N/A	12"-715.00	-
FES #6	FLARED END SECTION [2]	N/A	12"-721.00	-
FES #8	FLARED END SECTION [2]	N/A	-	15"-689.00
FES #9	FLARED END SECTION [2]	N/A	-	15"-718.00
SI #9	STORM INLET [4]	726.10	(NE)-12"-720.00 (S)-12"-720.00 UD- 724.10	(W)-15"-719.50
SI #10	STORM INLET [4]	724.65	(SE)-12"-721.65 UD-721.65	(N)-12"-721.50
FES #11	FLARED END SECTION [2]	N/A	12" - 722.00	
FES #10	FLARED END SECTION [2]	N/A	12"- 722.00	-
CB #5	CATCH BASIN - 4'-0" [3]	691.42	(E)-10"-685.50 (SE)-18"-685.50 UD- 687.50	(N)-24"-685.25
CB #4	CATCH BASIN - 4'-0" [3]	696.72	(S)-10-"-693.75 (E)-12"-693.75 UD- 694.90	(NW)-18"-693.25
SI #12	STORM INLET [4]	711.75	(S)-12"-708.25 UD-708.25	(W)-12"-708.00
SI #13	STORM INLET [4]	711.75	UD-709.40	(N)-12"-708.50
SI #11	STORM INLET [4]	691.42	UD-687.50	(W)-10"-686.00
SI #14	STORM INLET [4]	696.72	UD-694.90	(N)-10"-693.90
SI #15	STORM INLET [4]	697.72	(W) - 691.05 UD-696.00	(E)-12"-691.00
FES #11	FLARED END SECTION [2]	N/A	24"- 665.00	-

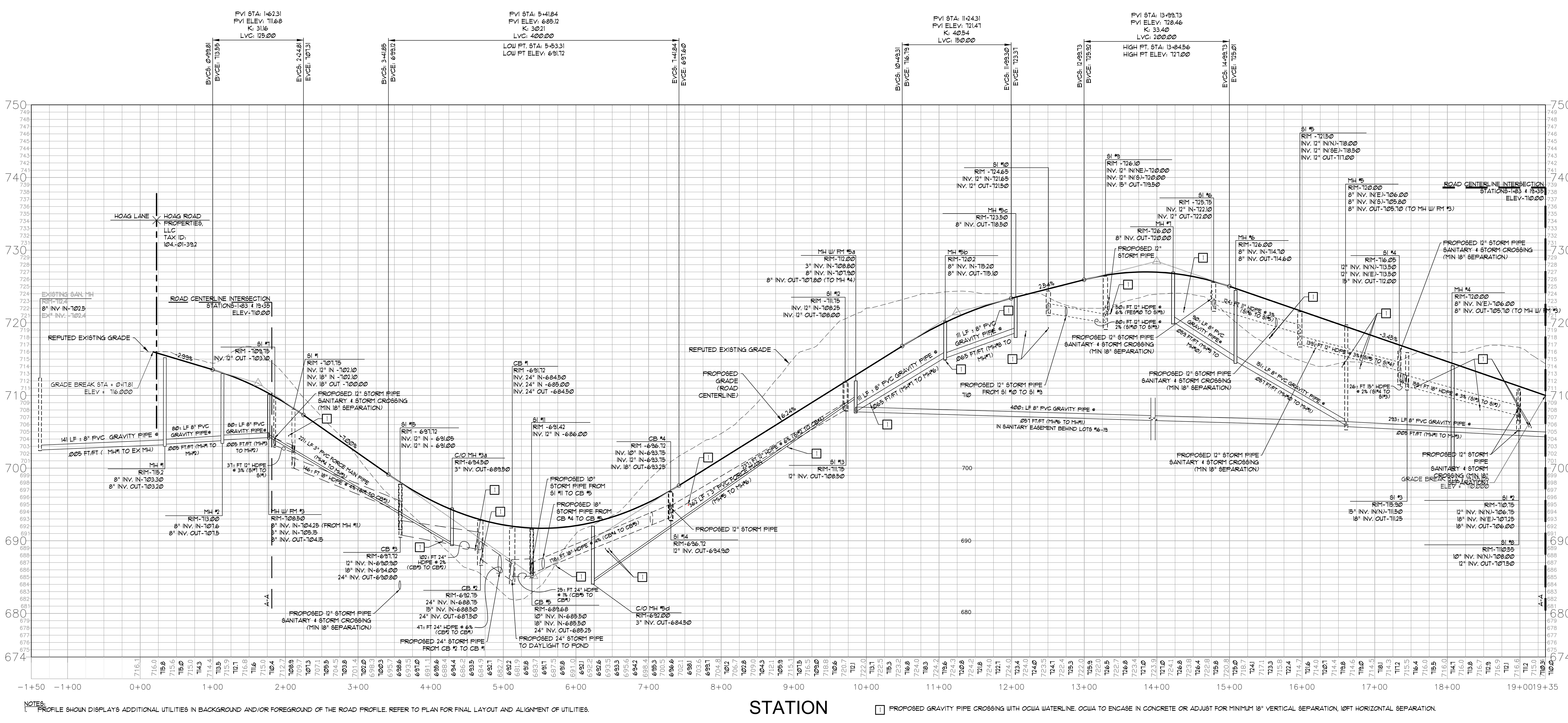
NOTES:
1. INSTALL OUTLET STRUCTURE PER DETAIL 20/L-500.
2. INSTALL FLARED END SECTION PER DETAIL 15/L-500.
3. INSTALL STORM INLET PER DETAIL 13/L-500.
4. INSTALL CATCH BASIN PER DETAIL 11/L-500.
5. INSTALL STORM PIPING TRENCH DETAIL PER DETAIL 12/L-500 & 3/L-503 IN FILL AREAS

SANITARY MANHOLE SCHEDULE

NOTES REFER TO SHEETS L-300

MANHOLE #	STRUCTURE TYPE	RIM ELEVATION	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
EX MH.	EXISTING	712.40	8" @ 702.50 (S)	702.40 (EX)
MH# 1	MANHOLE[1]	715.20	8" @ 703.30 (S)	8" @ 703.20 (N)
MH# 2	MANHOLE[1]	712.00	8" @ 703.77 (S)	8" @ 703.67 (N)
MH W/FM# 3	MH. W/ FORCED MAIN[2]	708.00	8" @ 704.25 (E) 3" @ 705.15 (S)	8" @ 704.15 (N)
MH# 4	MANHOLE[1]	714.00	8" @ 705.10 (E)	8" @ 705.00 (W)
MH# 5	MANHOLE[1]	720.00	8" @ 705.95 (E) 8" @ 705.95 (S)	8" @ 705.88 (W)
MH# 6	MANHOLE[1]	724.00	8" @ 714.70 (SE)	8" @ 714.60 (NW)
MH# 7	MANHOLE[1]	726.00		8" @ 720.00 (NW)
MH W/FM# 5A	MH. W/ FORCED MAIN[2]	712.00	3" @ 708.80 (W) 8" @ 707.90 (E)	8" @ 707.80 (N)
MH# 5B	MANHOLE[1]	720.20	8" @ 715.20 (E)	8" @ 715.10 (W)
MH# 5C	MANHOLE[1]	723.50		8" @ 718.50 (SW)
C/O MH# 5D	CLEAN OUT MH[1]	692.00		3" @ 684.50 (E)
C/O MH# 3A	CLEAN OUT MH[1]	694.50		3" @ 689.50 (NE)

NOTES:
1) INSTALL SANITARY MANHOLE PER DETAIL 1/L-501.
2) INSTALL SANITARY MANHOLE WITH FORCED MAIN PER DETAIL 10/L-501.



NOTES:
1. PROFILE SHOWN DISPLAYS ADDITIONAL UTILITIES IN BACKGROUND AND/OR FOREGROUND OF THE ROAD PROFILE. REFER TO PLAN FOR FINAL LAYOUT AND ALIGNMENT OF UTILITIES.

[1] PROPOSED GRAVITY PIPE CROSSING WITH OCWA WATERLINE. OCWA TO ENCASE IN CONCRETE OR ADJUST FOR MINIMUM 18" VERTICAL SEPARATION, 10FT HORIZONTAL SEPARATION.

1 / L-600 ROAD ALIGNMENT WITH SANITARY PROFILE
HORIZONTAL SCALE: 1 : 60
VERTICAL SCALE 1 : 6

0 60 120 180

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STATE OF NEW YORK · RUDY L. ZONA · 079543 · LICENSED PROFESSIONAL ENGINEER
UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION — △- Symbol Indicates Revision Issued

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
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4	4	PUBLIC HEARING- MANLIUS	05/04/18
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8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

REGISTERED LANDSCAPE ARCHITECT · SCOTT LEE FREEMAN · 001473 · STATE OF NEW YORK

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title: ROAD PROFILES

L-600

Plotted By: · Date Plotted: · Drawing File:

Monday, August 10, 2020 9:26:13 AM

DEEP HOLE TEST RESULTS

DH -1 0'-12" TOPSOIL 12'-36" GRAVEL LOAM 36'+66" SANDY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -2 0'-12" TOPSOIL 12'-36" GRAVEL LOAM 36'-80" SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -3 0'-12" TOPSOIL 12'-48" GRAVEL LOAM 48'-12" GRAVELLY SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -4 0'-12" TOPSOIL 12'-36" SANDY SILT LOAM 36'-72" SILTY CLAY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -5 0'-6" TOPSOIL 6'-36" SANDY LOAM 36'-66" SANDY SILT LOAM W/ COBBLES	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY REPRESENTATIVES OF RZ ENGINEERING & KEPLINGER FREEMAN ASSOCIATES

PERCOLATION TEST RESULTS

X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING

LEGEND

EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-#	DEEP HOLE
		FENCE
		UTILITY POLE
	W	WATER LINE
		FIRE HYDRANT
EX ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY PLANT TYPE	PLANT KEY
		VEGETATION
	UD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	RM 3" LPS	SANITARY PIPE-LOW PRESSURE
E/T		OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	ST MH	STORM STRUCTURE
	DI	INLET
	CB MH	CATCH BASIN/MANHOLE
	CO	CLEAN OUT
S		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6" 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	8" 12" 3'	OUTLET PROTECTION FOR 8"- 12" PIPE
	15" 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE PREP NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT, SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF OFF-SITE.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT, TO BE SUBMITTED AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO DEMOLITION.
6. DECOMMISSION EXISTING WATER PIT.
7. DEVELOPER TO PROVIDE, REMOVE UNDERBRUSH AND IRRESPECTIVE TREES TO REMAIN. DETAILED NEIGHBORHOOD PARK TO BE DESIGNED AT A LATER DATE.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.
9. REMOVE EXISTING STRUCTURE.
10. REMOVE EXISTING WATERBODY. APPLY FOR ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT.

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.

2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.

8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING to ALL TOWN OF MANLIUS SPECIFICATIONS.

9. DIG SAFELY NEW YORK TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.

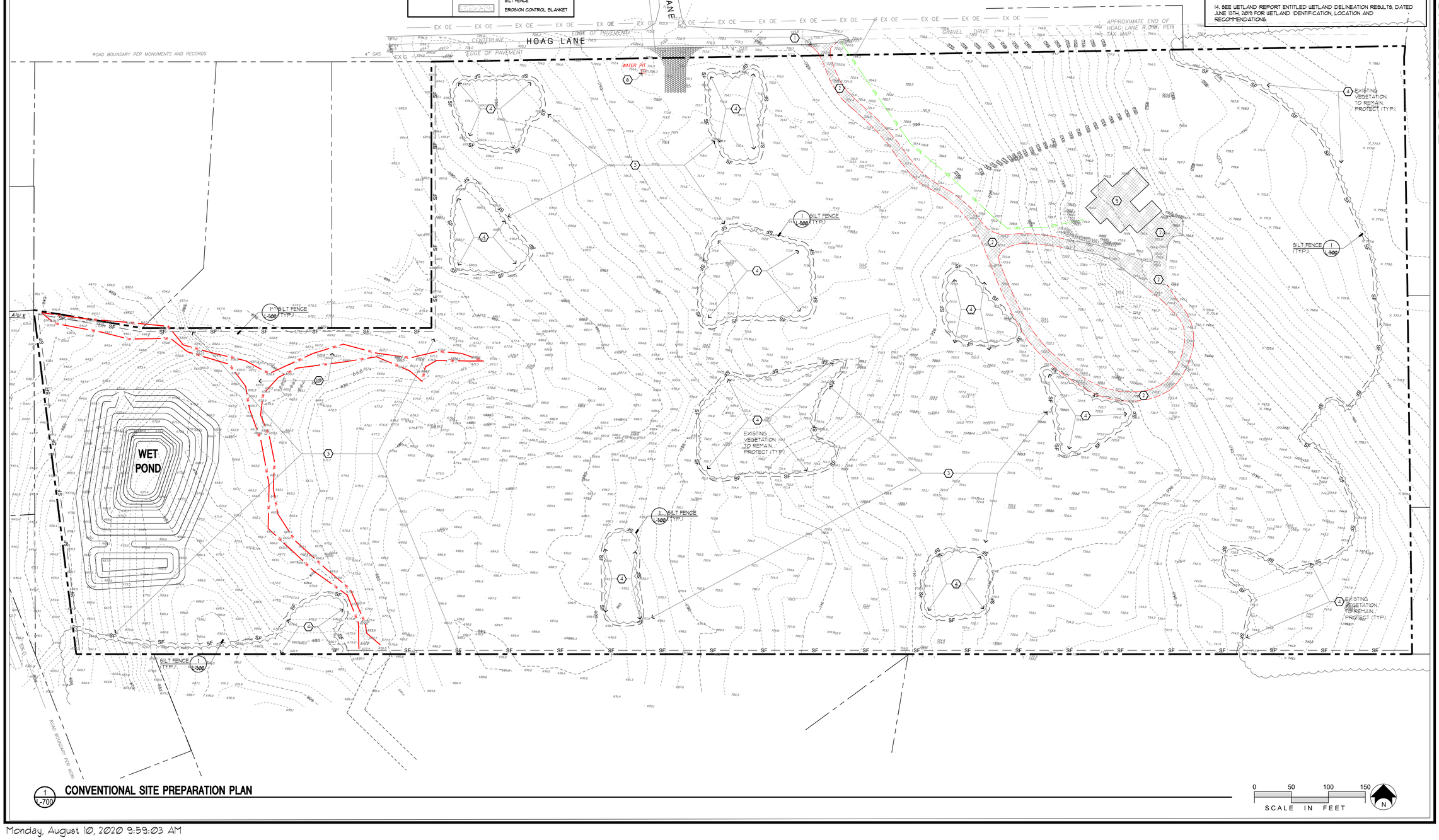
10. REFER TO PLANS L-101 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.

11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.

12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

13. SEE GEOTECHNICAL REPORTS ENTITLED EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED MAY 18TH, 2010 & MAY 21TH, 2010 RESPECTIVELY, FOR DETAILED GEOTECHNICAL INFORMATION AND SOIL PLACEMENT RECOMMENDATIONS.

14. SEE WETLAND REPORT ENTITLED WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 FOR WETLAND IDENTIFICATION, LOCATION AND RECOMMENDATIONS.



1 L-700 **CONVENTIONAL SITE PREPARATION PLAN**

SCALE IN FEET 0 50 100 150 N

Monday, August 10, 2020 9:59:03 AM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK — SCOTT L. ZOLN — 079945 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△ Symbol Indicates Revision Issued

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

No.	Rev.	Description	Date
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

LICENSED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 3T050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL SITE PREPARATION PLAN-21 LOT

L-700

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

X:\HOAG-ZONING-REVISED

1. ZONING

- TAX MAP #104.-01-39.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE §276). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY SEQUIN LAND SURVEYING, P.L.L.C. AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KFA.
  HTTPS://WWW.DOSNY.GOV/LG/PUBLICATIONS/SUBDIVISION%REVIEW%IN%NYS.PDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 23 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R1) FRONTAGE: 150'-0" MIN: 150'-0"
LOT AREA: MINIMUM 40,000 SF

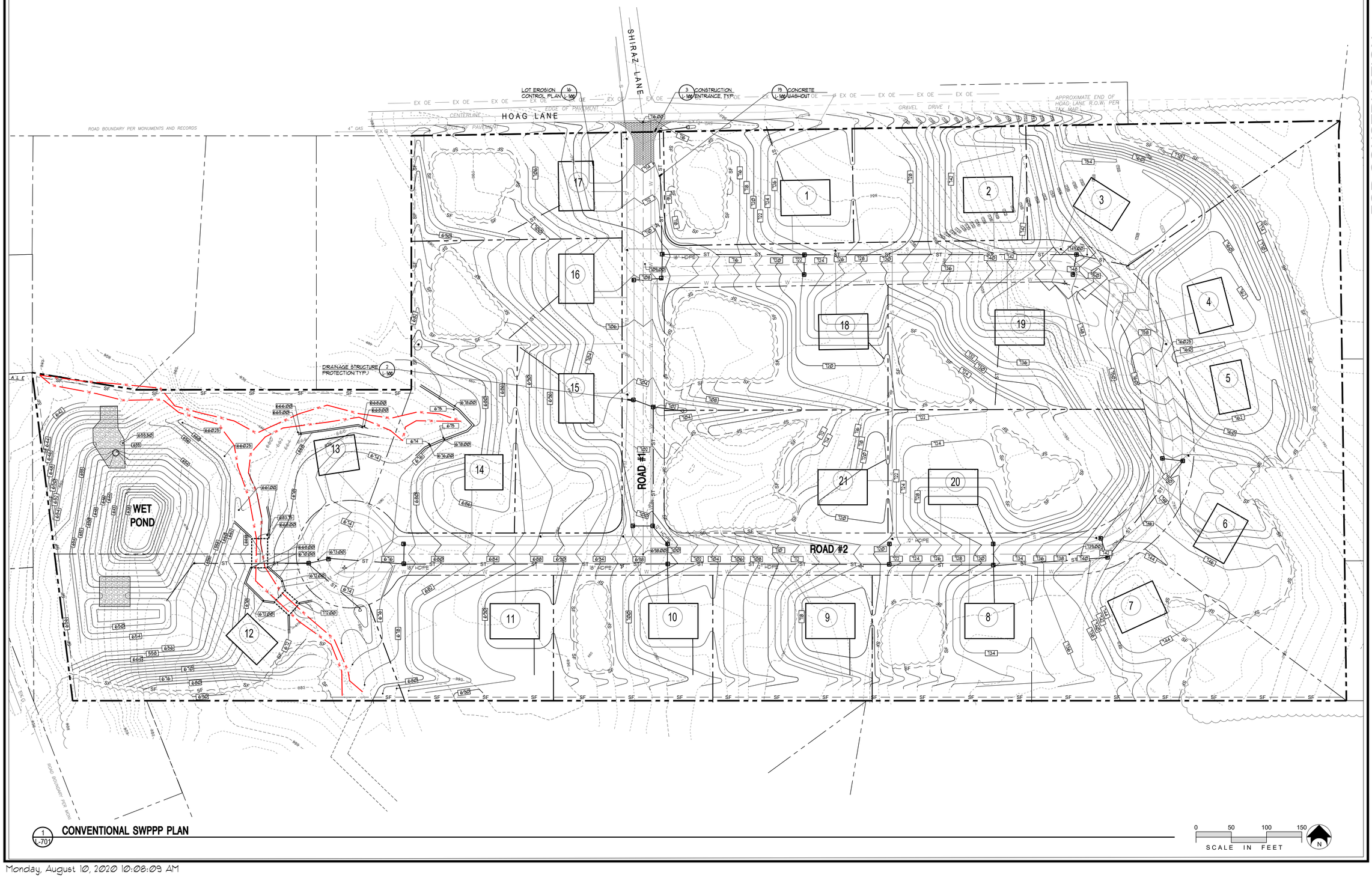
(R3) FRONTAGE: 100'-0" MIN: 100'-0" AVG: 170'- 0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING, OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1,324,224.00
"FOREVER WILD" AREA	9.35	408,303.11
(A) EAST "FOREVER WILD" AREA	3.66	159,367.97
(B) SOUTH "FOREVER WILD" AREA	.55	24,047.43
(C) WEST "FOREVER WILD" AREA	.56	24,571.97
(D) NORTH "FOREVER WILD" AREA	.39	17,218.69
(E) HOA "FOREVER WILD" AREA	4.19	182,697.05

NOTES:
1. 31% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/19/2020.



1 / L-701 **CONVENTIONAL SWPPP PLAN**

SCALE IN FEET 0 50 100 150

Monday, August 10, 2020 10:08:09 AM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK — RUDY L. ZOTA — 079845 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL RD	11/30/18

△- Symbol Indicates Revision Issued

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 19)	07/30/20
15	16	MANLIUS- PLAN SUBMISSION	08/07/20
16	17		
17	18		
18	19		
19	20		
20	21		
21	22		
22	23		
23			

REGISTERED LANDSCAPE ARCHITECT — SCOTT M. FREEMAN — 001417 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 3T050
Date: DECEMBER 1, 2017
Scale: AS NOTED

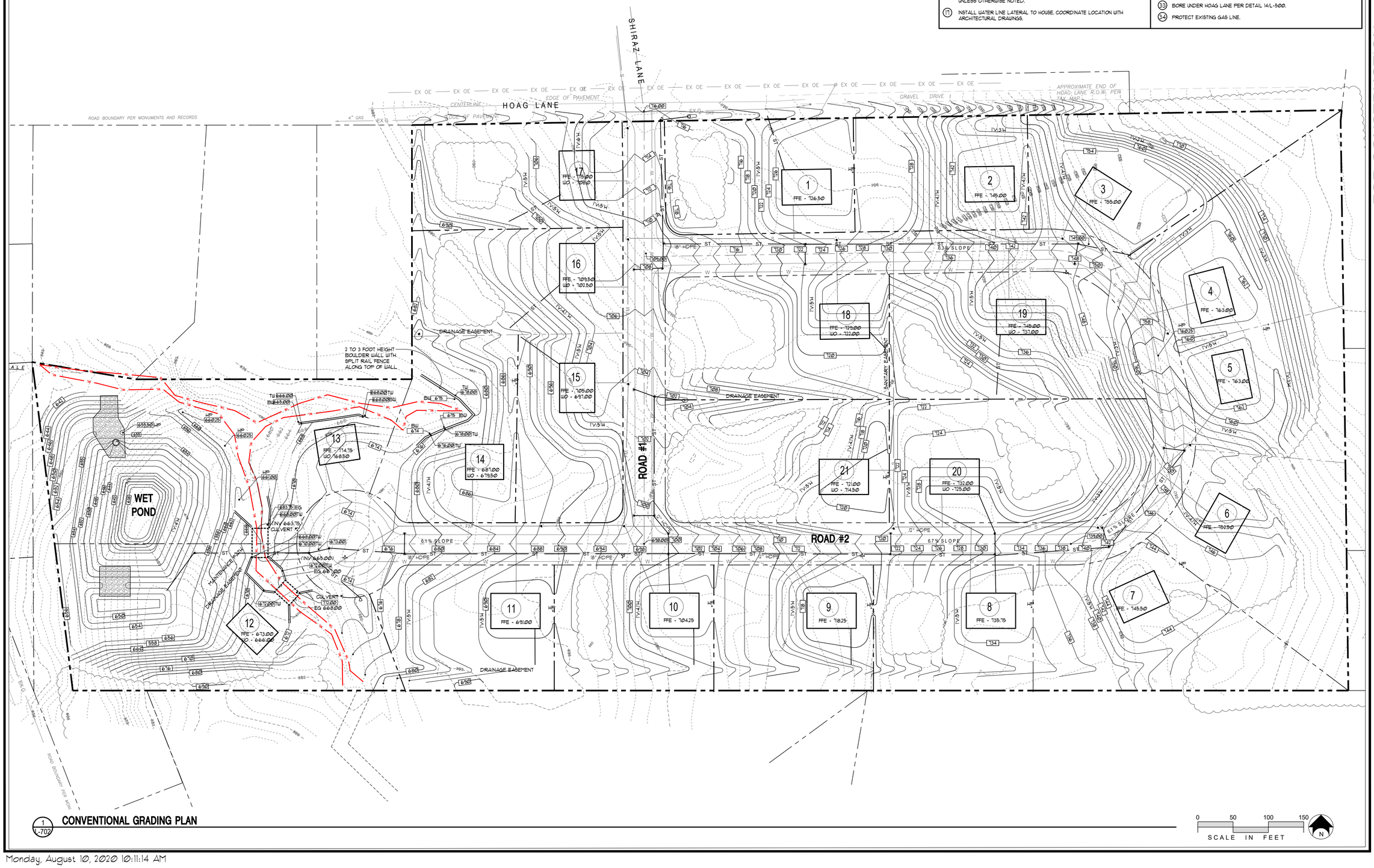
Title:

CONVENTIONAL SWPPP PLAN -21 LOT

L-701

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.). ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS & PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501 FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY.)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS). REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4.1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT, RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 2Ø/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. UYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-101 THRU L-108 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE SOIL.
30. MAINTENANCE ACCESS. NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" WIDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 1V:8H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25. SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 L-702 **CONVENTIONAL GRADING PLAN**

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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STATE OF NEW YORK · RUDY L. ZOLLA · 079945 · LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
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5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL. BD	11/30/18

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
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15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
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19	19		
20	20		
21	21		
22	22		
23	23		

LICENSED LANDSCAPE ARCHITECT · SCOTT LEE FREEMAN · 001413 · STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL GRADING AND DRAINAGE PLAN -21 LOT

L-702

Plotted By:
Date Plotted:
Drawing File:

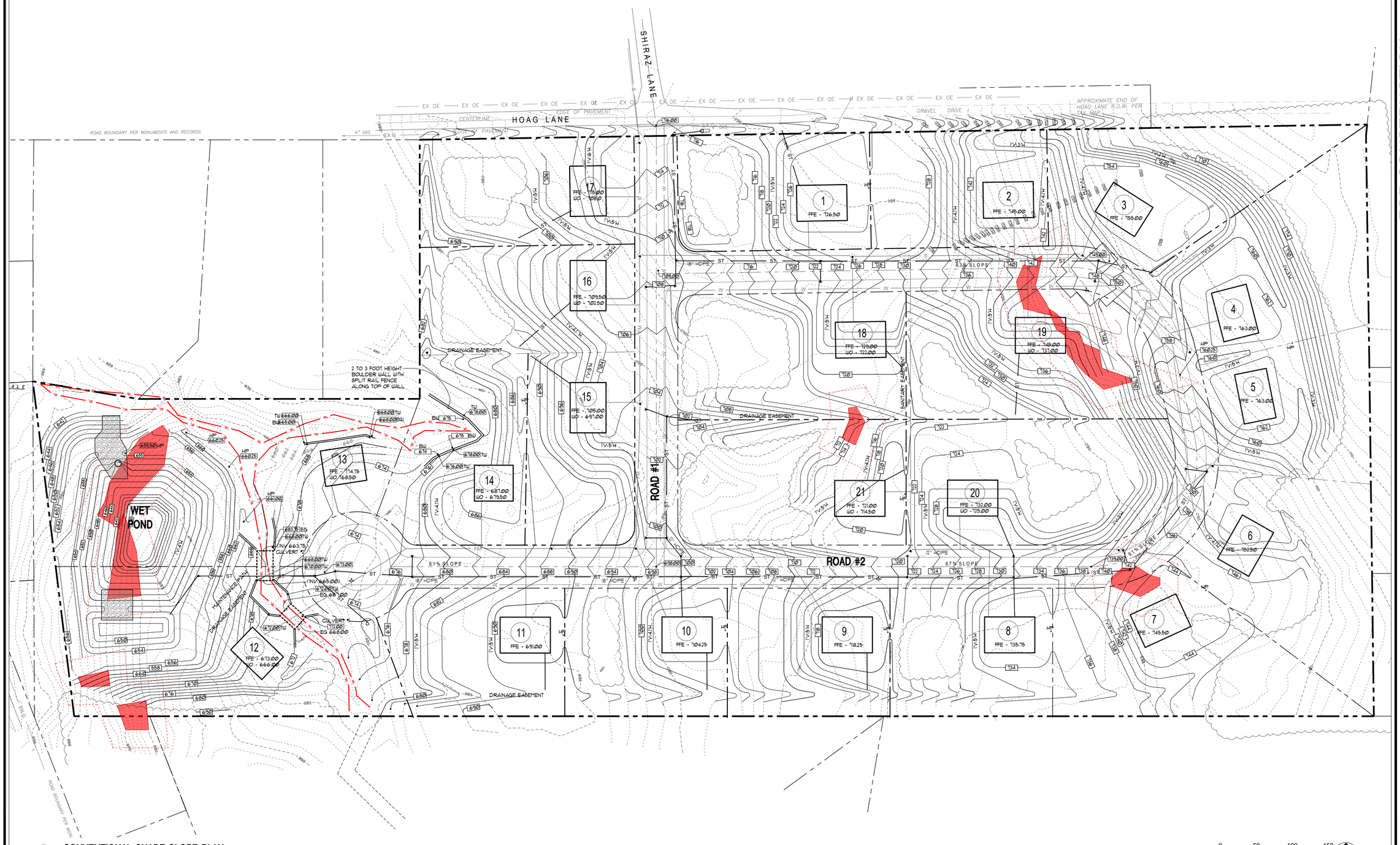
Monday, August 10, 2020 10:11:14 AM

SHADE RELIEF LEGEND - TOWN OF MANLIUS

§ 127-19: C. FOR PURPOSES OF DETERMINING A BUILDABLE LOT IN THE CONTEXT OF A SUBDIVISION APPROVAL, A LOT'S BUILDING ENVELOPE, DEFINED AS THE AREA OF A LOT THAT FALLS WITHIN THE REQUIRED SETBACKS, SHALL INCLUDE AN AREA LARGE ENOUGH TO FIT A REASONABLE BUILDING FOOTPRINT, WHICH IS:

(2) NO CLOSER THAN 25 FEET TO SLOPES OF 25% OR MORE.

= AREAS GREATER THAN OR EQUAL TO 25% SLOPES.



1 L-703 CONVENTIONAL SHADE SLOPE PLAN

0 50 100 150
SCALE IN FEET

KEPLINGER FREEMAN ASSOCIATES
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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△ - Symbol Indicates Revision Issued

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7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
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13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
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21	21		
22	22		
23	23		

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL SHADE SLOPE -21 LOT

L-703

Monday, August 10, 2020 10:13:50 AM

HOAG LANE DEVELOPMENT SEWER SYSTEM TYPE (CONVENTIONAL) - HOAG-SEWER	
SEWER SYSTEM TYPE	LOT NUMBERS
FORCE MAIN SYSTEM SEWER	9, 10, 11, 12, 13, 14, 15, 16
GRAVITY SYSTEM SEWER	1, 2, 3, 4, 5, 6, 7, 8, 17, 18, 19, 20, 21

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
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6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL: COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.) ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL: COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS & PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
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11. NOTE DELETED.
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14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS) REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4.1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
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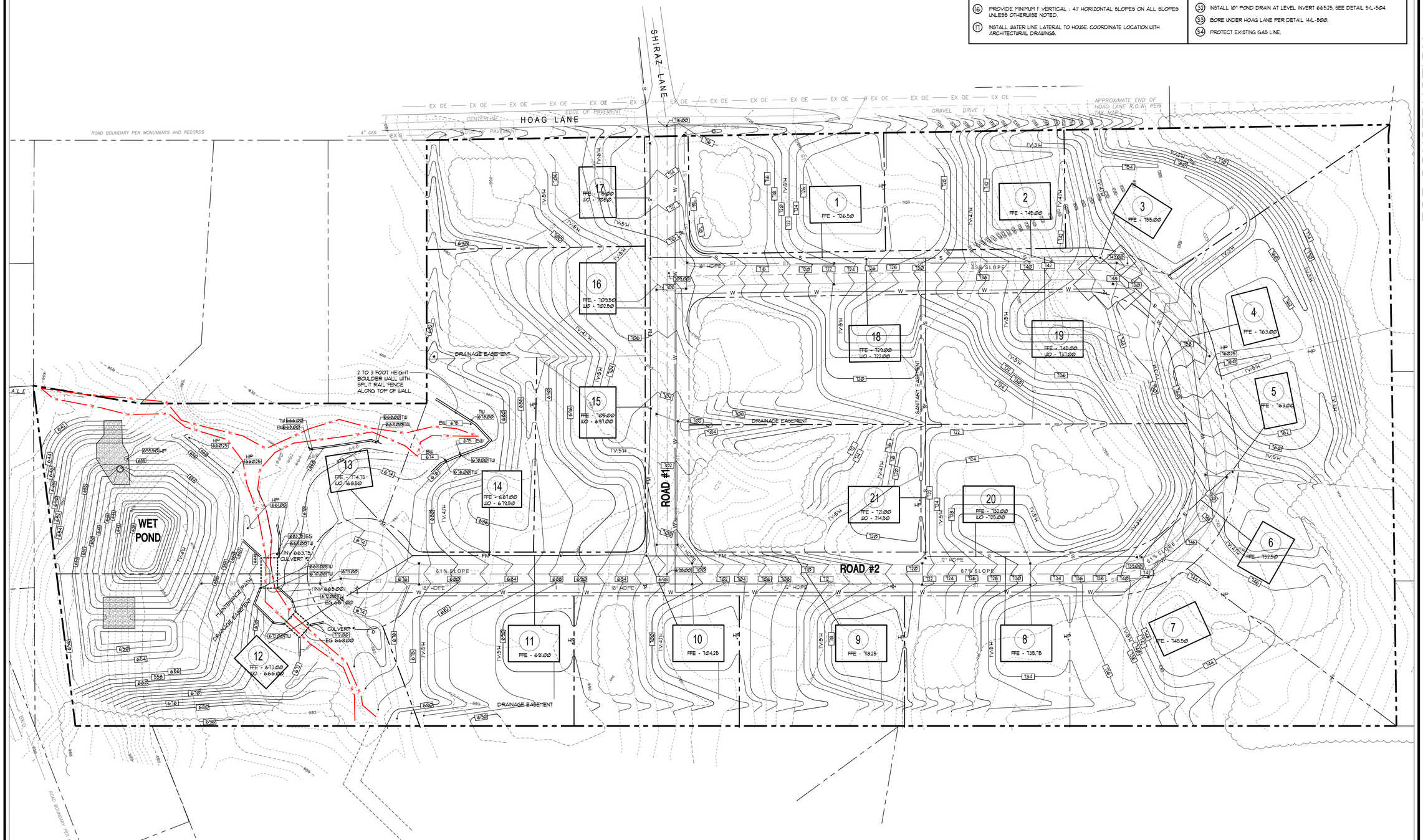
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT. RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 20/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-102 THRU L-108 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT. (16)
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE SOIL.
30. MAINTENANCE ACCESS: NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" WIDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 1V:8H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 L-704 **CONVENTIONAL UTILITIES PLAN**

Monday, August 10, 2020 10:17:11 AM

Plotted By:

Date Plotted:

Drawing File:

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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STATE OF NEW YORK · RUDY L. ZOSS · 079945 · LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

Symbol Indicates Revision Issued

No.	Rev.	Description	Date
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6	6	TOWN REV- 21 LOTS-MANLIUS	10/23/18
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	16	MANLIUS- PLAN SUBMISSION	08/07/20
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	22		
	23		

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001413 STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL UTILITIES PLAN -21 LOT

L-704

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

X:\HOAG\ZONING-REVISED

1. ZONING

- TAX MAP #064.-01-39.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE §276). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY SAGUIN LAND SURVEYING, P.L.L.C. AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KFA.
  HTTPS://WWW.DOSNY.GOV/LG/PUBLICATIONS/SUBDIVISION%REVIEW%N%NYS.PDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 23 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R) FRONTAGE: 150'-0" MIN: 150'-0"
LOT AREA: MINIMUM 40,000 SF

(R3) FRONTAGE: 100'-0" MIN: 100'-0" AVG: 110'-0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

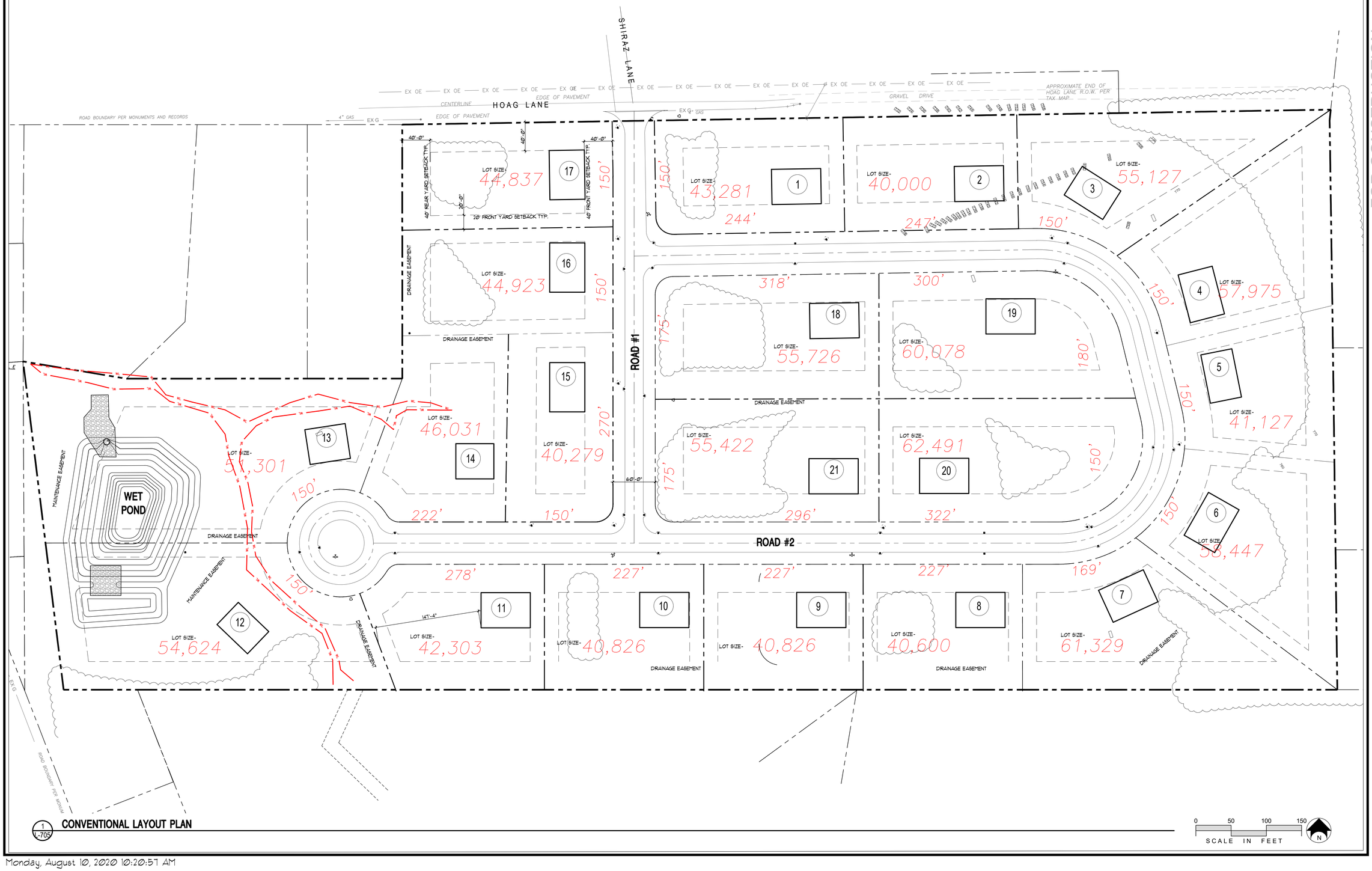
- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING, OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS		ACREAGE	SQUARE FEET
TOTAL SITE		30.04	1,324,224.00
"FOREVER WILD" AREA		9.35	408,303.11
(A)	EAST "FOREVER WILD" AREA	3.66	159,767.97
(B)	SOUTH "FOREVER WILD" AREA	.55	24,047.43
(C)	WEST "FOREVER WILD" AREA	.56	24,571.97
(D)	NORTH "FOREVER WILD" AREA	.39	17,218.69
(E)	HOA "FOREVER WILD" AREA	4.19	182,697.05

NOTES:
1. 31% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/15/2020.

LEGEND NOTES

- STORMWATER EASEMENT AREAS
- CONSERVATION EASEMENT AREAS



1 L-705 **CONVENTIONAL LAYOUT PLAN**

Monday, August 10, 2020 10:20:57 AM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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STATE OF NEW YORK — SCOTT L. ROSS — 079945 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

Symbol Indicates Revision Issued

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/22/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

No.	Rev.	Description	Date
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL LAYOUT PLAN -21 LOTS

L-705

SECTION 31 1000 – SITE DEMOLITION

PART 3 – EXECUTION

3.1 PERMITS

A. Contractor shall secure all necessary demolition permits including fees and licenses at his own expense.
B. Notify local agencies, such as fire, police, etc., that have jurisdiction.

3. 2 DUST CONTROL

A. Prevent dust and dirt from demolition operations from blowing onto adjacent properties.
B. Contractor shall apply dust surfactant/suppression agent such as Syntech 2002 to control dust as required.
C. Dust monitoring shall occur as noted in SWPPP (Stormwater Pollution Prevention Plan).

3.3 DISCONNECT UTILITY SERVICES

A. Disconnect and remove all existing utilities to structures to be demolished unless otherwise noted. Obtain appropriate utility owners/vendors regulations and coordinate caps, termination, shutting off gas, water, sanitary, storm drainage, electrical, telecommunications or other services.
B. Execute work in accordance with applicable utility owners/vendors regulations and directives.

3.4 DEMOLITION

A. Pavements and Other Structures: Define neat regular lines for cutting, saw cut only, protect edges of installations to remain, extend limits of cutting and removal to sound joints or other limits required to remove all adjoining broken, damaged, deteriorated paving, provide a sound stable edge for adjoining installation of new paving.
B. Storm Drains: Remove existing storm drain system components only after temporary or permanent replacement facilities are in place and operative to collect and channel storm water to required outfalls.
C. Salvage and Stockpile: Carefully remove and protect any existing improvements to be reinstalled as part of the work, including any improvements which may be reinstalled at Contractor's discretion. Contract and protect such items in addition to salvaging and stockpiling, if any, indicated on drawings, or existing improvements to be salvaged for future Owner use, stockpile in approved locations on property as determined by Owner.
D. Tree and Vegetation Removal: Clear, grub and remove all existing tree, shrub and other woody vegetation identified on the drawings or otherwise required to completely and properly prepare the site within the perimeter lines and limits of site excavation and regrading work. Protect all trees not identified for removal. Completely pull, grub and otherwise remove tree stumps/woody root systems. All vegetation and debris removed and stumps shall be legally disposed of off-site.
E. Rubble: Concrete, asphalt rubble and other hard-fill type debris from demolition shall be removed and legally disposed of off-site.
F. General Debris: Plastics, metals, garbage and other general debris shall be removed from the site and properly disposed of.
G. The use of explosives is not permitted for any demolition or removal work.

3.5 REMOVAL

A. Remove from site all debris and all materials not indicated to be salvaged. All removed materials become property of Contractor who shall legally dispose of materials.

END OF SECTION 31 1000

SECTION 31 1001 – SITE PREPARATION

PART 3 – EXECUTION

3.1 GENERAL JOB CONDITIONS

A. Schedule and conduct work in accordance with STAGING PLANS. Do not impede access by emergency vehicles and local traffic at any time. Maintain free access to all areas on the drawings; do not intrude onto other site areas more than reasonably necessary for access, staging, storage and other incidental aspects of work.
B. Verify all existing lines, limits, distances, dimensions, elevations, and other conditions affecting work required. Comply with special instructions on drawings. Notify Architect immediately of any conditions encountered which appear to differ from those indicated on drawings or which, to such matters may be resolved. Verify any existing underground utility locations and conditions prior to excavation, contact and secure UFPO services as required (1-800-962-7962).
C. Excavate carefully in all locations close to known or likely underground utility lines. In addition to all requirements of the General Conditions and all other public safety regulations and requirements applicable to the work, exercise caution in all sitework access and operations in anticipation that public pedestrian and vehicular traffic and activity will occur in proximity to the work and to access routes to and from the work at all times.
D. Contractor is held to have visited site and to have identified, investigated and measured surface and subsurface conditions and quantities involved in and affecting the work, complexity and cost of the work prior to submission of a bid. Contractor may, for his information, make test excavations during bidding period. Contact Architect for approval prior to any such excavation and repair test holes as directed. Contractor shall use his own judgment in investigating all surface and subsurface conditions, no responsibility is assumed by Owner or Architect for survey information, lack of survey information, or actual conditions encountered. Any geotechnical evaluation reports with soil test boring and pit logs, descriptions and related data and recommendations on existing subsurface and construction conditions included in the contract documents are made available for the convenience of the Contractor. If included, such reports are not intended as a representation or warranty of the accuracy of such information or the continuity of conditions between any soil boring and test pit locations. It is expressly understood that the Owner and Architect shall not be responsible for interpretations or conclusions drawn from the reports by the Contractor. Claims for extra compensation or inability to perform work in accordance with Contract Documents, or for an extension of time will not be considered for any alleged or actual differences between site surface or subsurface conditions and such information and data, except as may be provided elsewhere in the Contract Documents. Owner may elect alternative methods of undertaking work in event that variations in sitework conditions or unknown conditions are encountered.
E. Avoid spills and littering of earth, rubble or other debris on Owner or other public streets or other roadways; clean up any spills promptly and regularly.
F. Notify developer in writing of any existing damage to "Items to remain" prior to commencing work.

3.2 LAYOUT, LINES, LEVELS, AND FIELD CHECKS

A. Employ licensed Engineer or Surveyor to stake out all work.
B. Set hubs, offset lines, and grade stakes where spot elevations shown, at breaks in grade, and as otherwise required.
C. Run lines from existing buildings, monuments, and features shown on drawings. Establish base lines. Mark well and protect during construction. Run levels from benchmarks. Verify benchmark elevations. Advise Architect of results before commencing work.
D. Accurately locate all new buildings, roads, paved areas, walks, features, etc. Advise Architect of any discrepancies, prior to commencing work.

3.3 PROTECTION

A. Plank all walks, pavements, and curbs to be crossed by equipment.
B. Protect Persons and Property: provide temporary fencing, barricades, signs, signals, and other measures and devices for protection of persons, property, existing improvements to remain and traffic and other activities in and adjacent to the site of the work, in accordance with all applicable laws and regulations, at all times during work. When work areas are to be unattended, check that open excavations or other unsafe areas or conditions are adequately barricaded and that signals are operative. Perform work to prevent erosion, flooding, undermining, lateral movement, settlement, or other instability or damage of adjoining areas of the site and adjoining improvements. Make certain that cut or fill embankments slopes are stable during overnight or other periods of work interruption.
C. Protect Utilities: Protect and preserve in operating condition all active surface and subsurface utilities indicated on the drawings or which may otherwise exist or be encountered within or adjacent to the work. Excavate carefully near any known or suspected utility lines. Cooperate with other contractors performing removals or replacements of utilities. Particularly note the instructions on the drawings to verify location and/or depth of certain utility lines. Secure UPPO services to locate utilities. Damage to any utility lines or structures resulting from work shall be repaired by at the expense of the contractor, to the satisfaction of the Owner, Architect, utility company or other authority having jurisdiction. If active utilities are cut, broken, or damaged during work, immediately take all steps necessary to avoid endangering persons or property. Notify Owner, Architect and applicable utility company or other jurisdiction to obtain their decision and/or assistance in repair of damaged facilities. Remove, plug or cap as required any active and abandoned utilities encountered during construction operations or shown on drawings. If Contractor is required to reroute/relapse any portions of existing active utility lines, determine connection points and otherwise plan work in advance so that interruptions will be kept as briefly as possible. Where existing lines are to be abandoned, remove any portions which may interfere with or may be unstable or prone to settle under or along new structures or pavements, refer to drawings. Other portions may be abandoned in-place. In event that water, storm sewer, sanitary sewer, or other utility lines are broken, or that springs, ground water, or other sources of water are encountered, take necessary steps to immediately divert water to prevent erosion, undermining or other damage to existing improvements or construction operations. Permanent replacement, reconstruction or other corrective measures are Contractor's responsibility. Methods subject to approval of Architect and other having jurisdiction.
D. Protect Trees: protect all trees and shrubs in and adjoining work areas which are not identified to be removed. Do not store or stockpile earth or other materials or equipment and do not operate heavy equipment more than necessary within the branching limits of trees.

3.4 CLEARING AND GRUBBING

A. Unless otherwise noted on the drawings, remove promptly from site and legally dispose of all trees, logs, stumps, roots, brush, vegetation, rubbish, stones, boulders and other objectionable or perishable materials within grading limits to 1 – 6" below finish grade or to original grade whichever is the greater depth.
B. No burning of any cleared and grubbed material shall be permitted.

END OF SECTION 31 1001

SECTION 31 1413 – TOPSOIL

PART 1 – GENERAL

PART 2 – PRODUCTS

PART 3 – EXECUTION

3.1 TOPSOIL STRIPPING

A. Remove all trees and stumps prior to stripping topsoil. Investigate depth of organic soils in each designated area as the work progresses and strip topsoil accordingly. Depth may vary over the site of the work. Strip full depth of topsoil from removal limits shown on plan.
B. Stockpile in locations shown on plan where material will not interfere with other work and guard against erosion and sedimentation onto adjoining work areas or off-site areas.
C. Do not lift and mix subsoil material with topsoil. Remove debris and other foreign material and large stones encountered as work progresses. Ordinary grass sods and small roots, twigs and other woody material shall not be removed but shall be thoroughly broken up and intermixed with soil during handling operations.
D. All topsoil shall be screened prior to reuse/respreading.

END OF SECTION 31 1413

SECTION 31 2213 – ROUGH GRADING

PART 3 – EXECUTION

3.1 ROUGH GRADING

A. Subgrade: Depth below finished grade as required for topsoil or pavement.
B. Accuracy: Set grade stakes where spot elevation shown, at breaks in grade, along drainage "swales" and as otherwise required to correctly grade the site work according to elevations shown on plans.
C. Completion of rough grading: Obtain Architect's approval before spreading topsoil or preparing pavement subgrade.
D. Subgrade rolling: All paved areas. In areas inaccessible to roller, use mechanical tamps. Refer to Section 32 2301, Pavement Excavation, Backfilling and Compacting for additional requirements.
E. Avoid excessive working of subgrade or use of equipment that causes pumping or weaving.

END OF SECTION 31 2213

SECTION 31 2216 – FINE GRADING

PART 3 – EXECUTION

3.1 SPREAD TOPSOIL

A. Entire unpaved area within contract limits, unless otherwise noted.
B. Spread, compact and stabilize topsoil to a minimum of thickness as detailed after compaction to smooth draining grades true to elevations shown or indicated on drawings. Generally, all areas shall receive 4" topsoil thickness, plant beds shall receive 18" minimum topsoil thickness. Refer to drawings for verification and any special requirements for use of stripped topsoil.
C. Excess topsoil: Excess topsoil is the property of the owner. Excess topsoil shall remain in the approved topsoil stockpile area.

3.2 FINE GRADE OUTSIDE BUILDING LINES

A. Disk or harrow 4" depth where topsoil has been spread and 4" depth in disturbed areas where no grade changes occur.
B. Remove all stones 1" diameter and larger, roots, rubbish and all other foreign matter.
C. Grade to exact well draining grades indicated. Maximum allowed tolerances:
   1. Unpaved areas - grade surface areas to receive lawn or plantings to a tolerance of plus or minus 0.10'. Swales and ditches to a tolerance of plus or minus 0.05'.
   2. Paved areas-shape subgrade for pavement to a tolerance of plus or minus 0.05'.
   3. Exterior steps and ramps--finished subgrade to a tolerance of plus or minus 0.05'.

END OF SECTION 31 2216

SECTION 31 2301 – SITEWORK EXCAVATION, BACKFILLING AND COMPACTING

REFER TO DRAWING L-503 EXCAVATION, BACKFILLING, AND FILLING DETAILS FOR SECTION 31 2301.

SECTION 31 2500 – EROSION CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. The extent of the erosion, sediment and pollution control is shown on the drawings.
B. Erosion, sediment and pollution control includes, but is not limited to the following:
   1. Erosion, sediment and pollution control measures including silt fence, stone check dams and silt fence dikes.
   2. Slope and swale protection.
   3. Construction entrances.
   4. Permanent and temporary seeding.
   5. Permanent Turf Reinforcement Mats.
C. SPEDES General Permit for Stormwater Discharge is required for sites with disturbance areas which are greater than 1 acre. A SPEDES permit requires the following items to be on site:
   1. Completed Notice of Intent posted on site. Owner to submit by
   2. SWPPP (Storm water Pollution Prevention Plan) Maintenance and inspection log book (prepared by Owners' consultant).
   3. Contract drawings and specifications which include the implementation of Stormwater Management devices (prepared by owners' consultant).
   4. A 5 are disturbance letter with development conditions will be obtained from the NYSDEC after the SPEDES permit has been authorized.
D. Related sections:
   1. Section 31 1413 - Topsoil
   2. Section 31 2213 - Rough Grading
   3. Section 31 2216 - Fine Grading
   4. Section 31 2301 - Sitework Excavation, Backfilling and Compacting
   5. Section 33 4600 - Storm Drainage
   6. Section 32 9000 - Lawns and Sod
   7. Section 32 9300 - Plantings

1.2 QUALITY ASSURANCE

A. Conform to requirements of all regulatory authorities having jurisdiction.

1.3 REFERENCES

A. Guidelines for Erosion Control in Urban Areas of New York State.
B. New York State Stormwater Management Design Manual.
C. New York State Department of Environmental Conservation's "SPEDES General Permit for Stormwater Discharges for Construction Activity Permit".

1.4 INSPECTIONS and MAINTENANCE CRITERIA

A. SITE ASSESSMENT INSPECTION (PRECONSTRUCTION INSPECTION)
   1. The OWNER shall have a qualified professional conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described on the plans (Erosion and Sediment Control Plan) and the DEC's technical standards for erosion and sediment controls as detailed in the "New York Standards and Specifications for Erosion and Sediment Control" have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction. For the design of water quality and water quantity controls (post-construction stormwater control practices), the Department's technical standards are detailed in the "New York State Stormwater Management Design Manual."
B. INSPECTION REQUIREMENTS
   1. Following the commencement of construction, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 1/2" or greater. Site inspections shall be conducted twice a week during times that more than 5 acres of the site have been disturbed. During each inspections, the qualified professional shall record the following information:
      a. On a site map, indicate the extent of all disturbed areas and drainage pathways.
      b. Indicate all areas that are expected to undergo initial disturbance in the significant site work within the next 14-day period.
      c. Indicate all disturbed areas that have not undergone active stewardship during the previous 14-day period;
      d. Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume.
      e. Inspect all erosion and sediment control practices and record all maintenance requirements verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/ mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters (check dams, riser pipes) to pass water.
      f. All deficiencies that are identified with the implementation of the SWPPP
   2. The Operator shall maintain a record of all inspection reports in a site log book. The site log book shall be maintained on site and be made available to the permitting authority upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis.
C. POST CONSTRUCTION INSPECTION
   1. Prior to the Inspector's submittal of the Notice of Termination or the end of permit term, the Operator shall have the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization.

1.5 SUBMITTALS

A. Material Certificates (MC) and Sample (S) of material required for the following materials:
   1. No. 4 Stone;(MC), (LA) and (S) provide 5 lb sample
   2. No. 1 Crushed Stone; (See Section 31 2300, Submittals)
   3. Subbase Material: (See Section 31 2300, Submittals)
   4. Select Granular Fill: (See Section 31 2300, Submittals)
B. Shop Drawing, Manufacturers data (MD) and product sample (S) for the following materials as noted below:
   1. Stabilization Fabric for Construction Access Road: (MD)
   2. Silt Fence: (MD)
   3. Erosion Control Fabric: (MD)
   4. Soil Separation Fabric: (MD)
   5. Permanent Turf Reinforcement Mat and anchoring pins: (MD)
C. Certifications (SPEDES Requirement): The Contractor(s) responsible for project sitework shall submit a signed SWPPP certification page.
D. Construction Sequence Scheduling (SPEDES Requirement): The contractor is responsible for the completion of Schedule.
E. Maintenance Plan (SPEDES Requirement): The Owner/Contractor shall submit a Maintenance Plan with the following information: (note that some items may not be applicable to this project)
   1. Name, address and phone number of responsible parties for maintenance.
   2. Description of inspection and maintenance tasks.
   3. Description of funding source.
   4. Minimum vegetative cover requirements.
   5. Access and safety issues.
   6. Listing and disposal of sediments that will likely be necessary.
   7. Evidence of acquisition of all applicable local and non local permits.
   8. Evidence of acquisition of all necessary legal agreements (e.g., easements, covenants, land trusts).

1.6 NOTICE OF INTENT (SPEDES Requirement)

A. Notice of Intent (NOI): The Contractor shall post a New York State Department of Environmental Conservation completed Notice of Intent (NOI). Coverage under the general permit will begin 7 business days after the receipt by the Department. The contractor shall post this permit at the site.
B. Notice of Intent has been filed with the NYSDEC by the owner. SPEDES permits have been obtained for this project. Copies of the permit are available to the Contractor for posting.

1.7 INSPECTIONS AND MAINTENANCE (SPEDES Requirement)

The Contractor shall post the Stormwater Pollution Prevention Plan (SWPPP) and Construction Sequencing Schedule on site and conduct the following activities:

A. Inspections: The Operator shall contract a qualified professional to conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction. Following the commencement of construction, facilities shall be inspected within 24 hours of each rain event where rainfall exceeds 1/2" of rain or greater which ever comes first or as otherwise specified; provided immediately to repair any failures, washouts, erosion, overflows or other conditions occurring due to rain events to minimize downstream disturbance and sedimentation.
B. Site Log/Certification: The contracted qualified professional must maintain a record of all inspections reports in a site log book. The site log book must be maintained on site and made available to the permitting authority upon request. Prior to starting construction, the Operator must certify in the site log book that the SWPPP was prepared in accordance with the requirements in the permit and that it meets all federal, state and local erosion and sediment control requirements.
C. Stabilization: The Contractor must initiate stabilization measures as soon as predictable on portions of the site where construction activities have temporarily or permanently ceased.
D. Maintenance: Sediment must be removed from sediment traps or ponds whenever their capacity has been reduced by 50% of the design capacity.

1.8 CERTIFICATIONS

A. Refer to Contractor Certification Form contained in the Storm Water Pollution Protection Plan for the project.

1.9 SUPPLEMENTAL DOCUMENTS

A. Storm Water Pollution Prevention Plan for the project will be provided. Refer to attachment at end of this section. (To be added at completion of contract documents.)
B. Stormwater Management System Report for Subdivision prepared by Keplinger Freeman Associates and RZ Engineering. This report outlines the engineering and design calculations for the increased runoff and stormwater detention facilities required. The stormwater summary is included in the SWPPP Maintenance and Inspection Log Book. Copies of the full stormwater management report are available for a nominal charge.

PART 2 PRODUCTS

2.1 MATERIALS

A. Silt fence:
   1. Fabric - Mirafi 100X or equal.
   2. Support - 14-1/2 gauge galvanized woven wire with maximum 6" mesh opening.
   3. Stakes: Rough sawn hardwood, pointed on one end. Minimum cross sectional area 3 sq. inches.
B. Construction Access Road (Mudrack):
   1. Stabilization Fabric - Refer to Section 31 2300 - Excavation, Backfilling and Compaction.
   2. Stone - No. 4 stone or crushed concrete.
C. No. 4 Stone:

Standard ASTM Sieve Size	% Passing by Weight
4"	100
3"	90 - 100
2"	0 - 15
Passing No. 50	5 - 10
Passing No. 100	2 - 5

D. Erosion Control Fabric:
   1. Material - Mutual Industries or approved equal.
   2. Woven jute (undyed and sun bleached)
E. Permanent Turf Reinforcement Mats:
   1. Material – Pyramat High Performance Turf Reinforcement Mats as manufactured by Propex Geosynthetics (www.propex.com) or approved equal.
   2. Reference Standards – Comply with U.S. EPA Storm Water Fact Sheet, "Turf Reinforcement Mats" (EPA 832-F-99-002) and FHWA FP-03 Specifications Section 713.8.
F. Seeding: Refer to Section 32 9200.

PART 3 EXECUTION

3.1 GENERAL

A. The contractor is responsible for controlling sediment from leaving the project site. A Storm Water Pollution Prevention Plan, erosion control plan and erosion control details have been prepared for this project and shall be followed during construction.
B. Pollutants such as fuels, lubricants, bitumens, raw sewage, chlorine and other harmful materials shall be handled and disposed of by approved methods and shall not be discharged into rivers, streams, impoundments, wetlands, or into natural or man-made channels leading thereto. Wash water or waste from concrete mixing or curing operations shall not be allowed to enter live streams.
C. In case of repeated failures on the part of the Contractor to control pollution/erosion, the right shall be reserved by the Owner's representative to employ outside assistance to provide the necessary corrective measures. Such incurred costs, plus related engineering costs, shall be charged to the Contractor and appropriate deductions made to the Contractor's progress payment.
D. Any fines or fees incurred by the Contractor for failure to implement and maintain erosion control devices shall be paid for by the Contractor.

3.2 INSTALLATION OF EROSION CONTROL FACILITIES

A. Simultaneous with removal work and earthwork, install temporary erosion and sediment control facilities shown on drawings and all other facilities required initially and from time to time throughout the work as determined by the Contractor in accordance with Guidelines for Erosion Control in Urban Areas of New York State to prevent and reduce erosion and sedimentation affecting existing on-site improvements to remain or adjoining property or roadways.
B. To control erosion and sedimentation, initial construction operations shall include, as a minimum:
   1. Silt fencing along all perimeters of work as may be shown on the drawings and other perimeters which could produce erosion and sedimentation affecting adjoining properties, roadways, water bodies, and other improvements and facilities.
   2. Silt fencing around stockpiles of topsoil and other excavated soils.
   3. Installation of Stabilized Construction Entrance (Mud Rack)
C. Temporary sediment traps installed by the Contractor shall be sized to provide, as a minimum, 1800 CF of storage capacity for each acre of area being drained or as indicated on plans.
D. Sediment shall be removed from temporary sediment basin and sediment swales and traps and along silt fences and sone bale dikes regularly to maintain stability, flow and storage capacity.
E. Throughout all building and site work, Contractor shall be responsible for erosion and sediment control and for planning, scheduling and phasing work to prevent erosion or sedimentation. Drainage areas should be seeded and stabilized as soon as possible as other work is completed. Temporary seeding with Annual Rye may be considered if final seeding is delayed. All facilities shall be removed as the contributory drainage areas are stabilized and as construction is to be completed. Restore all affected site areas and surfaces.
G. Maintain Best Management Practices (BMP's) per SWPPP.

3.3 SLOPE PROTECTION

A. Protect all disturbed areas during and after earthwork operations as required to prevent gullying, mass wasting and erosion. Stabilize with erosion control fabric. Repair all eroded areas at no expense to the Owner.

3.4 SILT FENCE

A. Construct as detailed truly vertical for entire length. Install all contour 10' from toe of slope when practical.
B. Install where indicated on the drawings and/or as required. Wrap silt fence end posts together for continuous support in bed fabric; 6" minimum.
C. Fabric: Fabric 6" minimum.
D. Periodically maintain, remove sediment when 50% or greater full.
E. Promptly replace damaged or worn silt fence immediately

3.5 STABILIZED CONSTRUCTION ENTRANCE

A. Install where indicated on the drawings and/or as required.
B. Construct as detailed from stone or crushed concrete over thin site demolition. Maintain at all times and renew when no longer effective. Remove when no longer being used.
C. The pavement adjacent to the entrance shall be swept daily to remove excess mud, dirt or rock tracked from the site.
D. Dump trucks hauling material from the site shall be covered with a tarpaulin.

3.6 INTERCEPTER DIKES & SWALE

A. Install per plan or as otherwise required to direct storm water runoff to temporary sediment traps and detention facilities.
B. Stabilize with erosion control fabric, seed or mulch.
C. Install stone check dams along swale line as detailed at 2' vertical intervals.

3.7 EXCAVATION DEWATERING

A. Install upstream and/or downstream berm as required.
B. Sediment-laden water shall be discharged to silt trapping device.

3.8 STONE CHECK DAM

A. Check Dam where indicated on the plans and as otherwise required by construction staging.
B. Maintain Check Dams during duration of construction.
C. Remove silt when Check Dam.
D. Remove all temporary earthworks when seeding has been stabilized.

3.9 INLET PROTECTION

A. Contractor shall protect inlet, end sections and other outlets using appropriate Best Management Practices. Best Management Practices include Bale and Gravel drop inlet protection, filter fabric inlet protection and excavated drop inlet protection as acceptable control devices.

3.10 TEMPORARY SEDIMENT BASIN

A. Install where noted on plans.
B. Stabilize basin including side slopes.
C. Remove accumulated sediment & debris periodically.

3.11 PERMANENT TURF REINFORCEMENT MATS

A. Install where noted on plans.
B. Install per manufacturers specifications.

END OF SECTION 31 2500

SECTION 31 2500 - EROSION, SEDIMENT AND POLLUTION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. THE EXTENT OF THE EROSION, SEDIMENT AND POLLUTION CONTROL IS SHOWN ON THE DRAWINGS AND WITHIN SWPPP (STORMWATER POLLUTION PREVENTION PLAN).
B. EROSION, SEDIMENT AND POLLUTION CONTROL INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
   1. EROSION, SEDIMENT AND POLLUTION CONTROL MEASURES INCLUDING SILT FENCE, STONE CHECK DAMS AND SILT FENCE DIKES
   2. SLOPE AND SWALE PROTECTION
   3. CONSTRUCTION ENTRANCES
   4. PERMANENT AND TEMPORARY SEEDING
C. RELATED SECTIONS:
   1. SECTION 31 1413 - TOPSOIL STRIPPING
   2. SECTION 31 2213 - ROUGH GRADING
   3. SECTION 31 2216 - FINE GRADING
   4. SECTION 31 2301 - SITEWORK EXCAVATION, BACKFILLING AND COMPACTING
   5. SECTION 32 9200 - LAWNS AND SOD
   6. SECTION 32 9300 - PLANTING
   7. SECTION 33 4000 - STORM DRAINAGE

1.2 QUALITY ASSURANCE

A. CONFORM TO REQUIREMENTS OF ALL REGULATORY AUTHORITIES HAVING JURISDICTION.

1.3 REFERENCES

A. GUIDELINES FOR EROSION CONTROL IN URBAN AREAS OF NEW YORK STATE.
B. NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL
C. NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATIONS 'SPEDES GENERAL PERMIT FOR STORMWATER DISCHARGES FOR CONSTRUCTION ACTIVITY PERMIT.

1.4 SUBMITTALS

A. MATERIAL CERTIFICATES (MC) AND SAMPLE (S) OF MATERIAL REQUIRED FOR THE FOLLOWING MATERIALS:
   1. NO. 4 STONE (MC), (LA) AND (S) PROVIDE 5 LB. SAMPLE
   2. NO. 1 CRUSHED STONE; (SEE SECTION 31 2300, SUBMITTALS)
   3. SUBBASE MATERIAL: (SEE SECTION 31 2300, SUBMITTALS)
B. SHOP DRAWING, MANUFACTURERS DATA (MD) AND PRODUCT SAMPLE (S) FOR THE FOLLOWING MATERIALS AS NOTED BELOW:
   1. STABILIZATION FABRIC FOR CONSTRUCTION ACCESS ROAD: (MD)
   2. SILT FENCE: (MD)
   3. EROSION CONTROL FABRIC: (MD)
   4. SOIL SEPARATION FABRIC: (MD)
C. CERTIFICATIONS (SPEDES REQUIREMENT): THE CONTRACTOR(S) RESPONSIBLE FOR PROJECT SITEWORK SHALL SUBMIT A SIGNED SWPPP CONTRACTOR CERTIFICATION PAGE.
D. CONSTRUCTION SEQUENCE SCHEDULING (SPEDES REQUIREMENT): THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETION OF SCHEDULE.
E. MAINTENANCE PLAN (SPEDES REQUIREMENT): THE OWNER/CONTRACTOR SHALL SUBMIT A MAINTENANCE PLAN WITH THE FOLLOWING INFORMATION: (NOTE THAT SOME ITEMS MAY NOT BE APPLICABLE TO THIS PROJECT;
   NAME, ADDRESS AND PHONE NUMBER OF RESPONSIBLE PARTIES FOR MAINTENANCE;
   DESCRIPTION OF ANNUAL MAINTENANCE TASKS;
   DESCRIPTION OF FUNDING SOURCE;
   MINIMUM VEGETATIVE COVER REQUIREMENTS;
   ACCESS AND SAFETY ISSUES;
   TESTING AND DISPOSAL OF SEDIMENTS THAT WILL LIKELY BE NECESSARY;
   EVIDENCE OF ACQUISITION OF ALL APPLICABLE LOCAL AND NON LOCAL PERMITS;
   EVIDENCE OF ACQUISITION OF ALL NECESSARY LEGAL AGREEMENTS (E.G., EASEMENTS, COVENANTS, LAND TRUSTS).

PART 2 - PRODUCTS

2.1 MATERIALS

A. SILT FENCE:
   1. FABRIC: MIRAFI 100X OR EQUAL.
   2. SUPPORT - 14.5 GAUGE GALVANIZED WOVEN WIRE WITH MAXIMUM 6" MESH OPENING.
   3. STAKES: ROUGH SAWN HARDWOOD, POINTED ON ONE END. MINIMUM CROSS SECTIONAL AREA
   4. 3 SQ. INCHES.
B. CONSTRUCTION ACCESS ROAD (MUDRACK):
   1. STABILIZATION FABRIC - REFER TO SECTION 31 2301 - EXCAVATION, BACKFILLING AND COMPACTION.
   2. STONE - NO. 4 STONE OR CRUSHED CONCRETE.
C. NO. 4 STONE:

STANDARD ASTM SIEVE SIZE	% PASSING BY WEIGHT
4"	100
3"	90-100
2"	0-15
PASSING NO. 50	5-10
PASSING NO. 100	2-5

D. EROSION CONTROL FABRIC:
   1. MATERIAL - MUTUAL INDUSTRIES OR APPROVED EQUAL.
   2. WOVEN JUTE (UNDYED AND SUN BLEACHED)
E. SEEDING: REFER TO SECTION 32 9200.

PART 3 EXECUTION

3.1 GENERAL

A. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING SEDIMENT FROM LEAVING THE PROJECT SITE. A STORM WATER POLLUTION PREVENTION PLAN, EROSION CONTROL PLAN AND EROSION CONTROL DETAILS HAVE BEEN PREPARED FOR THIS PROJECT AND SHALL BE FOLLOWED DURING CONSTRUCTION.
B. POLLUTANTS SUCH AS FUELS, LUBRICANTS, BITUMENS, RAW SEWAGE, CHLORINE AND OTHER HARMFUL MATERIALS SHALL BE HANDLED AND DISPOSED OF BY APPROVED METHODS AND SHALL NOT BE DISCHARGED INTO RIVERS, STREAMS, IMPOUNDMENTS, WETLANDS, OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO. WASH WATER OR WASTE FROM CONCRETE MIXING OR CURING OPERATIONS SHALL NOT BE ALLOWED TO ENTER LIVE STREAMS.
C. IN CASE OF REPEATED FAILURES ON THE PART OF THE CONTRACTOR TO CONTROL POLLUTION/EROSION, THE RIGHT SHALL BE RESERVED BY THE OWNER'S REPRESENTATIVE TO EMPLOY OUTSIDE ASSISTANCE TO PROVIDE THE NECESSARY CORRECTIVE MEASURES. SUCH INCURRED COSTS, PLUS RELATED ENGINEERING COSTS, SHALL BE CHARGED TO THE CONTRACTOR AND APPROPRIATE DEDUCTIONS MADE TO THE CONTRACTOR'S PROGRESS PAYMENT.
D. ANY FINES OR FEES INCURRED BY THE CONTRACTOR FOR FAILURE TO IMPLEMENT AND MAINTAIN EROSION CONTROL DEVICES SHALL BE PAID FOR BY THE CONTRACTOR.

3.2 INSTALLATION OF EROSION CONTROL FACILITIES

A. SIMULTANEOUS WITH REMOVAL WORK AND EARTHWORK, INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL FACILITIES SHOWN ON DRAWINGS AND ALL OTHER FACILITIES REQUIRED INITIALLY AND FROM TIME TO TIME THROUGHOUT THE WORK AS DETERMINED BY THE CONTRACTOR IN ACCORDANCE WITH GUIDELINES FOR EROSION CONTROL IN URBAN AREAS OF NEW YORK STATE TO PREVENT AND REDUCE EROSION AND SEDIMENTATION AFFECTING EXISTING ON-SITE IMPROVEMENTS TO REMAIN OR ADJOINING PROPERTY OR ROADWAYS.
B. TO CONTROL EROSION AND SEDIMENTATION, INITIAL CONSTRUCTION OPERATIONS SHALL INCLUDE, AS A MINIMUM:
   1. SILT FENCING ALONG ALL PERIMETERS OF WORK AS MAY BE SHOWN ON THE DRAWINGS AND OTHER PERIMETERS WHICH COULD PRODUCE EROSION AND SEDIMENTATION AFFECTING ADJOINING PROPERTIES, ROADWAYS, WATER BODIES, AND OTHER IMPROVEMENTS AND FACILITIES.
   2. SILT FENCING AROUND STOCKPILES OF TOPSOIL AND OTHER EXCAVATED SOILS.
   3. INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE (MUD RACK)
C. SEDIMENT SHALL BE REMOVED FROM TEMPORARY SEDIMENT BASIN AND SEDIMENT SWALES AND TRAPS AND ALONG SILT FENCES AND STRAW BALE DIKES REGULARLY TO MAINTAIN STABILITY, FLOW AND STORAGE CAPACITY.
D. THROUGHOUT ALL BUILDING AND SITE WORK, CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL AND FOR PLANNING, SCHEDULING AND PHASING WORK TO PREVENT EROSION OR SEDIMENTATION. DRAINAGE AREAS SHOULD BE SEEDED AND STABILIZED AS SOON AS POSSIBLE AS OTHER WORK IS COMPLETED. TEMPORARY SEEDING WITH ANNUAL RYE MAY BE CONSIDERED IF FINAL SEEDING IS DELAYED.
E. ALL FACILITIES SHALL BE REMOVED AS THE CONTRIBUTORY DRAINAGE AREAS ARE STABILIZED AND AS CONSTRUCTION IS TO BE COMPLETED. RESTORE ALL AFFECTED SITE AREAS AND SURFACES.
F. MAINTAIN BEST MANAGEMENT PRACTICES (BMPS).

3.3 SLOPE PROTECTION

A. PROTECT ALL DISTURBED AREAS DURING AND AFTER EARTHWORK OPERATIONS AS REQUIRED TO PREVENT GULLYING, MASS WASTING AND EROSION. STABILIZE WITH EROSION CONTROL FABRIC. REPAIR ALL ERODED AREAS AT NO EXPENSE TO THE OWNER.

3.4 SILT FENCE

A. CONSTRUCT AS DETAILED TRULY VERTICAL FOR ENTIRE LENGTH. INSTALL ALL CONTOUR 10' FROM TOE OF SLOPE WHEN PRACTICAL.
B. INSTALL WHERE INDICATED ON THE DRAWINGS AND/OR AS REQUIRED. WRAP SILT FENCE END POSTS TOGETHER FOR CONTINUOUS SUPPORT IN BED FABRIC; 6" MINIMUM.
C. FABRIC 6" MINIMUM
D. PERIODICALLY MAINTAIN, REMOVE SEDIMENT WHEN 50% OR GREATER FULL.
E. PROMPTLY REPLACE DAMAGED OR WORN SILT FENCE IMMEDIATELY

3.5 STABILIZED CONSTRUCTION ENTRANCE

A. INSTALL WHERE INDICATED ON THE DRAWINGS AND/OR AS REQUIRED.
B. CONSTRUCT AS DETAILED FROM STONE OR CRUSHED CONCRETE FROM SITE DEMOLITION. MAINTAIN AT ALL TIMES AND RENEW WHEN NO LONGER EFFECTIVE. REMOVE WHEN NO LONGER BEING USED.
C. THE PAVEMENT ADJACENT TO THE ENTRANCE SHALL BE SWEPT DAILY TO REMOVE EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE.
D. DUMP TRUCKS HAULING MATERIAL FROM THE SITE SHALL BE COVERED WITH A TARPAULIN.

3.6 INTERCEPTER DIKES & SWALE

A. INSTALL PER PLAN OR AS OTHERWISE REQUIRED TO DIRECT STORM WATER RUNOFF TO TEMPORARY SEDIMENT TRAPS AND DETENTION FACILITIES.
B. STABILIZE WITH EROSION CONTROL FABRIC, SEED OR MULCH.
C. INSTALL STONE CHECK DAMS ALONG SWALE LINE AS DETAILED AT 2' VER

SECTION 33 3100 - SANITARY

1. SANITARY SEWER MAIN SHALL BE 8" DIAMETER, PVC SEWER PIPE, ASTM D 3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. SEWER PIPE SHALL BE LAID TRUE TO LINE AND GRADE WITH NO DEVIATION FROM TRUE LINE AND GRADE GREATER THAN 1/4".
2. CONNECTION OF NEW 8" SEWER TO EXISTING MANHOLE SHALL NOT BE COMMENCED BEFORE NOTICE IS GIVEN TO THE TOWN OF ONONDAGA. THE OPENING IN THE MANHOLE WALL FOR THE NEW SEWER SHALL BE "CORE DRILLED" AND BE OF ADEQUATE SIZE SUCH THAT THE PIPE SHALL BE MADE WATER TIGHT WITH "LINKSEAL".
3. SEWER LATERALS SHALL BE 6-INCH DIAMETER, PVC SEWER PIPE, ASTM D 3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. WYE BRANCHES SHALL BE USED FOR ALL LATERAL CONNECTIONS. ALL SEWER LATERALS SHALL BE EXTENDED TO THE SEWER RIGHT-OF-WAY. MINIMUM SLOPE FOR SEWER LATERALS SHALL BE 2% (1/4').
4. THE EXCAVATION SHALL BE A MINIMUM OF 1' EACH SIDE OF THE PIPE AND SHALL BE A MINIMUM OF 6" BELOW THE BOTTOM OF THE PIPE. THE CONTRACTOR SHALL PROVIDE ALL DRAINS, DITCHES, PUMPS, WELLS, WELL POINTS, SUMPS, CUTOFF TRENCHES, SHEETING OR OTHER EQUIPMENT AND STRUCTURES NECESSARY TO CONTROL THE FLOW OF SURFACE WATER OR GROUNDWATER INTO THE EXCAVATION SUCH THAT NO STANDING WATER EXISTS IN THE EXCAVATION AT 6" BELOW THE BOTTOM OF THE PIPE.
5. PIPE BEDDING SHALL BE NO. 1 WASHED STONE AND SHALL EXTEND FROM 6" BELOW THE BOTTOM OF THE PIPE TO 1' ABOVE THE TOP OF THE PIPE. PIPE BEDDING SHALL BE SHAPED AND COMPACTED TO CONFORM THE BARREL OF THE PIPE. THE REMAINDER OF THE BACKFILL SHALL BE COMMON FULL FREE OF ROCKS LARGER THAN 6" IN DIAMETER, FROZEN MATERIAL, ROOTS, STUMPS OR OTHER ORGANIC MATERIAL. COMPACTION OF 95% OF THE STANDARD PROCTOR FOR ALL BACKFILL MATERIALS IS REQUIRED IN AREAS UNDER PROPOSED PAVEMENT.
6. MANHOLES SHALL BE MADE OF PRECAST CONCRETE SECTIONS CONFORMING TO ASTM C 478. THE MANHOLE SECTIONS SHALL BE JOINED WITH AN "O" RING GASKET MEETING ASTM C 443 AND SHALL BE PARGED INSIDE AND OUT WITH NON-SHRINK GROUT. THE TOP SECTION SHALL BE AN "ECCENTRIC TAPER TOP".
7. ALL SANITARY SEWER CONNECTIONS TO MANHOLES SHALL BE MADE WITH FLEXIBLE RUBBER SLEEVES WITH STAINLESS STEEL HARDWARE.
8. THE FLOW CHANNEL IN EACH MANHOLE SHALL BE CAREFULLY SHAPED TO MATCH THE INVERTS AND PIPE SIZES WHICH CONNECT TO THE MANHOLE TO CREATE A SMOOTH AND GRADUAL SLOPE AND CURVATURE SUCH THAT FLOW THROUGH THE MANHOLE IS LAMINAR AND UNINTERRUPTED.
9. MANHOLE FRAMES AND COVERS SHALL BE CAST IRON CONFORMING TO ASTM A 48 CLASS 30 AND HAVE A 24" OPENING. MANHOLE FRAME AND COVER SHALL BE SYRACUSE CASTINGS MODEL NO. 1030 OR EQUAL. MANHOLES SHALL BE PROVIDED WITH STEPS MADE OF STEEL REINFORCED COPOLYMER IN COMPLIANCE WITH ASTM C 478, PARA 11.
10. THE COMPLETED SEWER SHALL BE LAMPED TO VERIFY STRAIGHTNESS, CHECKED FOR DEFLECTION WITH A " GO-NO-GO " MANDREL AND TESTED FOR LEAKAGE BY LOW PRESSURE AIR. THE "GO-NO-GO" TEST SHALL DEMONSTRATE THAT NO DEFLECTION GREATER THAN 5% HAS OCCURRED. THE LOW PRESSURE AIR TEST SHALL BE IN ACCORDANCE WITH UNI-B-5. THE MAXIMUM ALLOWABLE PRESSURE DROP SHALL BE 1.0 PSIG AT A TEST PRESSURE OF 5.0 PSIG OBSERVED FOR 10 MINUTES.
11. CONTRACTOR SHALL CONTACT UFPO 48 HOURS BEFORE THE START OF ANY EXCAVATION AND SHALL NOTIFY THE TOWN ENGINEER 72 HOURS BEFORE COMMENCEMENT OF CONSTRUCTION.
12. ALL SANITARY SEWER STRUCTURES, TEMPORARY STUBBED ENDS AND LATERAL ENDS SHALL BE MARKED WITH 2" X 4" 'S EXTENDING 4' ABOVE FINISHED GRADE AND THE TOP 12" OF THE 2" X 4" SHALL BE PAINTED OR SPRAYED RED.

END SECTION 33 3100

SECTION 02722 - SANITARY SEWERS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

A. ALL WORK SHALL BE IN COMPLIANCE WITH LOCAL REGULATIONS.

1.2 SUBMITTALS

A. PRODUCT DATA
   1. PIPING
   2. MANHOLE STRUCTURE
   3. MANHOLE FRAME AND COVER

PART 2 - PRODUCTS

2.1 SANITARY SEWER PIPING

A. SANITARY SEWER PIPING MAY BE ONE OF THE FOLLOWING AT THE CONTRACTOR'S OPTION UNLESS NOTED OTHERWISE ON THE DRAWINGS:
   4. PVC PIPE AND FITTINGS:
      a. COMPLY WITH ASTM D3034 "TYPE PSM POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS" FOR SDR-35 (STANDARD DIMENSION RATIO).

B. UNDERGROUND WARNING TAPES (ELECTRICAL AND SEWAGE)
   1. PROVIDE POLYETHYLENE PLASTIC TAPE, 6" WIDE BY 4 MILS THICK SOLID GREEN IN COLOR WITH CONTINUOUSLY PRINTED CAPTION IN BLACK LETTERS STATING WARNING! SEWER LINE BURIED BELOW... OR YELLOW WITH WARNING! ELECTRICAL LINE BURIED BELOW...

2.2 MANHOLE STRUCTURES

A. GENERAL
   1. THE CONTRACTOR MUST CONSTRUCT MANHOLES OF PRECAST CONCRETE.

B. PROVIDE MATERIALS COMPLYING WITH THE FOLLOWING:
   1. PRECAST SECTIONS: ASTM C 478-79, "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS" (SEE PART 16).
   2. RUBBER GASKETS: ASTM C 443-79, "JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE, USING RUBBER GASKETS".
   3. NONSHRINK GROUT: HIGH STRENGTH, NON-METALLIC, EXPANDING PORTLAND CEMENT GROUT.
   4. CONCRETE: 5 - 8% AIR ENTRAINED, 3,000 PSI, PORTLAND CEMENT CONCRETE.
   5. FRAMES AND COVERS: (BASED ON SYRACUSE CASTINGS #1104B OR APPROVED EQUAL):
      a. FRAMES - ROUND, CAST IRON WITH A CLEAR OPENING MINIMUM 24" IN DIAMETER, HEIGHT MINIMUM 8" AND FLANGE WIDTH MINIMUM 6".
      b. COVERS - ROUND, CAST IRON AND 1-3/8" THICK.
   9. LADDER RUNGS: CAST IRON AND ASPHALT COATED FOR USE IN CONICAL SHAPED CATCH BASINS AND MANHOLES. MINIMUM TENSILE STRENGTH OF 35,000 POUNDS PSI. OR APPROVED EQUAL.
   10. MANHOLES SHALL BE WATERTIGHT AND AN ASPHALTIC SEAL SHALL BE APPLIED TO ALL SURFACES.

PART 3 - EXECUTION

3.1 GENERAL

A. ESTABLISH AND MAINTAIN ALL LINES AND GRADES REQUIRED FOR THE PERFORMANCE OF THE WORK DESCRIBED IN THIS SECTION AND RELATE ALL ELEVATIONS TO DATUM ELEVATION INDICATED ON DRAWINGS.
B. INSTALL ALL PIPING IN ACCORDANCE WITH REFERENCED STANDARDS AND MANUFACTURER'S PRINTED INSTRUCTIONS.
C. LAY PIPING BEGINNING AT LOW POINT OF SYSTEM, TRUE TO GRADES AND ALIGNMENT INDICATED, WITH UNBROKEN CONTINUITY OF INVERT.
D. INSTALL ALL PVC PIPE IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM D 2321, "UNDERGROUND INSTALLATION OF FLEXIBLE THERMOPLASTIC SEWER PIPE".

3.2 PRECAST CONCRETE MANHOLES

A. USE EPOXY BONDING COMPOUND BETWEEN PRECAST SECTIONS AND WHERE MANHOLE STEPS ARE MORTARED INTO MANHOLE WALLS.

3.3 CLEANING OF SYSTEM

A. CLEAN SYSTEM OF ALL DEBRIS DURING AND AFTER CONSTRUCTION. KEEP SYSTEM CLEAN THROUGHOUT ALL PHASES OF CONSTRUCTION.

3.4 INSPECTION OF SYSTEM

A. INSPECT PIPING TO DETERMINE WHETHER LINE DISPLACEMENT OR OTHER DAMAGE HAS OCCURRED.
B. ALL PIPE SHALL BE TESTED FOR PRESSURE AND LEAKAGE IN ACCORDANCE WITH ALL LOCAL, REGIONAL AND STATE STANDARDS. PRESSURE AND LEAKAGE TESTING SHALL BE WITNESSED BY THE ENGINEER AND CERTIFIED TO THE APPROPRIATE MUNICIPALITIES. THE ENGINEER SHALL BE NOTIFIED AT LEAST 48 HRS IN ADVANCE OF ANY TESTING TO BE WITNESSED.
C. MAKE INSPECTIONS AFTER LINES BETWEEN MANHOLES HAVE BEEN INSTALLED AND APPROXIMATELY TWO FEET MINIMUM OF BACKFILL IS IN PLACE, AND AGAIN AT COMPLETION OF PROJECT.
D. IF INSPECTION INDICATES POOR ALIGNMENT, DEBRIS, DISPLACED PIPE, INFILTRATION OR OTHER DEFECTS, CORRECT SUCH DEFECTS TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.
E. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE AT LEAST ONE SET OF AS-BUILTS TO THE OWNER.

3.5 INSTALLATION OF WARNING TAPE

A. INSTALL CONTINUOUS PLASTIC UNDERGROUND WARNING TAPE DURING BACKFILLING OF TRENCHES FOR UNDERGROUND SEPTIC SYSTEM PIPING, STRUCTURES AND ELECTRICAL LINES. LOCATE 6 - 8" BELOW FINISH GRADE, DIRECTLY OVER PIPING AND ELECTRICAL LINES AND OVER EDGES OF UNDERGROUND STRUCTURES.

END OF SECTION 02722 - SANITARY SEWERS

SECTION 33 4000 – STORM DRAINAGE

PART 1 – GENERAL

1.1 SUBMITTALS

A. SUBMIT SHOP DRAWINGS (SD) AND MANUFACTURERS' DATA (MD) FOR THE ITEMS LISTED BELOW AND ANY SPECIAL CONSTRUCTION DETAILS RELATING TO THE STORM DRAINAGE SYSTEM.
   1. DRAINAGE STRUCTURES: ONE (SD) PER CASTING TYPE.
   2. DRAINAGE STRUCTURES AND TRENCH DRAIN: ONE (SD) PER STRUCTURE. INCLUDE RIM AND BOTTOM ELEVATIONS, PIPE INVERTS AND PIPE LOCATIONS.
   3. CASTINGS: ONE (SD) PER TYPE
   4. STORM LINES AND UNDERDRAINS: ONE (PD) PER PIPE MATERIAL TYPE
   5. FILTER FABRIC: (PD)
   6. DETECTABLE WARNING TAPE: (PD)
   7. NON-SHRINK GROUT: (PD)

B. MATERIAL CERTIFICATES (MC) INCLUDING A CERTIFIED LABORATORY SIEVE ANALYSIS (LA) BEARING NAME AND LOCATION OF QUARRY. SAMPLE (S) OF MATERIAL REQUIRED (APPROXIMATE VOLUME 1 CUBIC FOOT) IN A WATERPROOF CONTAINER PERMANENTLY LABELED TO SHOW SOURCE. SUBMIT FOR THE FOLLOWING MATERIALS:
   1. DRAINAGE FILL: (MC), (LA) AND (S)
   2. COARSE AGGREGATE FILL: (SEE SECTION 312301, SUBMITTALS)

PART 2 – PRODUCTS

2.1 MATERIALS

A. CONCRETE: AS SPECIFIED SECTION 32 1313 - SITE CONCRETE. MINIMUM COMPRESSIVE STRENGTH 3,000 PSI AT 28 DAYS.
B. REINFORCING: AS SPECIFIED SECTION 32 1313 - SITE CONCRETE.
C. MASONRY UNITS: COMMON BRICK, ASTM C-62, LATEST EDITION, GRADE SW.
   1. MORTAR: CEMENT-LIME-SAND,1:1:3 MIX.
D. DRAINAGE STRUCTURES, FRAME, GRATES AND COVERS:
   1. DRYWELLS/CATCH BASINS/MANHOLES/INLETS: SIZES, SHAPES, SPECIFIC UNIT, OR ANY OTHER SPECIAL REQUIREMENTS AS SHOWN ON DRAWINGS OR EQUAL, PRECAST REINFORCED CONCRETE UNITS COMPLYING WITH ASTM C 478 WITH INTEGRAL FLOOR OR POURED-IN-PLACE CONCRETE BASE, "O" RING GASKETS FOR INTERLOCKING UNITS ASTM C443. PROVIDE DUCTILE IRON OR REINFORCED PLASTIC STEPS INTEGRALLY CAST INTO SIDEWALLS WHERE INDICATED. USE ONLY "TRAFFIC DESIGN" COVERS IN PAVING AREAS OR WHERE OTHERWISE INDICATED.
E. FRAMES, GRATES, COVERS:
   1. SIZES, SPECIFIC UNIT, GRATE OR COVER DESIGN OR ANY OTHER SPECIAL REQUIREMENTS AS SHOWN ON DRAWINGS OR EQUAL. ALL UNITS TO BE HEAVY-DUTY SUITABLE FOR H-20 LOADING. SYRACUSE CASTINGS CO. OR NEENAH CO. PRODUCTS SHALL BE QUALITY STANDARD. PROVIDE CASTINGS OF UNIFORM QUALITY, FREE FROM BLOW HOLES, POROSITY, HARD SPOTS, SHRINKAGE DEFECTS, CRACKS, OR OTHER INJURIOUS DEFECTS, GRAY IRON MATERIAL, ASTM A-48 CLASS 30, ALL NON-ROCKING DESIGN WITH MACHINED BEARING SURFACES. PROVIDE TRAPS OR PIPE ELBOW DROPS IF SHOWN ON DRAWINGS.
   2. PIPE TO MH/CB CONNECTORS: KOR-N-SEAL FLEXIBLE EPDM RUBBER CONNECTOR BY NPC INC. OR APPROVED EQUAL.
   3. GRADE ADJUSTMENT: PRECAST CONCRETE RINGS, NYSDOT SECTION 715-13 PREFABRICATED CAST IRON OR STEEL ADJUSTMENT RINGS. NO BRICK ALLOWED.
   4. PROVIDE TRAPS OR PIPE ELBOWS WITHIN STRUCTURE IF SHOWN ON DRAWINGS.
F. STORM LINES:
   1. CAST IRON PIPE (CI): XH ASTM SERVICE WEIGHT, HUB-AND-SPIGOT JOINTS CISPI HSN COMPRESSION TYPE WITH ASTM C-564 NEOPRENE GASKETS.
   2. CORRUGATED ROUND STEEL PIPE (CSP): COMPLY WITH NYSDOT SECTION 707-02. STEEL THICKNESS 16 GAUGE MINIMUM, GALVANIZED HOT-DIPPED BITUMINOUS COATED INSIDE AND OUT, PAVED INVERT OR SMOOTH LINER IF INDICATED ON DRAWINGS; ALL SPECIAL SHAPES, FITTINGS, BRANCHES, REDUCERS AND BAND COUPLERS TO MATCH, SAME MANUFACTURER. USE MAXIMUM AVAILABLE WIDTH COUPLERS FOR PIPE SIZE. PROVIDE PERFORATED PIPE WHERE SHOWN ON DRAWINGS.
   3. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE): CORRUGATED PERFORATED OR NON-PERFORATED HIGH DENSITY POLYETHYLENE SHALL HAVE SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS. PIPE SIZES 4 - 60" (100 - 1500 MM) SHALL MEET AASHTO M294, TYPE S. PIPE SHALL BE JOINED WITH THE BELL-AND-SPIGOT JOINT MEETING THE REQUIREMENTS OF AASHTO M 252 OR AASHTO M-294. THE JOINT SHALL BE WATERTIGHT ACCORDING TO THE LABORATORY REQUIREMENTS OF ASTM D-3212. 30" (750 MM) THROUGH 42" (1050 MM) PIPE JOINTS SHALL BE WATERTIGHT ACCORDING TO ASTM D-3212 WITH THE EXCEPTION THAT THE JOINT BE TESTED USING 5.0 PSI (34.5 KPA). JOINTS SHALL REMAIN WATERTIGHT WHEN SUBJECTED TO A 1.5 DEGREE AXIAL MISALIGNMENT. GASKETS SHALL BE MADE OF POLYISOPRENE MEETING THE LABORATORY REQUIREMENTS OF ASTM F-477. GASKETS SHALL BE INSTALLED BY THE PIPE MANUFACTURER AND COVERED WITH A REMOVABLE WRAP TO ENSURE THE GASKET IS FREE FROM DEBRIS. A JOINT LUBRICANT SUPPLIED BY THE MANUFACTURER SHALL BE USED ON THE GASKET AND BELL DURING ASSEMBLY.
   4. UNDERDRAIN (UD): ASTM F-405 PERFORATED CORRUGATED POLYETHYLENE TUBING, PIPING AND FITTINGS BY ADVANCED DRAINAGE SYSTEMS, HANCOR, BAUGHMAN TILE CO., OR EQUAL, USE MAXIMUM LENGTH COILS IN EACH RUN, USE INTERNAL COUPLERS TO JOIN COILS. PROVIDE HEAVY- GRADE AASHTO M-294 CULVERT PIPE WHERE INDICATED. USE NON-PERFORATED TUBING WHERE INDICATED.
G. SAND BEDDING (STORM DRAINS): CLEAN COARSE NATURAL SAND FREE OF ORGANIC MATTER.
H. DRAINAGE FILL (UNDERDRAINS): SCREENED GRAVEL, CRUSHED GRAVEL OR CRUSHED STONE CONFORMING WITH NYSDOT SECTION 703.02 SIZE 1 GRADATION.
I. FILTER FABRIC: NON-WOVEN POLYPROPYLENE DRAINAGE FABRIC, MIRAFI 140N, TERRATEX SD OR EQUAL.
J. CLEANOUTS: HEAVY-DUTY COATED CAST IRON BODY, FITTED TOP WITH VANDAL RESISTANT FASTENERS, CLEANOUT PLUG. J.R. SMITH, ZURN OR EQUAL. USE DUCTILE IRON PIPE RISER. COMPLY WITH DRAWINGS.
K. NON-SHRINK GROUT: CRD-C 621, FACTORY PRE-MIXED GROUT. PRODUCTS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE THE FOLLOWING NON-METALLIC GROUTS OR AN APPROVED EQUAL: "SET GROUT" BY MASTER BUILDERS, "SONOGROUT" BY SONNEBORN-REXNORD OR "EUCO-NS" BY EUCLID CHEMICAL CO.
L. DISSIMILAR MATERIAL ADAPTER: DISSIMILAR MATERIAL ADAPTER BY ADVANCED DRAINAGE SYSTEMS OR APPROVED EQUAL.
M. COARSE SAND: WELL-GRADED COARSE SAND GENERALLY COMPLYING WITH NYSDOT SECTION 703.07 CONCRETE SAND SPECIFICATION AND GRADATION.

SIEVE SIZE	PERCENT PASSING
3/8"	100
NO. 4	90-100
NO. 8	75-100
NO. 16	50-85
NO. 30	25-60
NO. 50	10-30
NO. 100	1-10
NO. 200 (WET)	0-3

PART 3 – EXECUTION

3.1 STRUCTURES

A. PRECAST UNITS: BED IN GRAVEL, SET LEVEL AND PLUMB. ALIGN STEPS IN ALL SECTIONS EXACTLY ON A PLUMB AXIS. ON SLOPING SURFACES, ARRANGE FOR OPENING TO BE ON THE DOWNSLOPE SIDE OF THE STRUCTURE SO THAT 12" MINIMUM COVER IS MAINTAINED OVER RISER SECTION WITHOUT BULGING THE PLANE OF THE SLOPE. FINISHED STRUCTURE, INCLUDING ALL JOINTS AND PENETRATIONS, SHALL BE WATERTIGHT.
B. MASONRY EXTENSIONS: CONSTRUCT AS DETAILED. PARGE INSIDE AND OUT.
C. CASTINGS: SECURELY SET IN MORTAR.

3.2 INSTALLATION OF DRAIN LINES

A. ALL PIPE SHALL BE EXAMINED BEFORE LAYING AND NO PIECE SHALL BE INSTALLED WHICH IS FOUND TO BE DEFECTIVE.
B. DRAIN PLACEMENT SHALL COMMENCE AT THE OUTLET AND PROCEED SECTION BY SECTION "UPHILL" UNLESS OTHERWISE DIRECTED BY THE ENGINEER. PLACE SPIGOT ENDS IN DIRECTION OF FLOW.
C. IF ANY DEFECTIVE PIPE IS DISCOVERED AFTER IT HAS BEEN INSTALLED, IT SHALL BE REMOVED AND REPLACED WITH A SOUND PIPE IN A SATISFACTORY MANNER AT NO ADDITIONAL COST TO THE OWNER. ALL PIPE AND FITTINGS SHALL BE THOROUGHLY CLEANED BEFORE INSTALLATION, SHALL BE KEPT CLEAN UNTIL THEY ARE USED IN THE WORK AND WHEN LAID, SHALL CONFORM TO THE LINES AND GRADES REQUIRED. ALL PIPING, FLARED END SECTIONS AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF THE MANUFACTURER, OR AS OTHERWISE PROVIDED HEREIN OR ON THE DRAWINGS.
D. AS SOON AS THE EXCAVATION IS COMPLETE TO NORMAL GRADE OF THE BOTTOM OF THE TRENCH, SAND BEDDING SHALL BE PLACED, COMPACTED AND GRADED TO PROVIDE FIRM, UNIFORM AND CONTINUOUS SUPPORT FOR THE PIPE. THE PIPE SHALL BE LAID ACCURATELY TO THE LINES AND GRADES INDICATED ON THE DRAWINGS. BLOCKING UNDER THE PIPE WILL NOT BE PERMITTED. BEDDING SHALL BE PLACED EVENLY ON EACH SIDE OF THE PIPE TO MID-DIAMETER AND HAND TOOLS SHALL BE USED TO FORCE THE BEDDING WHERE NEEDED TO GIVE FIRM CONTINUOUS SUPPORT FOR THE PIPE. DEPENDING ON FINAL SURFACE MATERIAL, SAND BEDDING OR COARSE AGGREGATE FILL SHALL BE PLACED TO 12" ABOVE THE TOP OF THE PIPE (REFER TO "DRAINS" DETAIL). THE INITIAL 3' OF BACKFILL ABOVE THE BEDDING SHALL BE PLACED IN 1' LAYERS AND CAREFULLY COMPACTED. GENERALLY THE COMPACTION SHALL BE DONE EVENLY ON EACH SIDE OF THE PIPE AND COMPACTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY OVER THE PIPE UNTIL SUFFICIENT BACKFILL HAS BEEN PLACED TO ENSURE THAT SUCH COMPACTION EQUIPMENT WILL NOT HAVE A DAMAGING EFFECT ON THE PIPE. EQUIPMENT USED IN COMPACTING THE INITIAL 3' OF BACKFILL SHALL BE APPROVED BY THE PIPE MANUFACTURER'S REPRESENTATIVE PRIOR TO USE. REFER TO SECTION 31 2301, SITEWORK EXCAVATION, BACKFILLING AND COMPACTING FOR ADDITIONAL BACKFILLING REQUIREMENTS.
E. ALL PIPE SHALL BE SOUND AND CLEAN BEFORE INSTALLATION. WHEN INSTALLATION IS NOT IN PROGRESS, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY WATERTIGHT PLUG OR OTHER APPROVED MEANS. GOOD ALIGNMENT SHALL BE PRESERVED DURING INSTALLATION. THE DEFLECTION AT JOINTS SHALL NOT EXCEED THAT RECOMMENDED BY MANUFACTURER.
F. BEFORE ANY JOINT IS MADE, THE PIPE SHALL BE CHECKED TO ASSURE THAT A CLOSE JOINT WITH THE NEXT ADJOINING PIPE HAS BEEN MAINTAINED AND THAT THE INVERTS ARE MATCHED AND CONFORM TO THE REQUIRED GRADE. THE PIPE SHALL NOT BE DRIVEN DOWN TO GRADE BY STRIKING IT.
G. PRECAUTIONS SHALL BE TAKEN TO PREVENT FLOTATION OF THE PIPE IN THE TRENCH.
H. WHEN MOVEABLE TRENCH BRACING SUCH AS TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES ARE USED TO SUPPORT THE SIDES OF THE TRENCH, CARE SHALL BE TAKEN IN PLACING AND MOVING THE BOXES OR SUPPORTING BRACING TO PREVENT MOVEMENT OF THE PIPE, OR DISTURBANCE OF THE PIPE BEDDING AND THE BACKFILL. TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES SHALL NOT BE ALLOWED TO EXTEND BELOW TOP OF THE PIPE. IF TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES HAVE BEEN INSTALLED BELOW THE TOP OF THE PIPE, THEY SHALL BE MOVED SLOWLY TAKING CARE NOT TO DISTURB PIPE, BEDDING OR BACKFILL. AS TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES ARE MOVED, PIPE BEDDING SHALL BE PLACED TO FILL ANY VOIDS CREATED AND THE BACKFILL SHALL BE RECOMPACTED TO PROVIDE UNIFORM SIDE SUPPORT FOR THE PIPE.
I. THOROUGHLY CLEAN COMPLETED STORM DRAINAGE SYSTEM OF ALL DEBRIS AND SEDIMENT PRIOR TO FINAL ACCEPTANCE.

3.3 COORDINATION

A. COORDINATE LOCATION OF WYES AND VERIFY INVERTS OF LINES AND STRUCTURES WITH PLUMBING CONTRACTOR WHERE APPLICABLE.

3.4 UNDERDRAINAGE/FRENCH DRAIN/LOW FLOW UNDERDRAIN

A. DRAINAGE FILL: PLACE AS DETAILED.
B. PERFORATED LINES: PLACE HOLES DOWN, TRUE TO LINE AND GRADE. PLACE REMAINING DRAINAGE FILL.
C. CONNECT TO NEAREST SUITABLE STORM MANHOLE WHETHER DRAWINGS SHOW ROUTING OR NOT.
D. BACKFILL: PER SECTION 31 2301 SITEWORK EXCAVATION, BACKFILLING AND COMPACTING AND AS DETAILED ON THE DRAWINGS.

3.5 WATERPROOF PIPE CONNECTOR

A. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

END SECTION 33 4000

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FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION — △ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19	16	16	MANLIUS- PLAN SUBMISSION	08/07/20
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19	17	17		
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19	18	18		
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19	19	19		
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19	20	20		
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19	21	21		
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20	22	22		
				15	15	NOTE REMOVAL (NOTE 10)	07/30/20	23	23		

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001473 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title: SPECIFICATIONS

L-801

Plotted By:
Date Plotted:
Drawing File:

Monday, August 10, 2020 10:25:10 AM

TYPICAL DIMENSIONS:
SURFACE AREA: 6,660 ± SF
DIMENSIONS: APPROX. 168' X 60'

MAX EVENT DIMENSIONS:
SURFACE AREA: 22,223 ± SF
DIMENSIONS: APPROX. 254' X 120'

FEATURES:
- SAFETY BENCH
- AQUATIC BENCH
- VEHICULAR ACCESS AROUND POND.
- 14' BERM @ OUTFLOW
- HOA OWNED
- SLOPES DO NOT EXCEED 4 ON 1.
- FENCE AROUND PERIMETER OF POND



7 L-900 **GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS**

0 100 200 300
SCALE IN FEET
(ALL PLANS)

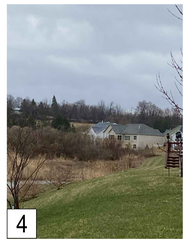

5

3

1

2


6


4


6


4

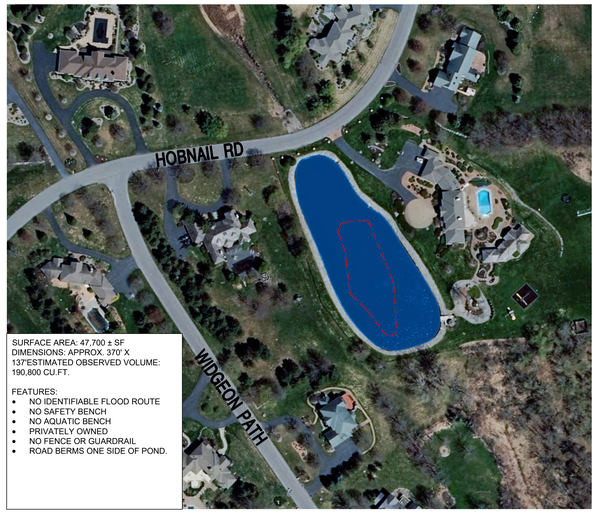
8 L-900 **REPRESENTATIVE PHOTO SAMPLES OF PONDS (0 FENCED)**



SURFACE AREA: 57,300 ± SF
DIMENSIONS: APPROX. 360' X 215'
ESTIMATED OBSERVED VOLUME:
558,400 CU.FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- NO FENCE OR GUARDRAIL
- 8-12' BERM AROUND POND.

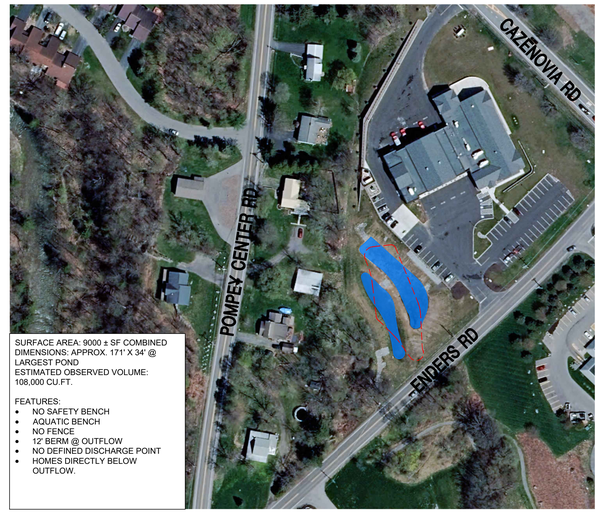
1 L-900 **MALLARDS LANDING SUBDIVISION - GADWALL**



SURFACE AREA: 47,700 ± SF
DIMENSIONS: APPROX. 370' X 137'ESTIMATED OBSERVED VOLUME:
190,800 CU.FT.

FEATURES:
- NO IDENTIFIABLE FLOOD ROUTE
- NO SAFETY BENCH
- NO AQUATIC BENCH
- PRIVATELY OWNED
- NO FENCE OR GUARDRAIL
- ROAD BERMS ONE SIDE OF POND.

3 L-900 **MALLARDS LANDING - HOBNAIL**



SURFACE AREA: 9000 ± SF COMBINED
DIMENSIONS: APPROX. 171' X 34' @ LARGEST POND
ESTIMATED OBSERVED VOLUME:
108,000 CU.FT.

FEATURES:
- NO SAFETY BENCH
- AQUATIC BENCH
- NO FENCE
- 12' BERM @ OUTFLOW
- NO DEFINED DISCHARGE POINT
- HOMES DIRECTLY BELOW OUTFLOW.

5 L-900 **MANLIUS FIRE DEPT.**



SURFACE AREA: 74,500 ± SF
DIMENSIONS: APPROX. 530' X 154'
ESTIMATED OBSERVED VOLUME:
298,000 CU.FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- NO DEFINED OUTLET
- NO FENCE, HAS GUARDRAIL
- ROAD IS USED AS BERM
- 3-4' BERM @ ROAD
- 30' DEEP

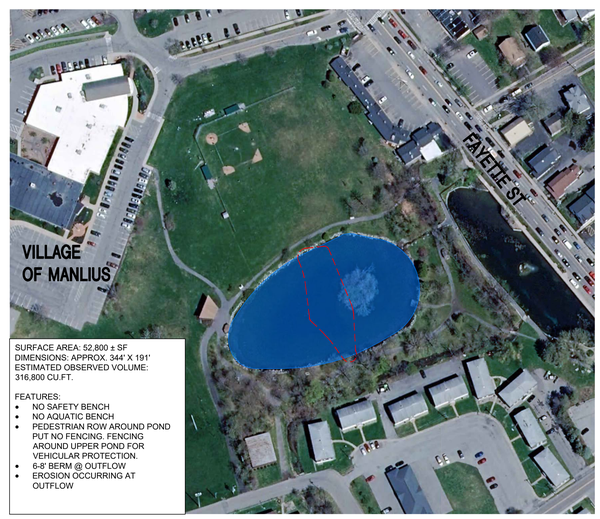
2 L-900 **MALLARDS LANDING SUBDIVISION - AYLESBURY**



SURFACE AREA: TOTAL 34,100 ± SF
DIMENSIONS: APPROX. LARGEST POND 194' X 88'
ESTIMATED OBSERVED VOLUME:
545,600 CU.FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- SLOPES BETWEEN 3:1 AND 2:1
- NO DEDICATED VEHICULAR ACCESS
- NO FENCE
- 16' BERM @ LOWEST OUTFLOW. HIGHEST POND HAS 6' BERM.

4 L-900 **MALLARDS LANDING - DECOY RUN**



SURFACE AREA: 52,800 ± SF
DIMENSIONS: APPROX. 344' X 191'
ESTIMATED OBSERVED VOLUME:
316,800 CU.FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- PEDESTRIAN ROW AROUND POND PUT NO FENCING. FENCING AROUND UPPER POND FOR VEHICULAR PROTECTION.
- 6-8' BERM @ OUTFLOW
- EROSION OCCURRING AT OUTFLOW

6 L-900 **SWAN POND**

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FOR CONSTRUCTION
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5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

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7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
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17	17		
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21	21		
22	22		
23	23		

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LICENSED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001413 STATE OF NEW YORK

Drawn By: VER
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KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
WET POND COMPARISONS

L-900

Plotted By:
Date Plotted:
Drawing File:

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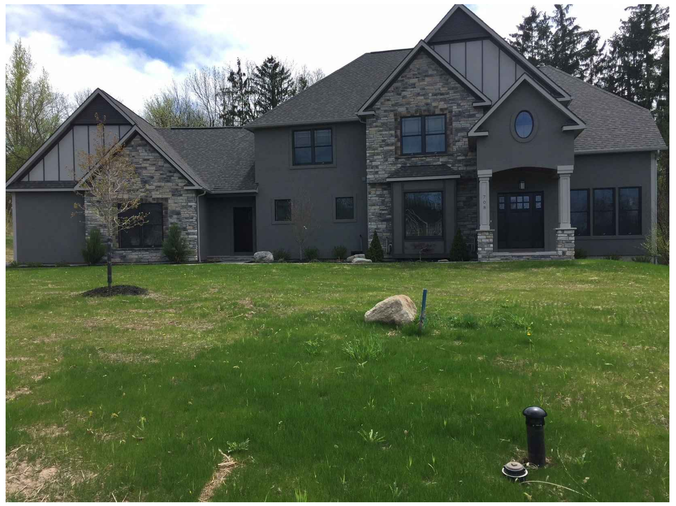







HOMES PICTURED HERE WERE BUILT BY THOMAS ALLEN HOMES THROUGHOUT THE LOCAL COMMUNITY. NEIGHBORHOODS INCLUDE WATERFORD WOODS, HARTSFIELD PLACE, MALLARDS LANDING & BRIAR BROOK

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Date Plotted:

Drawing File:

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FOR CONSTRUCTION

HOAG LANE SUBDIVISION

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CLIENT:
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8	8	21 LOT SITE PLAN REVISIONS	01/04/19
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23	23		

REGISTERED LANDSCAPE ARCHITECT · SCOTT LEE FREEMAN · 001413 · STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SAMPLE ARCHITECTURE

L-901

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Onondaga County, New York

Hoag Lane Subdivision



October 12, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,240 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CfB	Cazenovia silt loam, 2 to 8 percent slopes	16.1	49.7%
CfC	Cazenovia silt loam, 8 to 15 percent slopes	4.5	13.9%
CgD	Cazenovia soils, 15 to 25 percent slopes	7.7	23.8%
OgB	Ontario loam, 3 to 8 percent slopes	1.9	5.8%
OnC	Ontario gravelly loam, 8 to 15 percent slopes	2.2	6.8%
Totals for Area of Interest		**32.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Onondaga County, New York

CfB—Cazenovia silt loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vg5
Elevation: 380 to 1,690 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cazenovia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazenovia

Setting

Landform: Reworked lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 36 inches: silty clay loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F101XY013NY - Moist Till
Hydric soil rating: No

Minor Components

Ovid

Percent of map unit: 10 percent

Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

CfC—Cazenovia silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9vg6
Elevation: 380 to 1,480 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cazenovia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazenovia

Setting

Landform: Reworked lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 36 inches: silty clay loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F101XY013NY - Moist Till
Hydric soil rating: No

Minor Components

Schoharie
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils
Percent of map unit: 5 percent
Hydric soil rating: No

Ovid
Percent of map unit: 5 percent
Hydric soil rating: No

CgD—Cazenovia soils, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 9vg8
Elevation: 390 to 1,670 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Cazenovia and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazenovia

Setting
Landform: Reworked lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile
H1 - 0 to 12 inches: silt loam
H2 - 12 to 36 inches: silty clay loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities
Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F101XY013NY - Moist Till
Hydric soil rating: No

Minor Components

Ovid

Percent of map unit: 5 percent
Hydric soil rating: No

Ontario

Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye

Percent of map unit: 5 percent
Hydric soil rating: No

Schoharie

Percent of map unit: 5 percent
Hydric soil rating: No

OgB—Ontario loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w3ps
Elevation: 250 to 1,490 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ontario and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ontario

Setting

Landform: Till plains, drumlins, ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: loam
E - 8 to 14 inches: loam
Bt/E - 14 to 21 inches: loam
Bt - 21 to 39 inches: gravelly loam
C1 - 39 to 48 inches: gravelly loam
C2 - 48 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Hilton

Percent of map unit: 5 percent
Landform: Till plains, drumlins, ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex, concave
Hydric soil rating: No

Honeoye

Percent of map unit: 5 percent
Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

Cazenovia

Percent of map unit: 3 percent
Landform: Till plains, reworked lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Appleton

Percent of map unit: 2 percent
Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

OnC—Ontario gravelly loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w3qc
Elevation: 250 to 1,250 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ontario and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ontario

Setting

Landform: Drumlins, till plains, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: gravelly loam
E - 8 to 14 inches: loam
Bt/E - 14 to 21 inches: loam

Bt - 21 to 39 inches: gravelly loam
C1 - 39 to 48 inches: gravelly loam
C2 - 48 to 79 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Honeoye

Percent of map unit: 5 percent
Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hilton

Percent of map unit: 5 percent
Landform: Ridges, till plains, drumlins
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex, concave
Hydric soil rating: No

Cazenovia

Percent of map unit: 3 percent
Landform: Till plains, reworked lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Appleton

Percent of map unit: 2 percent
Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

Report—Prime and other Important Farmlands

Prime and other Important Farmlands–Onondaga County, New York		
Map Symbol	**Map Unit Name**	**Farmland Classification**
CfB	Cazenovia silt loam, 2 to 8 percent slopes	All areas are prime farmland
CfC	Cazenovia silt loam, 8 to 15 percent slopes	Farmland of statewide importance
CgD	Cazenovia soils, 15 to 25 percent slopes	Not prime farmland
OgB	Ontario loam, 3 to 8 percent slopes	All areas are prime farmland
OnC	Ontario gravelly loam, 8 to 15 percent slopes	Farmland of statewide importance

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10-15-61
ARX-3H-196
388


6-22-66
ARX-1GG- 43
370


Hoag Lane-1994
Write a description for your map.
Edgewood-Pkwy
Foxcroft-Ln
Old-Farm-Rd
Muirfield-Dr
Jackson-Rd
Dawley-Rd
Chevriot-Ct
Karakul-Ln
Shiraz-Ln
Balmoral-Dr
N-Eagle-Village-Rd
Hoag-Ln
S-Manlius-St
Thornwood-Ln
Adah-Dr
Cherry-Ln
257
Fayetteville-Manlius-Rd
Sherbrooke-Rd
Eton-Ln
Churchill-Ln
Churchill-Ct
Duguid-Rd
McDermott-Rd
Google Earth
Image U.S. Geological Survey
N
1000 ft


Hoag Lane-2003
Write a description for your map.
Jackson Rd
Karakul Ln
Shiraz Ln
Kinloch Cir
Dawley Rd
Hoag Ln
Thornwood Ln
Adah Dr
Cherry Ln
Churchill Ln
Churchill Ct
Cahill Rd
Duguid Rd
Sherbrooke Rd
Google Earth
Image © 2018 New York GIS
N
900 ft


Hoag Lane-2009
Write a description for your map.
Jackson Rd
Karakul Ln
Shiraz Ln
Kinloch Cir
Dawley Rd
Hoag Ln
Thornwood Ln
Adah Dr
Cherry Ln
Churchill Ln
Churchill Ct
Cahill Rd
Duguid Rd
Sherbrooke Rd
Google Earth
Image USDA Farm Service Agency
N
900 ft

ENVIRONMENTAL RESOURCES, LLC
CONSULTING SERVICES

June 13, 2019

Mr. Tom Douglas
7241 Kendall Drive, East
East Syracuse, New York 13057

Subject: Wetland Delineation Results, 5280 Hoag Lane Project Site, Town of Manlius, Onondaga County, New York.

Dear Mr. Douglas:

At your request, Environmental Resources, LLC (ERS) conducted a field wetlands delineation and data collection at the above referenced 30± acre project site on May 31, 2019 to determine the on-site limits of state and/or federal jurisdictional wetlands and streams. The sites jurisdictional water resources were identified by the presence of hydrophytic vegetation, hydric soils, and physical indicators of wetland hydrology in accordance with the methodology described in the *1987 Corps of Engineers Wetland Delineation Manual*, the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Regions,* and the New York State Department of Environmental Conservation *Wetland Delineation Manual.*

RESULTS

As shown on the attached survey map, the results of our investigation and data collection has determined that the study area supports a 745± linear foot (0.24± acres) intermittent stream channel in the west portion of the project site that enters the sites south property line, conveying surface waters northwest before existing the sites west boundary line. This intermittent stream channel has a low profile, and varies in width from 18" to 30" wide.

A second water resource was identified as a 0.10± acre ground water seep wetland that occurs at the west end of the site's north boundary line. This wetland discharges ground water to the surface, which then flows east before converging into the sites intermittent stream channel.

Remaining areas of the site are confirmed to be undulating site uplands that are dominated by upland vegetation, and exhibit no hydric soil characteristics or evidence of wetland hydrology.

REGULATORY GUIDANCE

The result of our investigation has determined that the site does not support New York State Department of Environmental Conservation regulated wetlands or streams.

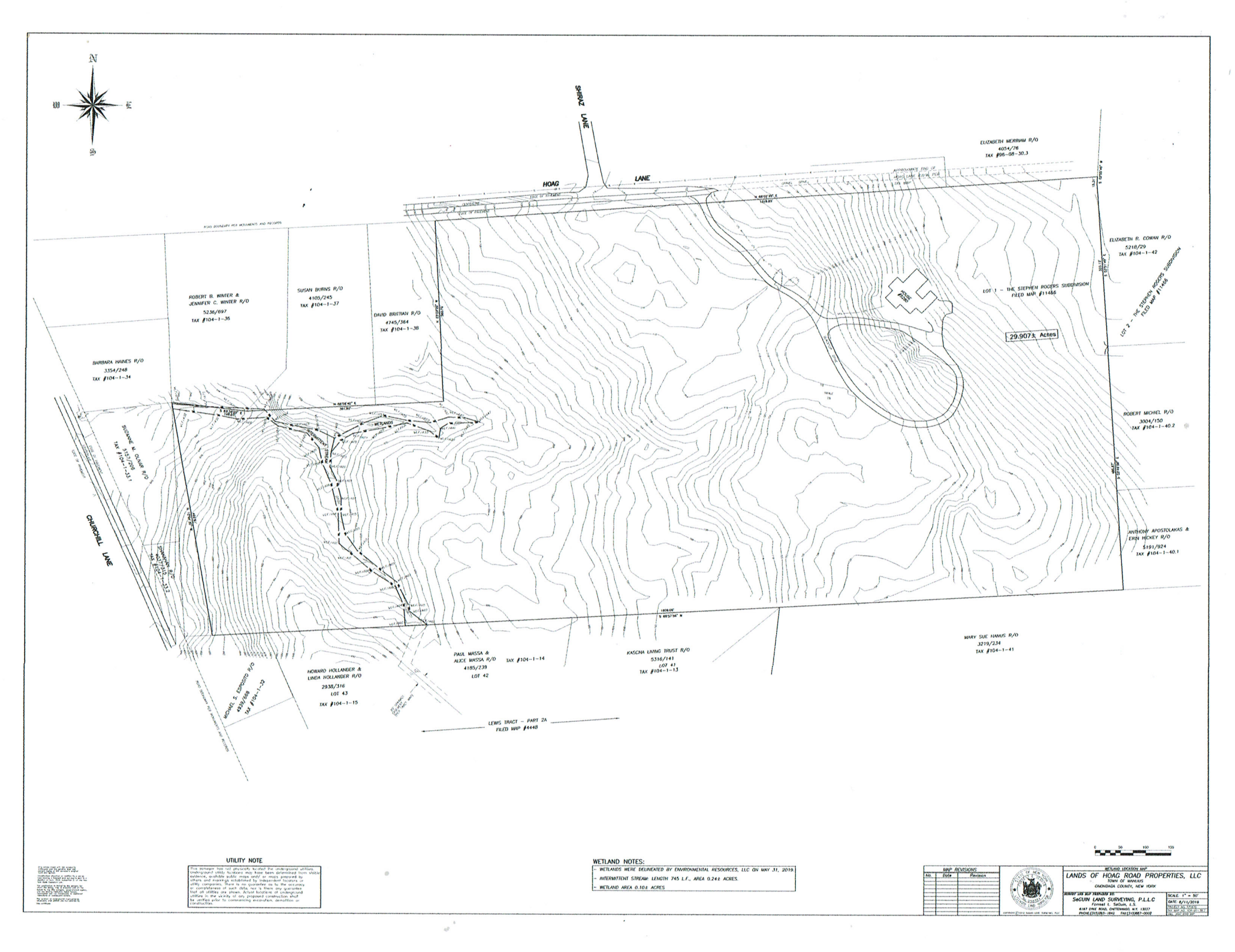
The sites delineated intermittent stream channel and ground water seep wetland are federal jurisdictional water resources regulated by Section 404 of the *Clean Water Act* under the jurisdiction of the U.S. Army Corps of Engineers (Buffalo District). The discharge of fill material into jurisdictional wetland areas and/or disturbance to stream channels will require a pre-construction notification and permit issuance from USACE.

This determination letter represents the conclusions of Environmental Resources, LLC based on existing site conditions. Feel free to contact me should you have any questions.

Sincerely,
Environmental Resources, LLC

Gene Pellett
Professional Wetlands Scientist

Attachment.



UTILITY NOTE

This surveyor has not physically located the underground utilities. Underground utility locations may have been determined from visible evidence, available public maps and/ or maps prepared by others and markings established by independent locators or utility companies. There is no guarantee as to the accuracy or completeness of such data, nor is there any guarantee that all utilities are shown. Actual locations of underground utilities in the vicinity of any proposed construction shall be verified prior to commencing excavation, demolition or construction.

WETLAND NOTES:

- WETLANDS WERE DELINEATED BY ENVIRONMENTAL RESOURCES, LLC ON MAY 31, 2019.
- INTERMITTENT STREAM: LENGTH 745 L.F., AREA 0.24± ACRES.
- WETLAND AREA 0.10± ACRES

MAP REVISIONS		
No.	Date	Revision

WETLAND LOCATION MAP

LANDS OF HOAG ROAD PROPERTIES, LLC

TOWN OF MARCELLUS

ONONDAGA COUNTY, NEW YORK

SURVEY AND MAP PREPARED BY:

SeGUIN LAND SURVEYING, P.L.L.C
Forrest E. SeGuin, L.S.
4187 DYKE ROAD, CHITTENANGO, N.Y. 13037
PHONE (315)383-1842 FAX (315)987-0002

SCALE: 1" = 50'

DATE: 6/11/2019

PROJECT NO. 17-2-10

FILE MAP NO. 17-2-10

FILE SURVEY NO. 17-2-10

NEW YORK STATE OF OPPORTUNITY.

Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

March 26, 2018

Mr. Vincent Ryan
Keplinger Freeman Associates
6320 Fly Rd.
Suite 109
East Syracuse, NY 13057

Re: DEC
Hoag Lane Subdivision
5291 Hoag Lane, Town of Manlius, Onondaga County, NY
18PR01562

Dear Mr. Ryan:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Michael F. Lynch, P.E., AIA

Director, Division for Historic Preservation

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

April 6, 2018

Vincent Ryan
Keplinger Freeman Associates
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Re: Hoag Lane Development
County: Onondaga Town/City: Manlius

Dear Mr. Ryan:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities directly at the project site.

Within 3.5 miles of the project site is a documented winter hibernaculum **Northern long-eared bat** (*Myotis septentrionalis*, state and federally listed as Threatened). These bats may travel five miles from documented locations. The main impact of concern for bats is the cutting or removal of potential roost trees. For information about any permit considerations for your project, contact the Permits staff at the NYSDEC Region 7 Office at dep.r7@dec.ny.gov, 315-426-7438. For information about potential impacts of your project on this species and how to avoid, minimize, or mitigate any impacts, contact the Region 7 Wildlife staff at 607-753-3095 ext. 247.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 7 Office, Division of Environmental Permits, as described above.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To:
Consultation Code: 05E1NY00-2018-SLI-1465
Event Code: 05E1NY00-2018-E-04441
Project Name: Hoag Lane Subdivision

March 16, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/

eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2018-SLI-1465

Event Code: 05E1NY00-2018-E-04441

Project Name: Hoag Lane Subdivision

Project Type: DEVELOPMENT

Project Description: 23 new home construction on 30 acres of currently wooded land. Parts of property will be left free of disturbance approximately 7 acres.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.01732490964984N75.98284210518362W



Counties: Onondaga, NY

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Eastern Massasauga (=rattlesnake) *Sistrurus catenatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2202	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Central New York's Water Authority

200 Northern Concourse
Syracuse, NY 13212
(315) 455-7061 x3173

July 6, 2017

Re: Hydrant Flow test #680

On July 6, 2017 hydrant flow test was conducted at Hoag Lane in the town of Manlius, NY. All testing was performed in accordance with NFPA 291 standards.

Hydrant #4117 was flowed at a rate of 798 gallons per minute (gpm). The static pressure at Hydrant 4115 was measured at 62 pounds per square inch (psi) at the start of the test and a residual pressure of 51psi during the test. Based on this test, the calculated system capacity at the hydrant is approximately 1,644 gpm at 20psi residual pressure, under similar conditions. Please review all mapping and documentation included in this report. OCWA's records indicate the water main in this area is 10" diameter pipe.

Should you need any additional information or have questions, please reply via email or call me at 315-455-7061 ext 3173. Thank you for the inquiry and have a great day.

Best Regards,

Mike Oemcke
OCWA Water Systems Engineering

Enc.: Flow Test Worksheets
Water Dist. Mapping

Clear Existing Data

Print Range A1..G31

Flow TEST #680

HYD. FIRE FLOWS

Blade Coef =1.0

Client: OCWA Test #: 1 Date: 07/06/17

Indicate Number of FLOW Hydrants: 1 Engr: MJO

(3 Hydrants Max)

Pres Hyd Loc: 4117

Static (psi): 62 Residual (psi): 51

FLOW HYDRANT

Flow Hyd #1: 4115

	Noz. Dia (Inches)	Blade Reading (Psi)	Quantity (GPM)
Flow Hyd #1:	2.310	31.0	798
Conn. to Steamer	2.310		
hose monster	2.000		

See chart for GPM

Calculated

	GPM
Total Flow	798
Flow @ 20 psi	1,644
Flow @ 10 psi	1,845

Location: Hoag ln. at Shiraz ln.

Town/Village: Manlius

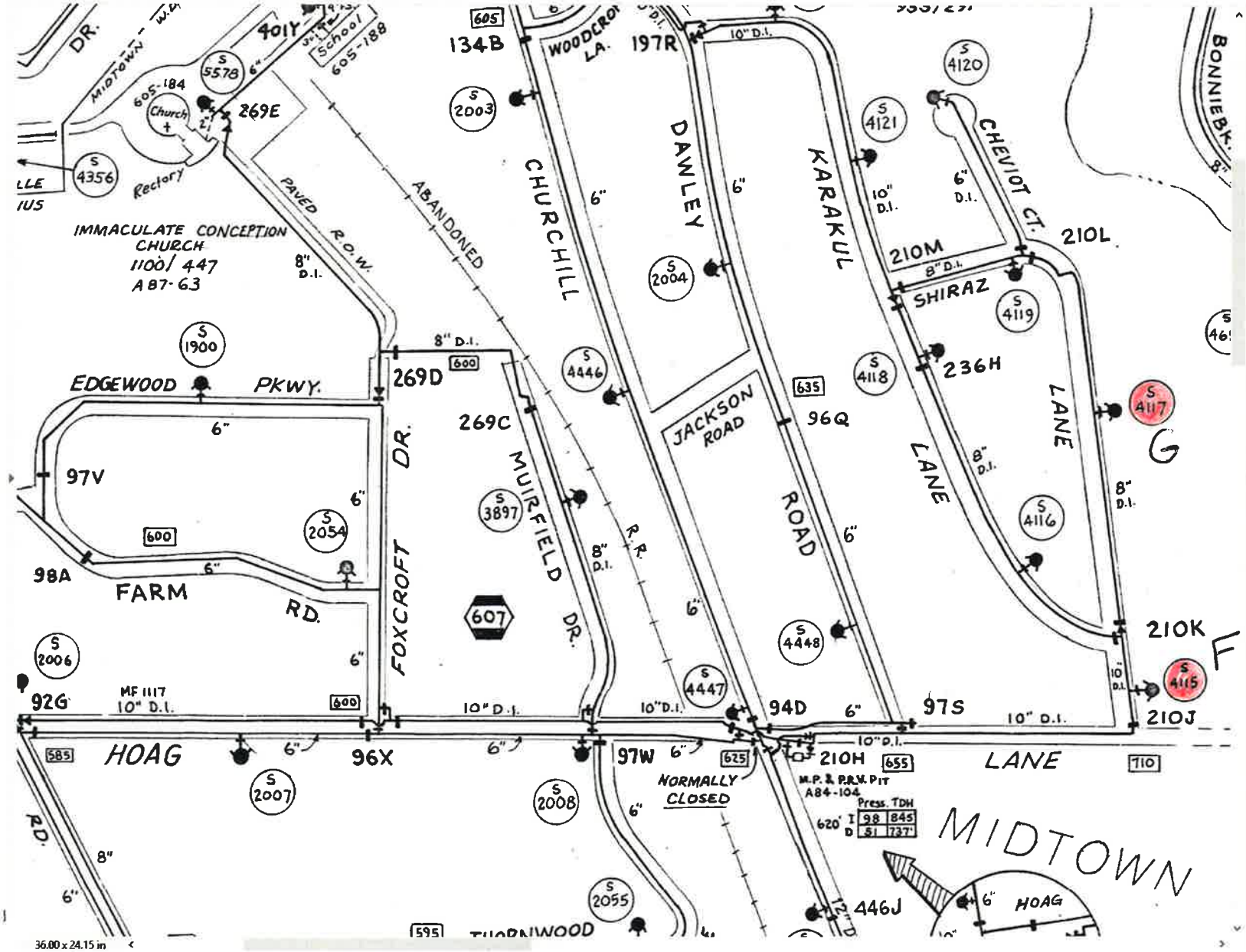
Requested By:

Notes: Gradient is 845', highest gradient in proposed subdivision is 743'.

pressure calculated at 43.8# at highest development road elevation.

Note: The 20psi Calculated Flow value represents the water available in the system near this hydrant, not always the maximum flow of this hydrant.

O:\ENG\Flow Tests\2017\[Flow0680.xlsm]Fire Flow



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Create PDF
Edit PDF
Comment
Combine Files
Organize Pages
Fill & Sign
Send for Signature
Send & Track
More Tools
Store and share files in the Document Cloud
Learn More

Joanne M. Mahoney, County Executive
Tom Rhoads, P.E., Commissioner
Flow Control Division
7120 Henry Clay Boulevard
Liverpool, NY 13088-5344
(315) 435-5402
FAX (315) 435-5458
http://www.ongov.net/wep/

April 2, 2018

Helen Caster
Project Manager
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Via E-mail

Re: Request for Capacity Assurance – 5290 Hoag Lane (T) Manlius

Dear Ms. Caster:

In response to your e-mail and attachment dated March 19, 2018, this is to confirm that The Onondaga County sewerage system this project is tributary to, currently has adequate capacity to accept the projected average daily flow from this 24 lot subdivision of 14,400 gpd. This project is subject to 1:1 wet weather offset for the service area it is tributary to, Meadow Brook Limestone WWTP. In accordance with Local Law # 1 of 2011This project is subject to 1:1 wet weather offset for the service area it is tributary to the developer coordinates with the Town of Manlius to offset the projected 14,400 gpd of sanitary flow within the Meadow Brook Limestone WWTP service area. The proposed offset plan shall be submitted with the sanitary sewer plan review submission.

Changes as a result of modifications or changes in laws, regulations or permit(s) that are beyond this Department's control that impact this project, will be the responsibility of the applicant.

This acceptance is based on County infrastructure capacity and maintainability of proposed new Town owned infrastructure only. Capacity of existing Town owned infrastructure is the responsibility of the Town. The engineering of this project is the responsibility of the design engineer.

This capacity assurance is only for the above indicated AND that there is no acceptance, or suggestion of future acceptance - expressed or implied, for any future phases or development. While we intend to honor capacity assurances, we can make no commitments to the likelihood of future approvals, due to growth of capacity utilization and the considerable regulatory changes we have heard circulating regarding treatment facility regulations. This letter shall be valid for 24 months from April 2, 2018. If construction has not commenced by that time frame, please contact this department to apply for an extension.

If you need anything else, please do not hesitate to contact me at 435-5402 x202.

Sincerely,

Chris Deitman
Sewer Maintenance Superintendent

ONONDAGA COUNTY DEPARTMENT OF
WATER ENVIRONMENT PROTECTION

CD/

c: File (T) Manlius

Hoag Lane Subdivision

5290-5320 Hoag Lane
Fayetteville, New York 13066
RZE# 17061

TRAFFIC IMPACT STUDY

10/23/17
Revised 8/15/19

Prepared for:
Tom Douglas
Hoag Road Development Group
201 Solar Street
Syracuse, NY 13202

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

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LIST OF REFERENCES

1. **Highway Capacity Manual 2010 – Fifth Edition, Transportation Research Board, 2010.**
2. **Synchro 10 Traffic Signal Coordination Software, Trafficware Corporation, 2017.**
3. **Trip Generation, 9th Edition, Institute of Transportation Engineers, 2012.**
4. **AASHTO's, A Policy on Geometric Design of Highways and Streets - 6th Edition, 2011**

EXECUTIVE SUMMARY

This traffic impact study was conducted to determine the effects, if any, of the traffic generated by the proposed Hoag Lane Subdivision development will have on the adjacent highway system. The project is located off Hoag Lane in the town of Manlius, Onondaga County, New York. The site location is illustrated on **Figure 1**.

The proposed Hoag Lane Subdivision will develop and construct 21 single family residential homes on 30 acres of property in the town of Manlius. The existing 30-acre site includes one 500 sf residential house on a partially developed parcel. The proposed 21 single family residential homes will make up the Hoag Lane Subdivision, and will be located immediate south of the Hoag Lane and Shiraz Lane intersection. Site improvements within the project will include, but not limited to: green space for the residential subdivision, storm water, water, and sanitary facilities; and general site elements and characteristics found in the surrounding residential area. The site location is illustrated on **Figure 1**.

Access to the proposed Hoag Lane Subdivision development will be from the existing Hoag Lane and Shiraz Lane intersection. Currently, this is a stop-controlled t-intersection. The proposed driveway will form the southerly fourth leg of the intersection and will be stop controlled. The build year for the proposed Hoag Lane Subdivision is 2020. The proposed site plan is shown on **Figure 3**.

In determining the overall traffic impact on the adjacent public highway system due to this new development; the Hoag Lane at Shiraz Lane, Hoag Lane at Dawley Road, and Hoag Lane at Churchill Lane intersections were analyzed. To determine current traffic operations, traffic volumes were collected on Wednesday, October 11, 2017; and analyzed for the weekday morning and evening peak travel hour. The peak travel hours for the studied intersection was found to be between 7:15 am and 8:15 am during the weekday morning peak hour, and between 4:15 pm and 5:15 pm during the evening peak travel hour. Current peak hour volumes for the intersection are presented in **Figure 2**. The summary of the Level of Service analysis for the

Existing Condition in 2019 are shown in **Tables 4 and 5.**

The opening year for the proposed residential subdivision is projected to be in 2020. Since the proposed Hoag Lane Subdivision is being developed within an existing residential neighborhood, no growth rate was applied to the existing traffic volumes. It is anticipated there will be no fluctuations in background traffic volume prior to the build year in 2020.

Methodology in Trip Generation, 9th Edition, published by the Institute of Transportation Engineers (ITE), is the industry standard for determining trip generation for proposed land uses. The trip generation rates estimate the number of vehicles entering and exiting the site during the peak travel hours. According to ITE Trip Generation Manual, Land Use Code 210 (Single Family Detached Housing) is the best description that accurately describes the traffic characteristics of the proposed development. **Table 3** summarizes shows the new trips generated by the proposed development for the weekday morning and evening peak period for the project.

The estimated trips generated were distributed to the existing roadway network based on the existing travel patterns in the area. The trip distribution of new trips for both peak periods can be seen in **Figure 4**. The distributed new generated trips are then added to the existing traffic volumes for the resulting build condition for each peak hour. This is presented in **Figure 6**.

The combined traffic volumes were then analyzed to determine the Level of Service provided to motorists under each peak hour if the project is developed. The intersections were analyzed for both peak hours under Existing Conditions (2019) and Build Conditions (2020). A summary of the Level of Service analysis is shown on **Tables 4 and 5**.

In conclusion, the proposed Hoag Lane Subdivision development will not have a notable effect on traffic operations and safety on the adjacent highway system. The trips generated by the proposed development are only 25 vph during the morning peak hour and 26 vph in the evening peak hour. The capacity analysis results indicate there will be no degradation in Level of Service at any of the nearby intersections or at the proposed site driveway due to the proposed development. Additionally, the Intersection Level of Service for all intersections studied will

continue to operate at a LOS A for all peak periods analyzed. The sight distance calculations indicate there is sufficient intersection sight distance at the proposed site driveway off Hoag Lane, which is consistent with the existing access conditions that are seen in the residential neighborhood. Lastly, the gap analysis performed at the Route 257 and Hoag Lane intersection showed there are more than enough gaps in traffic on Route 257 to accommodate the proposed Hoag Lane Subdivision development. No mitigation measures are recommended to maintain satisfactory and existing operations at the study area intersections for the proposed development.

I. INTRODUCTION

This traffic impact study was conducted to determine the effects, if any, of the traffic generated by the proposed Hoag Lane Subdivision development will have on the adjacent highway system. The existing 30-acre site includes one 500 sf residential house on a partially developed parcel and is located immediate south of the Hoag Lane and Shiraz Lane intersection in the town of Manlius, NY. The proposed development will subdivide the site into 21 variably sized lots for single family detached housing in accordance with NYS cluster development guidelines. The site location is illustrated on **Figure 1**.

Site improvements within the project will include, but not limited to: 7 acres of green space for the residential subdivision, storm water, water, and sanitary facilities; and general site elements and characteristics found in the surrounding residential area. Access to the proposed Hoag Lane Subdivision development will be from the existing Hoag Lane and Shiraz Lane intersection. Currently, this is a stop-controlled t-intersection, the proposed driveway will form the southerly fourth leg of the intersection and will be stop controlled. The build year for the proposed Hoag Lane Subdivision is 2020. The proposed site plan is shown on **Figure 3**.

The processes and methodology used to determine the effects of traffic generated by the project on the adjacent public highway network, the assumptions made, and the results and recommendations from the analysis are described in the following sections.

II. ANALYSIS METHOD AND METHODOLOGY

The unsignalized intersections for this traffic impact study were analyzed using Synchro 10 Traffic Signal Coordination Software. Synchro is based on methods presented in the 2010 Highway Capacity Manual, Chapters 18, 19, 20 and 21; Signalized Intersections, Two-Way Stop Controlled Intersections, All-Way Stop Controlled Intersections, and Roundabouts. Synchro is a complete software package for analyzing, modeling, optimizing isolated and coordinated traffic signal timings, and calculates the effects of traffic signal coordination. Synchro analyzes unsignalized and signalized intersections to determine the Level of Service (LOS), and provides a realistic representation of the traffic operations at isolated intersections and multiple intersections within a study area. Using this analytical approach as stated in the 2010 Highway Capacity Manual, the Level of Service for traffic traveling through an intersection and highway system are determined.

The concept of Level of Service is a qualitative measure describing operating conditions within a traffic stream, and its perception by motorists and/or passengers. In signalized intersections, this qualitative measure is in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, Level of Service criteria are stated in terms of the average total delay per vehicle for a 15-minute analysis period. Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the best conditions and LOS "F" the worst. An overall intersection Level of Service below "D" is generally considered unacceptable at signalized intersections. Signalized intersections with Levels of Service below "D" indicate that during the peak 15-minute travel period at the intersection, the average delay per vehicle traveling through the intersection will exceed 55 seconds.

Level of Service for unsignalized intersections is also defined in terms of delay. However, the total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. A LOS at or approaching "F" are obtained when insufficient gaps exist in the opposing traffic for turning vehicles to pass through safely and efficiently. A Level of Service below "E" is generally considered unacceptable at unsignalized intersections.

Unsignalized intersections with a Level of Service below "E", the average delay per vehicle will exceed 50 seconds.

The definitions of Levels of Service for signalized and unsignalized intersections, along with the ranges and criteria in which capacity and delay are dependent appear in **Appendix D.**

III. EXISTING CONDITIONS

In this traffic impact study, it was determined that the study area includes the following intersections:

- **Hoag Lane at Shiraz Lane** – one-way stop-controlled t-intersection
- **Hoag Lane at Dawley Road** – one-way stop-controlled t-intersection
- **Hoag Lane at Churchill Lane** – all-way stop controlled four-way intersection

The existing conditions of the main roadway are summarized below:

A. Existing Highway System

Hoag Lane in the project vicinity is classified as an urban local roadway and is under the jurisdiction of the town of Manlius. It is a two-lane roadway that runs east west and is directly adjacent and north of the proposed Hoag Lane Subdivision site. The proposed site is located on the easterly on of Hoag Lane near the dead-end portion of the road, and will access it from the south, opposite Shiraz Lane. Hoag Lane's cross section varies between 10.5 – 11 feet lanes with no shoulders, which is consistent for the residential roadways found in this area. All the residential roadways in this neighborhood have a slight rolling type of terrain with both horizontal and vertical curvature elements. Hoag Lane is approximately 3750 feet in length and intersects NY 257 to the west and is a dead end to the east. Multiple residential roads in the neighborhood intersect Hoag Lane from both the north and south, which in turn interconnect neighboring subdivisions to Hoag Lane. The posted speed limit for Hoag Lane and all the connecting local roadways within the study area is 30 mph.

This residential suburb within Onondaga County is a moderately populated area which incorporates mainly single-family detached housing. Approximately 1200 feet to the west of the proposed site access, Hoag Lane intersects Churchill Lane. This is an all-way stop controlled four-legged intersection used by commuters and leads to multiple main roads

depending on their desired destination. If motorists continue west through this intersection, Hoag Lane provides access to NYS Route 257 that leads to the village of Fayetteville to the north and village of Manlius to the south. Additionally, Churchill Lane to the north leads to Salt Springs Road and provides an alternate means for motorists destined towards the village of Fayetteville. Churchill Lane to the south can indirectly access Duguid Road through interconnecting subdivision roads. Duguid Road is a north-south roadway located east of the neighborhood and can also be as alternate route by commuters depending on their destination.

B. Peak Intervals for Analysis

Given the land use for the proposed site, the peak travel hours generally selected for analysis are the weekday morning and evening peak hour while school is in session. The specific peak travel hours analyzed are the morning (7:00 AM to 9:00 AM) and the evening (4:00 PM to 6:00 PM) peak hours. All peak intervals are included in the data collection and analysis.

C. Existing Traffic Volumes and Operating Conditions

Traffic volumes were collected on Wednesday, October 11, 2017 between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The operating conditions at the time the traffic counts were taken were cloudy with wet pavement conditions. Although counts were taken in 2017, the collected traffic counts still represents current conditions. It's a traffic engineering standard that volumes collected within the last three years are acceptable if there have been no new trip generators or land use changes in the area since the data was collected. Additionally, since the proposed Hoag Lane Subdivision is being developed within an existing residential neighborhood, no growth rate was applied to the existing traffic volumes to establish 2019 Existing Conditions. The traffic volume data can be seen in **Tables 1** and **Tables 2** in **Appendix A.**

Based on the traffic volumes collected, the peak travel hours used for the overall study area were determined to be:

AM Peak Hour:	**7:15 AM – 8:15 AM**
PM Peak Hour:	**4:15 PM – 5:15 PM**

In the traffic volumes that were collected, heavy vehicles and pedestrians were also specified in the counts for the time periods analyzed. The existing intersection turning movement counts for the above-mentioned peak periods are shown in **Figure 2**.

D. Pedestrian Facilities

There are no sidewalks present along any of the residential roadways in the study area. This is consistent throughout this neighborhood, with most pedestrians using the roadways to travel due to the low speeds and volumes of motorists in the area. The amount of pedestrian traffic is consistent to what is seen in similar residential neighborhoods in a suburb neighborhood.

IV. BACKGROUND CONDITIONS

The opening year for the proposed residential subdivision is projected to be in 2020. Since the proposed Hoag Lane Subdivision is being developed within an existing residential neighborhood, no growth rate was applied to the existing traffic volumes. It is anticipated there will be no fluctuations in background traffic volume prior to the build year in 2020. Additionally, there are no new, unknown developments that may occur within the residential neighborhood that will impact the traffic volumes in the study area.

V. PROPOSED DEVELOPMENT

A. Description

The proposed Hoag Lane Subdivision will develop and construct 21 single family residential homes on 30 acres of property in the town of Manlius. In order to clarify municipality jurisdiction, the property is in the town of Manlius, but the mailing address for the proposed Hoag Lane Subdivision is listed as Fayetteville. The existing 30-acre site includes one 500 sf residential house on a partially developed site. The proposed 21 single family residential homes will make up the Hoag Lane Subdivision, and will be located immediate south of the Hoag Lane and Shiraz Lane intersection. The proposed development will subdivide the site into 21 variably sized lots for single family detached housing in accordance with NYS cluster development guidelines. Site improvements within the project will include, but not limited to: green space for the residential subdivision, storm water, water, and sanitary facilities; and general site elements and characteristics found in the surrounding residential area. The site location is illustrated on **Figure 1**.

Access to the proposed Hoag Lane Subdivision development will be from the existing Hoag Lane and Shiraz Lane intersection. Currently, this is a stop-controlled t-intersection. The proposed driveway will form the southerly fourth leg of the intersection and will be stop controlled. The build year for the proposed Hoag Lane Subdivision is 2020. The proposed site plan is shown on **Figure 3**.

B. Site Generated Trips

The next step is to determine the amount of traffic that will be generated by the proposed development; which is 21 units of single residential family housing. Methodology in Trip Generation, 9th Edition, published by the Institute of Transportation Engineers (ITE), is the industry standard for determining trip generation for proposed land uses. The trip generation rates estimate the number of vehicles entering and exiting the site during the peak travel

hours.

According to ITE Trip Generation Manual, Land Use Code 210 (Single Family Detached Housing) is the best description that accurately describes the traffic characteristics of the proposed development. The weekday morning and weekday evening peak trip rates for the proposed development can be calculated by using either the average rate method or the fitted curve equation as specified in the ITE Trip Generation, 9th Edition manual. The trip generation peak periods used in the analysis resemble accurately the traffic characteristics of the proposed development since most of the traffic entering and exiting the proposed site will be weekday commuter traffic. **Table 3** summarizes the results of the new site generated trips for the proposed development.

TABLE 3
SITE GENERATED TRIPS
Single Family Detached Housing

		AM Peak (vph)			PM Peak (vph)		
	Units	Enter	Exit	Total	Enter	Exit	Total
Land Use Code 210 - Single Family Detached Housing	**21**	**6**	**19**	**25**	**16**	**10**	**26**

C. Site Traffic Distribution

The site traffic distribution on the transportation network is dependent on the origins and destinations of that traffic and the locations of the access serving the proposed site. The trips attracted to a proposed development tend to be similar to the existing travel patterns in the area and considers the following parameters as well:

- Existing highway network and geometry
- Location of the site access driveways

- Travel Time
- Population areas in the surrounding community
- Existing traffic control
- Proximity of project site to major highways

A distribution of new vehicle trips going to and from the proposed site were developed based on existing traffic volumes on the adjacent roadways, and the above-mentioned parameters and following assumptions. In the both peak periods, it is projected that 100% of the vehicles at the proposed site driveway off Hoag Lane will enter/exit the site to/from the west. This is largely due to Hoag Lane being a dead-end road immediately to the east, and an existing subdivision immediately to the north at the Hoag Lane and Shiraz Lane intersection. Observing and studying the existing traffic patterns from the traffic volume data support these assumptions for the trip distribution. The trip distribution of new trips for the morning and evening peak periods are shown in **Figure 4.**

VI. BUILD CONDITIONS

Proposed build conditions are developed for each peak period by combining the distributed site generated volumes shown in **Figure 4** with the existing volumes in 2019 shown in **Figure 2**. The combined design hour volumes represent the Build Condition in 2020 for each peak period with the proposed Hoag Lane Subdivision completed and occupied with residents. This is shown in **Figure 6**.

VII. CAPACITY AND LEVEL OF SERVICE ANALYSIS

A capacity analysis was performed using the Synchro 10 software, and per the methodology described earlier in Section II. The results of this analysis are shown in **Tables 4 and 5** for the morning and evening peak travel hours.

In comparing the Level of Service (LOS) for the Existing Conditions (2019) with the Level of Service for the Build Condition (2020), there is no degradation in the Intersection Level of Service or Approach Level of Service at any of the intersections analyzed in this study due to the traffic generated by the proposed Hoag Lane Subdivision. The following summarizes the Level of Service at each intersection analyzed under the build conditions:

Hoag Lane at Shiraz Lane and Proposed Site Driveway

This two-way stop-controlled intersection will continue to operate at an acceptable Level of Service (LOS) in both peak periods for the proposed residential development. All the critical turning movements for this intersection will operate at a Level of Service A for all peak periods analyzed, with no turning movement having an average delay higher than 8.9 seconds. Additionally, the overall Intersection Level of Service for this intersection will continue to operate at a LOS A for all peak periods analyzed. No mitigation measures are recommended to maintain satisfactory and existing operations at the intersection for the proposed residential development.

Hoag Lane at Dawley Road

This one-way stop-controlled t-intersection will continue to operate at an acceptable Level of Service (LOS) in both peak periods for the proposed residential development. All the critical turning movements for this intersection will operate at a Level of Service A for all peak periods analyzed, with no turning movement having an average delay higher than 8.7 seconds. Additionally, the overall Intersection Level of Service for this intersection will continue to operate at a LOS A for all peak periods analyzed. No

mitigation measures are recommended to maintain satisfactory and existing operations at the intersection for the proposed residential development.

Hoag Lane at Churchill Lane

This all-way stop controlled four-legged intersection will continue to operate at an acceptable Level of Service (LOS) in both peak periods for the proposed residential development. All the critical turning movements for this intersection will operate at a Level of Service A for all peak periods analyzed, with no turning movement having an average delay higher than 7.6 seconds. Additionally, the overall Intersection Level of Service for this intersection will continue to operate at a LOS A for all peak periods analyzed. No mitigation measures are recommended to maintain satisfactory and existing operations at the intersection for the proposed residential development.

The results of the Capacity and Level of Service analysis are included in the Appendix.

TABLE 4
Intersection Level of Service Summary
AM Peak Hour

Intersection	2019 Existing Conditions	2020 Build Conditions
Hoag Lane at Churchill Lane		
Hoag Lane- EB Left	A (7.4)	A (7.4)
Hoag Lane - EB Thru	A (7.4)	A (7.4)
Hoag Lane - EB Right	A (7.4)	A (7.4)
Hoag Lane- WB Left	A (7.4)	A (7.5)
Hoag Lane - WB Thru	A (7.4)	A (7.5)
Churchill Lane - NB Left	A (7.5)	A (7.6)
Churchill Lane - NB Thru	A (7.5)	A (7.6)
Churchill Lane - SB Thru	A (6.9)	A (7.0)
Churchill Lane - SB Right	A (6.9)	A (7.0)
Intersection LOS	A (7.3)	A (7.4)
Hoag Lane at Dawley Road		
Hoag Lane- EB Left	A (0.0)	A (0.0)
Hoag Lane - EB Thru	A (3.6)	A (2.1)
Hoag Lane - WB Thru	A (0.0)	A (0.0)
Dawley Road - SB Left/Right	A (8.5)	A (8.7)
Intersection LOS	A (4.4)	A (2.8)
Hoag Lane at Shiraz Lane		
Hoag Lane- EB Left	A (0.0)	A (0.0)
Hoag Lane - EB Thru	A (7.2)	-----
Hoag Lane - EB Thru/Right	-----	A (2.9)
Hoag Lane - WB Left/Thru/Right	A (0.0)	A (0.0)
Site Driveway - NB Left/Thru/Right	-----	A (8.9)
Shiraz Lane - SB Left/Thru/Right	A (8.4)	A (8.4)
Intersection LOS	A (7.0)	A (6.4)

LOS (control delay/sec)

VIII. SIGHT DISTANCE

The determination of sight distance requires the definition and consideration of seven design variables:

- Perception-reaction time
- Driver eye height
- Object height
- Vehicle Operating Speed
- Roadway grade
- Pavement coefficient friction
- Deceleration rates

The primary sources from policies and standards for intersection sight distance are set forth in AASHTO's, A Policy on Geometric Design of Highways and Streets, 6th Edition, 2011. This is commonly referred to as the "Green Book". The posted speed limit for Hoag Lane is 30 mph. According to the 2011 AASHTO Green Book, the design speed limit is estimated to the legal speed limit plus a value of 5 or 10 mph. Therefore, a design speed limit value of 35 mph was used for the intersection sight distance calculations. Sight distance measurements at the proposed site driveway was then measured in the field to determine if adequate sight distance exists at the proposed site driveway for the proposed residential development. The result of the intersection sight distance calculations and field measurements for the proposed site driveway are shown below in **Table 6.**

Table 6
Intersection Sight Distance

Location	AASHTO's Recommended Intersection Sight Distance (Left)	AASHTO's Recommended Intersection Sight Distance (Right)	Field Measure Sight Distance (Left)	Field Measure Sight Distance (Right)
Proposed Site Driveway (opposite Shiraz Lane) off Hoag Lane	386 feet	334 feet	400 feet +/- (Limited by Crest Curve)	500 feet + (Dead End)

Lastly, the proposed site access will have approximately the same intersection sight distance as Shiraz Lane, since it will be located directly opposite of it on Hoag Lane. Based on the information referenced above, the proposed site driveway opposite Shiraz Lane on Hoag Lane exceeds the recommended sight distance as suggested by AASHTO; and is consistent with the existing access conditions that are seen in this residential neighborhood.

IX. GAP ANALYSIS

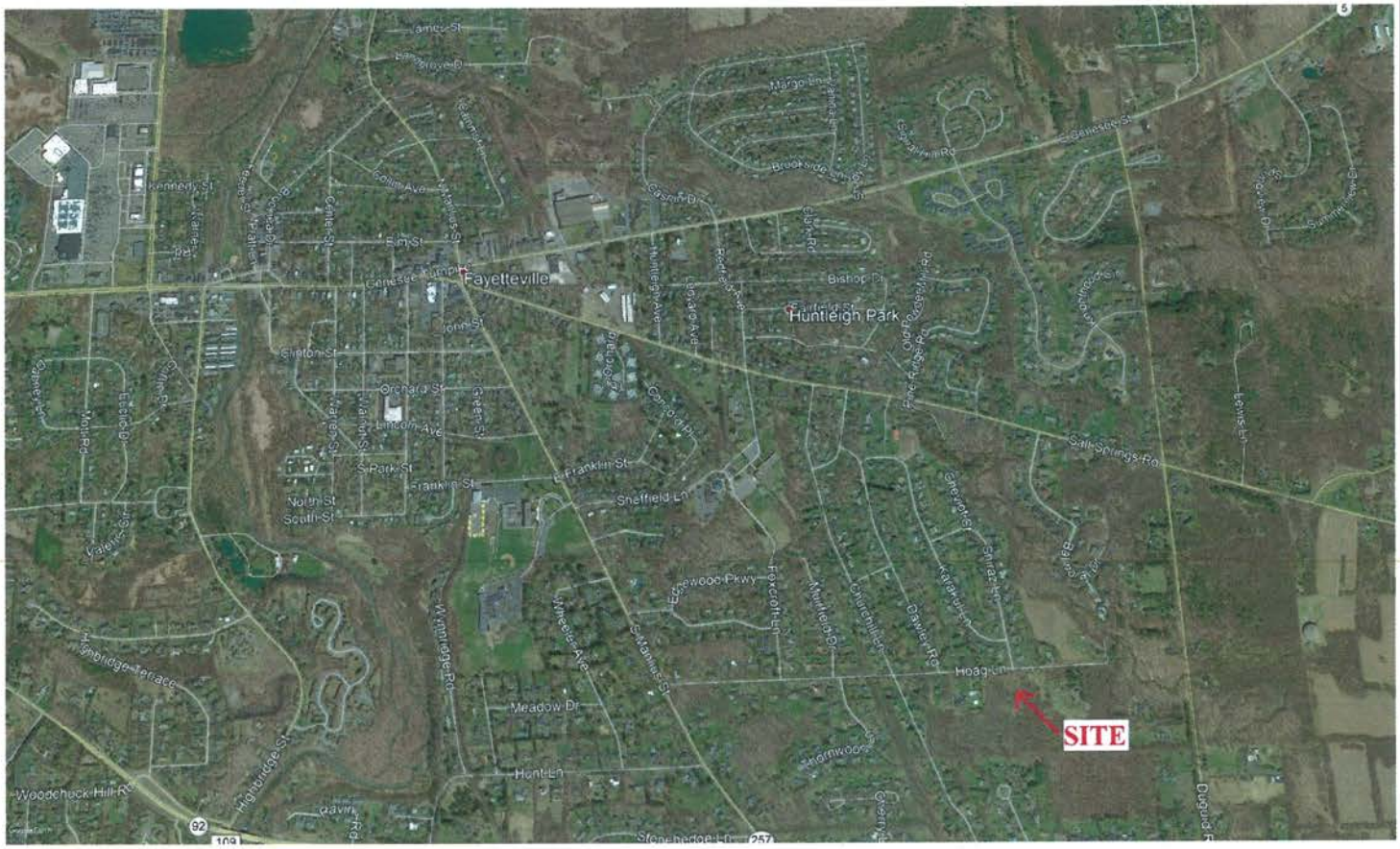
A gap analysis was performed at the Route 257 and Hoag Lane intersection to determine if there are enough gaps in traffic on Route 257 to accommodate the proposed Hoag Lane Subdivision development. According to the collected traffic volumes, the morning and evening peak hour for a typical weekday occurs between 7:15 AM – 8:15 AM and 4:15 PM – 5:15 PM. Therefore, these were the peak hours used to perform the intersection gap study for the proposed development.

Gap data was collected on Tuesday, February 27, 2018 to analyze the ability for vehicles to turn onto Route 257 from Hoag Lane and onto Hoag Lane from Route 257. A gap is defined as the amount of time, in seconds, between the end of one vehicle and the beginning of the next vehicle. For a vehicle to turn right onto Route 257 from Hoag Lane or left onto Hoag Lane from Rout 257, a vehicle only requires a gap in traffic in the northbound direction on Route 257. For a vehicle to turn left onto Route 257, a vehicle needs to have a gap in traffic in both the northbound and southbound directions. Gap data was collected for the morning and evening peak periods in 15-minute increments. The gaps were then converted to a number of vehicles equivalent that could turn left or right out of Hoag Lane and left into Hoag Lane for each gap and then totaled for the peak hour. For example, one vehicle can turn from Hoag Lane with a 6.4 – 10 second gap, two vehicles can turn with an 11 – 13 second gap, three vehicles with a 14 – 17 second gap, etc. Lastly, since there are vehicles that currently exit and enter Hoag Lane to/from Route 257, the gap data only resembles "available gaps" not utilized by existing vehicles. Essentially, it is a quantitative measure of the available gaps that can be utilized by additional traffic at the intersection.

Based on the collected gap data, there are more than sufficient gaps in traffic to accommodate the proposed development. Sufficient available gaps in traffic exist to accommodate approximately 578 right turning exiting vehicles and 550 left turn exiting vehicles onto Route 257 from Hoag Lane; and 787 left turn entering vehicles onto Hoag Lane from Route 257 during the morning peak hour. Similarly, enough available gaps in traffic exist to accommodate approximately 537 right turning exiting vehicles and 409 left turning exiting vehicles onto Route 257 from Hoag Lane; and 755 left turn entering vehicles onto Hoag Lane from Route 257 during the evening peak hour. The gap data tables are shown in Appendix C for reference.

X. CONCLUSION AND RECOMMENDATIONS

The proposed Hoag Lane Subdivision development will not have a notable effect on traffic operations and safety on the adjacent highway system. The trips generated by the proposed development are only 25 vph during the morning peak hour and 26 vph in the evening peak hour. The capacity analysis results indicate there will be no degradation in Level of Service at any of the nearby intersections or at the proposed site driveway due to the proposed development. Additionally, the Intersection Level of Service for all intersections studied will continue to operate at a LOS A for all peak periods analyzed. The sight distance calculations indicate there is sufficient intersection sight distance at the proposed site driveway off Hoag Lane, which is consistent with the existing access conditions that are seen in the residential neighborhood. Lastly, the gap analysis performed at the Route 257 and Hoag Lane intersection showed there are more than enough gaps in traffic on Route 257 to accommodate the proposed Hoag Lane Subdivision development. No mitigation measures are recommended to maintain satisfactory and existing operations at the study area intersections for the proposed development.



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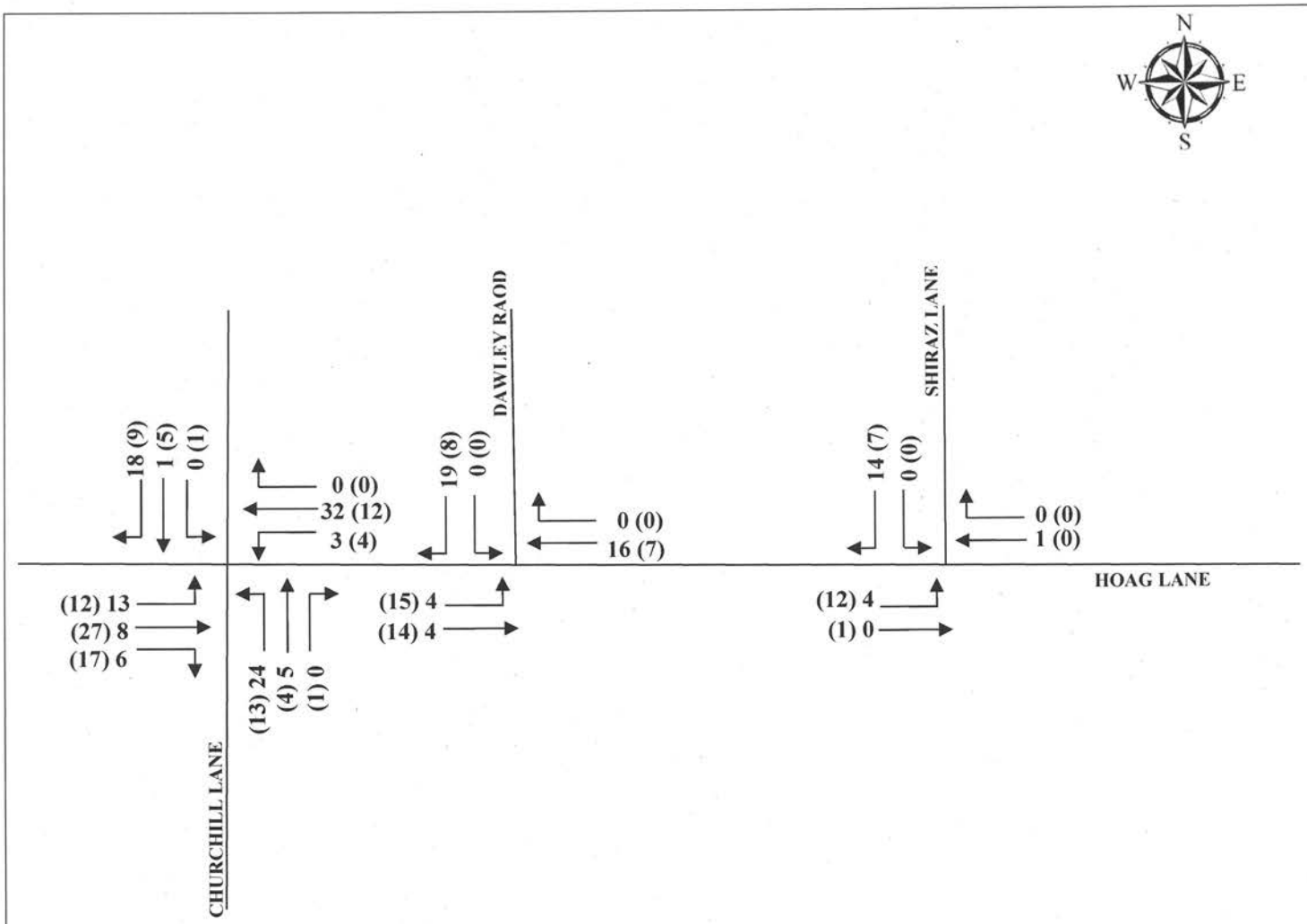
HOAG LANE SUBDIVISION TIS
LOCATION MAP

DATE: AUG. 2019	CHECKED BY: RLZ
DRAWN BY: RLZ	SCALE: NONE
PROJECT: HOAG LANE SUBDIVISION TIS FAYETTEVILLE, NY	

FIG. 1



AM (PM)

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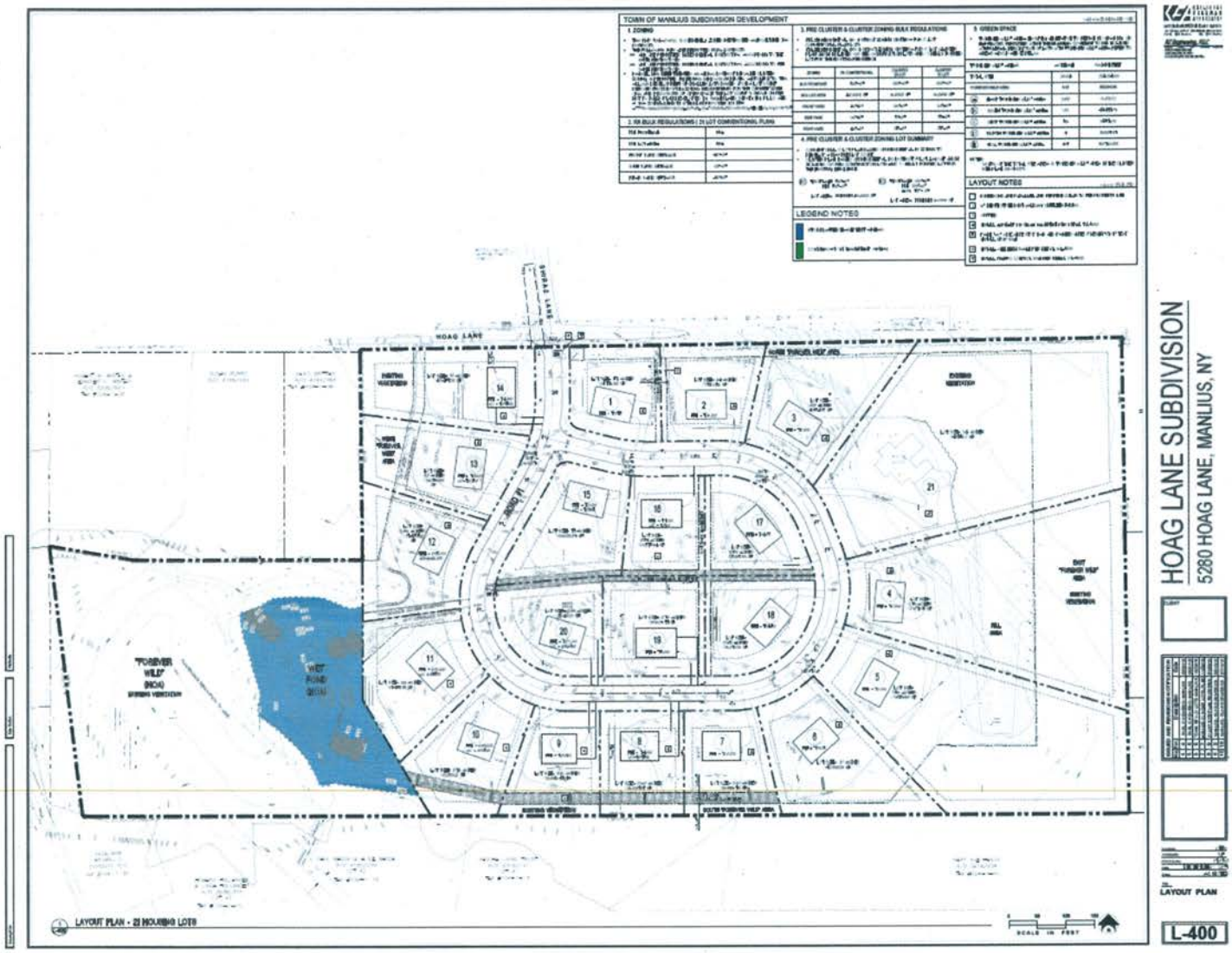
HOAG LANE SUBDIVISION TIS
EXISTING CONDITIONS (2019)

DATE: AUG. 2019	CHECKED BY: RLZ
DRAWN BY: RLZ	SCALE: NONE
PROJECT: HOAG LANE SUBDIVISION TIS FAYETTEVILLE, NY	

FIG. 2



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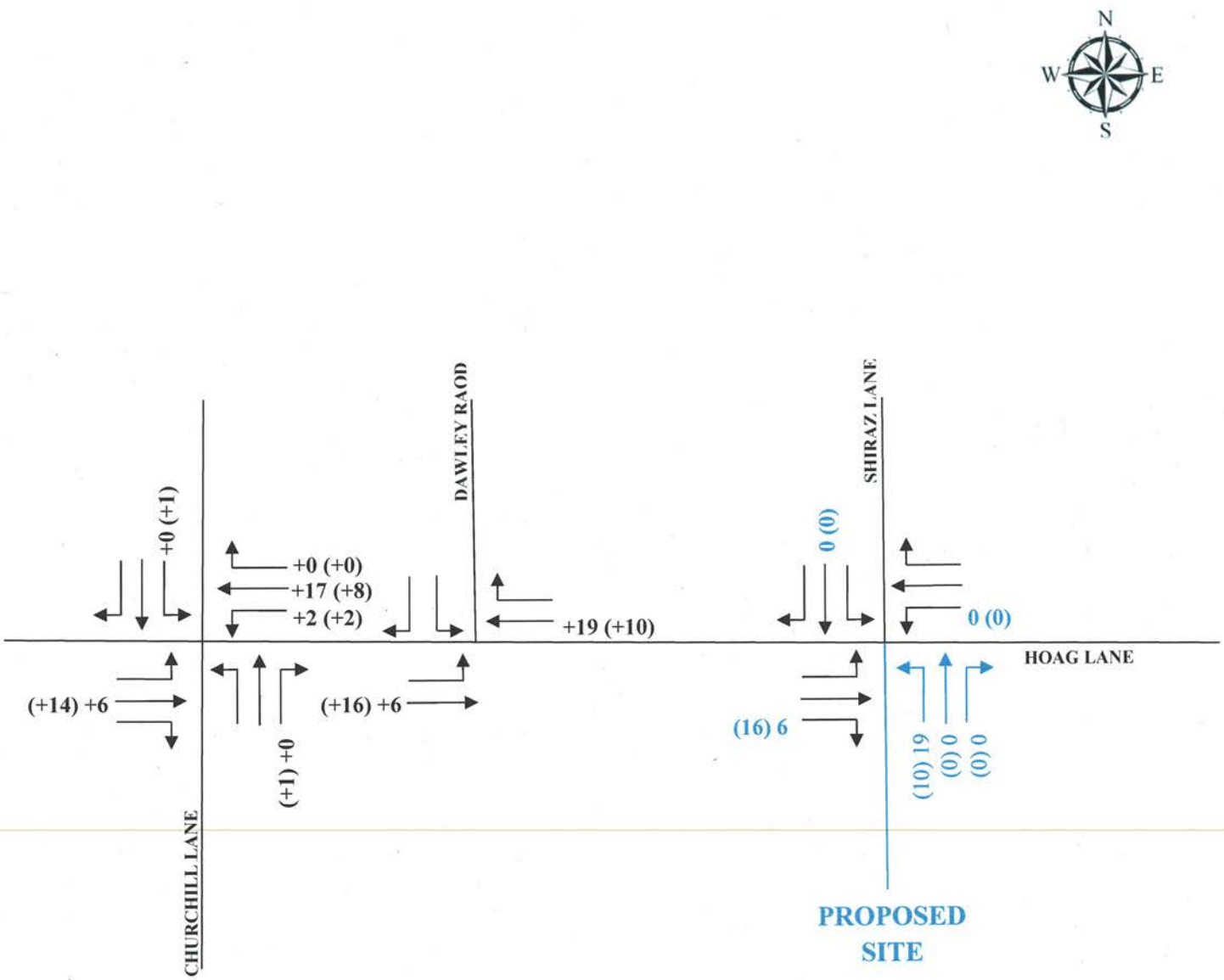
HOAG LANE SUBDIVISION TIS
SITE PLAN

DATE: AUG. 2019	CHECKED BY: RLZ
DRAWN BY: RLZ	SCALE: NONE
PROJECT: HOAG LANE SUBDIVISION TIS FAYETTEVILLE, NY	

FIG. 3



AM (PM)

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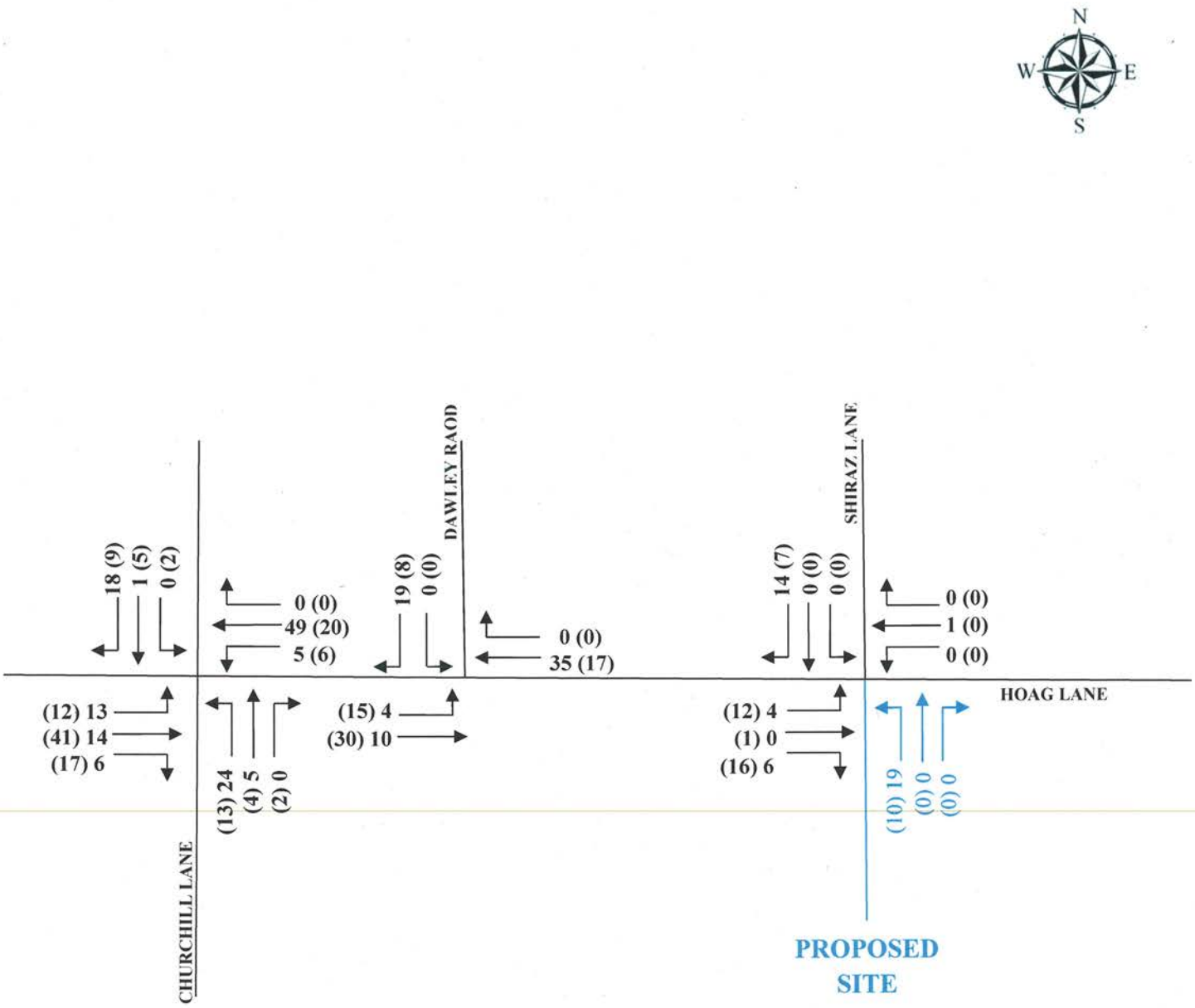
HOAG LANE SUBDIVISION TIS
SITE GENERATED TRIPS

DATE: AUG. 2019	CHECKED BY: RLZ
DRAWN BY: RLZ	SCALE: NONE
PROJECT: HOAG LANE SUBDIVISION TIS FAYETTEVILLE, NY	FIG. 4



AM (PM)

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HOAG LANE SUBDIVISION TIS
BUILD CONDITIONS (2020)

DATE: AUG. 2019	CHECKED BY: RLZ
DRAWN BY: RLZ	SCALE: NONE
PROJECT: HOAG LANE SUBDIVISION TIS FAYETTEVILLE, NY	

FIG. 5

Traffic Impact Study

for

Hoag Lane Subdivision

APPENDIX A

Collected Traffic Volume Data and Calculations

Table 1 - Traffic Volumes

10/11/2017	Hoag Lane at Churchhill Lane																							
	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND					
	Churchhill Lane						Churchhill Lane						Hoag Lane						Hoag Lane					
A.M.	LEFT		THRU		RIGHT		LEFT		THRU		RIGHT		LEFT		THRU		RIGHT		LEFT		THRU		RIGHT	
	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.
7:00-7:15	3	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	2	0	0	0	6	0	0	0
7:15-7:30	6	0	1	1	0	0	0	0	0	0	1	0	6	0	1	0	3	0	2	0	10	0	0	0
7:30-7:45	7	0	1	0	0	0	0	0	0	0	8	0	4	1	1	0	1	0	1	0	10	1	0	0
7:45-8:00	5	0	0	0	0	0	0	0	1	0	4	2	1	0	3	0	1	0	0	0	6	0	0	0
8:00-8:15	6	0	2	0	0	0	0	0	0	0	3	0	0	1	3	0	1	0	0	0	5	0	0	0
8:15-8:30	4	0	1	1	0	0	0	0	0	0	4	0	3	0	1	0	1	0	1	0	7	0	0	0
8:30-8:45	5	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	5	1	0	0
8:45-9:00	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	4	0	0	0

PEAK HOUR													TOTAL
7:00-8:00	21	3	0	0	2	15	13	7	7	3	33	0	104
7:15-8:15	24	5	0	0	1	18	13	8	6	3	32	0	110
7:30-8:30	22	5	0	0	1	21	10	8	4	2	29	0	102
7:45-8:45	20	6	0	0	1	13	6	8	5	1	24	0	84
8:00-9:00	18	7	0	0	0	7	6	6	5	1	22	0	72

% heavy vehicles at peak hour												
	0%	20%	0%	0%	0%	11%	15%	0%	0%	0%	3%	0%

Peak Hour Factor				
	0.91	0.59	0.68	0.73

Table 2 - Traffic Volumes

10/11/2017	Hoag Lane at Churchhill Lane																							
	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND					
	Churchhill Lane						Churchhill Lane						Hoag Lane						Hoag Lane					
P.M.	LEFT		THRU		RIGHT		LEFT		THRU		RIGHT		LEFT		THRU		RIGHT		LEFT		THRU		RIGHT	
	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.
4:00-4:15	3	0	0	0	0	0	1	0	1	0	1	3	2	0	5	1	3	0	0	0	3	1	1	0
4:15-4:30	3	0	0	1	1	0	0	0	2	0	2	2	2	0	5	1	4	0	1	0	3	1	0	0
4:30-4:45	3	0	1	0	0	0	0	0	1	0	1	1	3	1	8	0	3	0	1	1	2	0	0	0
4:45-5:00	3	0	1	0	0	0	0	0	1	0	1	1	3	0	7	0	4	0	0	0	3	0	0	0
5:00-5:15	4	0	1	0	0	0	1	0	1	0	1	0	3	0	6	0	6	0	1	0	3	0	0	0
5:15-5:30	2	0	0	0	1	0	0	0	1	0	0	0	3	0	6	0	5	0	0	0	3	0	0	0
5:30-5:45	4	0	1	1	1	0	0	0	1	0	2	0	5	0	5	0	4	1	1	0	5	0	0	0
5:45-6:00	3	0	1	0	0	0	0	0	1	0	2	0	5	0	5	0	3	0	0	0	4	0	0	0

PEAK HOUR													TOTAL
4:00-5:00	12	3	1	1	5	12	11	27	14	3	13	1	103
4:15-5:15	13	4	1	1	5	9	12	27	17	4	12	0	105
4:30-5:30	12	3	1	1	4	5	13	27	18	3	11	0	98
4:45-5:45	13	4	2	1	4	5	14	24	20	2	14	0	103
5:00-6:00	13	4	2	1	4	5	16	22	19	2	15	0	103

% heavy vehicles at peak hour												
	0%	25%	0%	0%	0%	44%	8%	4%	0%	25%	8%	0%

Peak Hour Factor				
	0.90	0.63	0.93	0.80

Table 1 - Traffic Volumes

10/11/2017	Hoag Lane at Dawley Road											
	EASTBOUND				WESTBOUND				SOUTHBOUND			
	Hoag Lane				Hoag Lane				Dawley Road			
A.M.	LEFT		THRU		THRU		RIGHT		LEFT		RIGHT	
	passenger veh.	heavy veh	passenger veh.	heavy veh	passenger veh.	heavy veh	passenger veh.	heavy veh	passenger veh.	heavy veh	passenger veh.	heavy veh
7:00-7:15	1	0	1	0	3	0	0	0	0	0	3	0
7:15-7:30	1	0	0	0	6	0	0	0	0	0	6	0
7:30-7:45	0	0	1	0	5	0	0	0	0	0	6	1
7:45-8:00	1	0	2	0	2	0	0	0	0	0	4	0
8:00-8:15	2	0	1	0	3	0	0	0	0	0	2	0
8:15-8:30	1	0	0	0	4	0	0	0	0	0	4	0
8:30-8:45	0	0	1	0	2	1	0	0	0	0	3	0
8:45-9:00	0	0	1	0	2	0	0	0	0	0	2	0
	6		7		27		0		0		30	TOTAL

PEAK HOUR							TOTAL
7:00-8:00	3	4	16	0	0	20	43
7:15-8:15	4	4	16	0	0	19	43
7:30-8:30	4	4	14	0	0	17	39
7:45-8:45	4	4	12	0	0	13	33
8:00-9:00	3	3	12	0	0	11	29

% heavy vehicles at peak hour

0%	0%	0%	0%	0%	5%

Peak Hour Factor

0.67	0.67	0.68

Table 2 - Traffic Volumes

10/11/2017	Hoag Lane at Dawley Road											
	EASTBOUND				WESTBOUND				SOUTHBOUND			
	Hoag Lane				Hoag Lane				Dawley Road			
P.M.	LEFT		THRU		THRU		RIGHT		LEFT		RIGHT	
	passenger veh.	heavy veh	passenger veh.	heavy veh	passenger veh.	heavy veh	passenger veh.	heavy veh	passenger veh.	heavy veh	passenger veh.	heavy veh
4:00-4:15	3	1	2	0	2	0	0	0	0	0	2	1
4:15-4:30	3	1	3	0	2	1	0	0	0	0	2	0
4:30-4:45	4	0	4	0	1	0	0	0	0	0	1	1
4:45-5:00	3	0	4	0	1	0	0	0	0	0	2	0
5:00-5:15	4	0	3	0	2	0	0	0	0	0	2	0
5:15-5:30	3	0	4	0	2	0	0	0	0	0	1	0
5:30-5:45	3	0	3	0	3	0	0	0	0	0	3	0
5:45-6:00	2	0	2	0	2	0	0	0	0	0	2	0
	25		25		15		0		0		15	TOTAL

PEAK HOUR							TOTAL
4:00-5:00	15	13	7	0	0	9	44
4:15-5:15	15	14	7	0	0	8	44
4:30-5:30	14	15	6	0	0	7	42
4:45-5:45	13	14	8	0	0	8	43
5:00-6:00	12	12	9	0	0	8	41

% heavy vehicles at peak hour

7%	0%	14%	0%	0%	13%

Peak Hour Factor

0.91	0.58	1.00

Table 1 - Traffic Volumes

10/11/2017

A.M.	Hoag Lane at Shiraz Lane											
	EASTBOUND				WESTBOUND				SOUTHBOUND			
	Hoag Lane				Hoag Lane				Shiraz Lane			
	LEFT		THRU		THRU		RIGHT		LEFT		RIGHT	
	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.
7:00-7:15	1	0	0	0	0	0	0	0	0	0	3	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	5	0
7:30-7:45	1	0	0	0	1	0	0	0	0	0	4	0
7:45-8:00	2	0	0	0	0	0	0	0	0	0	2	0
8:00-8:15	1	0	0	0	0	0	0	0	0	0	3	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	4	0
8:30-8:45	1	0	0	0	0	0	0	0	0	0	2	1
8:45-9:00	1	0	0	0	0	0	0	0	0	0	2	0
	7		0		1		0		0		25	TOTAL

PEAK HOUR							TOTAL
7:00-8:00	4	0	1	0	0	14	19
7:15-8:15	4	0	1	0	0	14	19
7:30-8:30	4	0	1	0	0	13	18
7:45-8:45	4	0	0	0	0	12	16
8:00-9:00	3	0	0	0	0	12	15

% heavy vehicles at peak hour

0%	0%	0%	0%	0%	0%

Peak Hour Factor

0.50	0.25	0.70

Table 2 - Traffic Volumes

10/11/2017

P.M.	Hoag Lane at Shiraz Lane											
	EASTBOUND				WESTBOUND				SOUTHBOUND			
	Hoag Lane				Hoag Lane				Shiraz Lane			
	LEFT		THRU		THRU		RIGHT		LEFT		RIGHT	
	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.	passenger veh.	heavy veh.
4:00-4:15	2	0	0	0	0	0	0	0	0	0	2	0
4:15-4:30	3	0	0	0	0	0	0	0	0	0	2	1
4:30-4:45	4	0	0	0	0	0	0	0	0	0	1	0
4:45-5:00	3	0	0	0	0	0	0	0	0	0	1	0
5:00-5:15	2	0	1	0	0	0	0	0	0	0	2	0
5:15-5:30	2	0	1	0	0	0	0	0	0	0	2	0
5:30-5:45	3	0	0	0	0	0	0	0	0	0	3	0
5:45-6:00	2	0	0	0	0	0	0	0	0	0	2	0
	21		2		0		0		0		15	TOTAL

PEAK HOUR							TOTAL
4:00-5:00	12	0	0	0	0	7	19
4:15-5:15	12	1	0	0	0	7	20
4:30-5:30	11	2	0	0	0	6	19
4:45-5:45	10	2	0	0	0	8	20
5:00-6:00	9	2	0	0	0	9	20

% heavy vehicles at peak hour

0%	0%	0%	0%	0%	14%

Peak Hour Factor

0.81	0.00	0.58

Traffic Impact Study

for

Hoag Lane Subdivision

APPENDIX B

Trip Generation Calculations

TRIP GENERATION CALCULATIONS

REFERENCE: ITE TRIP GENERATION MANUAL, 9TH EDITION

LAND USE: 210 - SINGLE-FAMILY DETACHED HOUSING

TRIP GENERATION FOR 21 DWELLING UNITS OF SINGLE FAMILY DWELLINGS

AM PEAK HOUR

AVERAGE RATE METHOD

WEEKDAY, PEAK HOUR OF ADJACENT STREET TRAFFIC, ONE HOUR BETWEEN 7 AND 9 AM
AVERAGE RATE: 0.75
DIRECTIONAL DISTRIBUTION: 25% ENTERING, 75% EXITING

7-9 AM PEAK HOUR TOTAL: (21 DWELLING UNITS) X (AVERAGE RATE OF 0.75) = 15.75 VEHICLE TRIPS >> **16 VEHICLE TRIPS**

7-9 AM PEAK HOUR ENTER: (16 VEHICLE TRIP) X .25 = **4 VEHICLE TRIPS**

7-9 AM PEAK HOUR EXIT: (16 VEHICLE TRIP) X .75 = **12 VEHICLE TRIPS**

FITTED CURVE EQUATION

WEEKDAY, PEAK HOUR OF ADJACENT STREET TRAFFIC, ONE HOUR BETWEEN 7 AND 9 AM
FITTED CURVE EQUATION: T = 0.70(X) + 9.74
DIRECTIONAL DISTRIBUTION: 25% ENTERING, 75% EXITING

7-9 AM PEAK HOUR TOTAL: T = 0.70(21 DWELLING UNITS) + 9.74 = 24.44 VEHICLE TRIPS >> **25 VEHICLE TRIPS**

7-9 AM PEAK HOUR ENTER: (25 VEHICLE TRIP) X .25 = **6 VEHICLE TRIPS**

7-9 AM PEAK HOUR EXIT: (25 VEHICLE TRIP) X .75 = **19 VEHICLE TRIPS**

PM PEAK HOUR

AVERAGE RATE METHOD

(WEEKDAY, PEAK HOUR OF ADJACENT STREET TRAFFIC, ONE HOUR BETWEEN 4 AND 6 PM)
AVERAGE RATE: 1.00
DIRECTIONAL DISTRIBUTION: 63% ENTERING, 37% EXITING

4-6 PM PEAK HOUR TOTAL: (21 DWELLING UNITS) X (AVERAGE RATE OF 1.00) = 21.0 VEHICLE TRIPS >> **21 VEHICLE TRIPS**

4-6 PM PEAK HOUR ENTER: (21 VEHICLE TRIP) X .63 = **13 VEHICLE TRIPS**

4-6 PM PEAK HOUR EXIT: (21 VEHICLE TRIP) X .37 = **8 VEHICLE TRIPS**

FITTED CURVE EQUATION

WEEKDAY, PEAK HOUR OF ADJACENT STREET TRAFFIC, ONE HOUR BETWEEN 4 AND 6 PM
FITTED CURVE EQUATION: Ln(T) = 0.90 Ln(X) + 0.51
DIRECTIONAL DISTRIBUTION: 63% ENTERING, 37% EXITING

4-6 PM PEAK HOUR TOTAL: Ln(T) = 0.90 Ln(21 DWELLING UNITS) + 0.51 = 25.79 VEHICLE TRIPS >> **26 VEHICLE TRIPS**

4-6 PM PEAK HOUR ENTER: (26 VEHICLE TRIP) X .63 = **16 VEHICLE TRIPS**

4-6 PM PEAK HOUR EXIT: (26 VEHICLE TRIP) X .37 = **10 VEHICLE TRIPS**

Traffic Impact Study

for

Hoag Lane Subdivision

APPENDIX C

Miscellaneous Traffic Data

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

1. ZONING

- TAX PARP 504-01-352 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1 ACCORDING TO THE SAME RESTRICTIONS
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3 ACCORDING TO THE SAME RESTRICTIONS
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE 5T8). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY SWAIN LAND SURVEYING PLLC AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KPA.

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (RI) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS
- UTILIZE RESIDENTIAL (RI) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE

ZONING	RI CONVENTIONAL	CLUSTER 20 LOT	CLUSTER 21 LOT
MIN FRONTAGE	50'-0"	100'-0"	100'-0"
MIN LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL RI ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL RI DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R) FRONTAGE: 50'-0" MIN. 50'-0"
LOT AREA: MINIMUM 40,000 SF

(R2) FRONTAGE: 100'-0" MIN. 100'-0" AVG. 110'-0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN NO GRADING OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1,324,224.00
"FOREVER WILD" AREA	9.15	398,819.88
(A) EAST "FOREVER WILD" AREA	3.00	131,000.33
(B) SOUTH "FOREVER WILD" AREA	1.02	44,477.05
(C) WEST "FOREVER WILD" AREA	.56	24,376.51
(D) NORTH "FOREVER WILD" AREA	.41	18,005.51
(E) HOA "FOREVER WILD" AREA	4.15	180,763.85

NOTES:
1. 30.45% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/14/2019.

LEGEND NOTES

- STORMWATER EASEMENT AREAS
- CONSERVATION EASEMENT AREAS

LAYOUT NOTES

1. DIMENSIONS ARE PARALLEL AND PERPENDICULAR TO THE PROPERTY LINE.
2. 6" DEPTH STONE DUST BALKWAY ON FILTER FABRIC
3. OMITTED
4. INSTALL ASPHALT DRIVEWAY PAVEMENT PER DETAIL 1/L-300
5. PAINT 7'-0" WIDE WHITE STOP BAR AND PAINTED WHITE 3' HEIGHT 'STOP' TEXT. INSTALL STOP SIGN
6. INSTALL JUTE MESH SWALE PER DETAIL 6/L-300
7. INSTALL TRAFFIC CONTROL SIGN PER DETAIL 2/L-300



LAYOUT PLAN - 21 HOUSING LOTS

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
4	4	PUBLIC HEARING- MANLIUS	05/04/19
5	5	PUBLIC HEARING- MANLIUS	06/01/19
6	6	TOWN REV-21 LOTS-MANLIUS	12/22/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/29/19
8	8	21 LOT SITE PLAN REVISIONS	05/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19

Drawn By: VER
Checked By: SF
Date: DECEMBER 2019
Scale: AS NOTED

LAYOUT PLAN

L-400

PRELIMINARY PLAT NOTES

- SUBDIVISION TO PROVIDE FINAL 22 PLAT PLAN (7 BUILDING LOTS + 1 STORMWATER CONSERVATION EASEMENT) AS APPROVED BY THE TOWN OF MANLIUS PLANNING BOARD
- STORMWATER AND CONSERVATION EASEMENT & LOT DEFINITIONS AND MAINTENANCE RESPONSIBILITY TO BE CLEARLY DEFINED ON THE FINAL SUBDIVISION PLAT AND CONSTRUCTION PLANS AT SITE PLAN
- 5 LOTS - 5 LOTS
  * INDICATES 'HOA' MAINTAINED PROPERTY. ALL OTHER EASEMENTS WILL BE INSPECTED/ENFORCED BY 'HOA'
- EASEMENTS OWNED BY PROPERTY OWNER
- HOA MAINTAINED AREA

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

1. ZONING

- TAX MAP NO4-01-352 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1 ACCORDING TO THE SAME RESTRICTIONS.
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3 ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE 5/7A: 7-13) ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE 'NOT TO BUILD PLAN DEVELOPED BY BAGAN LAND SURVEYING, PLLC, AND A 'RA' ZONING DENSITY SITE PLAN PROVIDED BY KPA.
  HTTPS://MUNICIPALCODE.COM/LIBRARY/NEW-YORK/TOWN-OF-MANLIUS/CODE-OF-ORDINANCES/CHAPTER-220-ZONING/ARTICLE-V-SCHEDULE-OF-DISTRICT-REGULATIONS/

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 7 LOT CLUSTER PLAN WHICH INCLUDES 7 (SEVEN) CONSTRUCTION LOTS AND (1) HEAVILY FORESTED LOT FOR THE EXISTING RESIDENCE

ZONING	R3 CONVENTIONAL	CLUSTER 21 LOT	CLUSTER 7 LOT
MIN. FRONTAGE	100'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R3 ZONING TO DEVELOP A 7 PARCEL LOT COUNT
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES 7 (SEVEN) CONSTRUCTION LOTS AND (1) HEAVILY FORESTED LOT FOR THE EXISTING RESIDENCE.

(R) FRONTAGE: 150'-0" MIN. 150'-0"
LOT AREA: MINIMUM 40,000 SF

(C) FRONTAGE: 100'-0" MIN. 100'-0" AVG. 150'-0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

- 'FOREVER WILD' AREA- EXISTING VEGETATION TO REMAIN, NO GRADING OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH 'FOREVER WILD' AREA. REFER TO AREAS A,B,C,D AND E BELOW

FOREVER WILD' AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1,308,422.00
FOREVER WILD' AREA	7.60	331,018.00
(A) EAST 'FOREVER WILD' AREA	3.02	131,845.00
(B) SOUTH 'FOREVER WILD' AREA	1.24	54,014.00
(C) WEST 'FOREVER WILD' AREA	.84	36,590.00
(D) NORTH 'FOREVER WILD' AREA	.31	13,509.00
(E) HOA 'FOREVER WILD' AREA	2.43	105,859.00

NOTES:
1. 25.06% OF THE TOTAL SITE AREA IS 'FOREVER WILD' AREA IN THE CLUSTER SITE PLAN (7 LOTS)



1/403 FOREVER WILD PLAN

KEPLINGER FOREMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
RZ Engineering, PLLC

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT

ISSUED AND REVISIONS NOTIFICATION		
No.	Description	Date
1	1	SHEA SET (TOWN OF MANLIUS)
2	2	PUBLIC HEARING MINUTES
3	3	PUBLIC HEARING MINUTES
4	4	PUBLIC HEARING MINUTES
5	5	PUBLIC HEARING MINUTES
6	6	PUBLIC HEARING MINUTES
7	7	MANLIUS ST HOME LOTS #1, #2

Drawn By: VER
Checked By: RF
Drawing No.: 37.0540
Date: DECEMBER 1, 2021
Scale: AS NOTED

Title: PRELIMINARY FOREVER WILD PLAN

L-403

PRELIMINARY PLAT NOTES

SURVEY TO PROVIDE FINAL 22 PLAT PLAN (2 BUILDING LOTS + 1 STORMWATER CONSERVATION EASEMENT AND ROAD #1) FOR SUBDIVISION APPROVAL OF TAX LOT # ZONING BOARD.

STORMWATER AND CONSERVATION EASEMENT'S LOT DEFINITIONS AND MAINTENANCE RESPONSIBILITY TO BE AS DESCRIBED IN SAID EASEMENT AGREEMENT WITH TOWN OF MANLIUS.

LOTS 21, 21 LOTS
= INDICATES "HOA" MAINTAINED PROPERTY. ALL OTHER EASEMENTS WILL BE INSPECTED/ENFORCED BY "HOA"
EMENTS OWNED BY PROPERTY OWNER

HOA MAINTAINED AREA

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

1. ZONING

- TAX MAP NO. 41-1-35.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3 ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NY'S SUBDIVISION REVIEW (ARTICLE 9/TAL 7-13) ALLOW DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY SMOLEN LAND SURVEYING, PLLC AND A YIELD ZONING DENSITY SITE PLAN PROVIDED BY KPA.
  HTTPS://MANLIUSNY.GOV/LIB/PUBLICATIONS/SUBDIVISIONREVIEWS/MANTLEPDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS
- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (2)R1 NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE

ZONING	R1 CONVENTIONAL	CLUSTER 21 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	15,000 SF	15,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT
- CLUSTER PLAN BASED ON RESIDENTIAL R2 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (2)R1 NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE

(R) FRONTAGE: 150'-0" MIN. 150'-0"
LOT AREA: MINIMUM 40,000 SF

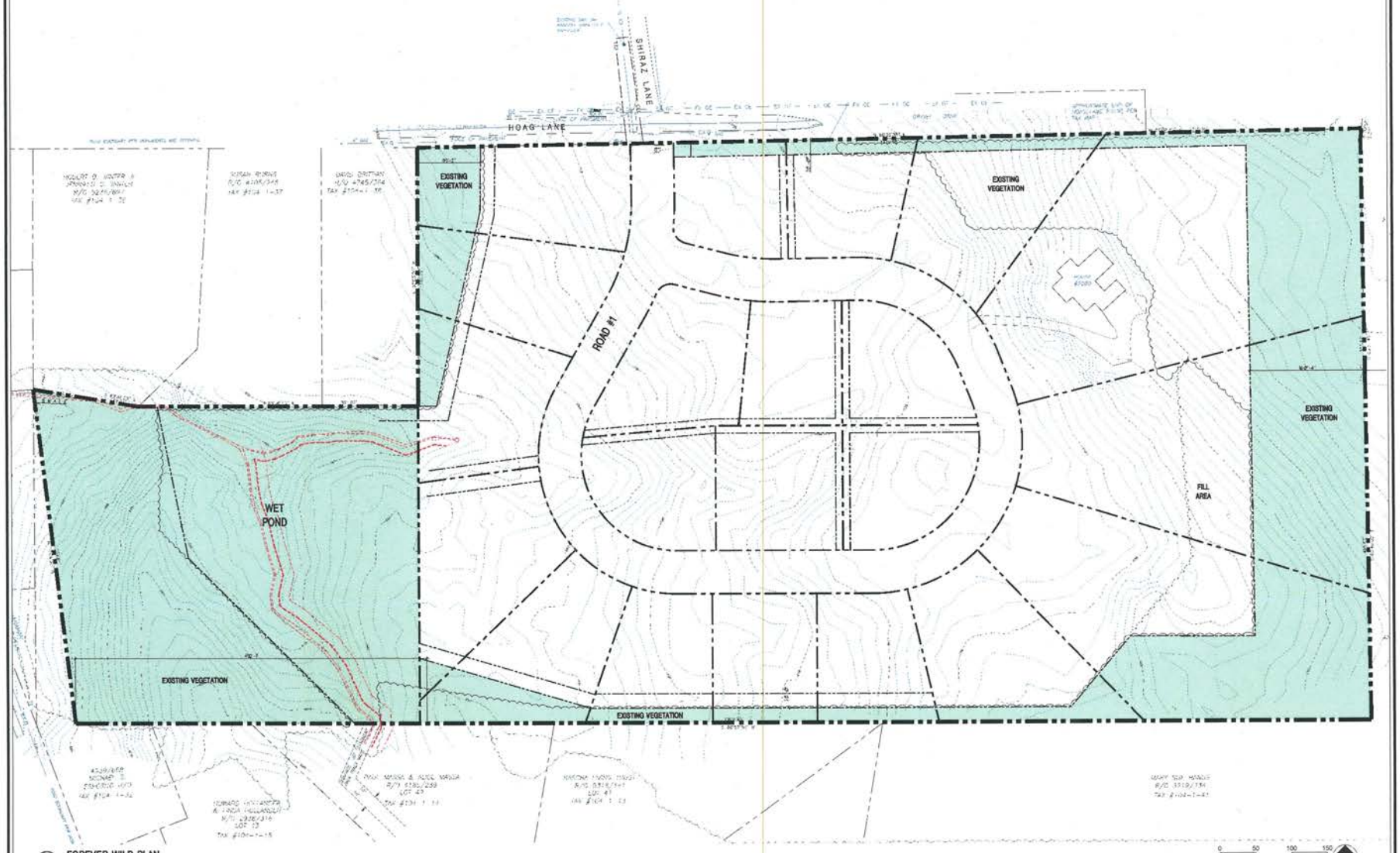
(R2) FRONTAGE: 100'-0" MIN. 100'-0" AVG. 150'-0"
LOT AREA: MINIMUM 15,000 SF

5. GREEN SPACE

- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1,308,234.00
"FOREVER WILD" AREA	7.69	335,218.00
(A) EAST "FOREVER WILD" AREA	3.02	131,649.00
(B) SOUTH "FOREVER WILD" AREA	1.24	54,014.00
(C) WEST "FOREVER WILD" AREA	0.44	19,166.00
(D) NORTH "FOREVER WILD" AREA	2.31	100,589.00
(E) HOA "FOREVER WILD" AREA	0.68	29,600.00

NOTES:
1. 25.60% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN (1-8-24).



1/40 FOREVER WILD PLAN

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
KF Engineering PLLC

HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT

ISSUED AND REVISIONS NOTIFICATION			
No.	Rev.	Description	Date
1	1	CHECK SET TOWN OF MAN. (US)	01/10/19
2	2	PUBLIC HEARING MANLIUS	03/21/19
3	3	PUBLIC HEARING MANLIUS	03/21/19
4	4	PUBLIC HEARING MANLIUS	05/04/19
5	5	PUBLIC HEARING MANLIUS	06/01/19
6	6	PUBLIC HEARING MANLIUS	07/01/19
7	7	MANLIUS 21 HOME LOTS (A, B)	12/03/19

Drawn By: VER
Checked By: KF
Project No.: 37040
Date: DECEMBER 1, 2021
Scale: AS NOTED

Title
PRELIMINARY FOREVER WILD PLAN

L-403

Table 6
Intersection Sight Distance

Location	AASHTO's Recommended Intersection Sight Distance (Left)	AASHTO's Recommended Intersection Sight Distance (Right)	Field Measure Sight Distance (Left)	Field Measure Sight Distance (Right)
Proposed Site Driveway (opposite Shiraz Lane) off of Hoag Lane	386 feet	334 feet	400 feet +/- (Limited by Crest Curve)	500 + feet (Dead End)

Note: The posted speed limit is 30 mph for Hoag Lane near the site location. Per 2011 AASHTO Green Book, the design speed limit is estimated to be the legal speed limit plus a value of 5 or 10 mph. Therefore, a design speed limit value of 35 mph used for the intersection sight distance calculations.

Per Chapter 9 in the 2011 AASHTO Green Book:

Major Road = Hoag Lane
Minor Road = Proposed Site Driveway

Intersection Sight Distance = ISD, where ISD = $1.47V_{MAJOR}t_g$

Design Speed = 35 mph

For Left Turns = t_g = 7.5 seconds*

*AASHTO recommends that 0.5 s be added to t_g for each lane of traffic crossed in excess of 1 lane.

For Right Turns = t_g = 6.5 seconds

Therefore:

Proposed Site Driveway : ISD_{LEFT} = (1.47) (35 mph) (7.5) = 386 feet.

ISD_{RIGHT} = (1.47) (35 mph) (6.5) = 334 feet.

Intersection Gap Study
(Available Gaps)

Location: Route 257 at Hoag Lane
Movement: Left Turns Exiting

Date Performed: 2/27/18
Speed Limit: 40 mph

Critical Gap, tC (s) = 6.4
Follow Up Time, tF (s) = 3.5

	Time Interval	6.4-10 sec	11-13 sec	14-17 sec	18-20 sec	21-24 sec	25-27 sec	28-31 sec	32-34 sec	35-38 sec	39-41 sec	42-45 sec	46 + sec	Total for	Total for
	Vehicle Equivalent	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	interval	hour
AM Peak Hour (7:15 - 8:15)															
7:15 to 7:30 AM	# of Gaps	3	4	2	1	3	3	2	2	2	2	0	3		
	# of Vehicles	3	8	6	4	15	18	14	16	18	20	0	36	158	
7:30 to 7:45 AM	# of Gaps	7	7	4	5	2	2	2	0	0	0	1	2		
	# of Vehicles	7	14	12	20	10	12	14	0	0	0	11	24	124	
7:45 to 8:00 AM	# of Gaps	10	4	4	3	0	0	4	2	2	0	0	2		
	# of Vehicles	10	8	12	12	0	0	28	16	18	0	0	24	128	
8:00 to 8:15 AM	# of Gaps	6	4	6	1	3	4	2	2	0	0	1	2		
	# of Vehicles	6	8	18	4	15	24	14	16	0	0	11	24	140	**550**

Movement: Right Turns Exiting

Critical Gap, tC (s) = 6.2
Follow Up Time, tF (s) = 3.3

	Time Interval	6.2-10 sec	11-13 sec	14-17 sec	18-19 sec	20-23 sec	24-26 sec	27-29 sec	30-33 sec	34-36 sec	37-39 sec	40-43 sec	44 + sec	Total for	Total for
	Vehicle Equivalent	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	interval	hour
AM Peak Hour (7:15 - 8:15)															
7:15 to 7:30 AM	# of Gaps	1	1	1	2	4	1	2	0	1	2	1	5		
	# of Vehicles	1	2	3	8	20	6	14	0	9	20	11	60	154	
7:30 to 7:45 AM	# of Gaps	3	6	2	3	4	1	6	0	0	0	0	3		
	# of Vehicles	3	12	6	12	20	6	42	0	0	0	0	36	137	
7:45 to 8:00 AM	# of Gaps	3	3	2	1	0	0	1	0	2	2	0	6		
	# of Vehicles	3	6	6	4	0	0	7	0	18	20	0	72	136	
8:00 to 8:15 AM	# of Gaps	3	3	2	1	5	2	2	3	1	0	0	4		
	# of Vehicles	3	6	6	4	25	12	14	24	9	0	0	48	151	**578**

Movement: Left Turns Entering

Critical Gap, tC (s) = 4.1
Follow Up Time, tF (s) = 2.2

	Time Interval	4.1-6.3sec	6.4-8.5 sec	8.6-10.7 sec	10.8-12.9 sec	13-15.1 sec	15.2-17.3 sec	17.4-19.5 sec	19.6-21.7 sec	21.8-23.9 sec	24-26.1 sec	26.2-28.3 sec	28.4 + sec	Total for	Total for
	Vehicle Equivalent	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	interval	hour
AM Peak Hour (7:15 - 8:15)															
7:15 to 7:30 AM	# of Gaps	0	0	0	0	2	0	2	1	3	0	1	10		
	# of Vehicles	0	0	0	0	10	0	14	8	27	0	11	120	190	
7:30 to 7:45 AM	# of Gaps	0	1	2	5	1	2	3	1	3	1	5	4		
	# of Vehicles	0	2	6	20	5	12	21	8	27	10	55	48	214	
7:45 to 8:00 AM	# of Gaps	0	3	0	3	2	0	1	0	0	0	1	10		
	# of Vehicles	0	6	0	12	10	0	7	0	0	0	11	120	166	
8:00 to 8:15 AM	# of Gaps	1	2	0	2	2	1	1	4	1	2	0	10		
	# of Vehicles	1	4	0	8	10	6	7	32	9	20	0	120	217	**787**

Intersection Gap Study
(Available Gaps)

Location: Route 257 at Hoag Lane
Movement: Left Turns Exiting

Date Performed: 2/27/18
Speed Limit: 40 mph

Critical Gap, tC (s) = 6.4
Follow Up Time, tF (s) = 3.5

		Time Interval	6.4-10 sec	11-13 sec	14-17 sec	18-20 sec	21-24 sec	25-27 sec	28-31 sec	32-34 sec	35-38 sec	39-41 sec	42-45 sec	46 + sec	Total for	Total for
		Vehicle Equivalent	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	interval	hour
PM Peak Hour (4:15 - 5:15)																
4:15 to 4:30 PM	# of Gaps		20	5	2	4	3	1	2	2	0	0	0	0		
	# of Vehicles		20	10	6	16	15	6	14	16	0	0	0	0	103	
4:30 to 4:45 PM	# of Gaps		18	5	9	2	3	2	0	3	0	0	0	0		
	# of Vehicles		18	10	27	8	15	12	0	24	0	0	0	0	114	
4:45 to 5:00 PM	# of Gaps		14	7	7	4	4	1	1	0	0	0	0	0		
	# of Vehicles		14	14	21	16	20	6	7	0	0	0	0	0	98	
5:00 to 5:15 PM	# of Gaps		17	9	9	1	3	1	1	0	0	0	0	0		
	# of Vehicles		17	18	27	4	15	6	7	0	0	0	0	0	94	**409**

Movement: Right Turns Exiting

Critical Gap, tC (s) = 6.2
Follow Up Time, tF (s) = 3.3

		Time Interval	6.2-10 sec	11-13 sec	14-17 sec	18-19 sec	20-23 sec	24-26 sec	27-29 sec	30-33 sec	34-36 sec	37-39 sec	40-43 sec	44 + sec	Total for	Total for
		Vehicle Equivalent	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	interval	hour
PM Peak Hour (4:15 - 5:15)																
4:15 to 4:30 PM	# of Gaps		8	3	1	5	2	2	0	1	0	2	0	4		
	# of Vehicles		8	6	3	20	10	12	0	8	0	20	0	48	135	
4:30 to 4:45 PM	# of Gaps		6	1	5	1	2	2	0	0	0	1	1	6		
	# of Vehicles		6	2	15	4	10	12	0	0	0	10	11	72	142	
4:45 to 5:00 PM	# of Gaps		7	2	7	2	3	0	1	2	0	1	1	3		
	# of Vehicles		7	4	21	8	15	0	7	16	0	10	11	36	135	
5:00 to 5:15 PM	# of Gaps		8	2	6	3	3	0	1	2	0	1	1	2		
	# of Vehicles		8	4	18	12	15	0	7	16	0	10	11	24	125	**537**

Movement: Left Turns Entering

Critical Gap, tC (s) = 4.1
Follow Up Time, tF (s) = 2.2

		Time Interval	4.1-6.3sec	6.4-8.5 sec	8.6-10.7 sec	10.8-12.9 sec	13-15.1 sec	15.2-17.3 sec	17.4-19.5 sec	19.6-21.7 sec	21.8-23.9 sec	24-26.1 sec	26.2-28.3 sec	28.4 + sec	Total for	Total for
		Vehicle Equivalent	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	interval	hour
PM Peak Hour (4:15 - 5:15)																
4:15 to 4:30 PM	# of Gaps		1	2	5	1	2	0	6	2	0	2	0	7		
	# of Vehicles		1	4	15	4	10	0	42	16	0	20	0	84	196	
4:30 to 4:45 PM	# of Gaps		1	1	4	0	3	3	1	1	1	2	0	8		
	# of Vehicles		1	2	12	0	15	18	7	8	9	20	0	96	188	
4:45 to 5:00 PM	# of Gaps		0	4	3	2	4	2	2	2	1	0	0	8		
	# of Vehicles		0	8	9	8	20	12	14	16	9	0	0	96	192	
5:00 to 5:15 PM	# of Gaps		1	4	5	2	3	3	2	2	0	0	0	7		
	# of Vehicles		1	8	15	8	15	18	14	16	0	0	0	84	179	**755**

Traffic Impact Study

for

Hoag Lane Subdivision

APPENDIX D

Level of Service Definition

Table 4-1 Signalized Intersection Level of Service (2010 HCM)

Control Delay Per Vehicle (s)	LOS by Volume to Capacity Ratio	
	≤1	>1
≤10	A	F
>10 and ≤20	B	F
>20 and ≤35	C	F
>35 and ≤55	D	F
>55 and ≤80	E	F
>80	F	F

Signing Settings

For an unsignalized two-way stopped controlled (TWSC), all-way stop-controlled (AWSC) or a roundabout intersection, the Level of Service for the intersection is calculated by taking the Intersection Delay and converting it to a letter using **Table 4-2**.

Table 4-2 TWSC, AWSC and Roundabout Level of Service Criteria (2010 HCM)

Control Delay Per Vehicle (s)	LOS by Volume to Capacity Ratio	
	≤1	>1
≤10	A	F
>10 and ≤15	B	F
>15 and ≤25	C	F
>25 and ≤35	D	F
>35 and ≤50	E	F
>50	F	F

The LOS criteria for TWSC, AWSC and roundabout intersections are different than that used for a signalized intersection. The primary reason for this is that drivers expect different levels of performance between signalized and unsignalized intersections.

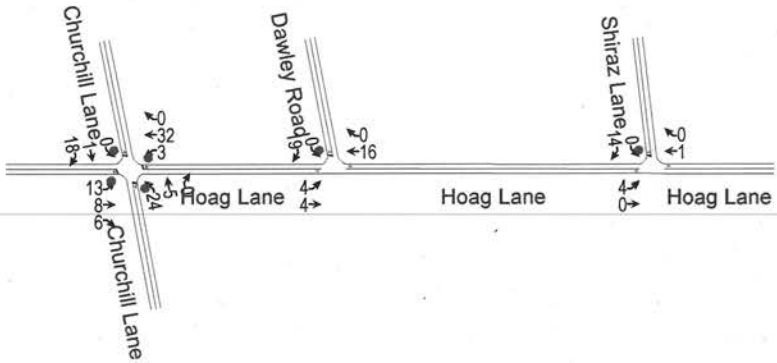
Traffic Impact Study

for

Hoag Lane Subdivision

APPENDIX E

Level of Service Analysis – Existing Conditions (2019)


Churchill Lane
Dawley Road
Shiraz Lane
Hoag Lane
Hoag Lane
Hoag Lane
Churchill Lane
18
1
0
32
3
9
0
16
14
0
0
1
13
8
6
24
5
4
4
4
0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (vph)	13	8	6	3	32	0	24	5	0	0	1	18
Future Volume (vph)	13	8	6	3	32	0	24	5	0	0	1	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970									0.873	
Flt Protected		0.977			0.996			0.960				
Satd. Flow (prot)	0	1625	0	0	1780	0	0	1708	0	0	1453	0
Flt Permitted		0.977			0.996			0.960				
Satd. Flow (perm)	0	1625	0	0	1780	0	0	1708	0	0	1453	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		285			469			330			306	
Travel Time (s)		6.5			10.7			7.5			7.0	
Peak Hour Factor	0.68	0.68	0.68	0.73	0.73	0.73	0.91	0.91	0.91	0.59	0.59	0.59
Heavy Vehicles (%)	15%	0%	0%	0%	3%	0%	0%	20%	0%	0%	0%	11%
Adj. Flow (vph)	19	12	9	4	44	0	26	5	0	0	2	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	48	0	0	31	0	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.1%		ICU Level of Service A	
Analysis Period (min) 15			



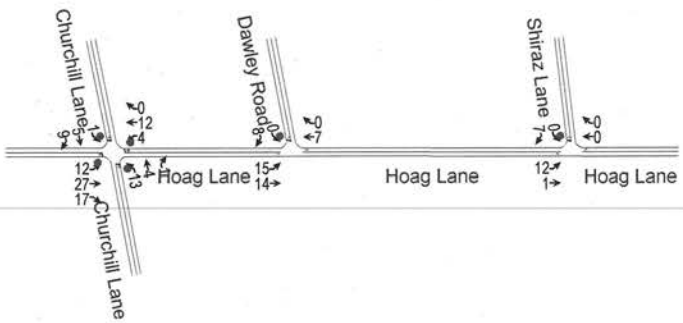
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	4	16	0	0	19
Future Volume (vph)	4	4	16	0	0	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.976				
Satd. Flow (prot)	0	1793	1837	0	1513	0
Flt Permitted		0.976				
Satd. Flow (perm)	0	1793	1837	0	1513	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		469	736		310	
Travel Time (s)		10.7	16.7		7.0	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.68	0.68
Heavy Vehicles (%)	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	6	6	24	0	0	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	12	24	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.8%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	0	1	0	0	14
Future Volume (vph)	4	0	1	0	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.950				
Satd. Flow (prot)	0	1745	1837	0	1589	0
Flt Permitted		0.950				
Satd. Flow (perm)	0	1745	1837	0	1589	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		736	287		307	
Travel Time (s)		16.7	6.5		7.0	
Peak Hour Factor	0.50	0.50	0.25	0.25	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	0	4	0	0	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	8	4	0	20	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		


Churchill Lane
Dawley Road
Shiraz Lane
Hoag Lane
Hoag Lane
Hoag Lane
Churchill Lane

Lanes, Volumes, Timings
3: Churchill Lane & Hoag Lane

08/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	12	27	17	4	12	0	13	4	1	1	5	9
Future Volume (vph)	12	27	17	4	12	0	13	4	1	1	5	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.959						0.993			0.921	
Flt Protected		0.989			0.988			0.964			0.996	
Satd. Flow (prot)	0	1680	0	0	1617	0	0	1670	0	0	1341	0
Flt Permitted		0.989			0.988			0.964			0.996	
Satd. Flow (perm)	0	1680	0	0	1617	0	0	1670	0	0	1341	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		285			469			330			306	
Travel Time (s)		6.5			10.7			7.5			7.0	
Peak Hour Factor	0.93	0.93	0.93	0.80	0.80	0.80	0.90	0.90	0.90	0.63	0.63	0.63
Heavy Vehicles (%)	8%	4%	0%	25%	8%	0%	0%	25%	0%	0%	0%	44%
Adj. Flow (vph)	13	29	18	5	15	0	14	4	1	2	8	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	0	0	20	0	0	19	0	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	14	7	0	0	8
Future Volume (vph)	15	14	7	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.975				
Satd. Flow (prot)	0	1728	1611	0	1406	0
Flt Permitted		0.975				
Satd. Flow (perm)	0	1728	1611	0	1406	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		469	736		310	
Travel Time (s)		10.7	16.7		7.0	
Peak Hour Factor	0.91	0.91	0.58	0.58	1.00	1.00
Heavy Vehicles (%)	7%	0%	14%	0%	0%	13%
Adj. Flow (vph)	16	15	12	0	0	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	31	12	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.2%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	1	0	0	0	7
Future Volume (vph)	12	1	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.955				
Satd. Flow (prot)	0	1754	1837	0	1589	0
Flt Permitted		0.955				
Satd. Flow (perm)	0	1754	1837	0	1589	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		736	287		307	
Travel Time (s)		16.7	6.5		7.0	
Peak Hour Factor	0.81	0.81	0.25	0.25	0.58	0.58
Heavy Vehicles (%)	0%	0%	0%	0%	14%	0%
Adj. Flow (vph)	15	1	0	0	0	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	16	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

Traffic Impact Study

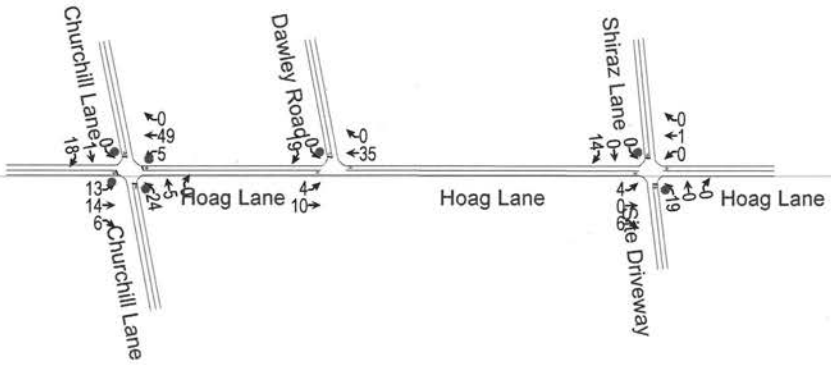
for

Hoag Lane Subdivision

APPENDIX F

Level of Service Analysis – Build Conditions (2020)

Hoag Lane Subdivision
Volumes **08/14/2019**



Hoag Lane Subdivision Build AM 2020

Lanes, Volumes, Timings
3: Churchill Lane & Hoag Lane

08/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	14	6	5	49	0	24	5	0	0	1	18
Future Volume (vph)	13	14	6	5	49	0	24	5	0	0	1	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975									0.873	
Flt Protected		0.981			0.995			0.960				
Satd. Flow (prot)	0	1660	0	0	1779	0	0	1708	0	0	1453	0
Flt Permitted		0.981			0.995			0.960				
Satd. Flow (perm)	0	1660	0	0	1779	0	0	1708	0	0	1453	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		285			469			330			306	
Travel Time (s)		6.5			10.7			7.5			7.0	
Peak Hour Factor	0.68	0.68	0.68	0.73	0.73	0.73	0.91	0.91	0.91	0.59	0.59	0.59
Heavy Vehicles (%)	15%	0%	0%	0%	3%	0%	0%	20%	0%	0%	0%	11%
Adj. Flow (vph)	19	21	9	7	67	0	26	5	0	0	2	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	0	0	74	0	0	31	0	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

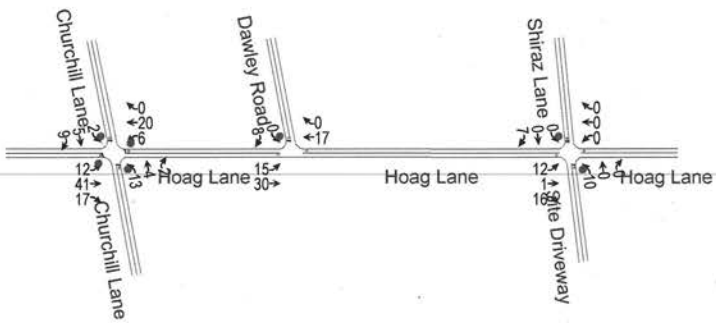
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	10	35	0	0	19
Future Volume (vph)	4	10	35	0	0	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.986				
Satd. Flow (prot)	0	1811	1837	0	1513	0
Flt Permitted		0.986				
Satd. Flow (perm)	0	1811	1837	0	1513	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		469	736		310	
Travel Time (s)		10.7	16.7		7.0	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.68	0.68
Heavy Vehicles (%)	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	6	15	52	0	0	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	21	52	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	0	6	0	1	0	19	0	0	0	0	14
Future Volume (vph)	4	0	6	0	1	0	19	0	0	0	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.919									0.865	
Flt Protected		0.980						0.950				
Satd. Flow (prot)	0	1654	0	0	1837	0	0	1745	0	0	1589	0
Flt Permitted		0.980						0.950				
Satd. Flow (perm)	0	1654	0	0	1837	0	0	1745	0	0	1589	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		736			287			232			307	
Travel Time (s)		16.7			6.5			5.3			7.0	
Peak Hour Factor	0.50	0.50	0.50	0.25	0.25	0.25	0.92	0.92	0.92	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	0	12	0	4	0	21	0	0	0	0	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	0	0	4	0	0	21	0	0	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.6%		ICU Level of Service A	
Analysis Period (min) 15			


Churchill Lane
Dawley Road
Shiraz Lane
Hoag Lane
Hoag Lane
Hoag Lane
Churchill Lane
Site Driveway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	12	41	17	6	20	0	13	4	2	2	5	9
Future Volume (vph)	12	41	17	6	20	0	13	4	2	2	5	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968						0.986			0.924	
Flt Protected		0.991			0.988			0.966			0.994	
Satd. Flow (prot)	0	1698	0	0	1618	0	0	1666	0	0	1353	0
Flt Permitted		0.991			0.988			0.966			0.994	
Satd. Flow (perm)	0	1698	0	0	1618	0	0	1666	0	0	1353	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		285			469			330			306	
Travel Time (s)		6.5			10.7			7.5			7.0	
Peak Hour Factor	0.93	0.93	0.93	0.80	0.80	0.80	0.90	0.90	0.90	0.63	0.63	0.63
Heavy Vehicles (%)	8%	4%	0%	25%	8%	0%	0%	25%	0%	0%	0%	44%
Adj. Flow (vph)	13	44	18	8	25	0	14	4	2	3	8	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	75	0	0	33	0	0	20	0	0	25	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 15.3%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	30	17	0	0	8
Future Volume (vph)	15	30	17	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.984				
Satd. Flow (prot)	0	1767	1611	0	1406	0
Flt Permitted		0.984				
Satd. Flow (perm)	0	1767	1611	0	1406	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		469	736		310	
Travel Time (s)		10.7	16.7		7.0	
Peak Hour Factor	0.91	0.91	0.58	0.58	1.00	1.00
Heavy Vehicles (%)	7%	0%	14%	0%	0%	13%
Adj. Flow (vph)	16	33	29	0	0	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	49	29	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.1%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	12	1	16	0	0	0	10	0	0	0	0	7
Future Volume (vph)	12	1	16	0	0	0	10	0	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.925									0.865	
Flt Protected		0.980						0.950				
Satd. Flow (prot)	0	1647	0	0	1837	0	0	1711	0	0	1589	0
Flt Permitted		0.980						0.950				
Satd. Flow (perm)	0	1647	0	0	1837	0	0	1711	0	0	1589	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		736			287			292			307	
Travel Time (s)		16.7			6.5			6.6			7.0	
Peak Hour Factor	0.81	0.81	0.81	0.25	0.25	0.25	0.92	0.92	0.92	0.58	0.58	0.58
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	2%	2%	2%	14%	2%	0%
Adj. Flow (vph)	15	1	20	0	0	0	11	0	0	0	0	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	0	0	0	11	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.2%		ICU Level of Service A	
Analysis Period (min) 15			

§ 155-7. Residential District R-1.

A. The following uses and no other uses shall be permitted in a Residential District R-1:

(1) A single-family dwelling on a lot with a minimum of 150 feet of frontage and with a minimum area of 40,000 square feet, where public sanitary sewer service is provided; a single-family dwelling on a lot with a minimum of 150 feet of frontage and with a minimum area of 80,000 square feet, where septic systems are proposed. Any lot with a septic system must have a minimum of 10,000 square feet of open, unimproved land suitable for the installation of a septic field explicitly identified and reserved for such purpose.

(2) Accessory structures or land uses customarily incidental to any use permitted above, provided that such accessory uses shall not include any activity commonly conducted for commercial profit, except as follows:

(a) An office of a physician, dentist, lawyer, architect, engineer or member of other recognized professions, in his or her place of abode, excluding hospitals or any inpatient establishments, only upon receipt of an accessory use permit pursuant to Article IV, § 155-29. Uses involving the preparation of food, shoe repair shops, barbershops, beauty salons and similar uses are expressly excluded from the R-1 District. **[Amended 5-22-2002 by Ord. No. 2002-5]**

(b) A private garage for use by the occupants of the premises, excepting that a space for one automobile may be rented to a person not residing on the premises.

(c) A private stable, provided that such lot has at least five acres in area, used to shelter horses owned by the occupant of the premises, and provided that such stable is at least 100 feet from any property line, unless an accessory use permit pursuant to Article IV, § 155-29, has been granted by the Planning Board.

(d) Structures for housing dogs, cats or other such domestic household pets, provided that such use is not conducted for profit or any commercial purpose; and provided, further, that the total floor area of all such structures shall not exceed 50 square feet.

(e) A bed-and-breakfast establishment to be permitted only upon receipt of an accessory use permit pursuant to Article IV, § 155-29. However, a bed-and-breakfast establishment shall not be permitted on property contained within the bounds of any subdivision plat filed with the Onondaga County Clerk. **[Added 3-10-1993 by Ord. No. 1-1993]**

B. All lots in Residential District R-1 shall have a minimum front yard depth of 40 feet, side yard depth of 20 feet and rear yard depth of 40 feet. No portion of any building or structure shall be located in any front, side or rear yard.

§ 155-9. Residential District R-3.

A. The following structures and uses shall be permitted in a Residential District R-3:

(1) Any use permitted in the Residential District R-1 and subject to the same restrictions, except that septic systems are not allowed.

(2) A single-family dwelling on a lot with a minimum of 100 feet of frontage and a minimum area of 16,000 square feet.

(3) Two-family dwellings, provided that the two-family house is built upon a lot with at least 100 feet of frontage and at least 200 feet in depth.

(4) Public or private schools, churches, parish house and other places of worship, public libraries, municipal buildings, parks, playgrounds, community centers or recreational grounds operated either by the public or by membership organizations for the benefit of their members and not for gain, on a lot at least 40,000 square feet in area and upon the issuance of a site plan approval by the Town Planning Board pursuant to Article IV, § 155-28.

(5) Home occupations as defined in § 155-3 herein which shall be subject to the receipt of an accessory use permit pursuant to Article IV, § 155-29, of this chapter.

(6) The following uses upon special permit of the Town Board pursuant to Article IV, § 155-27, after recommendation from the Town Planning Board and upon such conditions as the Town Board may impose in the interest of public safety, health and welfare, viz: hospitals, hospices, homes for elderly adults,

convalescent homes, nursing homes and similar facilities, as well as cemeteries, landing fields and greenhouses.

B. All lots in Residential District R-3 improved by a single-family or two-family dwelling shall have a minimum front yard depth of 30 feet, side yard depth of 15 feet and rear yard depth of 25 feet. No portion of any building or structure shall be located in any front, side or rear yard.

§ 155-12. Restricted Agricultural Districts (R-A).

A. The following structures and uses shall be permitted in the Restricted Agricultural Districts:

(1) Any use permitted in Residential District R-1, according to the same restrictions, or a two-family dwelling. A minimum of 150 feet of frontage and a minimum of 40,000 square feet of area are required where public sanitary sewers are provided. A minimum of 200 feet of frontage and a minimum of 100,000 square feet of area are required where a septic system is proposed. Any lot with a septic system must have a minimum of 10,000 square feet of open, unimproved land suitable for the installation of a septic field explicitly identified and reserved for such purposes.

(2) Any use permitted in Residential District R-3, according to the same restrictions. **[Amended 9-13-2000 by Ord. No. 3-2000]**

(3) Farms, farm structures and farming.

(4) Sale of products raised or produced only on the farm itself.

(5) [1]Public utility structures necessary for servicing of the area or for general Town use, but excluding radio, microwave, television or other similar forms of energy transmission towers or facilities which shall be permitted only after the issuance of a special permit pursuant to Article IV, § 155-27, of this chapter.

(6) The use of lands for one or more public or private golf courses, with or without a golf club house, and other activities customarily related to and enjoyed in connection with a golf club as tennis, swimming and similar activities; subject,

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1. Editor's Note: Former Subsection A(5) through (10) was repealed 9-13-2000 by Ord. No. 3-2000. This ordinance also renumbered Subsection A(11) through (16) as A(5) through (10), respectively.

however, to the receipt of a special permit pursuant to Article IV, § 155-27, of this chapter.

(7) Mobile home sites pursuant to the requirements of Article IV, § 155-21, of this chapter.

(8) Dog Kennels, only after the issuance of a special permit pursuant to Article IV, § 155-27, of this chapter.

(9) A bed-and-breakfast establishment to be permitted only upon the receipt of an accessory use permit pursuant to Article IV, § 155-29. However, a bed-and-breakfast shall not be permitted on property contained within the bounds of any subdivision plat filed with the Onondaga County Clerk. **[Added 3-30-1993 by Ord. No. 1-1993]**

(10) Rural occupations, only after the issuance of a special permit pursuant to Article IV, § 155-27, of this chapter. The purpose of this subsection is to allow a certain class of occupations which do not fit within this chapter's definition of home occupations, which definition has traditionally included primarily professional and teaching uses. This subsection is intended to permit and regulate small, low-intensity business occupations, that blend naturally with the rural setting as determined by the Town Board during the special permit process, where the use proposed can be controlled so as to be in conformity with neighboring uses and so as to minimize possible detrimental effects of the use on neighboring properties. **[Added 1-26-1994 by Ord. No. 1-1994; 6-10-2015 by L.L. No. 1-2015]**

B. All lots in Restricted Agricultural Districts shall have a minimum front yard depth of 40 feet, side yard depth of 20 feet and a rear yard depth of 40 feet. No portion of any building or structure shall be located in any front, side or rear yard.

Agency Use Only [If applicable]
Project :
Date :

Part 2 is to be completed by the lead agency. Part 2 is designed to help the lead agency inventory all potential resources that could be affected by a proposed project or action. We recognize that the lead agency's reviewer(s) will not necessarily be environmental professionals. So, the questions are designed to walk a reviewer through the assessment process by providing a series of questions that can be answered using the information found in Part 1. To further assist the lead agency in completing Part 2, the form identifies the most relevant questions in Part 1 that will provide the information needed to answer the Part 2 question. When Part 2 is completed, the lead agency will have identified the relevant environmental areas that may be impacted by the proposed activity.

If the lead agency is a state agency **and** the action is in any Coastal Area, complete the Coastal Assessment Form before proceeding with this assessment.

Tips for completing Part 2:

- Review all of the information provided in Part 1.
- Review any application, maps, supporting materials and the Full EAF Workbook.
- Answer each of the 18 questions in Part 2.
- If you answer **"Yes"** to a numbered question, please complete all the questions that follow in that section.
- If you answer **"No"** to a numbered question, move on to the next numbered question.
- Check appropriate column to indicate the anticipated size of the impact.
- Proposed projects that would exceed a numeric threshold contained in a question should result in the reviewing agency checking the box "Moderate to large impact may occur."
- The reviewer is not expected to be an expert in environmental analysis.
- If you are not sure or undecided about the size of an impact, it may help to review the sub-questions for the general question and consult the workbook.
- When answering a question consider all components of the proposed activity, that is, the "whole action".
- Consider the possibility for long-term and cumulative impacts as well as direct impacts.
- Answer the question in a reasonable manner considering the scale and context of the project.

1. Impact on Land
Proposed action may involve construction on, or physical alteration of, the land surface of the proposed site. (See Part 1. D.1)
☐ NO ☑ YES
If "Yes", answer questions a - j. If "No", move on to Section 2.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may involve construction on land where depth to water table is less than 3 feet.	E2d	☑	☐
b. The proposed action may involve construction on slopes of 15% or greater.	E2f	☐	☑
c. The proposed action may involve construction on land where bedrock is exposed, or generally within 5 feet of existing ground surface.	E2a	☐	☑
d. The proposed action may involve the excavation and removal of more than 1,000 tons of natural material.	D2a	☐	☑
e. The proposed action may involve construction that continues for more than one year or in multiple phases.	D1e	☐	☑
f. The proposed action may result in increased erosion, whether from physical disturbance or vegetation removal (including from treatment by herbicides).	D2e, D2q	☐	☑
g. The proposed action is, or may be, located within a Coastal Erosion hazard area.	B1i	☑	☐
h. Other impacts: Stormwater retention design impact; cut and fill process impact; particularly regarding local geophysical topography and the Muirfiled Basin		☐	☑

2. Impact on Geological Features

The proposed action may result in the modification or destruction of, or inhibit access to, any unique or unusual land forms on the site (e.g., cliffs, dunes, minerals, fossils, caves). (See Part 1. E.2.g) ☑ NO ☐ YES

If "Yes", answer questions a - c. If "No", move on to Section 3.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. Identify the specific land form(s) attached: _____ _____	E2g	☐	☐
b. The proposed action may affect or is adjacent to a geological feature listed as a registered National Natural Landmark. Specific feature: _____	E3c	☐	☐
c. Other impacts: _____ _____		☐	☐

3. Impacts on Surface Water

The proposed action may affect one or more wetlands or other surface water bodies (e.g., streams, rivers, ponds or lakes). (See Part 1. D.2, E.2.h) ☑ NO ☐ YES

If "Yes", answer questions a - l. If "No", move on to Section 4.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may create a new water body.	D2b, D1h	☐	☐
b. The proposed action may result in an increase or decrease of over 10% or more than a 10 acre increase or decrease in the surface area of any body of water.	D2b	☐	☐
c. The proposed action may involve dredging more than 100 cubic yards of material from a wetland or water body.	D2a	☐	☐
d. The proposed action may involve construction within or adjoining a freshwater or tidal wetland, or in the bed or banks of any other water body.	E2h	☐	☐
e. The proposed action may create turbidity in a waterbody, either from upland erosion, runoff or by disturbing bottom sediments.	D2a, D2h	☐	☐
f. The proposed action may include construction of one or more intake(s) for withdrawal of water from surface water.	D2c	☐	☐
g. The proposed action may include construction of one or more outfall(s) for discharge of wastewater to surface water(s).	D2d	☐	☐
h. The proposed action may cause soil erosion, or otherwise create a source of stormwater discharge that may lead to siltation or other degradation of receiving water bodies.	D2e	☐	☐
i. The proposed action may affect the water quality of any water bodies within or downstream of the site of the proposed action.	E2h	☐	☐
j. The proposed action may involve the application of pesticides or herbicides in or around any water body.	D2q, E2h	☐	☐
k. The proposed action may require the construction of new, or expansion of existing, wastewater treatment facilities.	D1a, D2d	☐	☐

l. Other impacts: _____		☐	☐

4. Impact on groundwater

The proposed action may result in new or additional use of ground water, or may have the potential to introduce contaminants to ground water or an aquifer. (See Part 1. D.2.a, D.2.c, D.2.d, D.2.p, D.2.q, D.2.t) ☐NO ☑YES

If "Yes", answer questions a - h. If "No", move on to Section 5.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may require new water supply wells, or create additional demand on supplies from existing water supply wells.	D2c	☑	☐
b. Water supply demand from the proposed action may exceed safe and sustainable withdrawal capacity rate of the local supply or aquifer. Cite Source: _____	D2c	☑	☐
c. The proposed action may allow or result in residential uses in areas without water and sewer services.	D1a, D2c	☑	☐
d. The proposed action may include or require wastewater discharged to groundwater.	D2d, E2l	☑	☐
e. The proposed action may result in the construction of water supply wells in locations where groundwater is, or is suspected to be, contaminated.	D2c, E1f, E1g, E1h	☑	☐
f. The proposed action may require the bulk storage of petroleum or chemical products over ground water or an aquifer.	D2p, E2l	☑	☐
g. The proposed action may involve the commercial application of pesticides within 100 feet of potable drinking water or irrigation sources.	E2h, D2q, E2l, D2c	☑	☐
h. Other impacts: The unique direct infiltration into the Limestone Substrate creates potential for ground water issues		☐	☑

5. Impact on Flooding

The proposed action may result in development on lands subject to flooding. (See Part 1. E.2) ☑NO ☐YES

If "Yes", answer questions a - g. If "No", move on to Section 6.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in development in a designated floodway.	E2i	☐	☐
b. The proposed action may result in development within a 100 year floodplain.	E2j	☐	☐
c. The proposed action may result in development within a 500 year floodplain.	E2k	☐	☐
d. The proposed action may result in, or require, modification of existing drainage patterns.	D2b, D2e	☐	☐
e. The proposed action may change flood water flows that contribute to flooding.	D2b, E2i, E2j, E2k	☐	☐
f. If there is a dam located on the site of the proposed action, is the dam in need of repair, or upgrade?	E1e	☐	☐

g. Other impacts: _____		☐	☐

6. Impacts on Air

The proposed action may include a state regulated air emission source. (See Part 1. D.2.f., D.2.h, D.2.g) ☑NO ☐YES

If "Yes", answer questions a - f. If "No", move on to Section 7.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. If the proposed action requires federal or state air emission permits, the action may also emit one or more greenhouse gases at or above the following levels:			
i. More than 1000 tons/year of carbon dioxide (CO_2)	D2g	☐	☐
ii. More than 3.5 tons/year of nitrous oxide (N_2O)	D2g	☐	☐
iii. More than 1000 tons/year of carbon equivalent of perfluorocarbons (PFCs)	D2g	☐	☐
iv. More than .045 tons/year of sulfur hexafluoride (SF_6)	D2g	☐	☐
v. More than 1000 tons/year of carbon dioxide equivalent of hydrochloroflourocarbons (HFCs) emissions	D2g	☐	☐
vi. 43 tons/year or more of methane	D2h	☐	☐
b. The proposed action may generate 10 tons/year or more of any one designated hazardous air pollutant, or 25 tons/year or more of any combination of such hazardous air pollutants.	D2g	☐	☐
c. The proposed action may require a state air registration, or may produce an emissions rate of total contaminants that may exceed 5 lbs. per hour, or may include a heat source capable of producing more than 10 million BTU's per hour.	D2f, D2g	☐	☐
d. The proposed action may reach 50% of any of the thresholds in "a" through "c", above.	D2g	☐	☐
e. The proposed action may result in the combustion or thermal treatment of more than 1 ton of refuse per hour.	D2s	☐	☐
f. Other impacts: _____		☐	☐

7. Impact on Plants and Animals

The proposed action may result in a loss of flora or fauna. (See Part 1. E.2. m.-q.) ☐NO ☑YES

If "Yes", answer questions a - j. If "No", move on to Section 8.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may cause reduction in population or loss of individuals of any threatened or endangered species, as listed by New York State or the Federal government, that use the site, or are found on, over, or near the site.	E2o	☑	☐
b. The proposed action may result in a reduction or degradation of any habitat used by any rare, threatened or endangered species, as listed by New York State or the federal government.	E2o	☑	☐
c. The proposed action may cause reduction in population, or loss of individuals, of any species of special concern or conservation need, as listed by New York State or the Federal government, that use the site, or are found on, over, or near the site.	E2p	☑	☐
d. The proposed action may result in a reduction or degradation of any habitat used by any species of special concern and conservation need, as listed by New York State or the Federal government.	E2p	☑	☐

e. The proposed action may diminish the capacity of a registered National Natural Landmark to support the biological community it was established to protect.	E3c	☑	☐
f. The proposed action may result in the removal of, or ground disturbance in, any portion of a designated significant natural community. Source: _____	E2n	☑	☐
g. The proposed action may substantially interfere with nesting/breeding, foraging, or over-wintering habitat for the predominant species that occupy or use the project site.	E2m	☑	☐
h. The proposed action requires the conversion of more than 10 acres of forest, grassland or any other regionally or locally important habitat. Habitat type & information source: _____ _____	E1b	☑	☐
i. Proposed action (commercial, industrial or recreational projects, only) involves use of herbicides or pesticides.	D2q	☑	☐
j. Other impacts: _____ _____		☐	☐

8. Impact on Agricultural Resources

The proposed action may impact agricultural resources. (See Part 1. E.3.a. and b.) ☑NO ☐YES

If "Yes", answer questions a - h. If "No", move on to Section 9.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may impact soil classified within soil group 1 through 4 of the NYS Land Classification System.	E2c, E3b	☐	☐
b. The proposed action may sever, cross or otherwise limit access to agricultural land (includes cropland, hayfields, pasture, vineyard, orchard, etc).	E1a, E1b	☐	☐
c. The proposed action may result in the excavation or compaction of the soil profile of active agricultural land.	E3b	☐	☐
d. The proposed action may irreversibly convert agricultural land to non-agricultural uses, either more than 2.5 acres if located in an Agricultural District, or more than 10 acres if not within an Agricultural District.	E1b, E3a	☐	☐
e. The proposed action may disrupt or prevent installation of an agricultural land management system.	E1 a, E1b	☐	☐
f. The proposed action may result, directly or indirectly, in increased development potential or pressure on farmland.	C2c, C3, D2c, D2d	☐	☐
g. The proposed project is not consistent with the adopted municipal Farmland Protection Plan.	C2c	☐	☐
h. Other impacts: _____		☐	☐

9. Impact on Aesthetic Resources

The land use of the proposed action are obviously different from, or are in sharp contrast to, current land use patterns between the proposed project and a scenic or aesthetic resource. (Part 1. E.1.a, E.1.b, E.3.h.)

☑ NO ☐ YES

If "Yes", answer questions a - g. If "No", go to Section 10.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. Proposed action may be visible from any officially designated federal, state, or local scenic or aesthetic resource.	E3h	☐	☐
b. The proposed action may result in the obstruction, elimination or significant screening of one or more officially designated scenic views.	E3h, C2b	☐	☐
c. The proposed action may be visible from publicly accessible vantage points: i. Seasonally (e.g., screened by summer foliage, but visible during other seasons) ii. Year round	E3h	 ☐ ☐	 ☐ ☐
d. The situation or activity in which viewers are engaged while viewing the proposed action is: i. Routine travel by residents, including travel to and from work ii. Recreational or tourism based activities	E3h E2q, E1c	 ☐ ☐	 ☐ ☐
e. The proposed action may cause a diminishment of the public enjoyment and appreciation of the designated aesthetic resource.	E3h	☐	☐
f. There are similar projects visible within the following distance of the proposed project: 0-1/2 mile ½ -3 mile 3-5 mile 5+ mile	D1a, E1a, D1f, D1g	☐	☐
g. Other impacts: _____		☐	☐

10. Impact on Historic and Archeological Resources

The proposed action may occur in or adjacent to a historic or archaeological resource. (Part 1. E.3.e, f. and g.)

☑ NO ☐ YES

If "Yes", answer questions a - e. If "No", go to Section 11.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may occur wholly or partially within, or substantially contiguous to, any buildings, archaeological site or district which is listed on the National or State Register of Historical Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places.	E3e	☐	☐
b. The proposed action may occur wholly or partially within, or substantially contiguous to, an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory.	E3f	☐	☐
c. The proposed action may occur wholly or partially within, or substantially contiguous to, an archaeological site not included on the NY SHPO inventory. Source: _____	E3g	☐	☐

d. Other impacts: _____		☐	☐
e. If any of the above (a-d) are answered "Moderate to large impact may occur", continue with the following questions to help support conclusions in Part 3:			
i. The proposed action may result in the destruction or alteration of all or part of the site or property.	E3e, E3g, E3f	☐	☐
ii. The proposed action may result in the alteration of the property's setting or integrity.	E3e, E3f, E3g, E1a, E1b	☐	☐
iii. The proposed action may result in the introduction of visual elements which are out of character with the site or property, or may alter its setting.	E3e, E3f, E3g, E3h, C2, C3	☐	☐

11. Impact on Open Space and Recreation

The proposed action may result in a loss of recreational opportunities or a reduction of an open space resource as designated in any adopted municipal open space plan.
(See Part 1. C.2.c, E.1.c., E.2.q.)
If "Yes", answer questions a - e. If "No", go to Section 12.

☑ NO ☐ YES

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in an impairment of natural functions, or "ecosystem services", provided by an undeveloped area, including but not limited to stormwater storage, nutrient cycling, wildlife habitat.	D2e, E1b E2h, E2m, E2o, E2n, E2p	☐	☐
b. The proposed action may result in the loss of a current or future recreational resource.	C2a, E1c, C2c, E2q	☐	☐
c. The proposed action may eliminate open space or recreational resource in an area with few such resources.	C2a, C2c E1c, E2q	☐	☐
d. The proposed action may result in loss of an area now used informally by the community as an open space resource.	C2c, E1c	☐	☐
e. Other impacts: _____		☐	☐

12. Impact on Critical Environmental Areas

The proposed action may be located within or adjacent to a critical environmental area (CEA). (See Part 1. E.3.d)
If "Yes", answer questions a - c. If "No", go to Section 13.

☑ NO ☐ YES

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in a reduction in the quantity of the resource or characteristic which was the basis for designation of the CEA.	E3d	☐	☐
b. The proposed action may result in a reduction in the quality of the resource or characteristic which was the basis for designation of the CEA.	E3d	☐	☐
c. Other impacts: _____		☐	☐

13. Impact on Transportation
The proposed action may result in a change to existing transportation systems. ☑ NO ☐ YES
(See Part 1. D.2.j)
If "Yes", answer questions a - f. If "No", go to Section 14.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. Projected traffic increase may exceed capacity of existing road network.	D2j	☐	☐
b. The proposed action may result in the construction of paved parking area for 500 or more vehicles.	D2j	☐	☐
c. The proposed action will degrade existing transit access.	D2j	☐	☐
d. The proposed action will degrade existing pedestrian or bicycle accommodations.	D2j	☐	☐
e. The proposed action may alter the present pattern of movement of people or goods.	D2j	☐	☐
f. Other impacts: _____		☐	☐

14. Impact on Energy
The proposed action may cause an increase in the use of any form of energy. ☑ NO ☐ YES
(See Part 1. D.2.k)
If "Yes", answer questions a - e. If "No", go to Section 15.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action will require a new, or an upgrade to an existing, substation.	D2k	☐	☐
b. The proposed action will require the creation or extension of an energy transmission or supply system to serve more than 50 single or two-family residences or to serve a commercial or industrial use.	D1f, D1q, D2k	☐	☐
c. The proposed action may utilize more than 2,500 MWhrs per year of electricity.	D2k	☐	☐
d. The proposed action may involve heating and/or cooling of more than 100,000 square feet of building area when completed.	D1g	☐	☐
e. Other Impacts: _____			

15. Impact on Noise, Odor, and Light
The proposed action may result in an increase in noise, odors, or outdoor lighting. ☐ NO ☑ YES
(See Part 1. D.2.m., n., and o.)
If "Yes", answer questions a - f. If "No", go to Section 16.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may produce sound above noise levels established by local regulation.	D2m	☐	☑
b. The proposed action may result in blasting within 1,500 feet of any residence, hospital, school, licensed day care center, or nursing home.	D2m, E1d	☑	☐
c. The proposed action may result in routine odors for more than one hour per day.	D2o	☑	☐

d. The proposed action may result in light shining onto adjoining properties.	D2n	☑	☐
e. The proposed action may result in lighting creating sky-glow brighter than existing area conditions.	D2n, E1a	☑	☐
f. Other impacts: Please see attached Addendum for Findings		☐	☑

16. Impact on Human Health

The proposed action may have an impact on human health from exposure to new or existing sources of contaminants. (See Part 1.D.2.q., E.1. d. f. g. and h.) ☑ NO ☐ YES

If "Yes", answer questions a - m. If "No", go to Section 17.

	Relevant Part I Question(s)	No,or small impact may cccur	Moderate to large impact may occur
a. The proposed action is located within 1500 feet of a school, hospital, licensed day care center, group home, nursing home or retirement community.	E1d	☐	☐
b. The site of the proposed action is currently undergoing remediation.	E1g, E1h	☐	☐
c. There is a completed emergency spill remediation, or a completed environmental site remediation on, or adjacent to, the site of the proposed action.	E1g, E1h	☐	☐
d. The site of the action is subject to an institutional control limiting the use of the property (e.g., easement or deed restriction).	E1g, E1h	☐	☐
e. The proposed action may affect institutional control measures that were put in place to ensure that the site remains protective of the environment and human health.	E1g, E1h	☐	☐
f. The proposed action has adequate control measures in place to ensure that future generation, treatment and/or disposal of hazardous wastes will be protective of the environment and human health.	D2t	☐	☐
g. The proposed action involves construction or modification of a solid waste management facility.	D2q, E1f	☐	☐
h. The proposed action may result in the unearthing of solid or hazardous waste.	D2q, E1f	☐	☐
i. The proposed action may result in an increase in the rate of disposal, or processing, of solid waste.	D2r, D2s	☐	☐
j. The proposed action may result in excavation or other disturbance within 2000 feet of a site used for the disposal of solid or hazardous waste.	E1f, E1g E1h	☐	☐
k. The proposed action may result in the migration of explosive gases from a landfill site to adjacent off site structures.	E1f, E1g	☐	☐
l. The proposed action may result in the release of contaminated leachate from the project site.	D2s, E1f, D2r	☐	☐
m. Other impacts:			

17. Consistency with Community Plans

The proposed action is not consistent with adopted land use plans. ☐ NO ☑ YES
(See Part 1. C.1, C.2. and C.3.)
If "Yes", answer questions a - h. If "No", go to Section 18.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action's land use components may be different from, or in sharp contrast to, current surrounding land use pattern(s).	C2, C3, D1a E1a, E1b	☑	☐
b. The proposed action will cause the permanent population of the city, town or village in which the project is located to grow by more than 5%.	C2	☑	☐
c. The proposed action is inconsistent with local land use plans or zoning regulations.	C2, C2, C3	☐	☑
d. The proposed action is inconsistent with any County plans, or other regional land use plans.	C2, C2	☑	☐
e. The proposed action may cause a change in the density of development that is not supported by existing infrastructure or is distant from existing infrastructure.	C3, D1c, D1d, D1f, D1d, E1b	☑	☐
f. The proposed action is located in an area characterized by low density development that will require new or expanded public infrastructure.	C4, D2c, D2d D2j	☑	☐
g. The proposed action may induce secondary development impacts (e.g., residential or commercial development not included in the proposed action)	C2a	☑	☐
h. Other: Please see attached Addendum for Findings		☐	☑

18. Consistency with Community Character

The proposed project is inconsistent with the existing community character. ☐ NO ☑ YES
(See Part 1. C.2, C.3, D.2, E.3)
If "Yes", answer questions a - g. If "No", proceed to Part 3.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may replace or eliminate existing facilities, structures, or areas of historic importance to the community.	E3e, E3f, E3g	☑	☐
b. The proposed action may create a demand for additional community services (e.g. schools, police and fire)	C4	☑	☐
c. The proposed action may displace affordable or low-income housing in an area where there is a shortage of such housing.	C2, C3, D1f D1g, E1a	☑	☐
d. The proposed action may interfere with the use or enjoyment of officially recognized or designated public resources.	C2, E3	☑	☐
e. The proposed action is inconsistent with the predominant architectural scale and character.	C2, C3	☑	☐
f. Proposed action is inconsistent with the character of the existing natural landscape.	C2, C3 E1a, E1b E2g, E2h	☐	☑
g. Other impacts: Potential non-compliance with standards of Cluster Development		☐	☑

PRINT FULL FORM

Agency Use Only [IfApplicable]

Project :

Date :

Full Environmental Assessment Form
Part 3 - Evaluation of the Magnitude and Importance of Project Impacts
and
Determination of Significance

Part 3 provides the reasons in support of the determination of significance. The lead agency must complete Part 3 for every question in Part 2 where the impact has been identified as potentially moderate to large or where there is a need to explain why a particular element of the proposed action will not, or may, result in a significant adverse environmental impact.

Based on the analysis in Part 3, the lead agency must decide whether to require an environmental impact statement to further assess the proposed action or whether available information is sufficient for the lead agency to conclude that the proposed action will not have a significant adverse environmental impact. By completing the certification on the next page, the lead agency can complete its determination of significance.

Reasons Supporting This Determination:

To complete this section:

- Identify the impact based on the Part 2 responses and describe its magnitude. Magnitude considers factors such as severity, size or extent of an impact.
- Assess the importance of the impact. Importance relates to the geographic scope, duration, probability of the impact occurring, number of people affected by the impact and any additional environmental consequences if the impact were to occur.
- The assessment should take into consideration any design element or project changes.
- Repeat this process for each Part 2 question where the impact has been identified as potentially moderate to large or where there is a need to explain why a particular element of the proposed action will not, or may, result in a significant adverse environmental impact.
- Provide the reason(s) why the impact may, or will not, result in a significant adverse environmental impact
- For Conditional Negative Declarations identify the specific condition(s) imposed that will modify the proposed action so that no significant adverse environmental impacts will result.
- Attach additional sheets, as needed.

Determination of Significance - Type 1 and Unlisted Actions

SEQR Status: ☐ Type 1 ☒ Unlisted

Identify portions of EAF completed for this Project: ☒ Part 1 ☒ Part 2 ☒ Part 3

Upon review of the information recorded on this EAF, as noted, plus this additional support information
being the full resolution dated August 10, 2020, determination of Environmental Significance

and considering both the magnitude and importance of each identified potential impact, it is the conclusion of the Town of Manlius Planning Board as lead agency that:

☐ A. This project will result in no significant adverse impacts on the environment, and, therefore, an environmental impact statement need not be prepared. Accordingly, this negative declaration is issued.

☐ B. Although this project could have a significant adverse impact on the environment, that impact will be avoided or substantially mitigated because of the following conditions which will be required by the lead agency:

There will, therefore, be no significant adverse impacts from the project as conditioned, and, therefore, this conditioned negative declaration is issued. A conditioned negative declaration may be used only for UNLISTED actions (see 6 NYCRR 617.7(d)).

☒ C. This Project may result in one or more significant adverse impacts on the environment, and an environmental impact statement must be prepared to further assess the impact(s) and possible mitigation and to explore alternatives to avoid or reduce those impacts. Accordingly, this positive declaration is issued.

Name of Action:	Woodland Hills - Hoag Ln - Cluster Subdivision - 5286 Hoag Ln
Name of Lead Agency:	Town of Manlius Planning Board
Name of Responsible Officer in Lead Agency:	Joseph Lupia
Title of Responsible Officer:	Chairman of Planning Board
Signature of Responsible Officer in Lead Agency:	Joseph a Lupia Date: 8-10-2020
Signature of Preparer (if different from Responsible Officer)	Date: 8/10/2020

For Further Information:

Contact Person: Lisa Beeman, Planning Board Clerk
Address: 301 Brooklea Dr., Fayetteville, NY 13066
Telephone Number: 315-637-8619
E-mail: lbeeman@townofmanlius.org

For Type 1 Actions and Conditioned Negative Declarations, a copy of this Notice is sent to:

Chief Executive Officer of the political subdivision in which the action will be principally located (e.g., Town / City / Village of)
Other involved agencies (if any)
Applicant (if any)
Environmental Notice Bulletin: http://www.dec.ny.gov/enb/enb.html

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Addendum to Woodland Hills (Hoag Lane) Long Form EAF

Page 8 & 9 - # 15 – Impacts on Noise, Odor and Lights – Letter f–

During construction there will be temporary intervals of noise exceeding ambient noise levels relating to typical construction noise activity; and/or noise in violation of the noise ordinance of the Town.

Page 10 - # 17 – Consistency with Community Plans – Letter h –

Section 127-12 of Town of Manlius law sets forth criterion for Cluster Development (278 Town Law) and project shows inconsistency with Site Plan due to potential failure to preserve natural and scenic qualities of open lands and show benefit to the Town.

Vincent Ryan

From: Rudy Zona <rzona@rzengineering.com>
Sent: Friday, April 10, 2020 4:40 PM
To: dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen'; Scott Freeman; Vincent Ryan; 'Tom Douglas'; tblair@fingerlakeslaw.com; 'Joe Lupia'
Subject: 200403 dam and additional town engineer requested items - Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY
Attachments: 2020_04_10-Basins.pdf

Doug, <<...>>

Based on the email below I think we finally have this dam issue is resolved. I know Jamie had requested we revisit the issue and now hopefully this is resolved for good. However, your march 25 email lists several new comments and requested items not identified in your 12/18/19 comment letter which contained approximately 200 comments. It is our intent to prepare a resubmission to the town based on this 12/18/19 comment letter, as we've informed your office and the town, during discussions and requests for clarification over the past few weeks. We would respectfully request that if you have any additional thoughts, comments or requested items, please let us know immediately so that we can include responses to those items in our next submission. In addition to the clarifications we have already requested and discussed in our 3/19/20 phone call, we now have other clarifications on your email below that will be necessary to compile our submission. Please provide clarification as to what you're looking for to the following items below.

1. The impoundment that you propose is a significant change to the overland flow in this area and impounds 3.33 acre feet or 1,085,084 gallons of water. *We disagree that the impoundment is a significant change to overland flow or existing drainage patterns, in fact it maintains them. The watersheds and discharge points for this DEC mandated stormwater management facility remain the same as in the pre development. Existing wetland/ overland streams are left in tact and untouched by the development or the SWMF. As discussed with the DEC (Jenn Ross) the discharge point for the facility is in an ideal location and discharges to an existing drainage channel (identified by a professional environmental consultant in conjunction with the NYSDEC and USACE) similar to existing conditions. Flows discharged by the proposed facility are at or below existing levels (some reduced by up to 40%). As noted in Ms. Ross's email below the impoundment is 0.59 af under normal conditions and under storm events may be larger but only for short periods of time resulting in minimal impacts to downstream areas.*

2. The impoundment structure you are proposing is depicted on drawings to be placed across an existing overland drainage way, there are residential dwellings and Town owned infrastructure immediately downstream of the proposed impoundment. *As previously noted the impoundment area is not placed in the direct pathway of any existing overland drainageway or wetland area. In fact buffers of 25 feet are provided from these areas and will remain untouched by the development. The DEC specifically notes in their clarification below, the minimal impacts to downstream town owned infrastructure and dwellings. A review of other existing stormwater management areas and dams located within the Town of Manlius results in several other instances where stormwater management areas and actual facilities classified as actual DAMS by the NYSDEC's dam criteria are located directly adjacent to residential areas. These existing facilities within the Town of Manlius mostly contain larger impoundments of water, with taller earthen embankments /berms/ dams which are adjacent to residential areas containing more residential structures than the facility we propose. See attached figure.*

3. We are recommending to the Town of Manlius that regardless of classification of your proposed impoundment and for safety of local residents, that the design and construction be completed to minimize any catastrophic failure events in the future. *As noted by the DEC's Jenn Ross below, our current design already will have minimal effects on downstream facilities and local residents. Importantly, it also notes that during large storm events the facility "may" have more impacts (which based on engineering hydraulic modeling, will be less runoff entering downstream drainageways than under existing conditions and result in an improvement) "but an analysis would need to be performed*

to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event". Firstly, we are not a dam as noted by the DEC. Secondly, the town has already acknowledged it has flooding issues downstream which this development will reduce. If the town has or will conduct a flood analysis as the DEC suggests, they could then determine how downstream town owned facilities will act under certain flood conditions. However, any impact would be improved by our SWMF and the applicant can only control property and facilities on the Hoag Ln Woodland Hills property. We would be happy to provide our hydraulic modeling to the town for their use in any drainage study performed by the town on its own infrastructure.

4. Items that need to be addressed include but are not limited to permeability of materials both (existing and proposed), lining materials and slope stability of the final installation, spillway locations being located only native material with non-erosive velocities, keyways, significant antiseep-collar flow length, greater flow capacity for spillways, greater freeboard from maximum impoundment height, special soil testing for borrow material and placement during construction, soil borings along the length of the embankment to ensure no porous soil layers are beneath the embankment, dam break analysis etc. *Many of the items noted have already been designed for such as ideal spillway and discharge locations (with DEC concurrence), discharges with non erosive velocities, anti seep collars, freeboard and adequate flow capacity for spillways. The permeability of on site soils, including those within the SWMF area have already been evaluated in the Kenney Geotechnical report previously submitted. Kenney Geotechnical found no porous soils, no permeable soils, no bedrock outcroppings and no soils unsuitable for construction of the facility according to the data collected and evaluation done by the Geotechnical Engineer in conjunction with the NYS Stormwater Design Manual. The facility is not a dam and based on Ms. Ross's supporting documentation and her conclusions that the facility will only have a minimal downstream impact suggests no dam break analysis is warranted. In addition, dam break analyses are not required as part of design for a SWMF within the NYS Stormwater Design Manual or as a condition of obtaining the Stormwater General Permit or it's 5 ac waiver by the DEC. As previously noted, any impacts from our facility are considered minimal by DEC and any analysis would require the town to evaluate it's own flooding conditions first in order to determine any positive impacts the proposed SWMF will have on downstream flooding. It should be noted that within the town of Manlius, several dams and earthen stormwater management facilities already exist. In our phone conversation we agreed to provide some additional testing for road areas. In light of your concerns below we have requested that the Geotechnical Engineer clarify his findings to specifically address the items above regarding soils.*

> *With regards to the discharge point, it is important to note that the existing, untouched, drainageway identified in item 1 above is a main thoroughfare for existing uncontrolled town storm infrastructure flowing from the Churchill Ln. cul-de-sac and it's contributory watershed. The town currently uses the subject site as a discharge point for discharge from this adjacent subdivision. Discharging stormwater from the subject site (at lower rates than under existing conditions) to the same existing channel already utilized by the town for stormwater conveyance is a logical and sound engineering practice. It has also been hypothesized, opined and theorized that Karst Topography may be a condition in the area. However, evidence such as available mapping, field testing and professional geotechnical analysis does not suggest such geologic conditions on the subject site. In addition, available mapping shows no evidence of rock outcroppings, land features or restrictive soil layers. Actually, it depicts a minimum soil profile of 18 inches for lands downstream of the subject site, with most downstream areas containing more than a 3-4 foot soil profile. Soil mapping does identify rock outcroppings and restrictive layers that could be considered Karst topography upstream of the site over ½ mile away to the south. It is a small area and is not on the subject site or within it's discharge flow path. Areas on site and surrounding the subject site are proven to contain a generous soil profile of over 15 feet (on site based on actual testing and geotechnical investigation) and soil mapping indicates a minimum of more than 6 feet in areas adjacent to the site. Therefore, we have not encountered any evidence of Karst Topography on the site, adjacent to the site or downstream of the site.*

5. Rather, best engineering practices, DEC guidance and requirements of the Town of Manlius Code dictate that the requirements requested by the Town Engineer on this matter be followed. *DEC guidance below does not indicate that any dam break analyses, additional soil borings, slope stability analysis or special soil testing is required. These items are*

not typically requested on other SWMF in central NY. We have already agreed to some additional soil investigation and per item 4 above we've requested clarification on other items you've listed. We have reviewed the NYSDEC Guidelines for Erosion and Sediment control for guidance on construction of earthen embankments. Guidance is provided within this manual on embankments under construction methods for temporary sediment basins on pages 5.19 thru 5.23, also for sediment traps. Instructions and requirements noted within these sections refer to placement of fill in layers and final seeding of the soils which area already addressed within the SWPPP, on the contract drawings and specifications. We then reviewed the NYS Stormwater Design Manual which includes the NYS Guidelines for Dams 1989 as it's Appendix A. The NYS Guidelines for Dams outline geotechnical investigation criteria in Seciton 8.1. These refer to design parameters for Dams (which we are not) and much of the language is directed toward larger dams and not toward SWMF or earthen berms as we have proposed. However, significant soil testing and soil map investigations have already been performed, including within the vicinity of the SWMF. Updated testing agreed to in our 3/19/20 phone conversation is being performed along with specific clarifications other items you've listed. We have also reviewed the town code which defers to the documents previously mentioned for design of the facility.

> *As previously noted, other existing stormwater management areas and facilities that would be classified as dams are located within the Town of Manlius in several other locations, many of them residential. As noted in item 2 above, we have prepared a drawing to compare these facilities to the one we've proposed. Many of these impoundments appear to contain features similar to, or mostly in excess of, our proposed facility as evident in the attached figure. We request that the town formally provide written documentation of the permeability of materials both (existing and proposed) used for these other facilities, lining materials used in other facilities, slope stability requirements used for design of other dams and ponds, spillway location selection process used in other pond design, size of keyways in other ponds and dams, antiseep-collar flow length design criteria used for other SWMF, ponds and dams, over sizing requirements for greater flow capacity for spillways for other ponds/dams, oversizing requirements for greater freeboard from maximum impoundment height for other ponds/ dams, special soil testing requirements for borrow material and placement during construction for other ponds/ dams, and dam break analysis requirements used for other ponds and dams within the town. This will enable us to appropriately and proportionately over size our facility in accordance with other facilities already designed, accepted by, installed and operational within the town currently. Since there is no precedent or regulation for some of your requests and no town guidance exists on these special requests and oversizing you've asked for, we'll need documentation of how these previously approved facilities were designed to determine town's design standards and parameters for our facility.*

In addition, there were several items we had discussed in our 3/19/20 phone conversation that you and Jamie had agreed to get back to us on. I've listed a summary of those below. Have you had a chance to research these items and provide clarification?

1. Additional soil tests needed for suitable soil density test? (Doug)

2. Town to confirm if our "staging" plans meet one or more phases? (Jamie & Doug)

3. Time of Concentration – Agreed to Disagree. Will reexamine with new SWPPP.

4. Are architectural plans needed or were graphics shown at meeting suitable? (Jamie)

5. Grinder Pumps – Planning Board to decide if this issue is settled? (Jamie and Doug)

6. Confirmation of Sanitary Offset Map – Town would like to see this beforehand but not typical? (Doug)

7. Special District Formations? (Jamie and Tim)

8. Security Deposits?

9. Daily construction observation? (Doug)

10. Open cut along Hoag Ln for Sanitary? (Doug)

11. Water Pit decommission, will OCWA and their requirements be sufficient? (Doug)

12. Additional Dust monitoring requirements? (Doug)

Thank you for your anticipated cooperation and we look forward to your responses to these items so that we can move forward with our anticipated submission.

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI

Principal

RZ Engineering, PLLC

6320 Fly Road, Suite 109

East Syracuse, NY 13057

Ph. (315)432-1089

Fax (315)445-7981

-----Original Message-----
From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Wednesday, March 25, 2020 1:55 PM
To: Rudy Zona <rzona@rzengineering.com>; dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: 'Joe Lupia' <lupia7@yahoo.com>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Good afternoon all:

I spoke with Rudy on the phone this afternoon and wanted to summarize our discussion for everyone's records.

I took a look at the drawings and noted that the invert of the outlet pipe is located at an elevation of 664 feet and the top of dam elevation was given as 676.5 feet. So based on my interpretation of the drawings, I had determined a dam height of 12.5 feet. Rudy added that there is some stone rip-rap below this pipe down to an elevation of 662 ft, so conservatively that would put the dam at a height of 14.5 feet. Since the maximum impoundment and dam height are under 3 million gallons and 15 feet the dam would be exempt from needing a DEC Dam Safety Permit. I have given the exemption below.

NYRCC Part 608.3 Dams

(b) Exceptions.

The requirement of a permit pursuant to subdivision (a) of this section does not apply to the following:

(1) the construction, reconstruction, repair, breach or removal of a dam that has a height less than 15 feet, and a maximum impoundment capacity less than three million gallons;

We also discussed that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event.

Although the dam is below DEC permit thresholds, we always do advise that any dam be designed by a Professional Engineer and that our Guidelines for Design of Dams 1989 be followed as best practice. I would also offer to review any other material that may be developed with regard to the design and specifications for the impoundment if that is desired by any party.

Please feel free to contact me if further clarification is needed.

Best,

Jennifer

-----Original Message-----

From: Rudy Zona <rzona@rzengineering.com>

Sent: Wednesday, March 25, 2020 12:26 PM

To: dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>

Cc: 'Joe Lupia' <lupia7@yahoo.com>; Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>

Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

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Dear Doug,

We have followed up with Ms. Ross and the result of that follow up is a conference call. The DEC has certain terminology and stipulations. We should clarify those as DEC has requested. We hope you as the town engineer will represent your client on the call.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI

Principal

RZ Engineering, PLLC

6320 Fly Road, Suite 109

East Syracuse, NY 13057

Ph. (315)432-1089

Fax (315)445-7981

-----Original Message-----

From: Doug Miller <dougmiller@millerengineers.com>

Sent: Wednesday, March 25, 2020 12:05 PM

To: Rudy Zona <rzona@rzengineering.com>; 'Jamie Sutphen'

<jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>

Cc: 'Joe Lupia' <lupia7@yahoo.com>; jennifer.ross@dec.ny.gov

Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Dear Rudy

Please feel free to follow up with Ms. Ross on your endeavors. Our last correspondence with NYSDEC indicates that the impoundment you propose requires a dam safety permit application as the toe of slope at the outfall has a contour of 660.0 and an adjacent spot elevation of 559.0 as shown on drawing L-200, attached for reference(a height of approximately 17.5 feet on an inclined slope). Elevations are not in adjacent protected federal wetlands as you have suggested but are depicted at the toe of the impoundment slope. Regardless, the impoundment that you propose is a significant change to the overland flow in this area and impounds 3.33 acre feet or 1,085,084 gallons of water. The impoundment structure you are proposing is depicted on drawings to be placed across an existing overland drainage way, there are residential dwellings and Town owned infrastructure immediately downstream of the proposed impoundment. We are recommending to the Town of Manlius that regardless of classification of your proposed impoundment and for safety of local residents, that the design and construction be completed to minimize any catastrophic failure events in the future. Items that need to be addressed include but are not limited to permeability of materials both (existing and proposed), lining materials and slope stability of the final installation, spillway locations being located only native material with non-erosive velocities, keyways, significant antiseep-collar flow length, greater flow capacity for spillways, greater freeboard from maximum impoundment height, special soil testing for borrow material and placement during construction, soil borings along the length of the embankment to ensure no porous soil layers are beneath the embankment, dam break analysis etc. We trust this clarifies your concern. We do not see a need to conference with NYSDEC at this time. Rather, best engineering practices, DEC guidance and requirements of the Town of Manlius Code dictate that the requirements requested by the Town Engineer on this matter be followed. Thank you.

Doug

Douglas A Miller, P.E.

Miller Engineers

Seneca Turnpike; Suite B

Box 311

Manlius, NY 13104

315-558-8417

-----Original Message-----

From: Rudy Zona <rzona@rzengineering.com>

Sent: Monday, March 23, 2020 4:29 PM

To: 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman'

<sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas'

<thomasallenhomes@yahoo.com>

Cc: Doug Miller <dougmiller@millerengineers.com>; 'Joe Lupia'

<lupia7@yahoo.com>

Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

I just received an email back from Jenn. She has suggested a conference call to clarify the height of the dam and permitting requirements. Please let me know when you all are available.

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI

Principal

RZ Engineering, PLLC

6320 Fly Road, Suite 109

East Syracuse, NY 13057

Ph. (315)432-1089

Fax (315)445-7981

-----Original Message-----

From: Jamie Sutphen <jsutphen@bsfattorneys.com>

Sent: Monday, March 23, 2020 2:59 PM

To: Rudy Zona <rzona@rzengineering.com>; 'Scott Freeman'

<sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas'

7

<thomasallenhomes@yahoo.com>

Cc: Doug Miller <dougmiller@millerengineers.com>; Joe Lupia <lupia7@yahoo.com>

Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Here is the DEC response.

Jamie L. Sutphen, Esq.

Baldwin, Sutphen & Frateschi, PLLC

126 N. Salina Street Suite 400

Syracuse, New York 13202

Phone: 315- 477-0100

Cell: 315-345-1666*

Fax: 315-477-5071

jsutphen@bsfattorneys.com

*In accordance with the Executive Order of Governor Cuomo, dated March 20,2020, the physical offices of Baldwin, Sutphen & Frateschi, PLLC are closed. I and many of our staff are equipped remotely and we are committed to deliver legal services to our clients during this time of crisis. Do not hesitate to email or call my cell phone.

This electronic message may contain privileged or confidential information.

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_____

In accordance with Internal Revenue Service Circular 230, we inform you that any discussion of a federal tax issue contained in this communication (including any attachments) is not intended or written to be used, and it cannot be used, by any recipient for the purpose of (i) avoiding penalties that may be imposed on the recipient under United States federal tax laws, or (ii) promoting, marketing or recommending to another party any tax-related matters addressed herein.

-----Original Message-----

From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>

Sent: Friday, March 20, 2020 1:52 PM

To: Doug Miller <dougmiller@millerengineers.com>

Cc: Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>

Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Doug,

Regardless of the height and impoundment size, Dam Safety would consider this impoundment a dam. Since the dam is over 15 feet in height the impoundment would need to have a maximum impoundment of less than 1 million gallons to be under Dam Safety Permit thresholds.

Since the dam is 16.5 feet in height and 3.33 acre-feet, it would appear that the dam is just over the permit thresholds. Therefore, I do think this impoundment will require a Dam Safety Permit.

Thank you,

Jennifer

Jennifer Ross

Assistant Engineer, Division of Water

State Cell 518-935-8973

-----Original Message-----

From: Doug Miller <dougmiller@millerengineers.com>

Sent: Friday, March 20, 2020 9:10 AM

To: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>

Cc: Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>

Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

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Im not sure this got through yesterday. Looking for some final clarification. Local residents downstream of the proposed impoundment have expressed concern

-----Original Message-----

From: Doug Miller

Sent: Thursday, March 19, 2020 4:04 PM

To: jennifer.ross@dec.ny.gov

Cc: Murakami, Tatsuhiko V (DEC <tatsuhiko.murakami@dec.ny.gov>; Choe, <trendon.choe@dec.ny.gov>

Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Hello Ms Ross

Miller Engineers represents the Town of Manlius NY. We are reviewing construction drawings for a proposed subdivision in the Town. As part of a stormwater plan we have received the attached information. Can you confirm the attached.

Last fall we had spoken to you and you indicated that the impoundment shown on attached L-200 was considered to be a dam by NYSDEC standards. We have your recent correspondence which now indicates that the impoundment is not a dam. At the Northwest corner of the impoundment local residents indicate elevation 660 at the toe of the slope, top of berm 676.5 (Height 16.5 feet) Impoundment volume 3.33 acre feet, we concur with this information.

Developer is looking to mov e forward with this project and the down stream residents of the area have voiced concern over the impoundment and are looking for clarification as to whether this is a dam and if so what if any dam safety precautions should be taken.

Thanks for your assistance

Doug Miller

Douglas A Miller, P.E.

Miller Engineers

Seneca Turnpike; Suite B

Box 311

Manlius, NY 13104

315-558-8417

-----Original Message-----

From: Vincent Ryan <vr@Keplingerfreeman.com>

Sent: Thursday, March 19, 2020 2:21 PM

To: Doug Miller <dougmiller@millerengineers.com>; Jamie Sutphen <jsutphen@bsfattorneys.com>

Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

-----Original Message-----

From: Rudy Zona <rzona@rzengineering.com>

Sent: Friday, October 18, 2019 1:58 PM

To: 'jennifer.ross@dec.ny.gov' <jennifer.ross@dec.ny.gov>; 'jennifer.everleth@dec.ny.gov' <jennifer.everleth@dec.ny.gov>; 'Murakami, Tatsuhiko V (DEC)' <tatsuhiko.murakami@dec.ny.gov>; 'Choe, Trendon P (DEC)'

<Trendon.Choe@dec.ny.gov>; 'kevin.delaney@dec.ny.gov'

<kevin.delaney@dec.ny.gov>; Scott Freeman <sf@Keplingerfreeman.com>

Subject: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Jenn,

Per our conversation this am, we are asking for clarification if dam permitting is required for our proposed Stormwater Management Facility. We have designed the facility as a wet pond with a storage capacity of 3.33 acre feet and a maximum height of 14.5 feet from the top of the embankment to the toe of slope. I have attached our submitted construction drawing which we have shared with the town engineer Doug Miller for his review on behalf of the town. The facility has not been built or approved yet as we are still involved in the review and SEQR process. It is our understanding that you spoke with him yesterday, providing him with guidance that the facility would require dam permitting. We note in our prepared swppp, the following excerpt showing criteria listed as part of the NYSDEC guidance on dam permitting.

Based on this criteria, we believe we fall under the third highlighted bullet point -----designated as exempt from dam permitting. Please review our attached drawing and the colored sketch highlighting key components of our proposal related to the dam permit exempt status we understand we fall under, per our conversation this morning. If you could please verify we meet this exemption and require no dam permit based on our proposal that would help us provide clear guidance to the town and it's engineer on the subject. If we do not fall under an exempt category based on the attached sketch please let me know so that we can modify our design to ensure we are not classified as a dam requiring permitting. Thank you very much for speaking with me this morning and I look forward to your response.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI

Principal

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Ph. (315)432-1089

Fax (315)445-7981

15th June 2020

Jamie L. Sutphen, Esq.
Town of Manlius Planning Board Attorney
126 N. Salina St., Suite 400
Syracuse, NY 13202
Tel (315) 477-0100 / Fax (315) 477-5071

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: Woodland Hills Summary of Outstanding Engineering Issues

Dear Mrs. Sutphen,

Our office has reviewed your Engineering comments related to the Hoag Lane dated on **April 28th, 2020** and received on **April 28th, 2020.** Below is our response to each comment received**.** Your comments are listed below followed by the design team response in bold italics.

HOAG LANE CLUSTER DEVELOPMENT

1) Constructability

1. Applicant is asking for a "5 acre disturbance waiver" from the NYSDEC stormwater regulations.

   Response: Agreed. The typical process is covered by the SWPPP for the project. KFA/ RZ have provided a draft Notice of Intent and letter within the SWPPP regarding a 5 acre disturbance waiver to Town of Manlius with this submission.

2. Soil movement and embankment compaction is extensive on this site and will change the grades of the entire developed area. The substantial amount of earthwork is not typical for a residential subdivision. Road profiles typically follow existing contours to limit both the cost and exposure for earth moving operations and minimize utility excavations.

   Response: Other Manlius projects such as Mallards Landing, Spruce Ridge had at least similar but likely, more extensive site work. The "Earthwork Material Evaluation" (referenced as EME) report, dated on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for road fill within the right of way. The road profiles and proposed grades generally follow existing grades within guidelines set forth by the Town of Manlius code. Earthwork is limited and the grading plan generally keeps earthwork within 4 feet of the current grades. One small area on site soil material was identified by Kenney Geotechnical as unsuitable and will not be utilized as fill within the proposed right of way, basin embankment or fill below basement slabs.

3. Some of the houses will be constructed on deep fills which causes concerns about stability of the foundations.

   Response: The term deep fill is confusing and could lead to public confusion regarding this project. 18 of the 20 proposed building foundations walls (footers) will be constructed at

an approximate 4 foot depth and will reside either below or on existing grade. Lots 12 and 13 will require deeper footings for a portion of the foundation wall. Lot #12 will require a four foot extension to the footer in the west corner of the home and Lot # 13 will also require a four foot extension to the footer in the southwest corner of the proposed home to meet existing grade. Refer to the text block Footer Depth Review on drawing L-202 entitled Right of way, Basement Slab and Footer Summary. A Cut/Fill Basement Slab Review text block along with basement slab elevations for each lot are provided on drawing L-202. There is a limited amount of basement slab area requiring more than 6 feet of cut or fill. The suggestion that major filling is required for more than just a house or two is misleading and does not reflect the vast majority of the lots. In addition, the report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use under residential structures as backfill. 12 of the 18 basement slabs will be constructed on existing soils. The remaining 8 basement slabs will be constructed utilizing the on site material which meets the project specifications.

4. Some road fills exceed 10 feet, and we have concerns about differential settlement related to utilities and road surfaces.

   Response: The average cut or fill for the entire 1,924 linear foot road and right of way (with the exception of stations 4+25 through 5+50 and Station 15+30 through Station 16-30) averages approximately 4'-6" depth. A 75' long section (Station 4+25 to 5+50) will require an approximate 8' to 10' fill depth and a 100' section (Station 15+30 to 16+30) will require a 6' to 8' fill depth as shown on drawing L-202 (175' linear feet total for road fill 6 ' or greater. No road areas require more than 10 feet, only right of way areas require up to 10 feet. The EME report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use within rights of way as backfill which meets the on-site testing process during construction. In addition, Tobin Construction representatives stated that the on site materials encountered during field testing are very suitable for placement in fill areas and the project can be constructed with standard construction practices.

5. The Impoundment/Dam proposed is significant in size and scope and is intended to hold back one million gallons of water, which is an unusual feature of this development.

   Response: The proposed stormwater management facility should be referred to as such. The facility is not a Dam and referring to it as one could be misleading to the board and the public. Drawing L-900 compares the proposed SWMF to other SWMF, impoundments and actual dams within the Town of Manlius. The suggestion that detaining this volume of water is unusual is misleading and incorrect. Several other facilities in the Town of Manlius contain more water at greater depths and with less safety features than the facility proposed.

6. This is a "Cluster Development" which requests/requires waivers from certain aspects of usual zoning. A goal of clustering is to preserve land and also to keep much in a natural state, which this development does not appear to accomplish.

Response: The 30.04 acre cluster development project includes 9.35 acres of HOA and homeowner owned designated 'Forever Wild Area'. The cluster project Forever Wild Area preserves 31% of the project site area including the preservation of an existing groundwater seep wetland, preservation of an existing intermittent stream channel and perimeter existing vegetative areas which are depicted on drawing L-400 entitled Layout Plan. The proposed cluster plan preserves the natural and scenic qualities of open lands through the creation of a significantly sized forever wild area, perimeter buffer and lot count reduction from the original conventional grading plan.

A. Critical to this site, is the manner and method of compacting of earth under what will eventually become the town's infrastructure (roads, pipes, etc).

   Response: The Kenney Geotechnical report dated May 18, 2020 provides a methodology for placement, compaction and testing of fill materials. The recommendations have been incorporated into drawing L-503 and include project specifications, a field testing summary table, typical local road sections for cut/fill conditions and a typical home foundation wall section. A significant portion of the right of way is to be graded within 4 to 5 feet of existing grades. According to the contractor this site can be constructed with standard construction practices, is almost ideal for a development of this size and does not foresee any significant concerns regarding construction of the town dedicated infrastructure.

   a. The waiver adds an element not present in many projects, and with the extent of soil movement/cuts and fills, drainage and grading will be very complex. (As a regulated MS4, the Town of Manlius has oversight of this NYSDEC regulation and must verify the work meets the NYSDEC SPDES Phase 2 permit requirements).

      Response: The draft waiver and NYSDEC Notice of Intent has been provided as noted on to Page 1, 1 Constructability, items 1 and 2.

   b. Certification of all fills are recommended to be coordinated with all anticipated utilities including but not limited to OCWA & National Grid. Geotechnical reports will be required of houses built in fill areas along with the proposed impoundment area.

      Response: As previously noted under other items within this letter, only 2 houses will be subject to this condition and deeper foundations will be extended to reside on natural grade will be provided. The owner has no authority over construction of utilities built by OCWA or National Grid.

B. Also, with the impoundment/dam holding back significant water that will seriously affect downstream property owners in the event of failure, its design and construction must be done properly. In light of these issues, the Town will require a person of Town's choosing, at developer's expense, to be on-site at all times to ensure the soil movement and compacting is done properly. This is especially critical due to the houses that will be built on the fill ensuring a safe foundation.

Response: Please refer to DEC email dated3/25/20 from DEC representative Jennifer Ross regarding the Dam ruling located in SWPPP appendix V. Several other facilities in the Town of Manlius contain more water at greater depths and steeper slopes with fewer safety features than the facility proposed as shown on drawing L-900 entitled Wet Pond Comparisons. In addition, the Kenney Geotechnical reports provided on 5/18/20 and 5/27/20 do not indicate any issues with on site soils, soil conditions or use of on-site materials to construct the proposed facility. The project sitework contractor has also performed several earthwork studies of the project site, reviewed the geotechnical studies for the project, performed many additional on site test pits, has reviewed the current set of construction drawings and has stated that the project is ready for construction. KFA and RZE have worked with Tobin development on the successful completion of the 37 unit Town of Clay Hamlet cluster housing project and the 163 unit Town of Van Buren planned unit housing development, Harbor Heights project which was constructed in many phases. Our design and construction team worked very closely with the municipal engineers and testing agencies and is prepared to do so on this 20 unit construction project.

C. Project cost/securities will need to be further discussed.

Response: Agreed.

2) Technical Issues

1. The stripping and grading plan has to be more detailed, including the phasing of same. There have not been sufficient details presented so far. The extent of the land stripping as thus far presented is of concern as the whole theory behind cluster development is to preserve the land in its natural state. The stripping of the entire parcel and the extensive cuts and fills seems to be contrary to the theory behind cluster development.

Response: The proposed project is to be constructed as one project, in one phase, within 7 distinct construction stages to minimize the site disturbance throughout construction. The staged approach to construction will limit the site disturbance areas as shown within the construction staging drawings and schedule shown on drawings L-102 through L-108. The entire site will not be stripped as noted in Page 2, 1 Constructability, item 6.

A. Phased work areas must have 80% coverage/density to be considered stabilized before proceeding the next work phase.

- **Response: Agreed. This is a NYSDEC requirement which our office field SWPPP inspectors are very familiar with. Drawings L-102 through L-108 depict a staged construction approach with each phase being stabilized before moving onto the next. Page 20 of the SWPPP states that all stages will be completely stabilized before advancing to the next stage.**

B. Indicate on the plans storage volumes equaling required storage for each sediment/erosion control feature in cubic feet for the tributary area.

Response: This data appears on drawing L-103 and L-104 and within the SWPPP under Appendix T of the December submission. These drawings and the SWPPP have been updated to reflect the current submission.

C. SWPPP inspections are required twice a week.

Response: Agreed during stages where disturbance is in excess of 5 acres, in accordance with the NYSDEC stormwater general permit provided in Appendix J. We anticipate the twice weekly inspections to occur during approximately 5 months of construction. A 5-acre disturbance letter has also been provided in Appendix W of the SWPPP included with this submission.

D. Site soils are type "C" soils. Per Table 4.6, soil restoration requirements must meet the NYSDEC deep ripping and decompaction manual dated April 2008.

Response: All soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 3/11/2020. See revised SWPPP provided with this submission, Appendix I and drawing L-101.

E. Both the wet pond and for the temporary sediment basin have deep cuts (Approx. 15 feet). Due to the limited number and depth of borings, we anticipate rock may be encountered and additional soil testing should be undertaken.

Response: The previous grading plan of the main basin only proposed cuts in the 15 foot range for a small 1000 sf area. The grading plan has been revised to limit all cuts to less than ± 13 feet. In addition, additional testing reflected in the Kenney Geotechnical report dated 5/27/20 supports all other testing on site (L-100) that no rock is encountered in any of the testing locations and a generous soil profile existing all over the site in excess of 15 feet. It has also been hypothesized, opined and theorized that Karst Topography may be a condition in the area. However, evidence such as available mapping, field testing and professional geotechnical analysis does not suggest such geologic conditions on the subject site. In addition, available mapping shows no evidence of rock outcroppings, land features or restrictive soil layers. Actually, it depicts a minimum soil profile of 18 inches for lands downstream of the subject site, with most downstream areas containing more than a 3-4 foot soil profile. Soil mapping does identify rock outcroppings and restrictive layers that could be considered Karst topography upstream of the site over ½ mile away to the south. It is a small area and is not on the subject site or within it's discharge flow path. Areas on site and surrounding the subject site are proven to contain a generous soil profile of over 15 feet (on site based on actual testing and geotechnical investigation) and soil mapping indicates a minimum of more than 6 feet in areas adjacent to the site. Therefore, we have not encountered any evidence of Karst Topography on the site, adjacent to the site or downstream of the site.

2. The existing SWPPP, which is part of the plans, presented is from last summer. It needs to be updated.

Response: Agree

3. Water quality volume calculations and RRv have to be re-done. On Page 12 of the of the permit it is stated WQv is only for site. NYSDEC requires all impervious upstream areas tributary to the wet pond be included within WQv. This is outlined on page 4-5 of the Stormwater Design Manual. The new permit should be refenced as GP-0-20-001. On Page 12 of the NOI question 38 should read "Homeowner's Association". It appears the runoff rate issues have generally been resolved and the calculations appear to be reasonable with the exception of revisiting time of concentration for the project site itself.

   Response: Agree. Both the pond and the water quality volume treatment capacity within it are both oversized and will accommodate all of the required Water Quality Volume. Also, the NOI and permit numbers have been updated.

4. SWPPP time to concentration calculations have to be updated and/or corrected for the project site to separate the disturbed area from the undisturbed area. We would anticipate a higher peak runoff rate from the disturbed area due to a reduced time of concentration and this could impact the calculated stage/storage/discharge rates from the wet pond.

   Response: Page 15 of the December 2019 SWPPP submission outlines the proposed sediment ponds and their design. As noted in the SWPPP on pages 15 thru 17, this design which will be employed for approximately 3 +/- months will accommodate for the interim open soil conditions, higher runoff coefficients and adjusted time of concentration associated with open soils. Included in Appendix T of the December 2019 submission are calculations and routing of the sediment ponds for stages 2 and 3 which verify that the sediment pond and SWMF adequately decrease runoff to downstream areas during open soil conditions during those stages of construction. Language has been added to sections on pages 15-17 on stage 2 and 3 sediment basins to outline the short duration we anticipate these conditions to be present and Appendix T has been updated for new shallower sediment pond contours.

5. In the area of Lots 11, 12 & 20 there is a stormwater pipe that is 13 ft. beneath the road with additional catch basins over 10 feet in depth. This is not a typical nor acceptable depth. A normal depth is 3-7 ft. and a deeper pipe could cause unnecessary expense to the Town in the future in the event repair is required.

   Response: Storm Pipe depths have been modified to depths less than 7'-0".

6. Individual grinder pumps for 7 lots remain a concern as, even though they are private systems, the Town is always called upon and spends time and resources on assisting residents in solving issues. Possibly combining the 7 grinder pumps into one pump station for all 7 would be a reasonable solution.

Response: A review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station in such a case. In addition, email correspondence from Christopher Deitman, dated 6/2/20 and provided with this submission, also indicates the lack of economic feasibility of using a municipally owned pumping station. These documents and correspondence support our proposal and contention that the low pressure sewer would be beneficial for the town, other members of the sewer district, the developer and the residents, providing the best solution for all parties with regards to construction, operation and maintenance.

7. Impoundment/Dam

   A. While it may not technically qualify as a "NYSDEC regulated dam", Guidelines for the Design of Dams (NYSDEC) need to be followed according to not only the Town, but also per NYSDEC recommendations.

      Response: We agree the SWMF does not qualify as a NYSDEC regulated dam and does not require permitting with NYSDEC. We also agree that the Guidelines for Design of Dams is to be followed since ALL stormwater management facilities designed in NYS are to follow those guidelines as outlined in the NYS Stormwater Design manual.

   B. Technical information provided by the applicant appears to indicate that the Impoundment/dam will need to be lined with impervious materials to prevent seepage and leaking.

      Response: Information submitted by the applicant both in the previous submission and as part of this submission within the Kenney Geotechnical Report dated 5/27/20 and soil testing results presented on drawing L-100 both indicate no infiltration capacity to the soils being proposed for the basin embankment or side walls and that no liner is recommended or required as a result of all of the completed field testing and geotechnical reports.

   C. An appropriately sized key-way for embankment construction purposes is necessary.

      Response: The Kenney Geotech report dated May 27, 2020, pages 1 and 2 of the report state that a keyway is not required.

   D. A toe drain may be required to address seepage.

      Response: Anti seep collar details have been added to the plans (detail 16/L-500). No other measures are required since the soils do not display any infiltrative properties and therefore no seepage is anticipated. See page 7, number 7, item C.

E. More test borings should be taken along the embankment to confirm basis of design. Please provide a detailed geotechnical report supporting the basis of the design for the impoundment area proposed.

Response: As mentioned within this response letter, Kenney Geotechincal has provided updated reports dated 5/18/20 and 5/27/20 verifying compliance with all DEC requirements. Reports are located in Appendix A within the SWPPP and all testing information is presented on Drawing L-100.

F. More cross sections should be done on the impoundment/dam and should include the existing and proposed ground elevations.

Response: Additional profiles and cross sections have been provided on Drawings L-202, L-502 and L-504.

G. The embankment top width should be shown.

Response: A dimension of 12 foot minimum embankment top is shown on Drawing L-400, verifying compliance with the Stormwater Design Manual. It is important to note that most areas exceed the 12 foot minimum.

H. If the developer follows the dam regulations, yearly inspections and testing will be required.

Response: Agreed, all SWMF designed in NYS require compliance with the NYS Dam Guidelines and all SWMF must be inspected per the NYS Stormwater design manual, General Permit and the SWPPP for the project.

I. Boring B-9 Dated 12/13/19 does not have proper elevation nor specific tie or longitude latitude information associated. The boring log also indicates the existence of glacial till at an approximate depth of 9.5 feet below the existing ground surface with apparent missing information from a depth of 9.5 feet below existing grade to 14 feet below existing grade. This provides a potential problem for the proposed design of the impoundment. Please provide further detail for drilling information through depths 9.5 – 14 for boring B-9 below surface along with actual elevations and location of the work.

Response: Kenney Geotechnical has provided two additional reports on soil investigation dated 5/18/20 and 5/27/20. All soil testing information to date, locations and elevations are provided on drawing L-100.

J. There does not appear to be any energy dissipation basin at the outlet of the pond which could lead to severe erosion and embankment failure.

Response: Rip rap aprons, appropriately sized have always been part of our design and submissions. Details and locations are provided on drawing L-200, and design sizing of rip rap outlet aprons are provided in appendix F of the SWPPP. Appendix F also provides calculations showing drainage facilities with non erosive velocities.

K. The impoundment spillway is used during the 100 year storm. We would typically see designs using pipes/weirs for the full range of storm discharges, but the dam regulations would allow it. However the spillway should be cut out of native soil, not embankment with limited velocities to prevent erosion. The SWPPP says the 100 year elevation of the pond is 676.06 and the plans (sheet 4) says is 676.22. This needs to be clarified. The pond should have a minimum of 1 foot of freeboard above the 100 year storm. It currently does not.

Response: The outlet structure has been modified to all passage of the 100 year event without use of the emergency spillway. The emergency spillway has been fitted with rip rap to manage and mitigate any flow thru it to non erosive velocities. Peak water elevation in the 100 year event is 675.42 per appendix E of the swppp and the plans (drawings L-200, L-202, L-502 and L-504 also reflect this elevation). Calculations proving non erosive velocity and rip rap sizing have been provided in appendix F.

8. Dust monitoring reporting requires verification for reporting and oversite procedures to the Town of Manlius.

Response: Section 12.1 of the previous (December 2019) SWPPP submission on page 22 outlines reporting techniques and requirements. Daily reports are required to be recorded within the SWPPP and kept in the SWPPP binder within the mailbox on site. We have added that reports should be transmitted to the Town of Manlius weekly to the SWPPP page 23 and drawings L-101 & L-501.

9. Relative to lot grading, grading is not shown correctly on lot 3 adjacent to the existing house. A retaining wall may be necessary. Road grade at driveways for lots 11, 12, 15, 16, 17 and 18 are higher that the house finished floor. There may be issues with garage/house flooding.

Response: Lot 3 has been regraded without the construction of a retaining wall. The slope will be planted with plant material to stabilize the slope as note 29 states on drawing L-200.

10. The calculated amount of increased runoff volume from the site: 2-yr is 25,000 c.f, and 100-yr is 67,000 c.f. This may impact the long- term viability of the infiltration basin on Muirfield. Mitigation of increased total volume run off should be addressed.

Response: It is important to note that in any development runoff is increased in volume and in flow when impervious surfaces are created. Typically, volume is not the driving factor since runoff volume is mostly affected by the infiltrative capacity of the onsite soils and not necessarily indicative of how downstream areas will be affected by runoff. The flow rate is typically considered higher in importance due to its effects on downstream conveyance and

drainageways. Volume is not always a contributor to flooding if the rate at which it is conveyed is well managed. The DEC's Jennifer Ross in her email has specifically stated "that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event". We concur with the DEC that, a more broad analysis by the town with respect to downstream impacts and the long term viability of the infiltration basin on Muirfield, would be necessary to evaluate its operation. We fail to see the validity of how the subject site would impact this facility. The location of this facility is not hydraulically connected to the subject site discharge flows. Several local low points exist between the subject site discharge point and this facility including points on Churchill Road and Hoag Lane. The intersection of Hoag Lane and Muirfield is lower than other points on Muirfield by several feet between the intersection and the Muirfield infiltration facility. It is unlikely that runoff from the subject site would be able to travel uphill to reach the Muirfield facility from points along the discharge route. We have provided figures capturing available topography profiles of these areas as evidence of these conditions. These figures are readily available off of google earth and are presented in Appendix O.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

BALDWIN, SUTPHEN & FRATESCHI, PLLC

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TO: Tom Blair, Esq.

FROM: Jamie L. Sutphen, Esq., Town of Manlius Planning Board Attorney

RE: Woodland Hills Summary of outstanding Engineering Issues

DATE: April 28, 2020

Tom, after consultation with the Town Engineer, he and I put together the below in an attempt to summarize the major engineering issues relating to project. This is in furtherance of the Planning Board's request that engineering issues be worked on with the applicant. Obviously, the detailed engineering comments herein are those of the Engineer, but we worked to make them understandable and to divide the ongoing concerns into matters of "constructability" vs. "technical". While this is not intended to be absolutely comprehensive of all project details, it is our intent that this correspondence will serve as a springboard for better dialogue on these matters; which is something I understand from your correspondence, that your clients and you desire, as does the Town.

Ultimately, after review of these items, and presumably resubmission and further dialogue, your client, as applicant, can determine when they want to appear before the Planning Board for SEQRA review. It appears at this juncture that proceeding to a SEQRA review that can best glean a negative declaration is dependent upon how/when these matters are addressed. The Planning Board currently intends to resume its meetings beginning with the May 11th meeting. We will be conducting the meetings by remote format, and in accordance with the directives currently in place. We will be coordinating with applicants with regard to the details of procedures of such meetings.

Constructability:

There are unusual and/or constructability specific items and concerns relative to this site and project which makes this project different from the ordinary subdivision. Those unusual issues include:

1. Applicant is asking for a "5 acre disturbance waiver" from the NYSDEC stormwater regulations.

2. Soil movement and embankment compaction is extensive on this site and will change the grades of the entire developed area. The substantial amount of earthwork is not typical for a residential subdivision. Road profiles typically follow existing contours to limit both the cost and exposure for earth moving operations and minimize utility excavations.

3. Some of the houses will be constructed on deep fills which causes concerns about stability of the foundations.

4. Some road fills exceed 10 feet, and we have concerns about differential settlement related to utilities and road surfaces.

5. The Impoundment/Dam proposed is significant in size and scope and is intended to hold back one million gallons of water, which is an unusual feature of this development.

6. This is a "Cluster Development" which requests/requires waivers from certain aspects of usual zoning. A goal of clustering is to preserve land and also to keep much in a natural state, which this development does not appear to accomplish.

Accordingly,

A. Critical to this site, is the manner and method of compacting of earth under what will eventually become the town's infrastructure (roads, pipes, etc).
    a. The waiver adds an element not present in many projects, and with the extent of soil movement/cuts and fills, drainage and grading will be very complex. (As a regulated MS4, the Town of Manlius has oversight of this NYSDEC regulation and must verify the work meets the NYSDEC SPDES Phase 2 permit requirements).
    b. Certification of all fills are recommended to be coordinated with all anticipated utilities including but not limited to OCWA & National Grid. Geotechnical reports will be required of houses built in fill areas along with the proposed impoundment area.

B. Also, with the impoundment/dam holding back significant water that will seriously affect downstream property owners in the event of failure, its design and construction must be done properly. In light of these issues, the Town will require a person of Town's choosing, at developer's expense, to be on-site at all times to ensure the soil movement and compacting is done properly. This is especially critical due to the houses that will be built on the fill ensuring a safe foundation.

C. Project cost/securities will need to be further discussed.

Technical Issues:

Overall, project details require additional attention, which is an essential step in the approval of the project in order for the project to be executed accurately. The better the details, the better chance there is that every part of the job will be completed and certified as required. Adherence and certification of the approved documents will minimize risk with the project.

1. The stripping and grading plan has to be more detailed, including the phasing of same. There have not been sufficient details presented so far. The extent of the land stripping as thus far presented is of concern as the whole theory behind cluster development is to preserve the land in its natural state. The stripping of the entire parcel and the extensive cuts and fills seems to be contrary to the theory behind cluster development.

    a. Phased work areas must have 80% coverage/density to be considered stabilized before proceeding the next work phase.

b. Indicate on the plans storage volumes equaling required storage for each sediment/erosion control feature in cubic feet for the tributary area.

c. SWPPP inspections are required twice a week.

d. Site soils are type "C" soils. Per Table 4.6, soil restoration requirements must meet the NYSDEC deep ripping and decompaction manual dated April 2008.

e. Both the wet pond and for the temporary sediment basin have deep cuts (Approx. 15 feet). Due to the limited number and depth of borings, we anticipate rock may be encountered and additional soil testing should be undertaken.

2. The existing SWPPP, which is part of the plans, presented is from last summer. It needs to be updated.

3. Water quality volume calculations and RRv have to be re-done. On Page 12 of the of the permit it is stated WQv is only for site. NYSDEC requires all impervious upstream areas tributary to the wet pond be included within WQv. This is outlined on page 4-5 of the Stormwater Design Manual. The new permit should be refenced as GP-0-20-001. On Page 12 of the NOI question 38 should read "Homeowner's Association". It appears the runoff rate issues have generally been resolved and the calculations appear to be reasonable with the exception of revisiting time of concentration for the project site itself.

4. SWPPP time to concentration calculations have to be updated and/or corrected for the project site to separate the disturbed area from the undisturbed area. We would anticipate a higher peak runoff rate from the disturbed area due to a reduced time of concentration and this could impact the calculated stage/storage/discharge rates from the wet pond.

5. In the area of Lots 11, 12 & 20 there is a stormwater pipe that is 13 ft. beneath the road with additional catch basins over 10 feet in depth. This is not a typical nor acceptable depth. A normal depth is 3-7 ft. and a deeper pipe could cause unnecessary expense to the Town in the future in the event repair is required.

6. Individual grinder pumps for 7 lots remain a concern as, even though they are private systems, the Town is always called upon and spends time and resources on assisting residents in solving issues. Possibly combining the 7 grinder pumps into one pump station for all 7 would be a reasonable solution.

7. Impoundment/Dam:

   - While it may not technically qualify as a "NYSDEC regulated dam", Guidelines for the Design of Dams (NYSDEC) need to be followed according to not only the Town, but also per NYSDEC recommendations.

   - Technical information provided by the applicant appears to indicate that the Impoundment/dam will need to be lined with impervious materials to prevent seepage and leaking.

   - An appropriately sized key-way for embankment construction purposes is necessary.

- A toe drain may be required to address seepage.

- More test borings should be taken along the embankment to confirm basis of design. Please provide a detailed geotechnical report supporting the basis of the design for the impoundment area proposed.

- More cross sections should be done on the impoundment/dam and should include the existing and proposed ground elevations.

- The embankment top width should be shown.

- If the developer follows the dam regulations, yearly inspections and testing will be required.

- Boring B-9 Dated 12/13/19 does not have proper elevation nor specific tie or longitude latitude information associated. The boring log also indicates the existence of glacial till at an approximate depth of 9.5 feet below the existing ground surface with apparent missing information from a depth of 9.5 feet below existing grade to 14 feet below existing grade. This provides a potential problem for the proposed design of the impoundment. Please provide further detail for drilling information through depths 9.5 – 14 for boring B-9 below surface along with actual elevations and location of the work.

- There does not appear to be any energy dissipation basin at the outlet of the pond which could lead to severe erosion and embankment failure.

- The impoundment spillway is used during the 100 year storm. We would typically see designs using pipes/weirs for the full range of storm discharges, but the dam regulations would allow it. However the spillway should be cut out of native soil, not embankment with limited velocities to prevent erosion. The SWPPP says the 100 year elevation of the pond is 676.06 and the plans (sheet 4) says is 676.22. This needs to be clarified. The pond should have a minimum of 1 foot of freeboard above the 100 year storm. It currently does not.

8. Dust monitoring reporting requires verification for reporting and oversite procedures to the Town of Manlius.

9. Relative to lot grading, grading is not shown correctly on lot 3 adjacent to the existing house. A retaining wall may be necessary. Road grade at driveways for lots 11, 12, 15, 16, 17 and 18 are higher that the house finished floor. There may be issues with garage/house flooding.

10. The calculated amount of increased runoff volume from the site: 2-yr is 25,000 c.f, and 100-yr is 67,000 c.f. This may impact the long- term viability of the infiltration basin on Muirfield. Mitigation of increased total volume run off should be addressed.

Hoag Lane Subdivision

5290-5320 Hoag Lane

Town of Manlius, Onondaga County, NY

RZE# 17061

SWPPP

1/26/2018
Rev. 03/29/2018
Rev. 06/01/2018
Rev. 06/14/2019
Rev. 07/11/2019
Rev. 09/19/2019
Rev. 12/17/2019
Rev. 06/15/2020
Rev 08/07/20



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- *01/31/2019 Conventional/Cluster boring locations map (KFA)*
- *06/13/2019 Kenney Geotech Report*
- *05/18/2020 Kenney Earthwork Material Evaluation*
- *05/27/2020 Kenney Berm Stability Evaluation*
- *06/11/2020 L-100 Site Preparation and Boring Location Plan*

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1.0 – SUMMARY

The proposed development will subdivide a 30.40± acre parcel located on Hoag Lane east of Churchill Lane in the Town of Manlius, Onondaga County, NY. Currently existing on the parcel is one residential structure with a mix of forested areas and overgrown vegetated areas throughout**.** Development will result in 20 single-family homes of with asphalt roadway. Development will also include removal of the existing access drive for a new connection off of Hoag Lane for primary access. Proposed development will include approximately 19.85+/- acres of disturbance, above the 5 acres threshold. Therefore, this project will require permission from the NYSDEC to disturb more than 5 acres. This project will also require permission from the regulated MS4. Proposed site improvements within the project will include grading and excavation, general site landscaping, stormwater facilities, and sanitary structures tied into public sewer.

2.0 – OBJECTIVE

The purpose of this Report is to describe the additional stormwater management and erosion control measures for the site and the rationale for their use. This Report has been prepared in accordance with the United States Department of Agriculture (USDA) - Soil Conservation Service (SCS) "NYS Standards and Specifications for Erosion and Sediment Control," the New York State Department of Environmental Conservation (NYSDEC) "NYS Stormwater Management Design Manual," and the NYSDEC "SPDES General Permit for Stormwater Discharges from Construction Activities."

This report will provide a narrative description of the proposed site improvements including stormwater management structures and erosion control methods to be temporarily or permanently employed at the site.

A copy of this SWPPP shall be maintained on site by the owner/contractor for the duration of the construction process.

3.0 – EXISTING SITE CONDITIONS

Existing Site Use

Proposed is the development of a 30.40± acre parcel located on Hoag Lane east of Churchill Lane in the Town of Manlius, Onondaga County, NY. The location of the site in relation to major roads and other points of reference are presented in Figures 1-3 along with an aerial photo of the site, general environmental mapping, and general vicinity.

Currently existing on the parcel is one residential structure with a mix of forested areas and overgrown vegetated areas throughout**.** According to Web Soil Survey, the site consists of primarily HSG C moderate-draining soils that would yield a high curve number in the range of 55-75. Deep hole tests, performed on 10/10/17, revealed the soil to be primarily comprised of silt loam with a 1'-2' gravel loam layer just above. No water, mottling, or restrictive layers were observed. Perc testing, conducted on 10/11/17 by a

representative from RZ Engineering, was consistent with the deep hole observations. Silty loam was witnessed in each of the perc test holes at depths of 24” below existing grade. Both 24” holes passed, one at 3 min/in and the other at 21 min/in. Results can be found in Appendix A.

Additional soil testing has been performed by Kenny Geotechnical and also provided in Appendix A. The 01/12/2018 report provided testing of soil infiltration at varying depths of 18ft, 25.3ft, and 24ft to find accurate representations of the profile at the proposed stormwater BMP depth. Although RZE testing revealed satisfactory percolation rates for infiltration at 24” depth, testing performed by Kenney Geotechnical in the 01/12/2018 report at greater depths at the proposed pond bottom elevation revealed unsatisfactory infiltration rates. Kenney Geotechnical also performed additional subsurface investigation with eight soil borings in the 06/13/2019 report provided in Appendix A. This report also provided a brief analysis into the presence of karst topography and concludes that “no distinct karst topographic features (i.e. sinkholes, circular depressions, steel elevations changes, etc.) are apparent in the immediate project vicinity.” Due to proposed changes in the site, the proposed stormwater measure was also relocated from the original location shown in the 01/12/2018 geotech report. Therefore, additional soil testing in the current proposed stormwater measure location at the proposed depth has been provided, see report in Appendix A.

For the purposes of analysis, one watershed was delineated under existing conditions, with the watershed being subdivided into 4 sub watersheds. This watershed has been subdivided into EXDA-1a,b, c, and d. This will allow design for the stormwater management facility to be representative of the runoff contributing to the proposed stormwater measures and analyze final outflow from site for areas not routed through the proposed stormwater measure.

Stormwater runoff enters the project site and existing drainage swale from several points. The watershed EXDA-1a consists of the runoff east of drainage swale and consists of a majority of the site limits and areas of uphill contributing areas. EXDA-1b consists of a small portion of onsite parcel areas as well as additional offsite stormwater entering into the site through the 20’ drainage easement located to the southwest of the site. EXDA-1c consists of the onsite runoff west of the swale within the site parcel. EXDA-1d contains of offsite stormwater from the housing and pavement located south of the site parcel draining to the 20’ drainage easement that will not be modified as part of the proposed project.

According to soil information provided by the National Cooperative Soil Survey the site soils consist of Cazenovia silt loam – Type C and Ontario loam – Type B.

The existing land-surface cover descriptions and totals for this site within the total watershed are described as follows:

- 1 acre lots, 20% Imp, HSG C, CN 79 – 16.28± ac
- 2 acre lots, 12% Imp, HSG B, CN 65 – 8.61± ac

- Woods, Good, HSG B, CN 70 – 16.43± ac
- Existing Pavement, CN 98 – 1.79± ac
- Woods, Good, HSG C, CN 70 – 17.64± ac
- Grass Cover, Good, HSG C, CN 74 – 3.64± ac
- Brush, Good, HSG C – 11.12± ac

4.0 – PROPOSED SITE USE AND IMPROVEMENTS

Proposed Site Use

The site improvements proposed for the onsite development will require stormwater quality and quantity controls for applicable drainage areas. The proposed stormwater measure will handle runoff from watersheds DA-a and DA-1b. For purposes of analysis, the site disturbed area watersheds were analyzed under pre- and post-conditions to determine peak runoff conditions associated with the design of the stormwater control facilities

Further discussion of the analysis is discussed in the next few report sections. The site will be connected to public water and sanitary sewer systems. Access to the site during construction will be made via a temporary construction entrance in the location of the proposed entrance to the site.

Due to site development, the Tc flow-path for DA-1a was updated, but the discharge point remains the same. It should be noted that the Tc flow-path for DA-1a starts offsite to provide accurate watershed analysis for Tc flow-path since time of concentration is defined as the hydraulically most distant point of the watershed, see Section 5.0.

Site Improvements

The proposed grading and drainage plan for the site is designed to generally maintain the natural drainage direction of the site while attempting to improve existing storm runoff conditions. Stormwater runoff from site improvements as well as some offsite runoff will be directed via stormwater structures and swales to the proposed P-2 Wet Pond, discussed in Section 6.0.

Runoff from DA-1a will be directed to the proposed wet pond via drainage structures and swales. DA-1b offsite runoff will be directed to the proposed wet pond via a proposed swale to run along the southern property line. DA-1c onsite runoff does not have any proposed onsite development within its limits and will enter the existing drainage swales onsite before final discharge offsite. DA-1d off-site runoff from parcels in the Churchill Ct Cul-de-sac region will drain as it currently does in existing conditions to an existing drainage swale and bypass the proposed wet pond.

Presently, there are no flood control measures for the total DA-1 74.67± acre watershed(s). The total acreage of offsite area contributing into the proposed onsite stormwater system is 31± acres. The total onsite acreage contributing is 27± acres, for a total of 58± acres controlled by the onsite stormwater system. The stormwater from

offsite area controlled by the onsite stormwater system consists of lightly wooded area south of the site. Stormwater runoff from housing on Cahill Road and Churchill Court enter storm sewer system and drain into the 20' drainage easement that bypass through the site. We anticipate this will greatly reduce the severity of flooding on the subject site and mitigate storm events for downstream properties by allowing parcels to bypass through the site. Figures and site photos justifying drainage areas for contributing area are provided in Appendix O.

The controlled discharge from the pond will outlet to the existing ditch between the Haines and Olivar properties, who have frontage on Churchill Ln, and flow to the public storm sewer on Churchill Lane. Runoff ultimately discharges to Limestone creek, located West of the project site.

The proposed land-surface cover descriptions and totals within the overall site watershed are described as follows:

- 1 acre lots, 20% Imp, HSG C, CN 79 – 16.36± ac
- 2 acre lots, 12% Imp, HSG B, CN 65 – 8.61± ac
- Woods, Good, HSG B, CN 70 – 16.41± ac
- Proposed Site Impervious, CN 98 – 3.87± ac
- Woods, Good, HSG C, CN 70 – 12.12± ac
- Grass Cover, Good, HSG C, CN 74 – 15.53± ac
- Existing Pavement, CN 98 – 1.17± ac
- Permanent Pool of Wet Pond, CN 98 – 0.30± ac

5.0 – STORMWATER RUNOFF COMPUTATIONS

This section of the Report outlines the results of a stormwater runoff analysis that was conducted for the proposed site. The analysis includes a comparison of pre-development hydrologic conditions with those of the post-development conditions. This analysis is based on the site watershed's total area under both Pre- and Post-Development Conditions.

HydroCAD Version 10.00 was utilized in this Report for estimating runoff and peak discharges from the site disturbed area watershed. This computerized model was developed by the USDA-SCS to determine runoff volumes and peak rates of discharge, and takes into account watershed area, rainfall frequency, runoff coefficients characterizing land surfaces, flow duration or time of concentration, and average watershed slopes. Pre- and post-development calculations were generated for a 1, 2, 5, 10, 25, 50 and 100-year frequency, 24-hour storm event. Exhibits outlining stormwater runoff information referenced from the New York Standards and Specifications for Erosion and Sediment Control are presented in Appendix I.

The SCS has developed curve numbers characterizing land surfaces for urban areas and agricultural lands, which were utilized in the computer modeling of this site.

The time of concentration (t_c) value is utilized in the modeling of stormwater runoff for a site. Time of concentration is the duration that it takes for runoff to travel from the hydraulically most distant point of the watershed to a point of interest (outfall) within the watershed. It is also the sum of the travel time from the various consecutive flow segments along the flow path of the watershed to the outfall. The time of concentration is dependent on the velocity of the runoff, and is a function of the surface roughness, slope of the surface, and flow segment length.

Pre-Development Analysis

For purposes of analysis, the disturbed site watershed was analyzed to determine the existing site peak runoff rate to the downstream discharge point of the defined swale at the northwest property corner. This peak runoff rate at the downstream discharge point was used as the limiting factor when comparing the post-development rates from the site.

The computer modeling results of the pre-development site conditions for a 1, 2, 5, 10, 25, 50 and 100-year, 24-hour storm event indicates that the following peak runoff rates in cubic feet per second (cfs) are anticipated to discharge from the pre-site condition drainage area. Calculations are presented in Appendix C.

Pre-Development Site Watershed

Drainage Area (I.D.)	Area (Acres)	1 Year Storm Peak Flow (cfs)	2 Year Storm Peak Flow (cfs)	5 Year Storm Peak Flow (cfs)	10 Year Storm Peak Flow (cfs)	25 Year Storm Peak Flow (cfs)	50 Year Storm Peak Flow (cfs)	100 Yr Storm Peak Flow (cfs)
EXDA-1a (subject site + offsite)	32.49	1.62	3.69	8.54	14.28	25.01	36.18	50.22
EXDA-1b (offsite)	26.95	0.85	1.95	4.6	7.8	13.99	20.55	28.76
DA-1c (subject site)	2.08	0.26	0.48	0.94	1.44	2.33	3.22	4.32
DA-1d (offsite)	12.84	9.08	12.67	18.95	25.00	34.98	44.46	55.57
Pre-Swale 3	74.36	9.53	14.14	23.49	33.84	53.11	73.12	97.89

Post-Development Analysis

For purposes of analysis, the proposed site construction limits were analyzed under pre- and post-conditions to determine peak runoff conditions associated with the design of the stormwater control facilities.

The computer modeling results of the post-development site conditions for a 1, 2, 5, 10, 25, 50 and 100-year 24-hour storm event indicates that the following peak runoff rates are anticipated to discharge from the post-site condition drainage area. Calculations are presented in Appendix D.

Post-Development Site Watershed

Drainage Area (I.D.)	Area (Acres)	1 Year Storm Peak Flow (cfs)	2 Year Storm Peak Flow (cfs)	5 Year Storm Peak Flow (cfs)	10 Year Storm Peak Flow (cfs)	25 Year Storm Peak Flow (cfs)	50 Year Storm Peak Flow (cfs)	100 Yr Storm Peak Flow (cfs)
PRDA-1a (subject site + offsite)	19.74	5.35	8.30	13.80	19.30	28.67	37.83	48.75
PRDA-1b (offsite + subject site)	38.30	1.20	2.78	6.53	11.08	19.89	29.20	40.88
DA-1c (subject site)	3.48	0.43	0.80	1.57	2.41	3.9	5.40	7.24
DA-1d (offsite)	12.84	9.08	12.67	18.95	25.00	34.98	44.46	55.57
Post-Swale 3	74.36	12.93	19.26	31.12	43.25	64.57	86.03	112.03

Comparison of Pre- and Post-Development Runoff

The peak flow conditions for the pre- and post-development watershed areas of the project site are summarized below:

Pre-Development Watershed vs. Post-Development Watershed (Pre Routing)

Drainage Area (I.D.)	Drainage Area (ac)		1 Year Storm Peak Flow (cfs)		2 Year Storm Peak Flow (cfs)		5 Year Storm Peak Flow (cfs)		10 Year Storm Peak Flow (cfs)		25 Year Storm Peak Flow (cfs)		50 Year Storm Peak Flow (cfs)		100 Yr Storm Peak Flow (cfs)	
	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site
DA-1a (subject site + offsite)	32.49	19.74	1.62	5.35	3.69	8.30	8.54	13.80	14.28	19.30	25.01	28.67	36.18	37.83	50.22	48.75
Swale 3 (DA-1)	74.36	74.36	9.53	12.93	14.14	19.26	23.49	31.12	33.84	43.25	53.11	64.57	73.12	86.03	97.89	112.03

The above table reflects increases in peak runoff conditions of DA-1 watershed for all storms. Runoff increase is due to changes in Time of Concentration for DA-1a and an increase in impervious area. The DA-1 watershed remained similar in size between pre- and post-development conditions. Due to site development, the limits of the proposed site will require quality and quantity controls to be discussed in the next section in accordance with Chapter 10 of the NYS Stormwater Design Manual.

6.0 – STORMWATER MITIGATION AND BMP'S

A P-2 Wet Pond will be utilized at this site for treatment of stormwater runoff from the watershed. A summary of the stormwater flows post routing for the overall watershed are found in the table below and the calculations are found in Appendix E.

DA-1a&b P-2 Wet Pond:

The P-2 Wet Pond for DA-1 contains 0.927± ac-ft (0.227± ac-ft from both forebays and 0.700± ac-ft in pond) of inactive/WQv storage and 2.97± ac-ft of active storage – 3.89± ac-ft of total storage. The total required WQv for the pond is 0.732 ac-ft or 31,875 cf, see Appendix G. This required volume is calculated by combining PRDA-1a and PRDA-1b, see Appendix G. The total WQv/inactive storage provided below the invert of the lowest orifice, and in the forebays is 40,385 cf, or 0.927 ac-ft. Therefore, the design is successful in meeting WQv requirements. The side slopes of the active storage of the pond are set at 4:1. A 10' aquatic bench has been provided between elevations 671.00 and 670.00. A 12' maintenance/safety bench has been provided to maintenance access to outlet controls. Two forebays have been proposed at a depth of 4± ft, providing a total of 9,875± cf volume or 31% pretreatment of the WQv (10% required). A proposed 6'x6' square concrete outlet structure will discharge active storage stormwater flows to the existing drainage ditch that will flow to the existing 48" CMP under Churchill Lane. One 2"x3" orifice with external protection is proposed at invert at 671.00 to mitigate the 1-yr storm discharge levels to meet channel protection volume requirements, CPv. The required CPv discharge rate of the watershed is 0.30 cfs. As can be seen in the table below, the 1-yr post-routed discharge rate is 0.30 cfs. Therefore, CPv requirements have been met. The 2"x3" orifice is proposed with external protection through the use of a trash rack or approved equal. Two additional orifices with dimensions of 18"H x 48" are proposed at invert 673.45 to handle the larger storms. The outlet structure has two proposed 24" diameter open grate rims at 675.45. Two proposed 24" HDPE outlet culverts are set at invert out 665.20 to discharge from the proposed outlet control structure. A 10" pond drain is also proposed and has been sized to drain the pond within 24 hours. A specification of the proposed pond drain has been provided in Appendix P. A detail of the outlet structure and stormwater profile have also been provided in Appendix P. An emergency spillway has been proposed at invert 675.50 to allow for extreme storm passage. The spillway has been provided with 1 foot of freeboard. Compaction requirements for the pond will be 90% Standard Proctor Maximum Density and 95% in the subgrade area.

Pre-Development Watershed vs. Post-Development Watershed (Post Routing)

			1 Year Storm		2 Year Storm		5 Year Storm		10 Year Storm		25 Year Storm		50 Year Storm		100 Year Storm	
Drainage Area	Drainage Area (ac)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
(I.D.)	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
Pond (DA1a & 1b)	32.49	19.74		0.30		1.59		7.10		15.53		31.33		47.60		64.29
Pre vs. Post Swale 3	74.36	74.36	9.53	9.20	14.14	13.03	23.49	19.89	33.84	26.58	53.11	37.69	73.12	57.57	97.89	78.22

As can be seen in the above table, the proposed wet pond is successful in reducing peak runoff storm levels for the 1-yr through 100-yr storms for onsite & offsite areas. It should be noted, values for outflow from the pond have been provided to show channel protection provisions and reference only. The final outflow of the site has been provided in the Swale 3 row combining all onsite and offsite runoff from non-routed flows and pond-routed flows.

Construction, Reconstruction or Repair of Dams and other Impounding Structures

Regulated Activities

A Protection Of Waters Permit is required for:

Constructing, reconstructing, repairing, or modifying dams and water impounding structures that permanently or temporarily impound water as a result of a structure placed across a watercourse or overland drainage way or which receive water from an external source such as drainage diversion or pumping of ground water.

Some examples of activities requiring this permit are:

- siting and constructing a new dam or water impounding structure (i.e., concrete, earthen, stone and wooden structures);
- reconstruction or modification (i.e., refacing, anchoring, breaching, or removal of an existing structure);
- repairs or maintenance which may affect the structural integrity or functional capability of a dam or impounding structure.

Exempt Activities

The most common impoundment related activities not needing a Protection of Waters
Permit for a Dam or Other Impoundment Structure are constructing or repairing a dam or structure used for impounding water that satisfies any one of the following criteria:

- maximum height is 6 feet or less (maximum height is measured as the height from the downstream (outside) toe of the dam at its lowest point to the highest point at the top of the dam);
- maximum impounding capacity is one million gallons or less (maximum impounding capacity is measured as the volume of water impounded when the water level is at the top of the dam);
- maximum height is between 6 feet and 15 feet and the maximum impounding capacity is less than 3 million gallons.

Note: The exempt activities listed only represent exemptions for this section of the Protection of Waters Program. Other DEC permits under other sections of the Protection of Waters Permit Program or under other Articles of the Environmental Conservation Law may be required.

The proposed pond contains a maximum impounding capacity of 1,195,252± gallons and a maximum dam height of 12.5 ft (measured from toe of slope to top of berm, or 664 to 676.50). Per the NYSDEC website snapshot above and confirmed in an email provided in Appendix V, the proposed pond is considered exempt from requiring a NYSDEC Dam Permit.

7.0 – PROPOSED STORMWATER DRAINAGE FACILITIES

All on site drainage facilities are designed to transmit flows from a 10-year storm event to downstream stormwater Best Management Practices. Per request of Town Engineer riprap for outlets and swales were sized. The location, size, and type of all existing and proposed pipes and riprap provided on the contract drawings have been provided in Appendix F.

8.0 – STORMWATER QUALITY VOLUME

The water quality volume (denoted as WQ_V) is designed to improve water quality, sized to capture and treat 90% of the average annual stormwater runoff volume. The WQ_V is directly related to the amount of impervious cover created at the site. The following equation is used to estimate water quality storage volume WQ_V in acre feet of storage:

$$WQ_V = \frac{(P)(R_V)(A)}{12}$$

Where:

WQ_V = water quality volume (in acre-feet)
P = 90% Rainfall Event Number (Figure 4.1 – Appendix G)
R_V = 0.05 + 0.009(I), where I is the percent of impervious cover
A = site area in acres

It is assumed that by meeting the WQ_V requirements thru the employment practices outlined in Table 5.1 of the "New York State Stormwater Management Design Manual", a project will, by default, meet water quality objectives. Water quality has been calculated by combining watersheds DA-1a and DA-1b. Calculations of water quality volume can be found in Appendix G.

9.0 – PHOSPHORUS REMOVAL

Chapter 10 of the NYS Stormwater Design Manual outlines the requirements for treatment of phosphorus in stormwater. Enhanced Phosphorus Removal requires calculation of the 1-year, 24-hour design storm in the post development watershed. The site is not located in a TMDL Phosphorous watershed and therefore, no additional phosphorus treatment volume for the 1-year storm event has been provided.

10.0 – RUNOFF REDUCTION VOLUME AND GREEN PRACTICES

The green practices encompassed on the site are tabulated in the matrix below:

Green Practices

PRACTICE	WATERSHEDS	TYPE OF REDUCTION
• Tree Planting	Post Development DA-1	Area Reduction
• Conservation of Natural Areas	Post Development DA-1	Area Reduction
• Rooftop Disconnection	Post Development DA-1	Area Reduction

Soil Restoration Requirements **

According to Section 5 of the NYS Stormwater Design Manual, soil restoration practices must be applied across the site in areas of soil disturbance. This is necessary to reclaim the origional properties and porosity of the soil before construction. The benefits of soil restoration include but are not limited to:

- Less stormwater runoff
- Increased porosity on redevelopment sites where impervious cover is converted to pervious
- Achieves performance standards on runoff reduction practices
- Healthier, asthetically pleasing landscapes

- Enhances direct groundwater recharge
- Promotes sucessful long term revegitation by restoring soil organic matter, permeability, drainage and water holding capacity for healthy root system development of trees, shrubs and deep-rooted ground covers, minimizing lawn chemical requirements, plant drowning during wet periods, and burnout durring dry periods

Table 5.3 Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A &B	HSG C&D	Protect area from any ongoing construction activities.
	apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A &B	HSG C & D	
	Aerate and apply 6 inches of topsoil	Apply full Soil Restoration **	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (de-compaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

*Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per "Deep Ripping and De-compaction, DEC 2008".

** taken from the NYS Stormwater Management Manual (version 2010)

Many of the Runoff Reduction practices will require soil restoration measures applied in and around the practice inorder to reach the desired runoff reduction performance. Table 5.13 on page 5-22 of the NYS Stormwater Design Manual has been included below that higlights these requirements and provides guidance on when to implement

soil restoration techniques. Also included is the NYS Stormwater Design Manual section on Practice implimentation, Maintenece and Inspection.

Soil Restoration Practice Implementation:

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil

Figure 5. 16 Soil aerator implement



Figure 5. 17 Soil aerator implement



2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractormounted disc, or tiller, mixing, and circulating air and compost into subsoils
3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site
4. Apply topsoil to a depth of 6 inches
5. Vegetate as required by approved plan.

Figures 5.16 and 5.17 above show two attachments used for soil decompaction. Tilling (step 2 above) should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Soil Restoration Inspection:

At the end of the project an inspector should be able to push a 3/8” metal bar 12 inches into the soil just with body weight.

Compost Specifications

Compost shall be aged, from plant derived materials, free of viable weed seeds, have no visible free water or dust produced when handling, pass through a half inch screen and have a pH suitable to grow desired plants.

Soil Restoration Maintenance:

The maintenance agreement with the HOA should identify where Soil Restoration has been applied (in addition to already being shown on the contract documents), where newly restored areas are/cannot be cleared, who the responsible parties are to ensure that routine vegetation improvements are made (i.e., thinning, invasive plant removal, etc.). Soil compost amendments within a filter strip or grass channel should be located in public right of way, or within a dedicated stormwater or drainage easement.

First-year Maintenance Operations Includes:

• Initial inspections for the first six months (once after each storm greater than half- inch)
• Reseeding to repair bare or eroding areas to assure grass stabilization
• Water once every three days for first month, and then provide a half inch of water per week during first-year. Irrigation plan may be adjusted according to the rain event.
• Fertilization may be needed in the fall after the first growing season to increase plant vigor

Ongoing Maintenance:

Two points help ensure lasting results of decompaction:

1. Planting the appropriate ground cover with deep roots to maintain the soil structure
2. Keeping the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths. (Sometimes it may be necessary to de-thatch the turf every few-years)

11.0 – POSSIBLE CONTAMINANTS FROM CONSTRUCTION ACTIVITIES

During construction contaminants from materials and equipment could enter the stormwater drainage system unintentionally. The contractor should store construction materials and equipment in the designated staging area and all possible contaminants should be stored to prevent damage.

This particular project will require construction equipment such as a backhoe, drum roller, dump trucks, a grader, and bull dozer. These vehicles use oil and petroleum products which if not treated carefully could enter the storm drainage system. Accidental spills should be reported to the Department of Environmental Conservation 24-hour spill response hotline at 1-800-457-7362. On site fueling of construction equipment shall be limited to a bermed/ diked area located within the project staging area. The table below provides a guide for quantities that should be reported. Should a spill incident occur, the

employee or party responsible for the spill should contain the spill, start cleanup and report the spill to his/ her superiors. The spill should be reported to the appropriate governing agency should the spill exceed the reportable quantity or enter surface waters.

Examples of Reportable Quantities		
Material	*Media Released To*	*Reportable Quantity*
Engine oil, fuel, hydraulic and brake fluid	Land Water	25 gallons Visible Sheen
Antifreeze	Land	100 lbs. (13 gal.)
Battery Acid	Land, Water	100 lbs.
Refrigerant	Air	1 lb.
Gasoline	Air, Land, Water	100 lbs.
Engine Degreasers	Air, Land, Water	100 lbs.

All construction waste material such as housing materials and utility installation materials shall be disposed of as required by law.

Wastewater from concrete washout areas is prohibited from discharging directly to any site areas not managed by an appropriate stormwater control measure. Also prohibited are washouts from stucco, paint, form release oils, curing compounds, and other construction materials. Soaps, solvents, fuels, oils, or other pollutants used in vehicle operations or maintenance shall also be controlled by an appropriate stormwater control measure. Staging areas are designated on the plans for storage of equipment and vehicles. Locations subject to the above contaminants outside the staging area shall require additional measures and should be reviewed with the SWPPP inspector and MS4 representative prior to commencement of activities that may result in contamination.

12.0 – EROSION CONTROL MEASURES

Structural erosion and sediment control measures are classified as either temporary or permanent, according to how they are used. Temporary structural measures shall be used during construction of the site to prevent off-site sedimentation. Permanent structural measures shall be utilized following construction and shall be implemented to convey surface water safely to the existing drainage ways present in the pre-development condition. The permanent structural measures shall remain in-place and continue to function after the completion of construction. General construction notes and maintenance plan for implementing the temporary and permanent stormwater and erosion control structures during and after construction have been developed for the project.

The proposed project will be constructed in one phase consisting of 7 stages as

depicted on drawings L-102 through L-108. Erosion control measures shall be inspected twice weekly by a Licensed Professional Engineer or Erosion Control Specialist until the site is completely stabilized. Inspections and maintenance of erosion control structures shall be in accordance with the NYS Pollution Discharge Elimination System for Construction Activities GP-0-20-001 (SPDES) program. The owner shall file a Notice of Intent (NOI) with the NYS DEC prior to commencement of further construction activities. The NOI shall be sent to:

NYSDEC- Notice of Intent
Bureau of Water Permits
625 Broadway
Albany, NY 12233-3505

Temporary Structural Measures

This subsection will describe the specific temporary control measures to be implemented to reduce and/or eliminate erosion and sedimentation during the construction phase of this project. Example details of the following erosion control measures are presented in Appendix I. As construction progresses more site areas may be opened after already constructed areas are permanently stabilized in accordance with the New York State Standards and Specifications for Erosion and Sediment Control.

Silt Fence

A temporary barrier of geotextile fabric (filter cloth) fence shall be used to intercept sediment-laden runoff along the borders of disturbed site areas during construction. A geotextile fabric fence shall also be placed around all permanent stormwater drainage structures, in the absence of straw bale dikes, (catch ponds and manholes) to intercept sediment and protect the structure during construction. The geotextile filter fabric fence requires periodic maintenance and should be checked for tears or clogging with silt or debris. Silt can be removed from the woven filter cloth with a stiff brush if clogging occurs.

Stabilized Construction Entrance

A stabilized pad of aggregate underlain with filter cloth shall be positioned at points where traffic will be entering or leaving the construction site area onto public roads. This measure will reduce the tracking of soils onto public roads or streets. Entrance and Hoag Lane shall be inspected weekly/biweekly by the contractor for cleanliness and new stone reapplied as necessary.

Drop Inlet Protection

A temporary, somewhat permeable barrier shall be installed around inlets in the form of a fence, berm, or excavation around an opening, trapping water and to prevent heavily

sediment laden water from entering a storm drain system through inlets. The barrier should be inspected after each rain event and repairs shall be made as necessary. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the area around the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Concrete Washout

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil. Minimum size shall be 8ft x 8ft at the bottom and 2ft deep with 2:1 side slopes if excavated. Facility should be located a minimum of 100ft from drainage swales, drain inlets, wetlands, streams and other surfaces waters. Facility shall provide a liner with 10 mils minimum thickness. Facility shall be inspected daily and accumulated material removed with 75% of storage capacity is reached.

Sediment Basin(s)

The proposed Hoag Lane subdivision project will be constructed in one phase broken down into 7 stages. We anticipate 3 months in total for stages 2 and 3, roughly 6 weeks per stage, see drawings L-103 and L-104. These stages have been outlined in the contract drawings, L-102 through L-108, with applicable erosion and sediment control practices within each stage. As outlined on the Staging Plans, the first stage will install the proposed wet pond for the site development as well as associated earthwork for 11, 12, 13, and 14. In stages 2 and 3, we have provided analyses and designs for a sediment control basin to be located upstream of the wet pond. This section of the SWPPP has been prepared to summarize the design of the sediment basin(s) with calculations provided in Appendix T. As can be seen in the HydroCAD routing diagrams in Appendix T, the calculations provided include the routing of an open soils condition of the applicable stage of construction, with an undeveloped condition of the remaining site watershed directed to the wet pond. The cover types and time of concentration has been modified to reflect an open soils condition where necessary, see summaries in Appendix T.

Typically, a sediment basin would be sized per guidelines provided in the 2016 NYS Standards and Specifications for Erosion and Sediment Control. Due to the large exposure of open soils for earthwork, the proposed sediment basin will also be sized such that the overall downstream discharge point’s outflow from the downstream proposed wet pond (installed under stage 1) during construction does not release more than existing site conditions. Calculations for sizing per NYS Guidelines as well as existing conditions outflows vs pond outflows during construction have been provided in Appendix T. Sizing information provided as well as outflow values are summarized in the tables below for stages 2 and 3.

Stage 2 Sediment Basin

As depicted on drawing L-103, Stage 2 will consist of associated earthwork for Lots 4, 5, 6, 7, 8, 9, 10, 18 and 19 as well as the installation of the proposed sediment basin. The estimated disturbed of stage 2 is 7.8± acres with a contributing drainage area of roughly 9.2± acres, see drawing L-103. It should be noted that we anticipate the duration of the open soil conditions of this stage to be short. Tables summarizing the basin sizing as well as existing vs during construction basin outflow information has been provided below. Per guidance from the NYS Guidelines, a proposed 15" diameter standpipe with trash rack and emergency spillway are proposed for stormwater discharge from basin. A 5.5" skimmer is also proposed to aid in dewatering as necessary, see contract drawings. The 15" diameter riser is proposed at invert 690.00 with the emergency spillway at 694.00. A 12" outlet culvert is proposed for discharge from standpipe, see contract drawings. To aid in preventing erosion at the channel inflow point of the basin, there are – proposed check dams to reduce inflow to non-erosive velocities (see Appendix T for calculations). The basin shall be cleaned of sediment when 50% of the sediment storage zone volume has been reached, or elevation 688.49. This elevation shall be clearly marked on the riser in the field. Sediment that has been removed shall be placed in such a manner that it will not erode from the site. It shall also not be deposited downstream from the basin or adjacent to a stream. The method and location of disposing of sediment from the basin has been provided in drawing L-103.

Stage 2 Drainage Area Sediment Basin Sizing		
	Required	Provided
Sediment Storage Zone Volume (CF)	7,820	18,058
Dewatering Zone Volume (CF)	33,062	57,082
Total Vol. (CF)	40,882	75,140
Length to Width Ratio	2 : 1 min.	2.2 : 1
Surface Area (acres)	0.21	0.39

Existing Conditions vs Pond Outflow during Stage 2 Construction

Drainage Area	Drainage Area (ac)		1 Year Storm Peak Flow (cfs)		2 Year Storm Peak Flow (cfs)		5 Year Storm Peak Flow (cfs)		10 Year Storm Peak Flow (cfs)		25 Year Storm Peak Flow (cfs)		50 Year Storm Peak Flow (cfs)		100 Yr Storm Peak Flow (cfs)	
	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.
(I.D.)	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
DA-2 Sediment Basin Outflow		9.18		1.32		5.58		6.74		7.81		8.84		9.22		9.58
Wet Pond Outflow		58.0		0.73		1.17		8.10		18.31		32.77		45.91		60.04
DA-1 (Swale 3)	74.4	74.3	9.60	9.18	14.30	12.99	23.87	19.81	34.47	26.50	54.20	37.61	74.69	52.65	100.02	68.94

As can be seen in the table above, the sediment basin will limit discharge flows during

construction to the pond and also the overall downstream discharge point to levels at or below existing conditions. Discharge calculations can be found in Appendix T.

Stage 3 Sediment Basin

As depicted on drawing L-104, Stage 3 will consist of associated earthwork for Lots 1, 2, 3, 15, 16 and 17. The estimated disturbed of stage 3 is 4.1± acres with a contributing drainage area of roughly 9.2± acres, see drawing L-103. It should be noted that we anticipate the duration of the open soil conditions of this stage to be short. Tables summarizing the basin sizing as well as existing vs during construction basin outflow information has been provided below. Sizing of stages 2 and 3 sediment basins result in required similar size to meet NYS requirements described above. Therefore, the proposed sediment basin installed for stage 2 of construction will be utilized for stage 3 also. Per guidance from NYS Guidelines, any remaining basin material and trapped sediments after completion of stage 2 will be removed and safely disposed of per guidance on the contract drawings. Any basin material removed must be backfilled with a structural fill to maintain original volumes as provided in stage 2. It is recommended at the start of stage 3 that the contractor inspect all discharge structures/devices (riser, outlet pipe, skimmer, etc.) prior to construction. The basin shall be cleaned of sediment when 50% of the sediment storage zone volume has been reached, or elevation 688.26. This elevation shall be clearly marked on the riser in the field. Sediment that has been removed shall be placed in such a manner that it will not erode from the site. It shall also not be deposited downstream from the basin or adjacent to a stream. The method and location of disposing of sediment from the basin has been provided in drawing L-104.

Stage 3 Drainage Area Sediment Basin Sizing		
	Required	Provided
Sediment Storage Zone Volume (CF)	4,160	18,058
Dewatering Zone Volume (CF)	26,262	57,082
Total Vol. (CF)	30,422	75,140
Length to Width Ratio	2 : 1 min.	2.2 : 1
Surface Area (acres)	0.14	0.39

Existing Conditions vs Pond Outflow during Stage 3 Construction

Drainage Area	Drainage Area (ac)		1 Year Storm Peak Flow (cfs)		2 Year Storm Peak Flow (cfs)		5 Year Storm Peak Flow (cfs)		10 Year Storm Peak Flow (cfs)		25 Year Storm Peak Flow (cfs)		50 Year Storm Peak Flow (cfs)		100 Yr Storm Peak Flow (cfs)	
	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.
(I.D.)	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
DA-3 Sediment Basin Outflow		7.30		0.23		0.85		1.97		6.24		7.57		8.68		9.04
Wet Pond Outflow		58.0		0.29		1.74		5.24		14.26		32.82		47.05		61.29
DA-1 (Swale 3)	74.4	74.3	9.60	9.20	14.30	13.04	23.87	19.88	34.47	26.55	54.20	37.92	74.69	54.38	100.02	70.82

As can be seen in the table above, the sediment basin will limit discharge flows during construction to the basin and also the overall downstream discharge point to levels at or below existing conditions. Discharge calculations can be found in Appendix T.

Stage 4 Sediment Basin Decommission
Upon stabilization of stage 3, the temporary sediment basin may be removed.

Siltation Socks

A temporary sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration onsite. To be placed on contour with terminal ends 8ft upslope at 45 degree angle. Diameters designed for use shall be 12”-32” except that 8” diameter socks can be used for residential lots to mitigate less than 0.25 acres. Flat dimension of sock to be at least 1.5 times the nominal diameter. Maximum slope length above a filter sock shall not exceed following limits:

Dia. (in.)	Slope %						
	2	5	10	20	25	33	50
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50
* Length in feet							

Maintenance of Temporary and Permanent Control Structures

Temporary and Permanent Stormwater Facilities during Construction

Temporary stormwater and erosion control structures must be constructed in accordance with their design intent and maintained to prevent sediment-laden runoff from leaving the site during construction. In general, the temporary structures during construction should be inspected on a routine basis and maintained as follows:

- Temporary silt fences, straw bale dikes, and sediment interceptors shall be installed prior to earth disturbance to reduce runoff velocity and transportation of sediment. The stabilization structures shall be inspected weekly and after every rainfall; and the structures cleaned, repaired, or replaced as required. Temporary stabilization structures shall be removed when their contributory drainage area is stabilized.

- Temporary storm drain inlet protection shall be installed to prevent heavily sediment laden water from entering a storm drain through inlets. Inspections shall

be bi-weekly and after major storms to ensure that sediment is not being allowed into the storm system. The inlet protection shall be cleaned, repaired, and or replaced as required until the contributing drainage area is stabilized. When this occurs, the devices shall be removed and the area around the inlet shall be stabilized in the manner appropriate the site.

- All permanent drainage structures, installed as part of the site improvements, shall be inspected weekly and after every rainfall to ensure structural integrity, detect vandalism and damage, and for cleaning. Permanent drainage structures shall be repaired or replaced, as required.

- All disturbed soil areas, upon final grading of topsoil, shall be seeded, and mulched. All seeded areas shall be inspected monthly and after every rainfall and the areas repaired and re-seeded, as required.

- Stabilized construction entrance shall be installed to control erosion at location where traffic will be entering or leaving the construction area. The temporary construction entrance shall be inspected periodically and after each rainfall; and the entrance cleaned, repaired, or replaced, as required. The temporary construction entrance shall be removed when construction is completed and all disturbed areas are stabilized.

Permanent Stormwater Facilities after Construction

Permanent stormwater control structures must be constructed in accordance with their design intent and maintained on a routine basis to remain effective. This site has employed stormwater management facilities. Prior to submission of the Notice of Termination to NYSDEC the contractor shall provide as built drawings of all stormwater best management practices and facilities to allow verification of construction in compliance with this SWPPP and the contract drawings. **A stormwater maintenance agreement with the HOA will be implemented to maintain these facilities as required by the NYS Stormwater Design Manual. Maintenance requirements and design information is included in Appendix K of this report.**

In general, the structures after construction should be inspected periodically and maintained as follows:

- Permanent stormwater drainage structures shall be inspected semi-annually and after every 0.5 inches of rainfall to ensure structural integrity, detect vandalism and damage, and for cleaning. The structures shall be repaired or replaced, as required.

- Permanent lawns and grassed areas shall be inspected and maintained on a regular basis, consistent with favorable plant growth, soil, and climatic conditions to insure soil protection and structural integrity of the site's plant cover. Maintenance involves regular seasonal work for mowing, fertilizing, liming, watering, pruning, fire

controls, weed, and pest control, re-seeding, and timely repairs, as required. Maintenance of vegetative areas shall also include removal of debris and protection from unintended uses or traffic.

- **Stormwater Best Management Practices used on this site; their design intents and inspection and maintenance punch list forms have been included in Appendix K.**

Site Stabilization

The Owner/Contractor shall initiate stabilization measures as soon as practicable in a portion of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

a. Where the initiation of stabilization measures by the 7th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as possible;
b. Where disturbed area is 5 acres or more, stabilization measures must be employed no more than 7 days after construction activities have temporarily or permanently ceased.

Site Assessment and Inspection

Initial Inspection

The Owner shall have a qualified professional conduct an assessment of the site prior to the commencement of construction. The qualified professional shall certify that the appropriate erosion and sediment controls described in this SWPPP and required by the permit have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. The “qualified professional” shall meet the requirements of the SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

Post Construction Inspection

The Owner shall have a qualified professional conduct an assessment of the site after construction is complete. The qualified professional shall be a Licensed Professional Engineer or possess the appropriate certifications for inspection. The qualified professional shall certify that the appropriate erosion and sediment controls and stormwater BMP’s described in this SWPPP and required by the permit have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. The “qualified professional” shall meet the requirements of the SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001. If the site is located in an area governed by a traditional MS4, the MS4 must also make a final inspection and sign the Notice of Termination.

In addition, the owner must ensure that a properly qualified inspector is performing inspections of post construction stormwater practices as outlined in the NYS Stormwater Design Manual. The owner shall ensure that a binding maintenance agreement is in place for inspection and maintenance of all stormwater practices and ensure that the inspection and maintenance is performed by a qualified professional. The owner must then identify the responsible party for these inspections and maintenance on the Notice of Termination.

As-Builts

Prior to Submission of the Notice of Termination by a Licensed Professional Engineer and upon completion of the site, a surveyor or appropriate inspector shall be required to produce an AutoCAD or paper as-built map to the design engineer for verification that stormwater items and BMP's were installed as per the approved plans.

Stormwater BMP Inspection and maintenance punch list forms are provided behind the appropriate design intent page in Appendix K.

Inspections and Records during Construction

Inspection Frequency

After commencement of construction, site inspections shall be conducted by the qualified professional once per week when disturbing more than 1 acre and at least twice per week when this site disturbs more than 5 acres. Two consecutive working days shall be given between site inspections per week. Prior to filing a Notice of Termination (NOT) or at the end of the permit term, the owner shall have the qualified professional perform a final site inspection.

Records during Inspection

A site map shall be maintained on site indicating the extent of all disturbed onsite areas and drainageways throughout the duration of construction. The site map shall contain all areas expected to undergo initial disturbance or significant site work within every 7-day period. The map shall indicate all areas of the site that have undergone temporary or permanent stabilization. All disturbed areas that have not undergone active site work during the previous 7-day inspection period shall be noted on the map. All sediment control measures shall be inspected and the degree of accumulation as a percentage of the sediment storage volume shall be recorded. Inspector must describe and inspect all points of discharge to natural surface water bodies located within, or immediately adjacent to property boundaries. Photographic record of inspections and any deficiencies shall be included in the inspection reports and photos of corrective action must be recorded upon compliance. Any maintenance required for installed erosion and sediment control structures shall be noted, and documentation of areas where adjustments are needed to those measures shall be provided. Any deficiencies identified with the implementation of the SWPPP shall be recorded. Erosion control measures shall be inspected weekly by a Licensed Professional Engineer or Erosion Control Specialist until the site is completely stabilized. Inspections and maintenance of

erosion control structures shall be in accordance with the NYS Pollution Discharge Elimination System for Construction Activities GP-0-20-001 (SPDES) program. These inspection reports should be in compliance with the requirements set forth under part IV.C-4 of the general permit. A copy of the general permit is included in Appendix J.

Inspection Log Book

The Owner/ contractor shall maintain an inspection logbook which shall contain a record of all inspection reports. The site logbook shall be maintained on site and shall be made available to the permitting authority upon request. The Owner shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis.

Certifications

At the final site inspection, the qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods, and that all temporary erosion and sedimentation measures have been removed. Final certification requires completion of the Notice of Termination form. The Notice of Termination shall be signed by the qualified professional. The owner shall provide the qualified professional with as built drawings in AutoCAD format so that the qualified professional can verify that all stormwater practices have been installed in accordance with the approved plans, SWPPP and the General Permit. The owner shall certify that the requirements of the permit have been satisfied within 48 hours of actually meeting such requirements and sign the Notice of Termination.

12.1 Dust Control Plan

Overview

Per guidance from the NYSDOH Generic Community Air Monitoring Plan (see Appendix R), this site is required to implement periodic monitoring for particulates during construction. The required frequency of monitoring and reporting has been outlined below.

The proposed site construction project in general consists of the following:

- Clearing of vegetation;
- Soil Excavation;
- Utility installation(s);
- Proposed lot construction;
- Backfilling and compaction of fill to achieve design grade;

All dust monitoring reporting as outlined below shall be provided to Town of Manlius upon completion and to allow for oversight by the Town of Manlius as necessary.

Location of Monitoring Stations

Two monitoring stations are proposed on the site and have been shown located on the Erosion and Sedimention Control Plan, sheet L-101 of the contract drawing set. These

monitoring stations are proposed at the east and west ends of the site around the working areas.

Monitoring Techniques, Frequency, and Analytical Methods

The contractor is required to utilize a real-time dust monitoring device capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.. A binder for records must be maintained onsite, possibly within the SWPPP mailbox, with daily record keeping. The contractor must monitor dust levels every 2-3 hours, when airborne dust is minimal, and/or with significant changes to the wind is witnessed. Results shall be sent to the Town of Manlius engineer on a weekly basis.

It is also required to keep daily records of wind speed, direction, temperature, precipitation, etc. from such sites as wunderground.com or similar. This information should be recorded on the same records sheets as the dust monitoring records.

Action Levels (with stop work levels)

Per recommendation from the NYSDOH Community Air Monitoring Plan, the contractor must provide the following response levels and actions:

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.
2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

Measures and Supplements for corrective actions as needed

General

Some common applications for dust control based on the site condition have been provided in the table below:

Site Condition	Dust Control Practices							
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Temporary Gravel Construction Entrances/Equipment Wash Down	Synthetic Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	X	X	X	X	X			X
Disturbed Areas Subject to Traffic			X	X	X	X		X
Material Stockpiles		X	X	X			X	X
Demolition			X			X	X	
Clearing/ Excavation			X	X				X
Truck Traffic on Unpaved Roads			X	X	X	X	X	
Tracking					X	X		

These practices as a minimum should be applied to the appropriate site conditions during the construction process.

Water Application

Water application should be used to mitigate dust udring the excavation, backfilling and grading activities. Water may be applied using a water truck to mitigate dust on stockpiles, haul roads for example. A direct spray through the use of a fire hose and hydrant may also be used onsite.

Stockpile Management Practices

The placement of stockpiles shall be located to be a minimum of 20ft away from existing slopes of 10% or more. Stockpiles should not be placed within 75 feet of occupied buildings.

Grading Practices

To attempt to minimize dust generation, the contractor shall attempt to maintain water spraying at the load buckets and excavation face, empty construction excavators slowly, and minimize drop height from loader bucket.

Vehicular Practices

To attempt to mimize dust generation, the contractor shall attempt to minimize vehicular traffic in non-designated travel areas. It is also recommended that the size of vehicle staging areas be minimized. Vehicles shall also maintain slower speeds in the vicinity of 10-15 mph, and should avoid sitting idle for more than 5 minutes to minimize exhaust fumes. Haul trucks should also be covered with tarps prior to relocating soil at the site.

RELIANCE

Engineer's Certification

The undersigned agrees that this SWPPP has been prepared in accordance with all applicable standards outlined in this report. The undersigned understands that the owner intends to use this SWPPP to support his application for a New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Prepared By: _____ Date: 6-15-20

Helen J. McMillen
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

Reviewed By: _____ Date: 6/15/20

Rudy L. Zona, P.E.
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

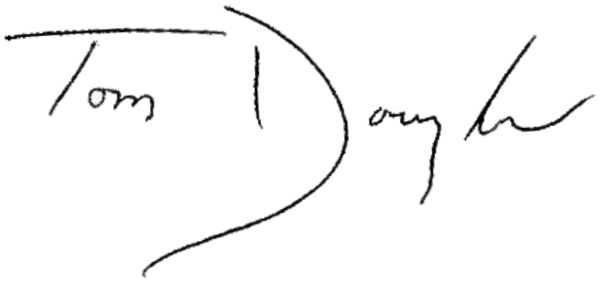
Owner's Certification

I certify that I have read and understand the requirements outlined in this SWPPP report. The undersigned agrees that I have employed the above professional to prepare this SWPPP and that the recommendations within this Report and accompanying documents support the requirements set forth by the New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001. I certify that I intend to employ a contractor who will follow the recommendations of this SWPPP and any requirements set forth by the New York State SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

Owner: Hoag Lane Development

Owner's Representative: Tom Douglas Date: 06/15/2020

Title: Developer/Owner



Contractor's / Sub-Contractor's Certification

Contractor's/Sub-Contractor's Certification "I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollution Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings."

Contractor: _____

Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date:_____

Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Contractor is responsible for SWPPP components identified:

SWPPP Inspections _____

_____

_____

Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____

Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____

Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____
Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

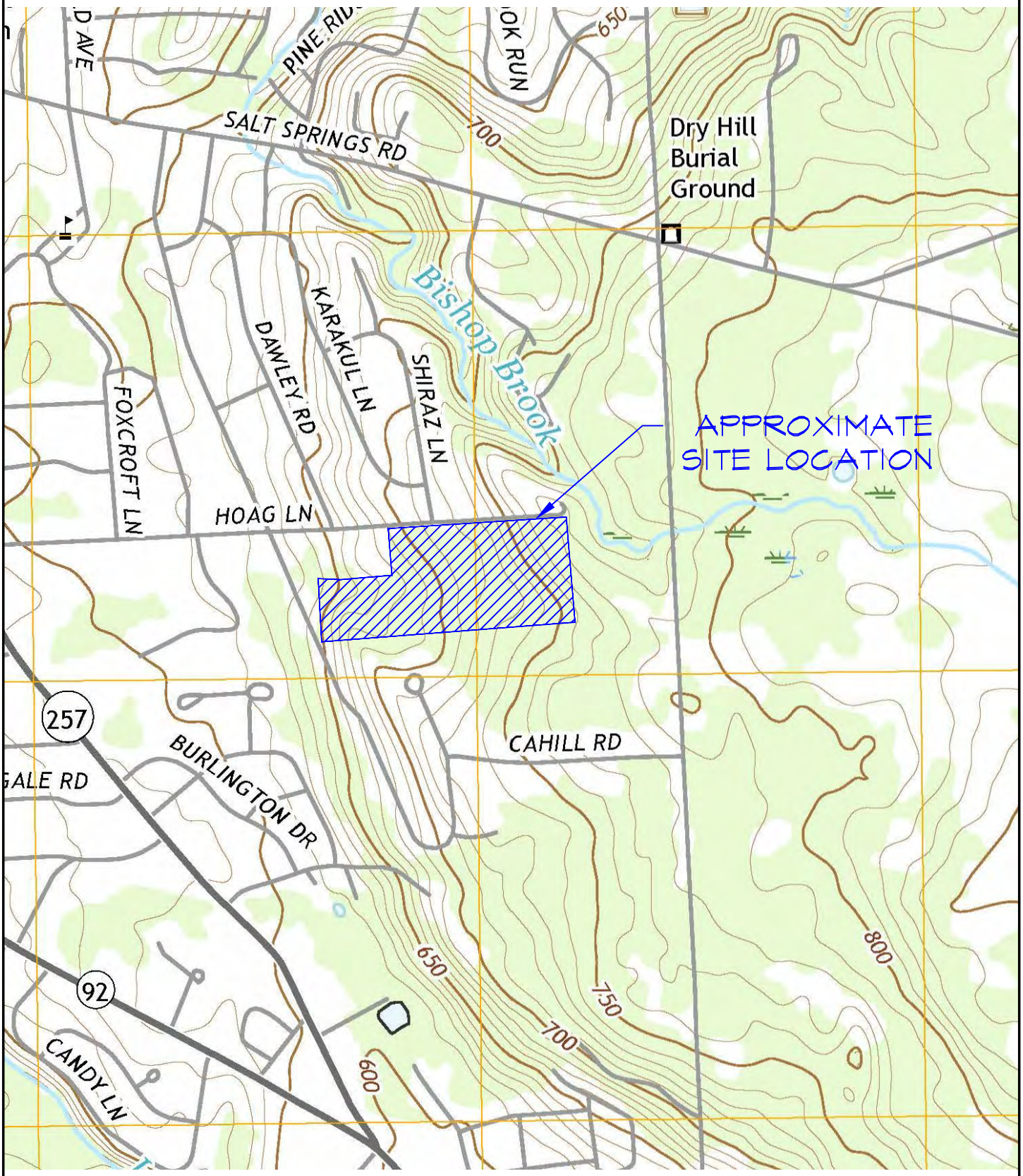
Signature: _____ Date:_____

Sub-Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____
Address: _____

_____

Phone: _____

Fax: _____



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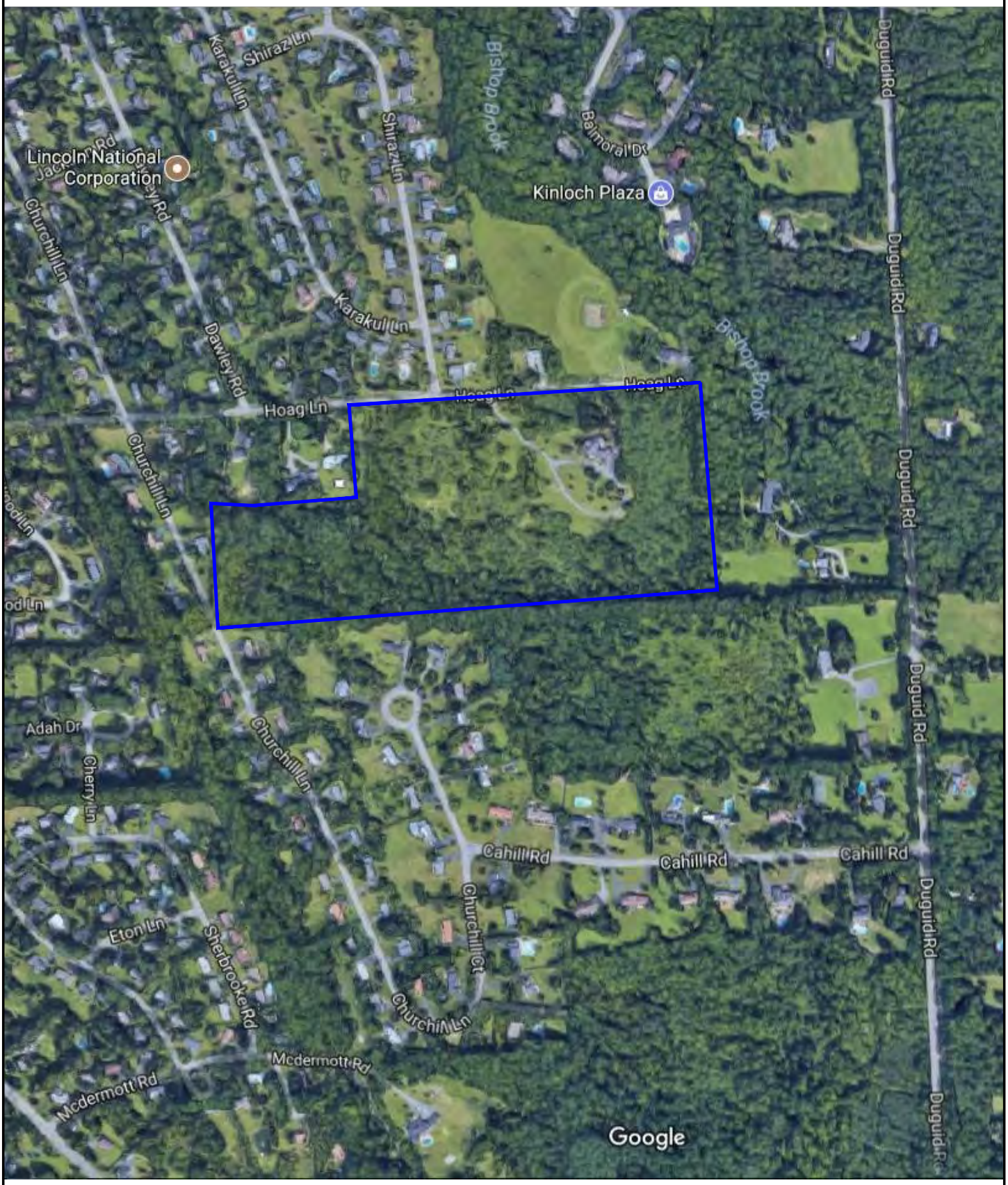
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

N

Hoag Lane Subdivision
USGS MAP
SCALE 1:1000

FIGURE 1



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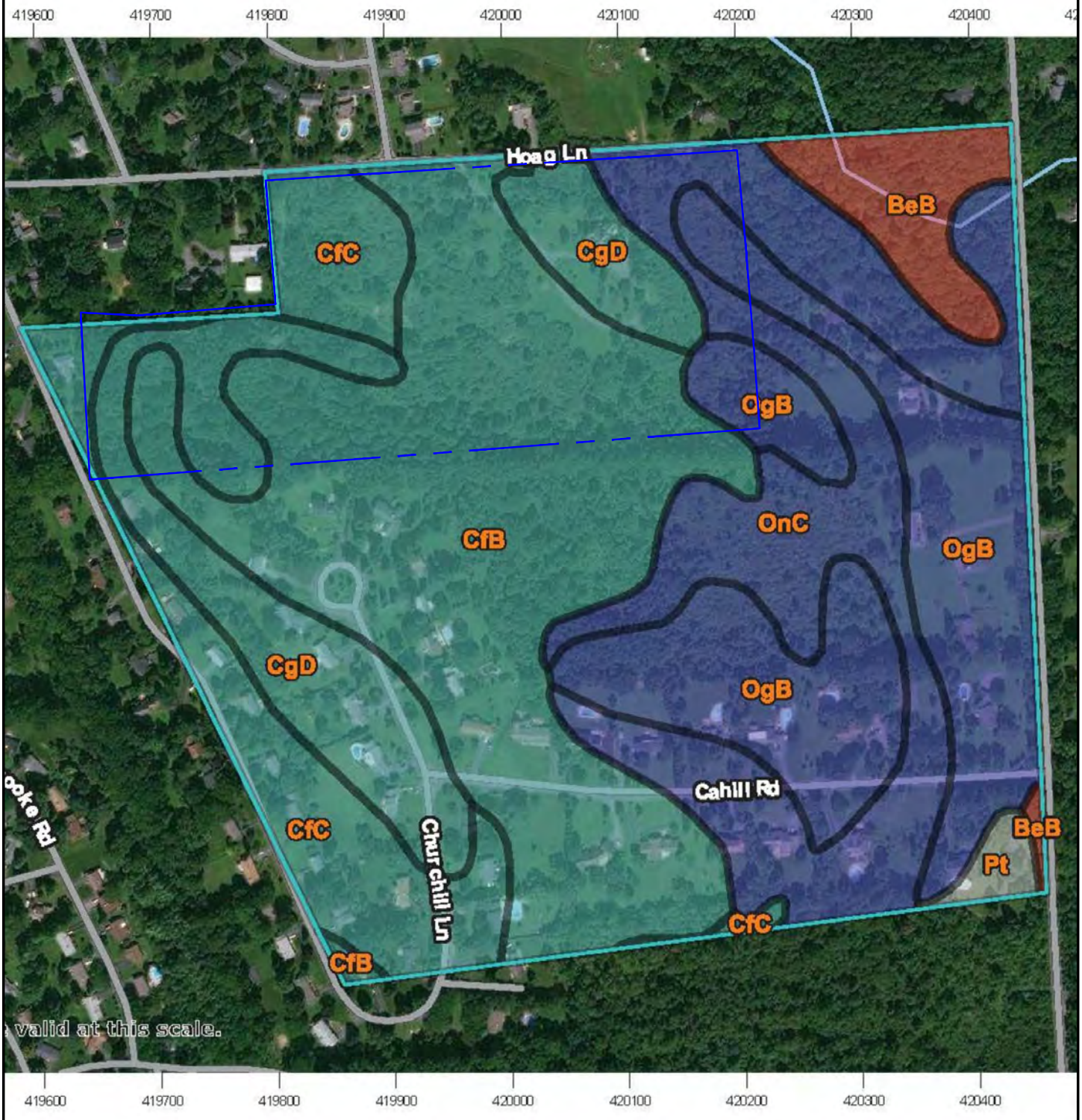
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

N

Hoag Lane Subdivision
AERIAL MAP
SCALE 1:500

FIGURE 2

Hydrologic Soil Group—Onondaga County, New York



inted on A landscape (11" x 8.5") sheet.

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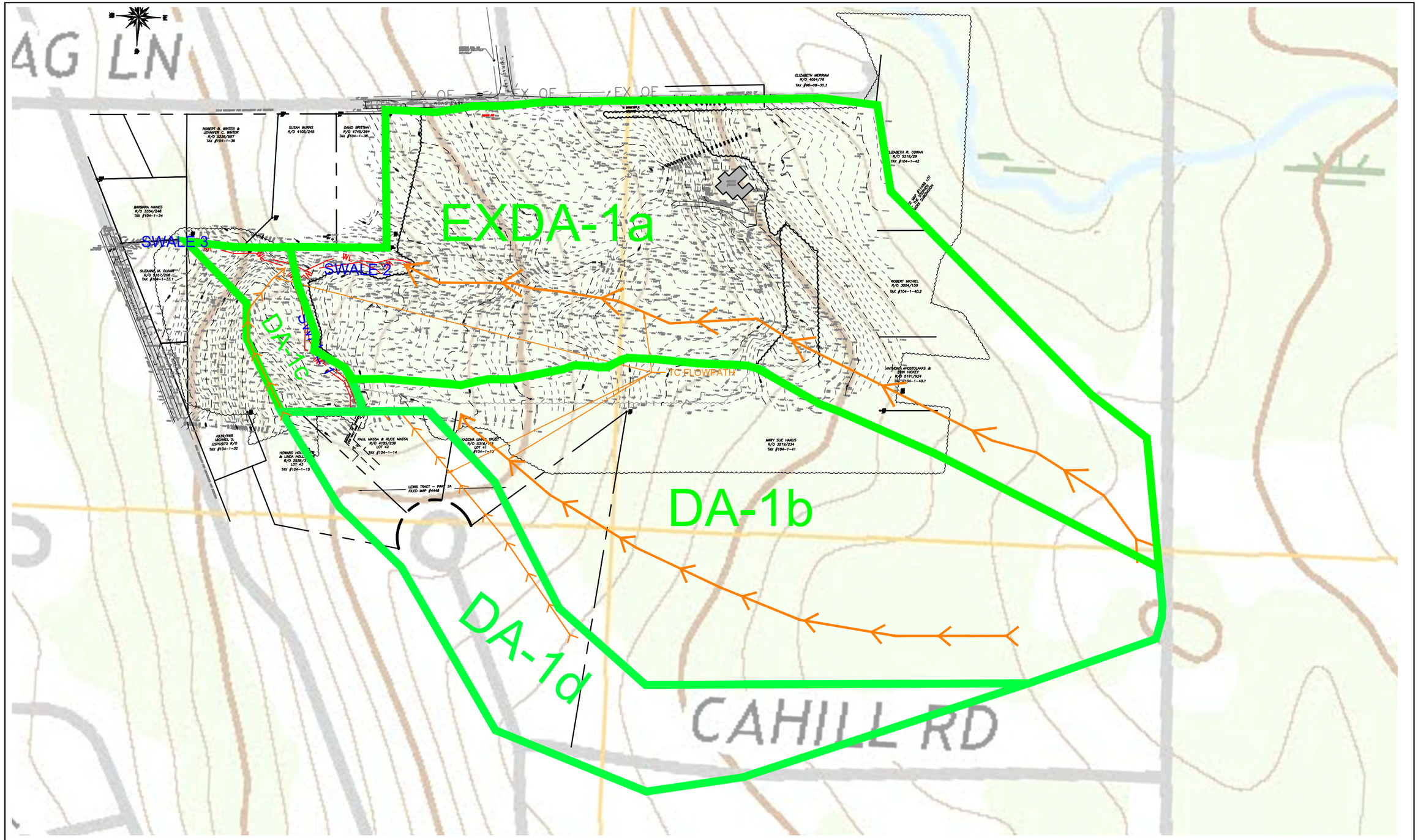
N

Hoag Lane Subdivision
SOILS MAP
SCALE 1:400

UPDATED 4/28/20

FIGURE 3



Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 4a: Existing Site Watershed with USGS

SCALE: 1:250
Updated: 09/19/19

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EAST SYRACUSE, NY 13057
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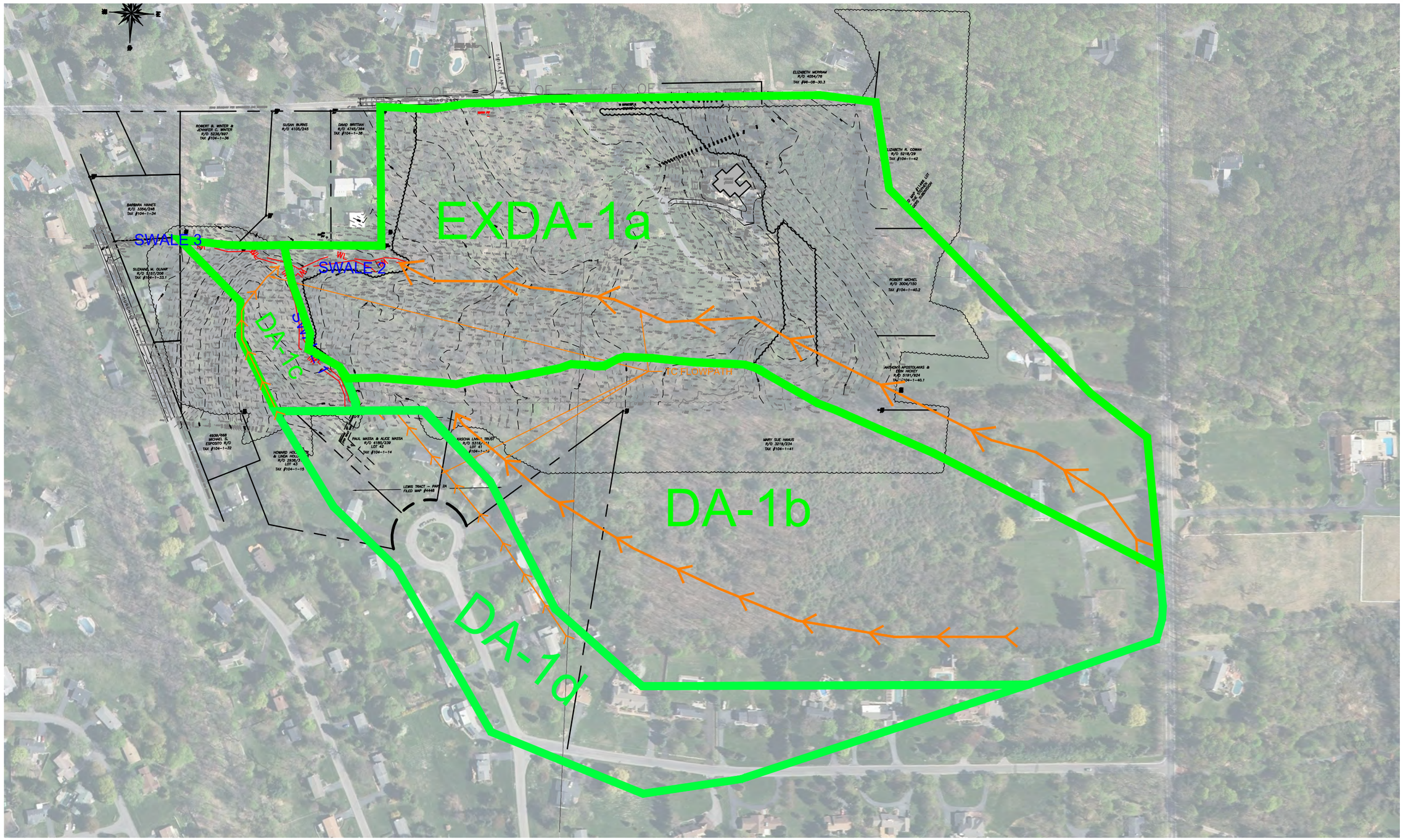
FAX (315) 445-7981



Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 4b: Existing Site Watershed with Aerial

SCALE: 1:250
Updated: 09/19/19

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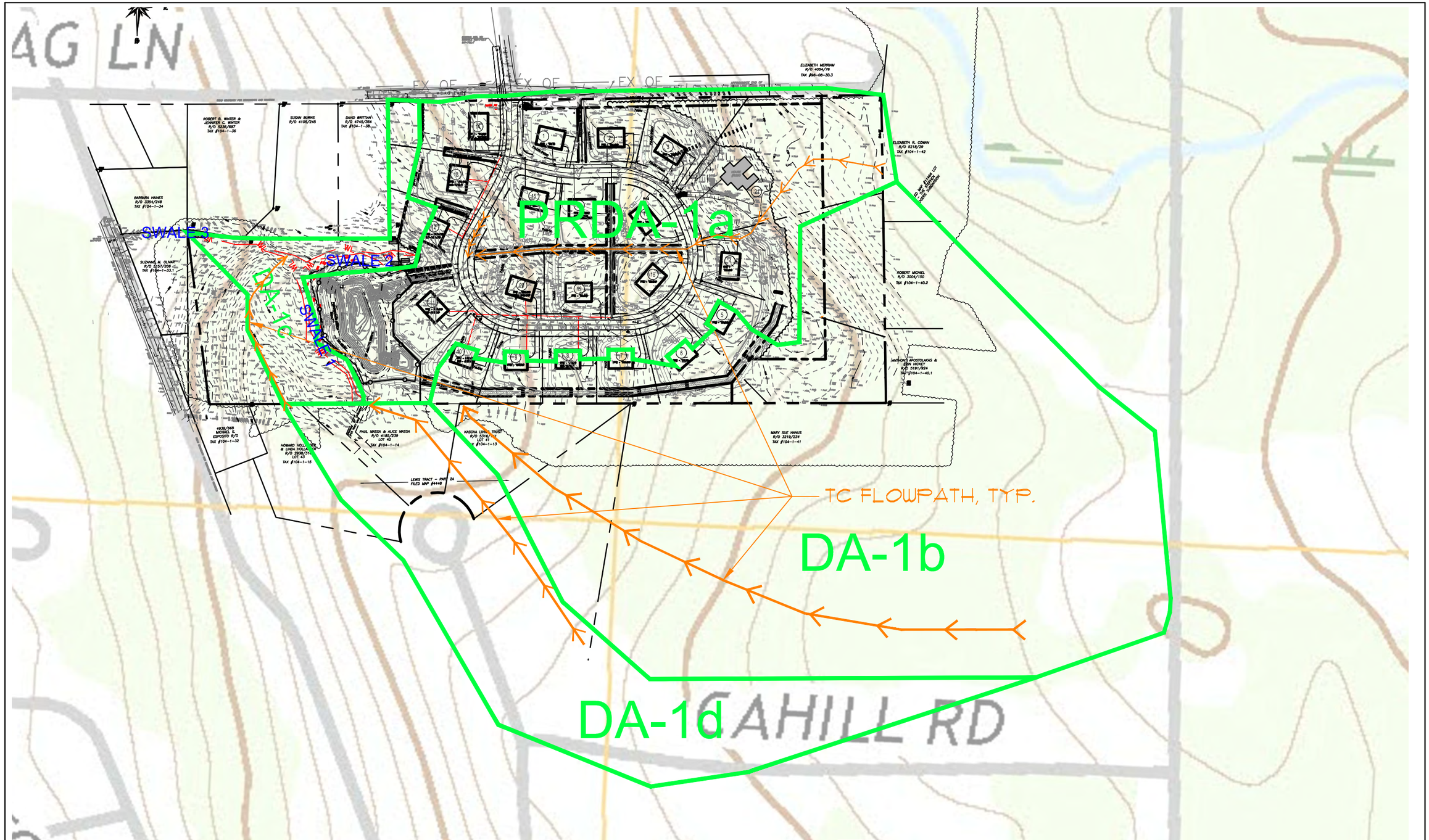
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 5: Proposed Watershed

SCALE: 1:250
Updated: 06/15/20

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STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

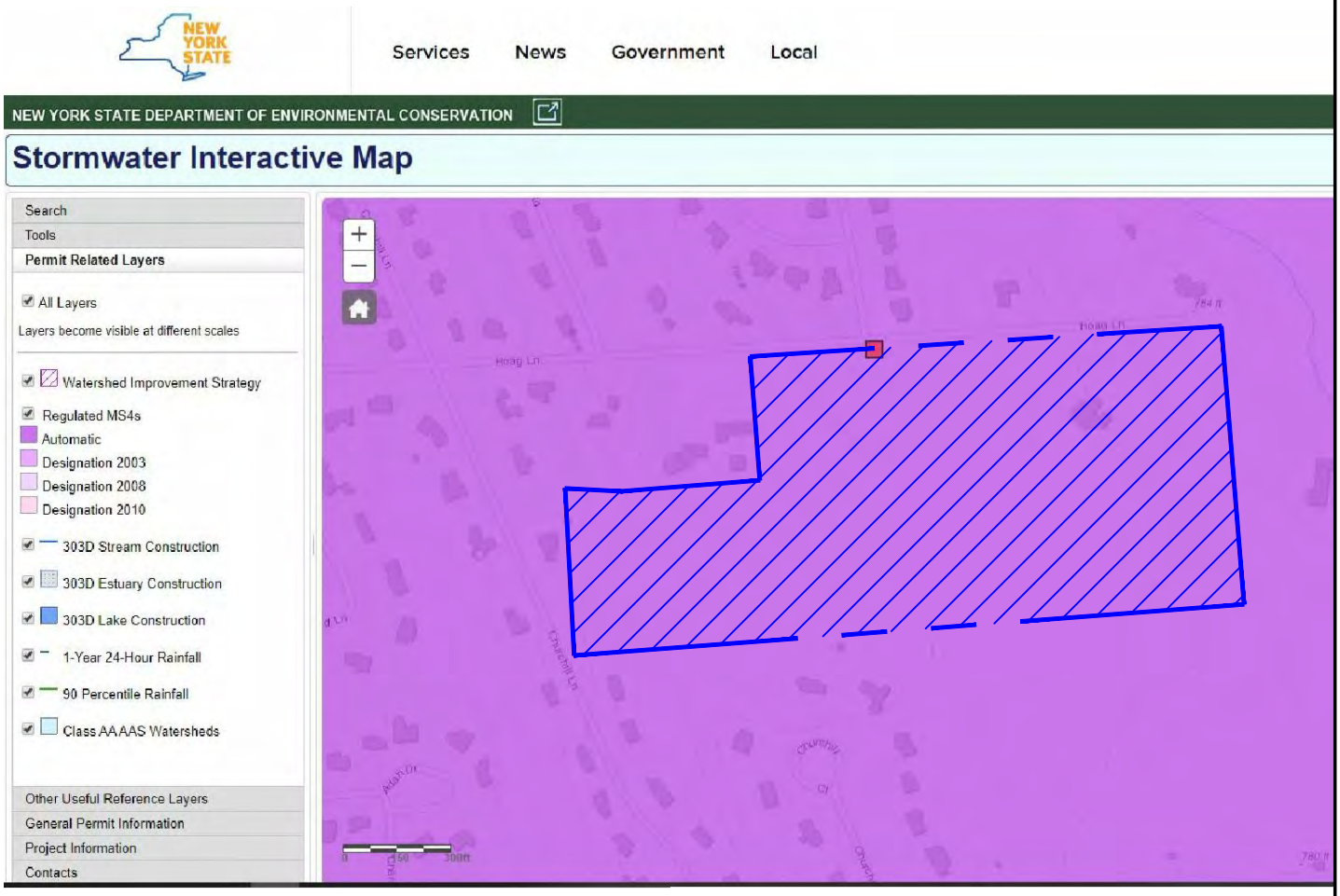

Figure 6 Narrative: Available mapping shown was taken from gisservices.dec.ny.gov on 04/28/2020. Due to available mapping taken at that time, it is apparent that the subject site lies within a regulated MS4.

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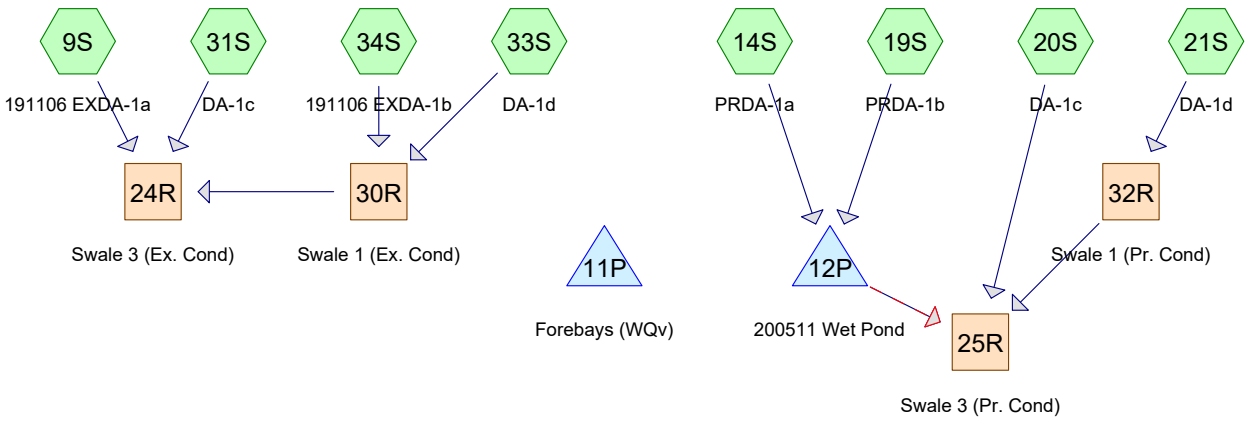
FAX (315) 445-7981

Hoag Lane Subdivision
NYSDEC STORMWATER MAP
SCALE 1:500

UPDATED 4/28/20

N

FIGURE 6



Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 6/12/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

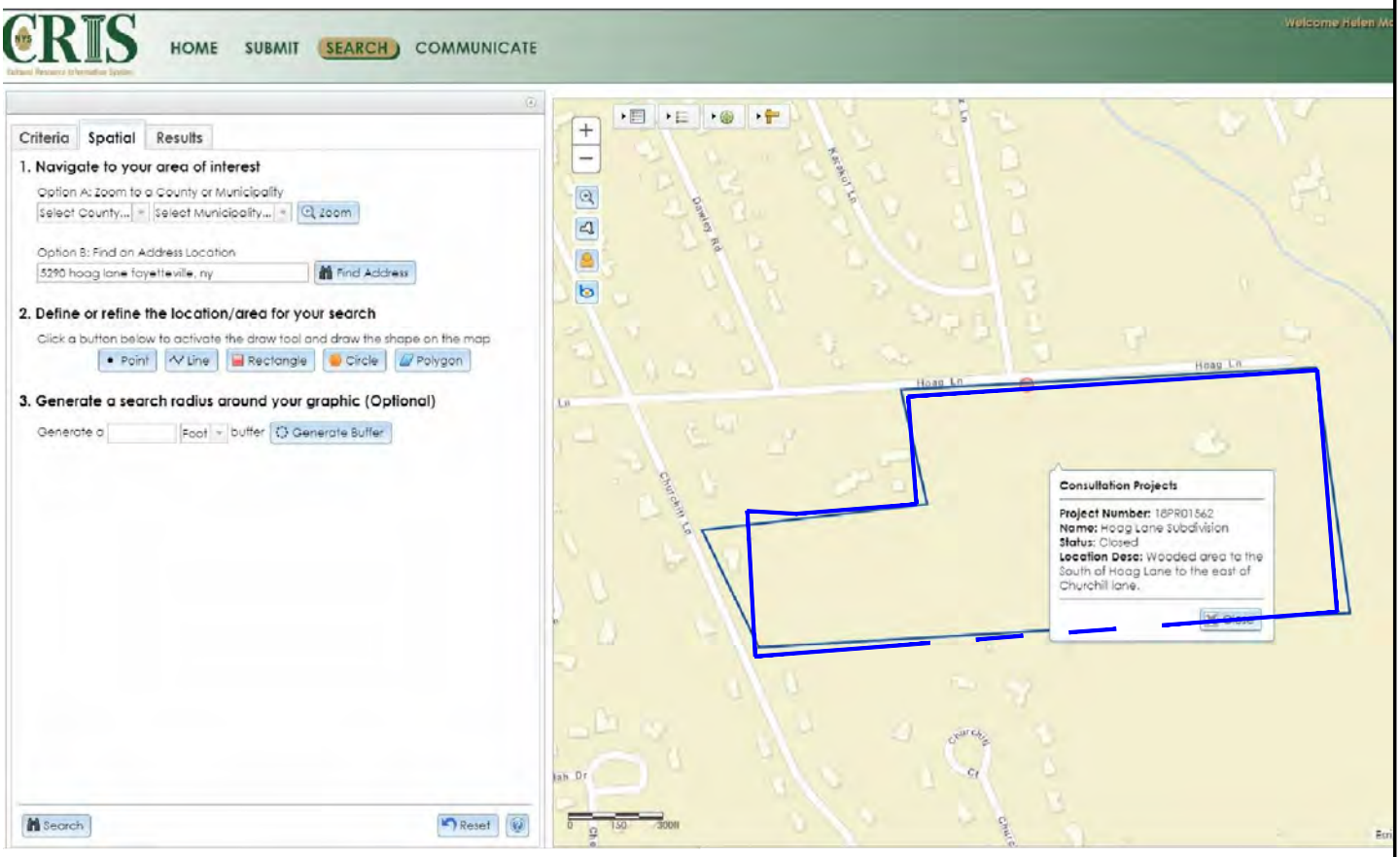


Figure 8 Narrative: Available mapping shown was taken from cris.parks.ny.gov on 04/28/2020. Due to available mapping, the subject does not lie within an archeologically sensitive area. Submission was made to the NYSHPO and response received 03/26/2018 concluded that per the NYSHPO opinion that the project will have no impact on archaeological and/or historic resources listed in or eligble for the NYS and National Registers of Historical Places, see Appendix Q.

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Hoag Lane Subdivision
SHPO MAP
SCALE 1:600

UPDATED 4/28/20

FIGURE 8

NYSDEC ENVIRONMENTAL RESOURCE MAPPER

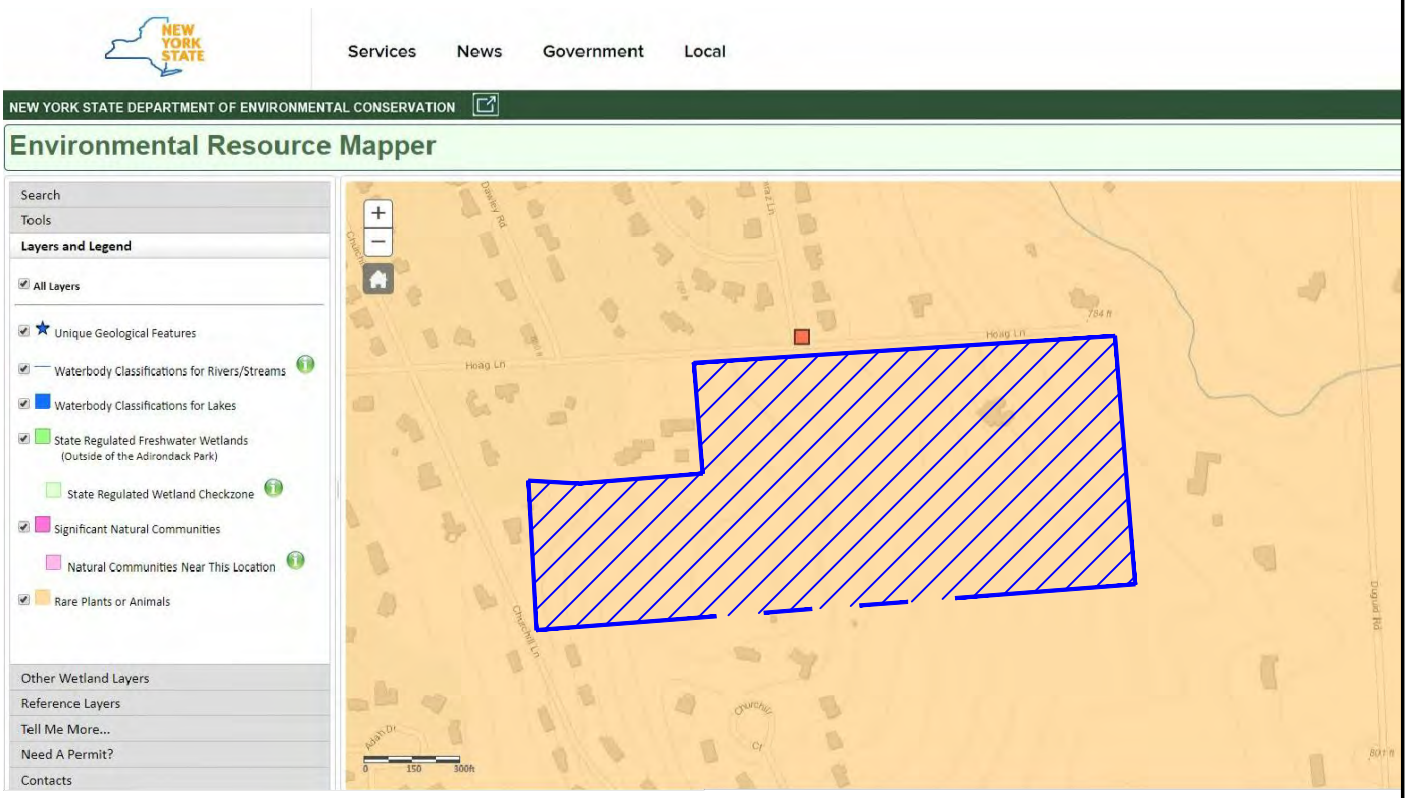

Figure 9 Narrative: Available mapping shown was taken from gisservices.dec.ny.gov on 04/28/2020. Due to available mapping, the subject lies in an area subject to potential of rare plants and animals. Submission has been made to Natural Heritage on 02/05/2018. Response was received on 04/06/2018 stating no records of rare or state-listed animals/plants/natural communities are located at the project site but theNorthern long-eared bat is located within 3.5 miles of the site, see Appendix U.

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EAST SYRACUSE, NY 13057
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FAX (315) 445-7981

Hoag Lane Subdivision UPDATED 4/28/20
NYSDEC WETLANDS AND ENDANGERED SPECIES MAP
SCALE 1:600

N

FIGURE 9

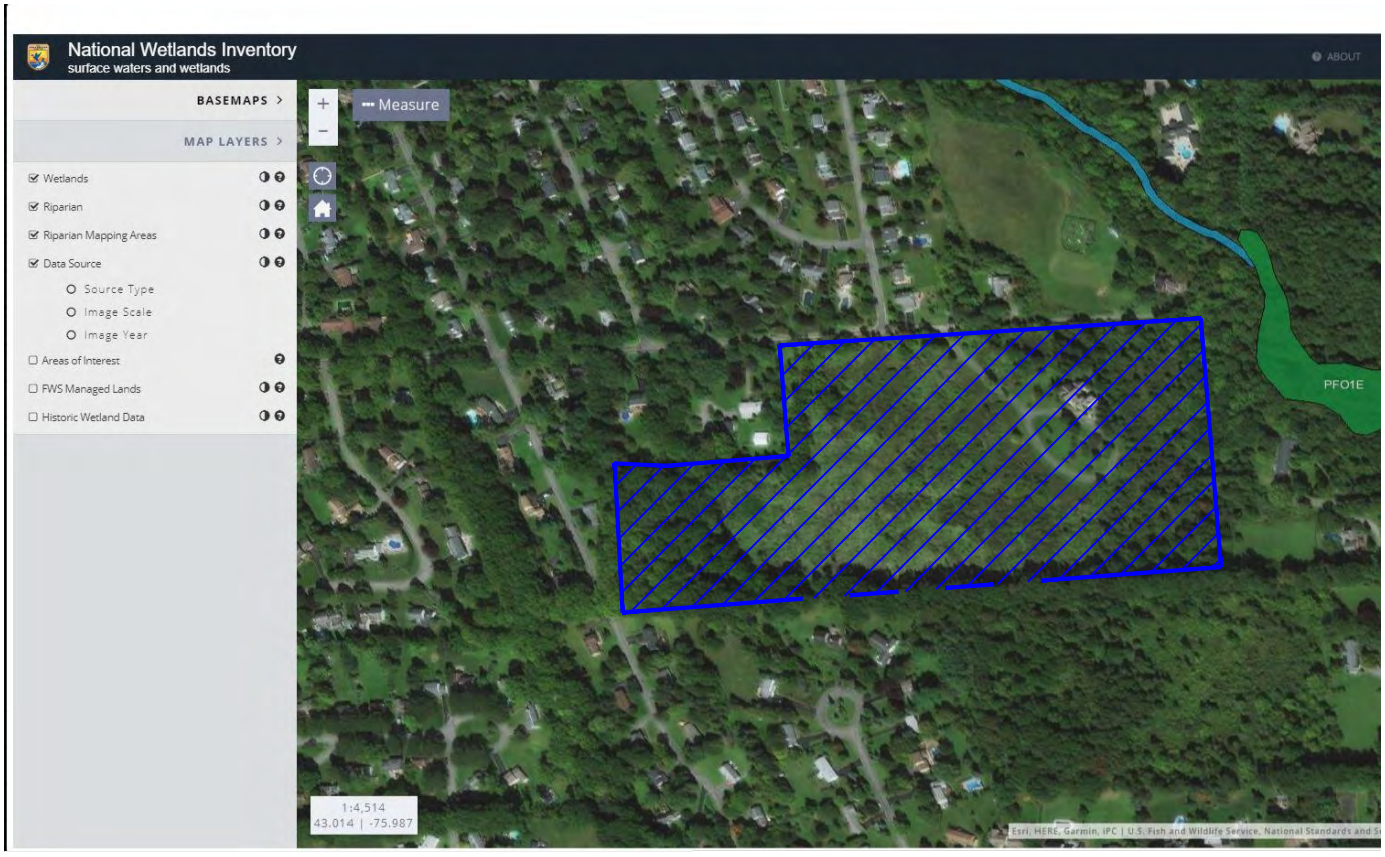

Figure 10 Narrative: Available mapping shown was taken from fws.gov on 04/28/2020. Due to available mapping, the subject does not lie within any federally mapped wetlands.

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Hoag Lane Subdivision
FEDERAL WETLANDS MAP
SCALE 1:600

UPDATED 4/28/20

FIGURE 10

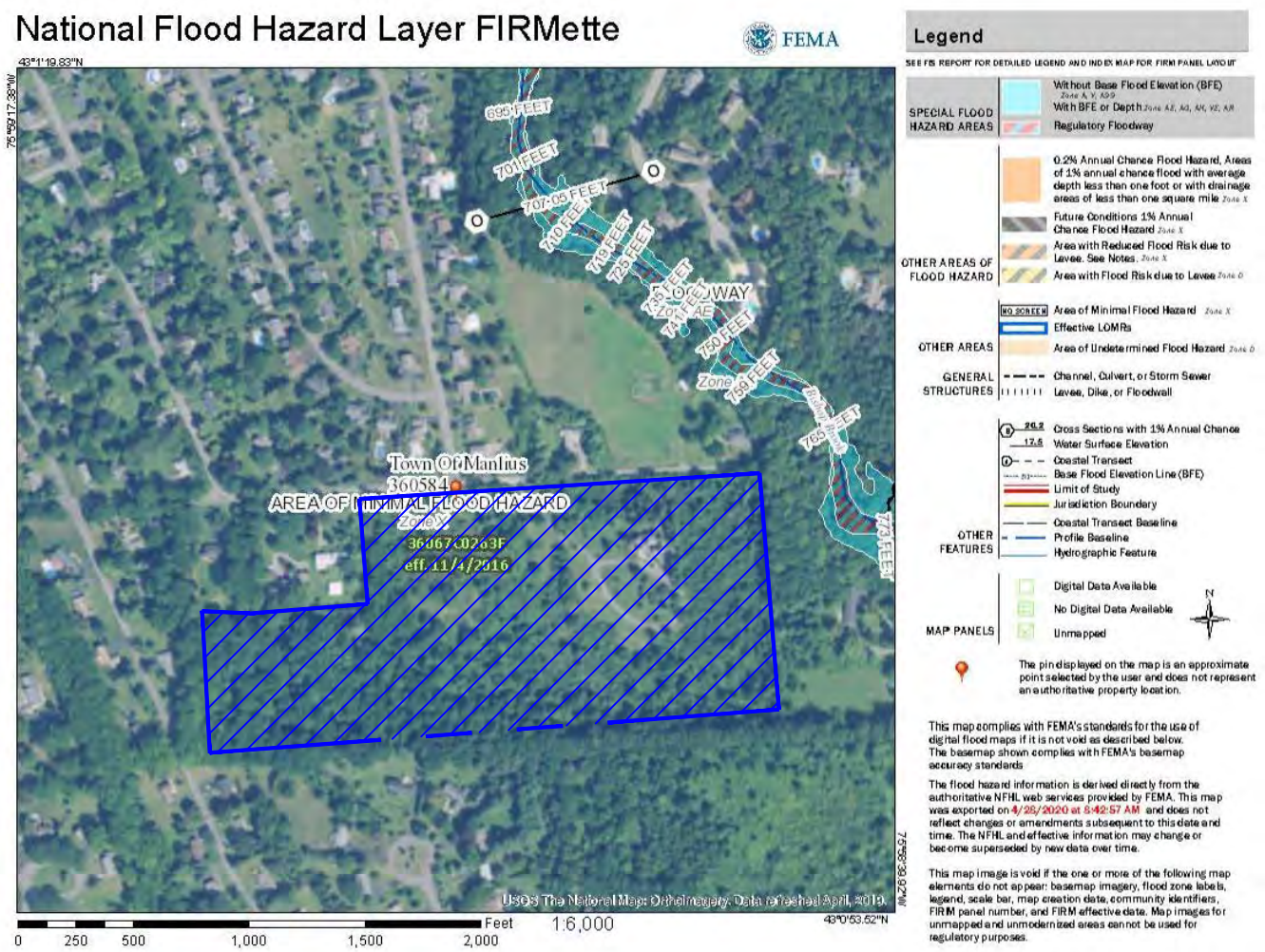

Figure 11 Narrative: Available mapping shown was taken from msc.fema.gov on 04/28/2020. Due to available mapping, the subject site does not lie in a special flood hazard area.

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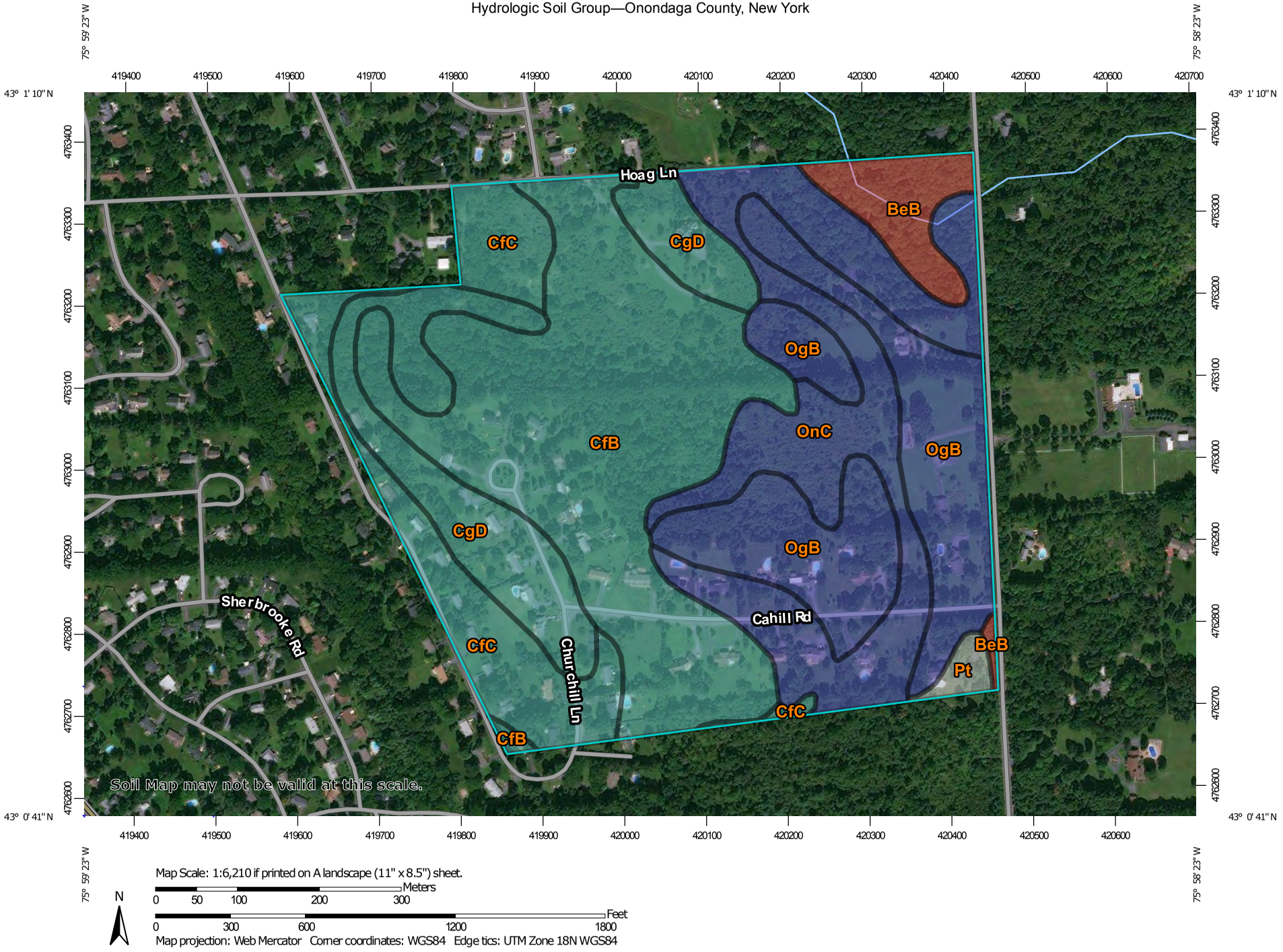
Hoag Lane Subdivision UPDATED 4/28/20
NATIONAL FLOOD INSURANCE MAP
SCALE 1:600

N

FIGURE 11

APPENDIX A


75° 59' 23" W
75° 58' 23" W
43° 1' 10" N
43° 0' 41" N
419400
419500
419600
419700
419800
419900
420000
420100
420200
420300
420400
420500
420600
420700
4763400
4763300
4763200
4763100
4763000
4762900
4762800
4762700
4762600
Hoag Ln
BeB
CfC
CgD
OgB
CfB
OnC
OgB
CgD
OgB
Cahill Rd
Sherbrooke Rd
CfC
Churchill Ln
BeB
Pt
CfC
CfB
Soil Map may not be valid at this scale.
Map Scale: 1:6,210 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 50 100 200 300
Feet
0 300 600 1200 1800
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 11, Oct 8, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	D	4.9	4.1%
CfB	Cazenovia silt loam, 2 to 8 percent slopes	C	39.0	32.5%
CfC	Cazenovia silt loam, 8 to 15 percent slopes	C	13.4	11.2%
CgD	Cazenovia soils, 15 to 25 percent slopes	C	15.1	12.6%
OgB	Ontario loam, 3 to 8 percent slopes	B	23.1	19.3%
OnC	Ontario gravelly loam, 8 to 15 percent slopes	B	23.4	19.5%
Pt	Quarries		1.0	0.8%
Totals for Area of Interest			**120.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

RZ Engineering, PLLC

RZE# 17061

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

OWNERS NAME: TOM DOUGLAS ADDRESS OF PROPERTY: 5280 HOAG LANE TOWN: MANLIUS

TEST PERFORMED BY: STEVEN RAHN REPRESENTING: RZ ENGINEERING Weather: CLOUDY 70±°F DATE: 10/10/17

Test hole	Soil Description and Depth	Results of Presoaking	Time	Percolation Test Results 1	2	3	4	5	6	7	8	FINAL RESULT
PT #1	24" Sandy Loam		Finish	1:28	2:07	2:43						
			Start	1:10	1:32	2:08						
			Time	18 MIN	35 MIN	35 MIN						35 MIN
PT #2	24" Silt Loam		Finish									
			Start	2:30								
			Time	>120 MIN								FAIL
DH #1	0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-66" SANDY LOAM		Finish									
			Start									
			Time									
DH #2	0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-80" SILT LOAM		Finish									
			Start									
			Time									

Deep Hole Testing Results: DH #1

Contractor for Deep Hole : _____

Owner Hired ☒

Paid on site ☐

Ground Water Witnessed: ☒ No Water ☐ Yes at ____" Deep

Mottling Witnessed: ☒ No Mottling ☐ Yes at ____" Deep

Restrictive Layer: ☒ No layer ☐ Yes _____ Layer at ____" Deep

DH #2
NO WATER
NO MOTTLING
NO LAYER

RZ Engineering, PLLC

RZE# 17061

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

OWNERS NAME: TOM DOUGLAS ADDRESS OF PROPERTY: 5280 HOAG LANE TOWN: MANLIUS

TEST PERFORMED BY: STEVEN RAHN REPRESENTING: RZ ENGINEERING Weather: CLOUDY 70± °F DATE: 10/10/17

Test hole	Soil Description and Depth	Results of Presoaking	Time	Percolation Test Results 1	2	3	4	5	6	7	8	FINAL RESULT
DH #3	0"-12" TOPSOIL		Finish									
	12"-48" GRAVEL LOAM		Start									
	48"-72" GRAVELY SILT LOAM		Time									
DH #4	0"-12" TOPSOIL		Finish									
	12"-36" SANDY SILT LOAM		Start									
	36"-72" SILTY CLAY LOAM		Time									
DH #5	0"-6" TOPSOIL		Finish									
	6"-36" SANDY LOAM		Start									
	36"-66" SANDY SILT LOAM W/ COBBLES		Time									
			Finish									
			Start									
			Time									

Deep Hole Testing Results: DH #3

Contractor for Deep Hole : _____ Owner Hired ☒

Ground Water Witnessed: ☒ No Water ☐ Yes at ____" Deep

Mottling Witnessed: ☒ No Mottling ☐ Yes at ____" Deep

Restrictive Layer: ☒ No layer ☐ Yes _____ Layer at ____" Deep

DH #4: NO WATER, NO MOTTLING, NO LAYER

DH #5: NO WATER, NO MOTTLING, NO LAYER

Paid on site ☐

RZ Engineering, PLLC

RZE# 17061

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

OWNERS NAME: Tom Douglas ADDRESS OF PROPERTY: 5280 Hoag Lane TOWN: Manlius

TEST PERFORMED BY: Steven Rahn REPRESENTING: RZ ENGINEERING Weather: Cloudy 60± °F DATE: 10/11/17

Test hole	Soil Description and Depth	Results of Presoaking	Time	Percolation Test Results 1	2	3	4	5	6	7	8	FINAL RESULT
PT #3	24" Sandy Silt Loam		Finish	11:08	11:12	11:16						
			Start	11:06	11:09	11:13						
			Time	2 MIN	3 MIN	3 MIN						3 MIN
PT #4	24" Sandy Silt Loam		Finish	12:01	12:22	12:44						
			Start	11:45	12:02	12:23						
			Time	16 MIN	20 MIN	21 MIN						21 MIN
			Finish									
			Start									
			Time									
			Finish									
			Start									
			Time									

Deep Hole Testing Results:

Contractor for Deep Hole : _____ Owner Hired ☐

Ground Water Witnessed: ☐ No Water ☐ Yes at ____" Deep Paid on site ☐

Mottling Witnessed: ☐ No Mottling ☐ Yes at ____" Deep

Restrictive Layer: ☐ No layer ☐ Yes _____ Layer at ____" Deep


SCALE - 1:100
Hoag Ln
ROAD BOUNDARY PER MONUMENTS AND RECORDS
10" WATER
CENTERLINE
HOAG LANE
EDGE OF PAVEMENT
4" GAS
HIRAZ LANE
GRAVEL DRIVE
APPROXIMATE END OF HOAG LANE R.O.W. PER TAX MAP
ROBERT B. WINTER & JENNIFER C. WINTER R/O 5236/697 TAX #104-1-36
SUSAN BURNS R/O 4105/245 TAX #104-1-37
DAVID BRITTIAN R/O 4745/364 TAX #104-1-38
PT#1
PT#2
PT#3
PT#4
DH#1
DH#2
DH#3
DH#4
DH#5
HOUSE #5280
B1
B2
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
N 86°56'40" E 391.92'
S 83°34'20" E 149.01'
N 86°02'35" E 1319.65'
1809.96'
S 86°57'56" W
HOWARD HOLLANDER
PAUL MASSA & ALICE MASSA R/O 4185/239 LOT 42
KASCHA LIVING TRUST R/O 5316/141 LOT 41 TAX #104-1-13

Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Rd., Syracuse, NY 13209
Mail: P.O. Box 117 Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

January 12, 2018

Thomas Allen Custom Homes Inc.
c/o Keplinger Freeman Associates
6320 Fly Road, Suite 109
East Syracuse, NY 13057
<via email>

Attn: Tom Douglas

Re.: Geotechnical Investigation Services
Infiltration Testing
Hoag Lane Subdivision
Fayetteville, NY

Dear Tom,

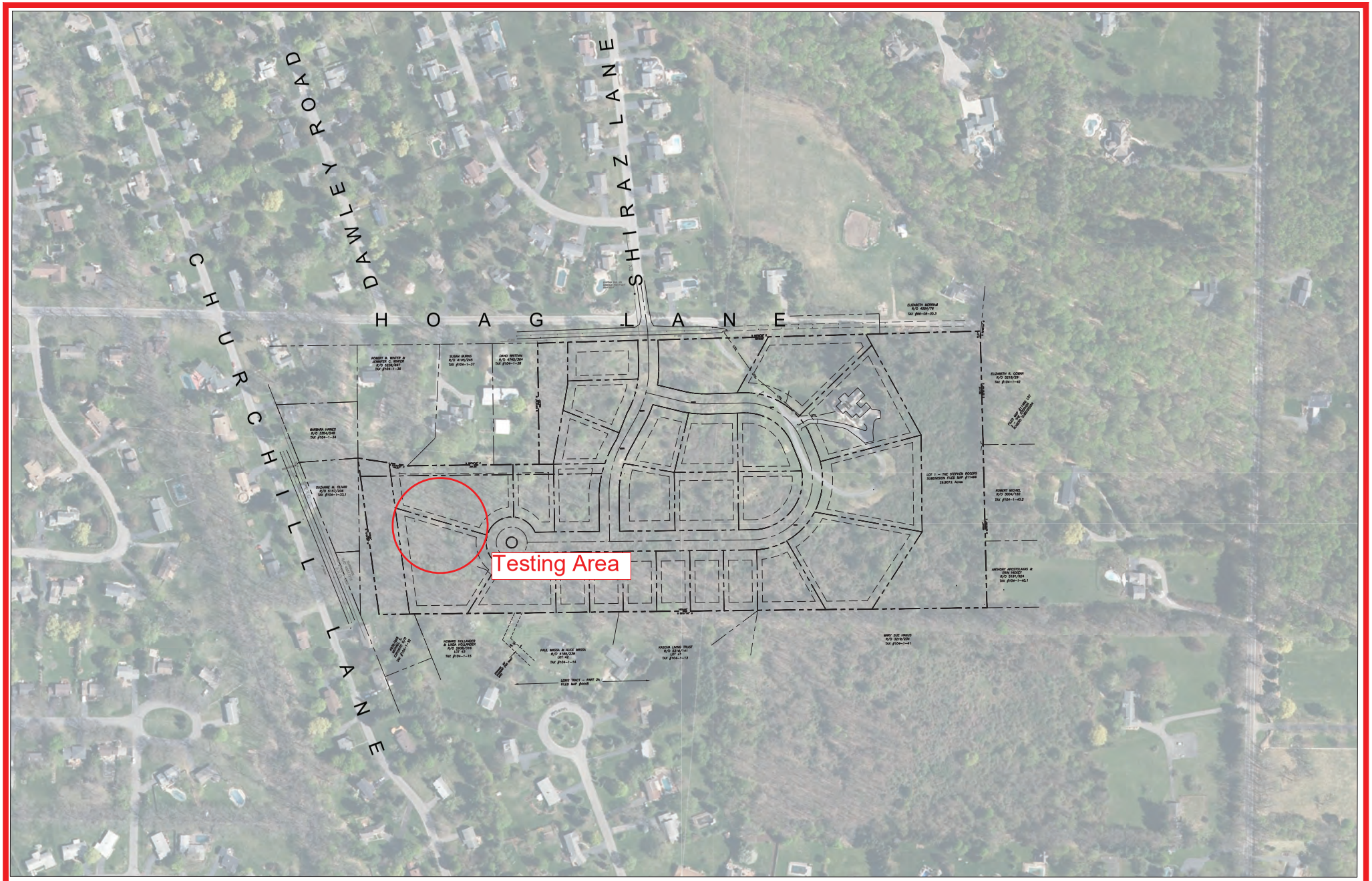
Kenney Geotechnical Engineering Services, PLLC is pleased to present the results of the infiltration testing performed at the referenced site (See Figure 1). Testing locations are illustrated on Figure 1. Testing locations were selected by Keplinger Freeman Associates and field-located by Kenney Geotechnical Services personnel. Infiltration testing was performed in accordance with NYSDEC guidelines.

The three infiltration tests were performed (designated HOLE #1, HOLE #2, and HOLE #3). Infiltration testing was performed using a four-inch diameter borehole at depths of 18 feet, 25.3 feet, and 24 feet respectively. The test locations were then pre-soaked for twenty-four hours. Testing was performed the day following presoaking.

Stabilized infiltration readings are summarized in the attached tables. Please contact us if you have any questions.

Respectfully submitted,
KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC

Christopher M. Kenney, P.E.
President



HOAG LANE SUBDIVISION
HOAG LANE, MANLIUS, NEW YORK
NEIGHBORHOOD PLAN

DECEMBER 1, 2017

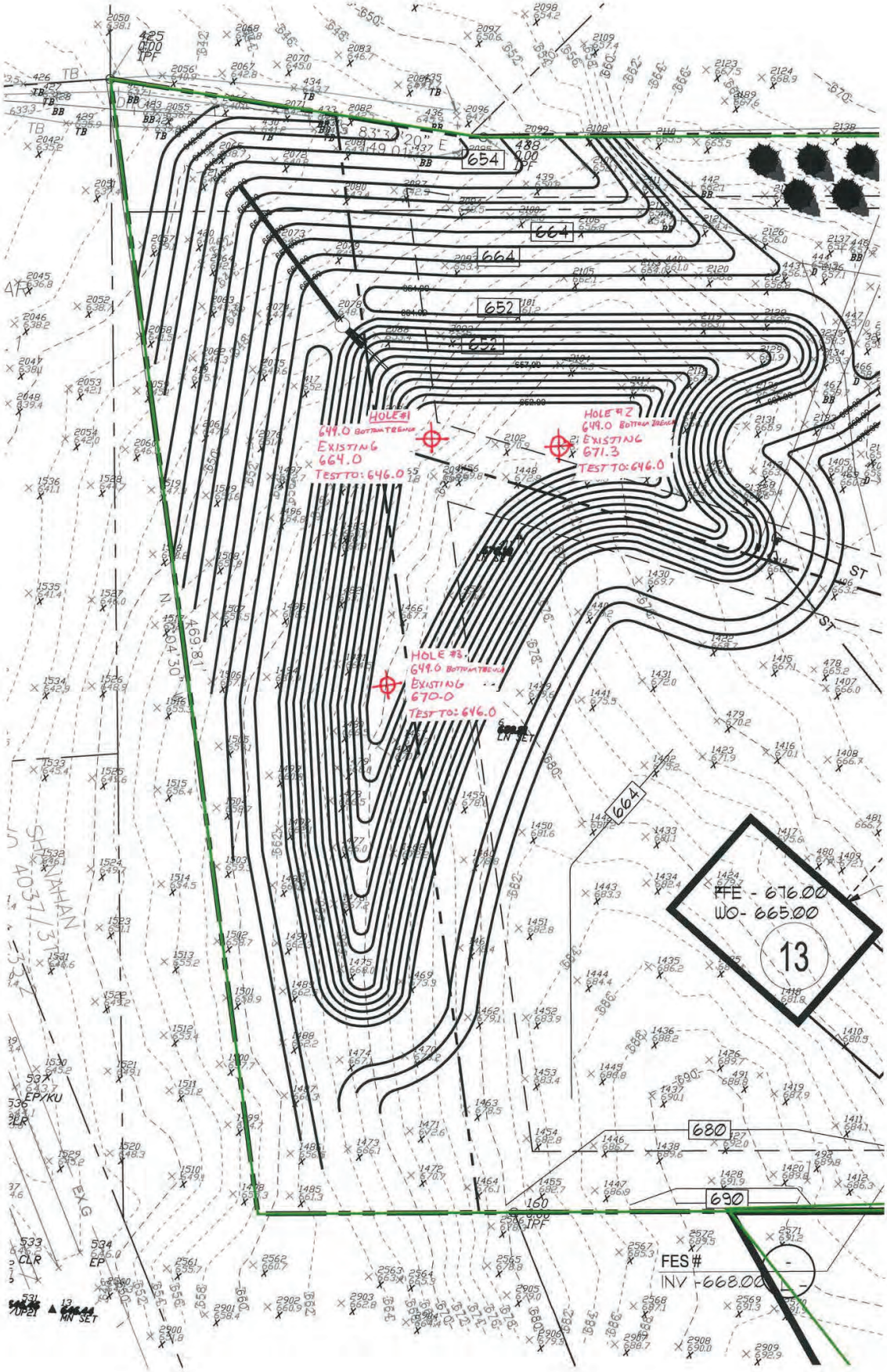
0 100 200 300
SCALE IN FEET

KEPLINGER FREEMAN ASSOCIATES

HOAG LANE SUBDIVISION

RZE #17061

SCALE - 1:40



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Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail :P.O. Box 156 Baldwinsville, N.Y. 13027
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

INFILTRATION TESTING LOG						
PROJECT:	**HOAG LANE SUBDIVISION, FAYETTEVILE NY**					
PRESOAK:	1/10/2017		WEATHER:	OVERCAST		
TEST:	1/11/2017		WEATHER:	CLEAR		
PERSONNEL:	D.A.		LOCATION:	**HOLE #1**		
TEST TYPE:	4" BOREHOLE AT DEPTH OF 18 '					
SOIL CONDITIONS:	TILL: GREY/BROWN SANDY CLAY WITH GRAVEL					
RUN #	1	2	3	4	5	6
RATE (INCH/HOUR)	-	-	-	-		
STABILIZED (INCH/HR)	-					
NOTES:	Water seepage noted above testing elevation.					

INFILTRATION TESTING LOG						
PROJECT:	**HOAG LANE SUBDIVISION, FAYETTEVILE NY**					
PRESOAK:	1/10/2017		WEATHER:	OVERCAST		
TEST:	1/11/2017		WEATHER:	CLEAR		
PERSONNEL:	D.A.		LOCATION:	**HOLE #2**		
TEST TYPE:	4" BOREHOLE AT DEPTH OF 25.3'					
SOIL CONDITIONS:	TILL: BROWN SANDY CLAY WITH GRAVEL					
RUN #	1	2	3	4	5	6
RATE (INCH/HOUR)	-	-	-	-		
STABILIZED (INCH/HR)	-					
NOTES:	Water seepage noted above testing elevation.					

INFILTRATION TESTING LOG						
PROJECT:	**HOAG LANE SUBDIVISION, FAYETTEVILE NY**					
PRESOAK:	1/10/2017		WEATHER:	OVERCAST		
TEST:	1/11/2017		WEATHER:	CLEAR		
PERSONNEL:	D.A.		LOCATION:	**HOLE #3**		
TEST TYPE:	4" BOREHOLE AT DEPTH OF 24'					
SOIL CONDITIONS:	TILL: BROWN SANDY CLAY WITH GRAVEL					
RUN #	1	2	3	4	5	6
RATE (INCH/HOUR)	0	0	0	0		
STABILIZED (INCH/HR)	**0**					
NOTES:						

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Kenney Geotechnical Services

June 13, 2019

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Subsurface Investigation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed additional subsurface investigation at the Woodland Hills project site. The purpose of the additional subsurface investigation was to provide data for road design and to provide a preliminary screening for karst features. The scope of the additional investigation included eight soil borings (designated as B-1 through B-8), a site reconnaissance, and a review of publically available mapping and geologic information.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Subsurface investigations were performed at the locations designated on mapping prepared by Keplinger Freeman Associates Landscape Architecture. The site was heavily vegetated at the time of this investigation. The investigation was performed using a track-mounted Geoprobe 7822DT drill rig. Hollow stem augering techniques were utilized to advance the test borings to a maximum depth of 10 feet or auger refusal. Standard penetration testing (ASTM D1586) was performed with an automatic hammer to obtain soil samples. Boreholes were back-filled with cuttings and sealed with a two foot lift of bentonite hole plug.

Subsurface Conditions Encountered- Road Borings

Based on our review of the recovered samples, standard penetration testing, and drilling observations, the subsurface conditions encountered by the test borings generally consisted of:

- 0.5 to 2.0 feet of topsoil, overlying

- Soft to medium stiff silty clay with gravel to depths of approximately two to ten feet, overlying
- Hard glacial till.

Underlying the soft to medium silty clay in several borings (B-4 and B-6) was a layer of sandy silt with some gravel and possible weathered rock. "N" values in the sandy silt layer ranged from 9 bpf to greater than 100 bpf.

Glacial till was encountered in half of the borings (B-1, B-2, B-5, B-8) and consisted of sandy silty clay with gravel. "N" values in the till were typically greater than 30 bpf.

In general, it appears that after stripping topsoil the road subgrade will consist of silty clay ranging from stiff to hard in stiffness. The silty clay will be susceptible to strength loss due to saturation and excessive vibration if not properly managed during construction. The subgrade should be sealed with a pass of a smoothdrum roller at the end of each working day, and before rain events, to prevent unnecessary saturation during construction.

The silty clay will generally have a low permeability, so proper drainage of the subgrade will be an important influence on roadway longevity. The subgrade should be sloped to drain, and perimeter under drains may be necessary.

Given the conditions encountered, we would suggest a California Bearing Ratio of 5 is utilized for roadway design. However, the road subgrade should be thoroughly reviewed during construction for the presence of soft areas that may required undercutting and replacement with structural fill.

Karstic Conditions Reconnaissance

The Hoag Lane Subdivision lies within the Appalachian Plateau physiographic province. Major topographic and geologic features in this area were formed during the last glacial advance and retreat, which ended approximately 12,000 years ago. Regional surficial geologic mapping suggests that natural soils in the site vicinity generally consist of glacial till and kame moraine deposits. Bedrock mapping suggests that Manlius formation limestone underlies soil in the area.

The term 'karst' has traditionally been used to refer solely to regions of exposed soluble bedrock having an abundance of surface landforms, such as sinkholes, sinking streams, and springs, that reflect the presence of subsurface voids or caves. The Town of Manlius has apparently identified areas in the vicinity of the project site as Critical Environmental Areas with "Sinkholes, sinking streams, and seasonal streams, which are indicative of karst topography" (Town of Manlius, 2009).

We asked to see the mapping associated with this declaration, but the Town would not provide us with the mapping without a formal Freedom of Information Law (FOIL) request. We have submitted the FOIL request but have not received a response as of the date of this report.

Karstic conditions are often revealed through a review of topography. Steep elevations changes, circular depressions, and sinkholes would be typical indicators.

We performed a walking site reconnaissance of the site, and also utilized USGS topographic mapping and publically available aerial imagery to search for possible topographic indicators of karstic conditions. In general, the site slopes gently downward to the west, with elevations ranging between 670 and 770 feet above sea level (USGS National Map, Accessed 2019). No distinct karst topographic features (i.e. sinkholes, circular depressions, steep elevation changes, etc.) are apparent in the immediate project vicinity.

Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
Kenney Geotechnical Engineering Services PLLC

Christopher M. Kenney

Christopher M. Kenney, P.E.
President

Attachments,
Figure 1: Boring Location Plan
Figure 2: Soil Boring Logs
Figure 3: USGS Topographic Mapping

References:

Weary, D.J., and Doctor, D.H., 2014, Karst in the United States: A digital map compilation and database: U.S. Geological Survey Open-File Report 2014–1156, 23 p., https://dx.doi.org/10.3133/ofr20141156.

USGS, National Geologic Map Database: Geolex – Unit Summary. Geologic Unit: Manlius, Accessed 6/11/2019.

https://ngmdb.usgs.gov/Geolex/UnitRefs/ManliusRefs_2619.html

Town of Manlius, Town Code, 2009. Part II, Chapter 66, Appendix A: Geographic Extent of Critical Environmental Areas. Accessed 6/11/2019.

"Surficial Geologic Map of New York – Finger Lakes Sheet", New York State Museum, 1970, Reprinted 1995.

USGS National Map, Accessed 6/11/2019, https://viewer.nationalmap.gov/advanced-viewer/

HOAG LANE BORING LOCATION PLAN



Kenney Geotechnical Engineering Services, PLLC
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Syracuse, NY 13209
315-638-2706

KEY TO SYMBOLS

CLIENT _____ **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)

- CL-ML: USCS Low Plasticity Silty Clay
- MLS: USCS Sandy Silt
- SM: USCS Silty Sand
- TILL: Glacial Till
- TOPSOIL: Topsoil

SAMPLER SYMBOLS

- Standard Penetration Test

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
-200 - PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)

TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION

- Water Level at Time Drilling, or as Shown
- Water Level at End of Drilling, or as Shown
- Water Level After 24 Hours, or as Shown

KEY TO SYMBOLS - GINT STD US LAB.GDT - 6/10/19 14:50 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

Project: WOODLAND HILLS - HOAG LANE SUBDIVISION
Project Location: MANLIUS, NY
Project Number: 2019-089

Key to Soil Symbols and Terms

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very stiff	200 to 400	15 to 30
Hard	> 400	> 30

GENERAL NOTES

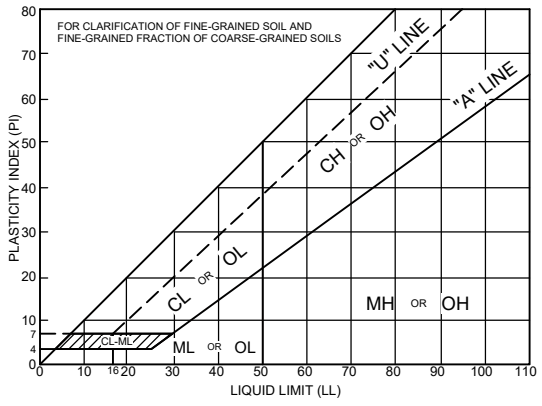
1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. Surface elevations are based on topographic maps and estimated locations.

3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times.

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravel (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravel with fines (Appreciable amount of fines)	GM* d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4; Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-silt mixtures	Atterberg limits above "A" line or P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly-graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM* d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4; Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. greater than 7
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Silts and Clays (Liquid limit less than 60)		ML	Inorganic silts and very fine sands, rock floor, silty or clayey fine sands or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and Clays (Liquid limit greater than 60)		MH	Inorganic silts, micaceous or disto-maceous fine sandy or silty soils, organic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly Organic Soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain size curve, Depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows:
Less than 5 percent..... GW, GP, SW, SP
More than 12 percent..... GM, GC, SM, SC
6 to 12 percent..... Borderline case4s requiring dual symbols**



Plasticity Chart

Particle Size	Sieve sizes	Material
mm	< #200	Silt or clay
< 0.074	#200 to #40	Sand
0.074 to 0.42	#40 to #10	Fine
0.42 to 2.00	#10 to #4	Medium
2.00 to 4.76		Coarse

Particle Size	Sieve	Material
mm		
4.76 to 19.1	#4 to 3/4 in.	Gravel
		Fine
19.1 to 76.2	3/4 in. to 3 in.	Coarse
76.2 to 304.8	3 in. to 12 in.	Cobble
304.8 to 914.4	12 in. to 36 in.	Boulders

* Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg Limits: suffix d used when L.L. is 23 or less and the P.I. is 6 or less; the suffix is used when L.L. is greater than 26.

** Borderline classifications used for soils possessing characteristics of two groups are designated by combinations of groups symbols. For example; GW-GC, well-graded gravel-sand mixture with clay binder.

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BORING NUMBER B-1

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT BROWN SILTY CLAY WITH SAND, GRAVEL AND ROOT FRAGMENTS, MOIST	SPT 1	70	1-1-2-2 (3)	2.5	
2.5		(CL-ML) MEDIUM STIFF TO VERY STIFF BROWN SILTY CLAY WITH SAND AND GRAVEL, MOIST	SPT 2	75	3-7-7-7 (14)	4	
5.0			SPT 3	80	7-11-12-15 (23)	4.5	
7.5			SPT 4	55	11-15-14-15 (29)	3.5	
		(CL-ML) HARD RED-BROWN RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 5	30	20-22-20-17 (42)	4.5	
10.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

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Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
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BORING NUMBER B-2

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT TO STIFF BROWN-RED SANDY SILTY CLAY WITH ROOT FRAGMENTS AND GRAVEL, MOIST	SPT 1	60	1-2-1-2 (3)	1	
2.5			SPT 2	55	3-3-5-6 (8)	.5	
		(CL-ML) STIFF BROWN-RED SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 3	70	4-10-16-16 (26)	4.5	
5.0							
		(CL-ML) HARD RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 4	75	19-27-25-25 (52)	4.5	
7.5							
			SPT 5	65	23-25-25-24 (50)	4.5	
10.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

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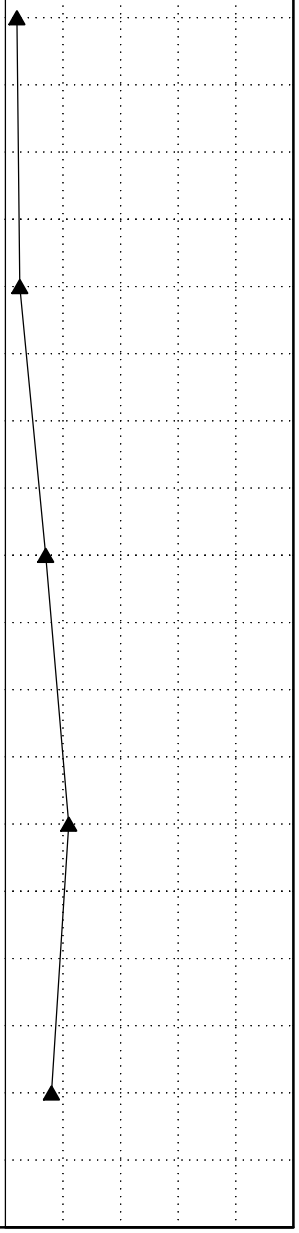
BORING NUMBER B-3

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT TO STIFF BROWN SANDY SILTY CLAY WITH GRAVEL AND ROOT FRAGMENTS, MOIST	SPT 1	55	1-2-2-2 (4)		
2.5			SPT 2	90	2-2-3-4 (5)	1	
5.0			SPT 3	45	3-5-9-12 (14)		
		(CL-ML) VERY STIFF BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 4	35	9-11-11-12 (22)		
7.5			SPT 5	65	10-8-8-10 (16)	1.75	
10.0		Bottom of borehole at 10.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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Kenney Geotechnical Engineering Services, PLLC
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BORING NUMBER B-4

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT RED-BROWN SANDY SILTY CLAY WITH GRAVEL AND ROOT FRAGMENTS, MOIST	SPT 1	65	1-1-2-2 (3)		
2.5		(ML) MEDIUM DENSE TO DENSE RED-BROWN SANDY SILT, MOIST	SPT 2	55	4-4-5-7 (9)	1.25	
5.0			SPT 3	75	9-7-8-9 (15)	2.25	
7.5			SPT 4	45	12-15-12-15 (27)	3	
10.0			SPT 5	10	10-12-14-14 (26)	4.5	

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

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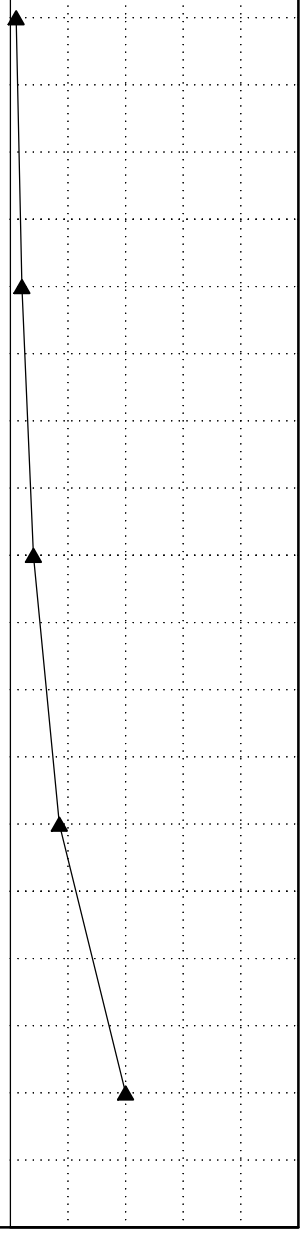
315-638-2706

BORING NUMBER B-5

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL	SPT 1	50	1-1-1-1 (2)		
2.5		(CL-ML) SOFT TO VERY STIFF RED-BROWN SANDY SILTY CLAY, MOIST	SPT 2	70	2-2-2-3 (4)	1	
5.0			SPT 3	60	2-2-6-5 (8)	1.5	
7.5			SPT 4	50	6-8-9-21 (17)	2.5	
		(CL-ML) HARD RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 5	20	16-19-21-20 (40)		
10.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Bottom of borehole at 10.0 feet.

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315-638-2706

BORING NUMBER B-6

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT BROWN SANDY SILTY CLAY WITH ROOT FRAGMENTS, MOIST	SPT 1	55	1-2-1-2 (3)	0.5	
2.5		(CL-ML) MEDIUM STIFF TAN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 2	75	2-3-4-8 (7)	1.25	
5.0		(ML) DENSE TO VERY DENSE TAN SANDY SILT WITH GRAVEL AND POSSIBLE WEATHERED ROCK, MOIST	SPT 3	65	11-16-30-38 (46)		
7.5			SPT 4	85	20-18-22-16 (40)		
			SPT 5	100	20-50/5"		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

>>

Bottom of borehole at 9.9 feet.

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 6/13/19 13:49 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

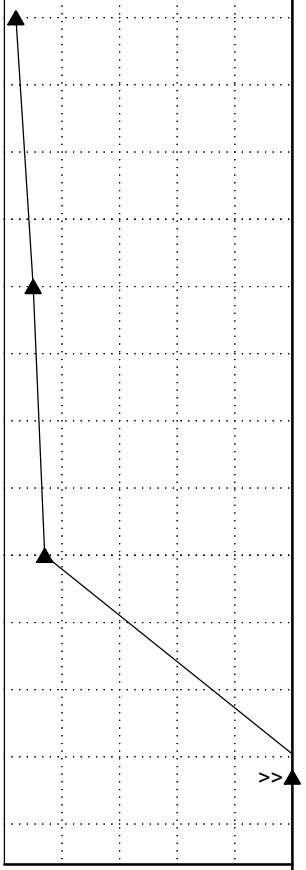
Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

BORING NUMBER B-7

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT BROWN-RED SANDY SILTY CLAY, MOIST	SPT 1	55	2-2-2-4 (4)	2	
2.5		(CL-ML) STIFF TO HARD BROWN-RED SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 2	65	4-5-5-6 (10)	3.5	
5.0			SPT 3	70	5-6-8-8 (14)	2.5	
			SPT 4	85	8-8-50/4"	4.5	

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Bottom of borehole at 7.3 feet.

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Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

BORING NUMBER B-8

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) MEDIUM STIFF RED-BROWN SANDY SILTY CLAY WITH ROOT FRAGMENTS, MOIST	SPT 1	70	1-2-3-2 (5)		
2.5		(CL-ML) MEDIUM STIFF TO STIFF RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 2	85	2-3-3-6 (6)	2	
5.0			SPT 3	80	3-5-5-7 (10)	2.5	
7.5		(CL-ML) VERY STIFF RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 4	95	9-14-15-15 (29)	3.5	
10.0			SPT 5	90	13-15-14-15 (29)	4.5	

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

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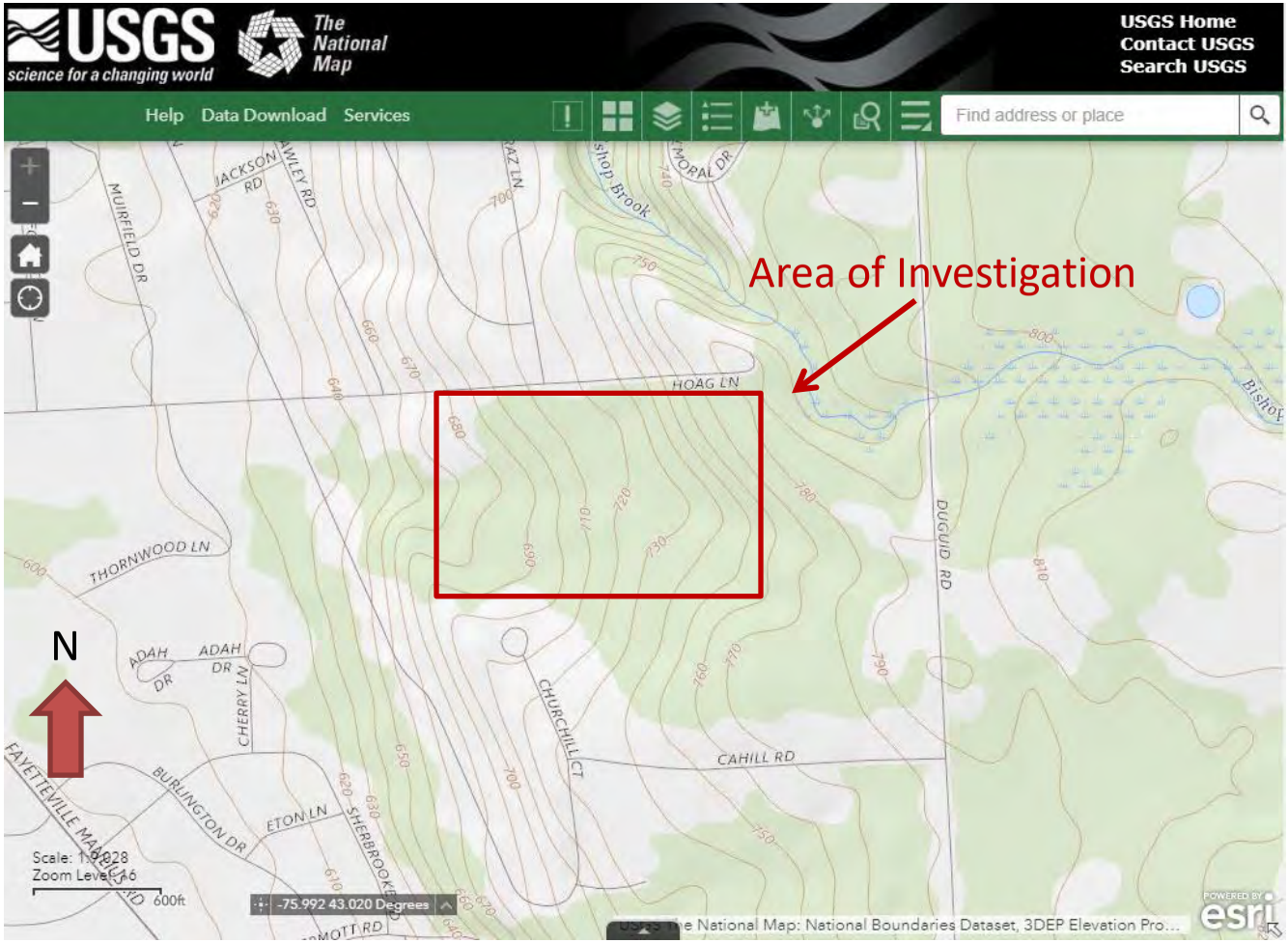
Figure 3: USGS Topographic Mapping



Kenney Geotechnical Engineering Services, PLLC
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Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 18, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Earthwork Material Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed additional subsurface investigation at the Woodland Hills project site. The purpose of the additional subsurface investigation was to provide evaluate the engineering characteristics of on site materials to determine if they are suitable for use during earthwork. The scope of the additional investigation included eight test pits (designated as TP-1 through TP-8) and laboratory testing. This report presents the results of the test pit investigation and laboratory testing and provides quality assurance/quality control recommendations for earthwork.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Subsurface investigation was performed at the locations designated on mapping prepared by Keplinger Freeman Associates Landscape Architecture (see attached). Test pits were excavated by J. K. Tobin Construction.

Subsurface Conditions Encountered- Test Pits

In general the test pits encountered glacial till consisting of stiff to hard reddish brown sandy clay with gravel, cobbles and boulders beneath a thin layer of topsoil. Topsoil ranged from 12 inches to 23 inches in thickness at the test pit locations.

Differing subsurface conditions were encountered at location TP-6. At this location, silty gravel with sand was encountered beneath approximately one foot of topsoil and extended to a depth of three feet, where highly weathered grey shale was encountered. The shale was brittle and could be excavated to a depth of five feet.

Test pit logs are attached to this report.

Laboratory Testing

Bulk samples were obtained from the test pits and tested in our Syracuse laboratory. Testing performed included:

- Moisture- Density Relationship Testing (Modified Effort) (ASTM D-1557)
- Natural Moisture Content (ASTM D 2216)
- Particle Size Analysis with Hydrometer (ASTM D-422)
- Atterberg Limits (ASTM D4318)

Test results are attached. Results are summarized in the following table:

Sample ID	Description	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Max. Dry Density (pcf)	Optimum Moisture Content (%)	Fines (%)
TPS-1	Red-brown Till	9	21	15	6	-	-	57
TPS-2	Red-brown Till	10	22	15	7	-	-	53
TPS-3	Red-brown Till	11	21	14	7	-	-	56
TPS-4	Red-brown Till	10	23	19	4	-	-	54
TPS-5	Red-brown Till	10	-	-	-	136.2	7.2	57
TPS-6 TOP	Silty Gravel	35	-	-	-	104.4	17.5	38
TPS-6 BOTTOM	Weathered Shale	23	-	-	-	110.6	16.2	14
TPS-7	Red-brown Till	10	-	-	-	137.3	7.2	59
TPS-8	Sandy Silt w/ Gravel	20	-	-	0	122.3	11.9	55

Analysis and Recommendations

The on site soils are suitable for re-use during earthwork provided that they are properly managed during construction. The till has a significant silt content and will lose strength if disturbed by saturation or freezing. Completed lifts of earthwork should be sealed with a smoothdrum roller at the end of each work day.

Earthwork must be performed using methods that will result in a stable excavations and fills. Typical temporary earthwork measures such as temporary drainage swales, stabilized haul roads, and the use of protective layers of crushed stone can be employed at this site. It is recommended that earthwork is observed by geotechnical personnel to ensure that all organic material is removed from the structural and pavement areas. Additional recommendations are as follows:

- Strip existing topsoil, roots and organics from all areas that will receive new construction to establish subgrade.
- Proof-roll exposed subgrade with a fully loaded dump truck, or accepted alternative equipment, under the observation of geotechnical personnel. Areas that rut, weave, or deflect should be over-excavated and replaced with compacted structural fill (see below for structural fill characteristic requirements).
- Utilize engineered fill to raise site grades to the desired elevation. On site soil can be used as engineered fill provided that particles larger than 2 inches are removed and the material is placed, compacted, and maintained as described herein.
- Field moisture contents for engineered fill should be maintained within 2 percentage points of the optimum moisture content established by laboratory testing to provide adequate compaction. All fill should be placed in level lifts having a loose thickness no greater than 12 inches and should be compacted to at least the following minimum percentages of the Modified Proctor (ASTM D-1557) maximum dry density:

    - Below footings: 95%
    - Beneath slab-on-grade or pavements: 95%
    - Utility trench backfill: 95%
    - Beneath landscape areas: 90%
    - Beneath sidewalks and exterior slabs: 95%
    - Structural berms: 95%

    In-place density testing should be performed at a frequency of one test per 500 square feet per lift in open areas and one test per 25 feet per lift in trenches.
- If the structure is to be constructed during the winter months, or if the building interiors will be subjected to freezing temperatures after footer construction, adequate frost cover and protection must be provided. Earthwork cannot be performed with frozen material.
- Permanent slopes should be graded no steeper than 3 horizontal: 1 vertical unless reinforced with geosynthetic materials.

In utility trenches, or other confined areas, small compaction equipment may be necessary such as a vibratory plate, jumping jack or walk-behind vibratory roller. In-place density testing should be performed at a frequency of one test per 25 feet per lift in trenches. Utility trench fill should be placed in level lifts no greater than 8 inches in thickness and should be compacted to at least 95%the Modified Proctor (ASTM D-1557) maximum dry density. Adequate frost cover and protection must be provided during winter weather construction. Earthwork cannot be performed with frozen material.

Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
Kenney Geotechnical Engineering Services PLLC

Christopher Kenney

Christopher M. Kenney, P.E.
President

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-1

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 676 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.5					674.5
					(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED AT 5-10 FEET
5.0			CL-ML		
7.5	GB 1	MC = 9% LL = 21 PL = 15 Fines = 57%			
10.0					666.0



Bottom of test pit at 10.0 feet.

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Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-2

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 674 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.5					672.5
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 10% LL = 22 PL = 15 Fines = 53%			
10.0					10.0 664.0



Bottom of test pit at 10.0 feet.

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Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-3

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 680 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					679.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 11% LL = 21 PL = 14 Fines = 56%			
10.0					10.0 670.0



Bottom of test pit at 10.0 feet.

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Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-4

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 681 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					680.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 10% LL = 23 PL = 19 Fines = 54%			
10.0					671.0



Bottom of test pit at 10.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-5

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 716 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					715.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
5.0					
7.0		MC = 10% Fines = 57%			709.0
					Bottom of test pit at 7.0 feet.



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Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-6

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 704 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0						
			ML		(ML) TOPSOIL	
					1.0	703.0
			GM		(GM) BROWN SILTY GRAVEL WITH SAND, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED. BULK SAMPLE RETRIEVED	
		MC = 35% Fines = 38%				
2.5						
					3.0	701.0
					GREY/OLIVE HIGHLY WEATHERED SHALE, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED BULK SAMPLE RETRIEVED	
		MC = 23% Fines = 14%				
5.0					5.0	699.0

Bottom of test pit at 5.0 feet.



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315-638-2706

TEST PIT NUMBER TPS-7

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 722 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					721.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
2.5					
5.0					
7.0		MC = 10% Fines = 59%			715.0
					Bottom of test pit at 7.0 feet.



GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-8

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 683 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0			ML		(ML) TOPSOIL	
					1.0	682.0
			ML		(ML) BROWN SANDY SILT WITH CLAY AND GRAVEL, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED BULK SAMPLE RETRIEVED	
2.5		MC = 20% Fines = 55%			3.0	680.0

Bottom of test pit at 3.0 feet.



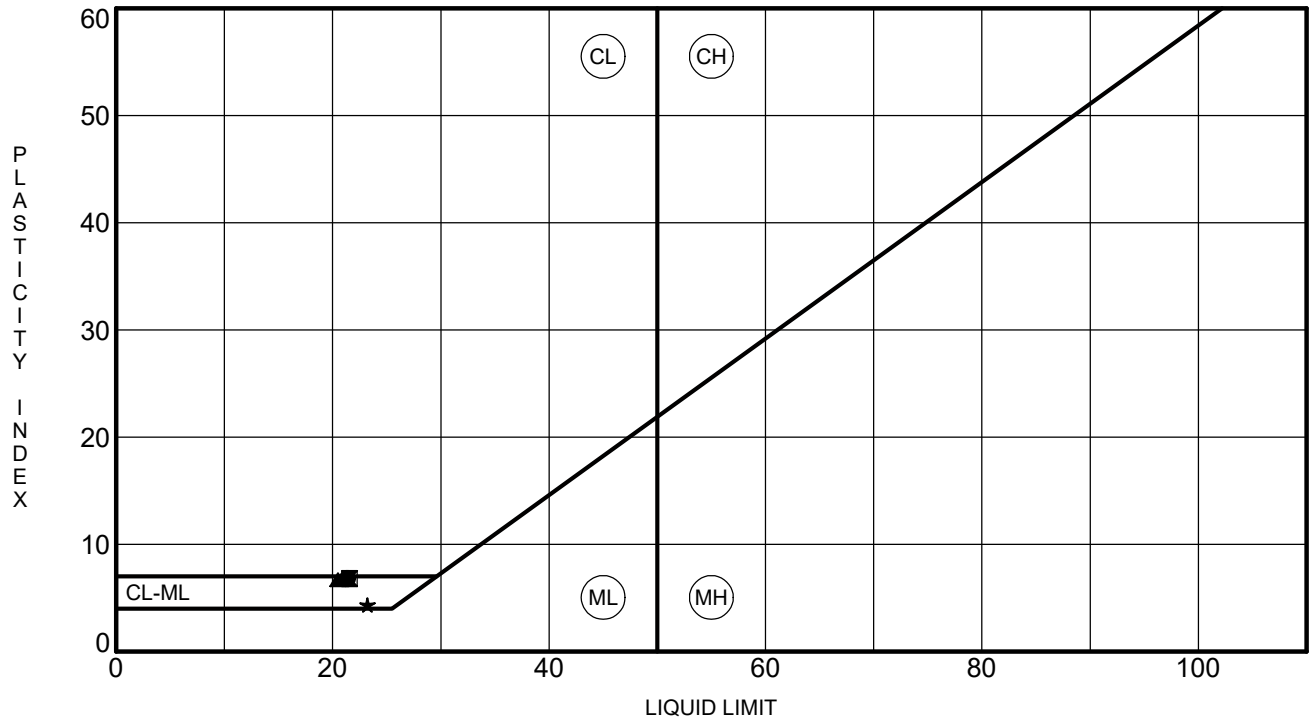
GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

ATTERBERG LIMITS' RESULTS

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**TPS-1**	**7.5**	**21**	**15**	**6**	**57**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
⊠	**TPS-2**	**7.5**	**22**	**15**	**7**	**53**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
▲	**TPS-3**	**7.5**	**21**	**14**	**7**	**56**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
★	**TPS-4**	**7.5**	**23**	**19**	**4**	**54**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**

ATTERBERG LIMITS - GINT STD US LAB.GDT - 5/11/20 13:11 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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315-638-2706

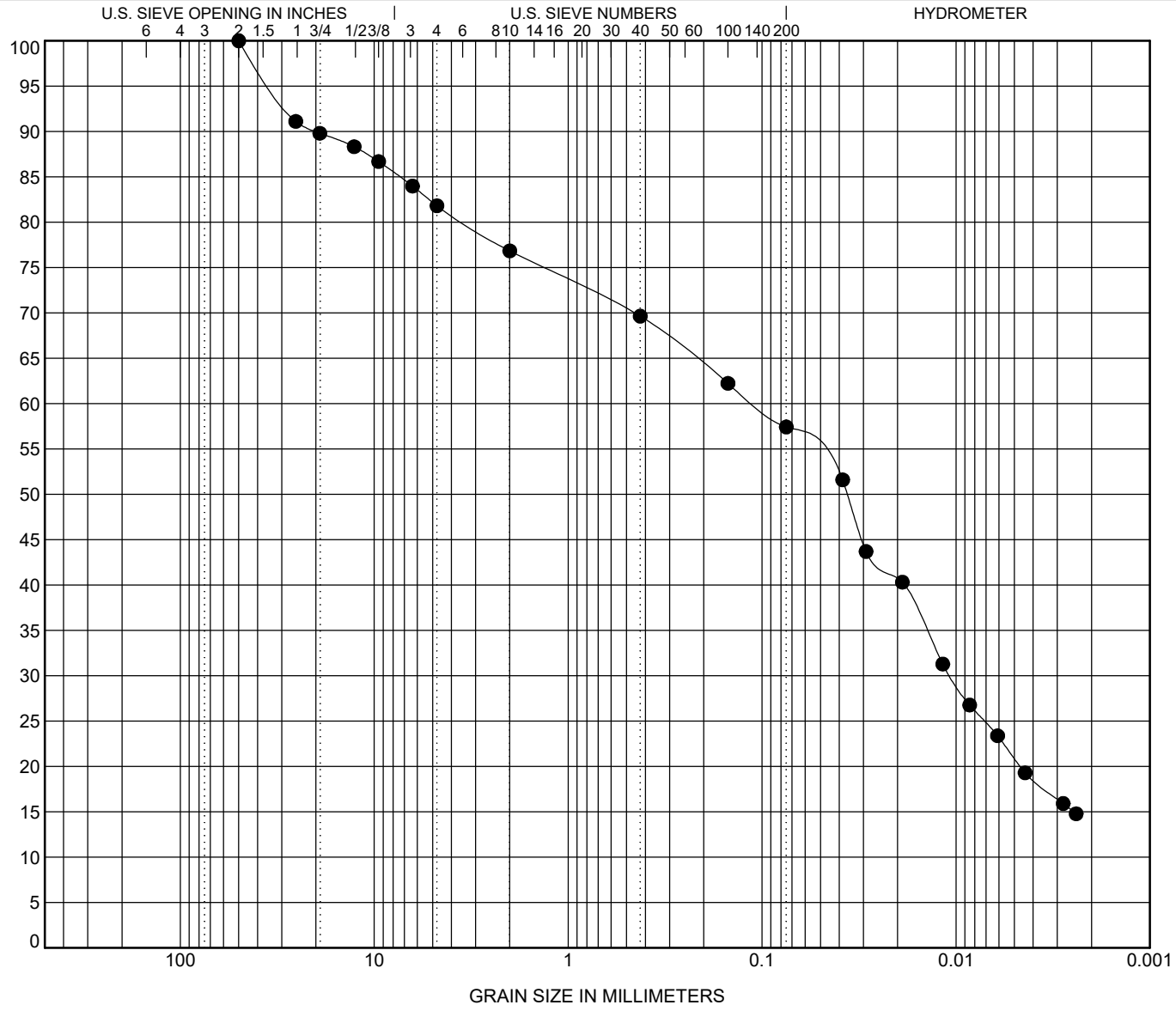
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-1	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**15**	**6**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-1	7.5	**50**	**0.109**	**0.011**		**18.2**	**24.4**	**36.5**	**20.9**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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GRAIN SIZE DISTRIBUTION

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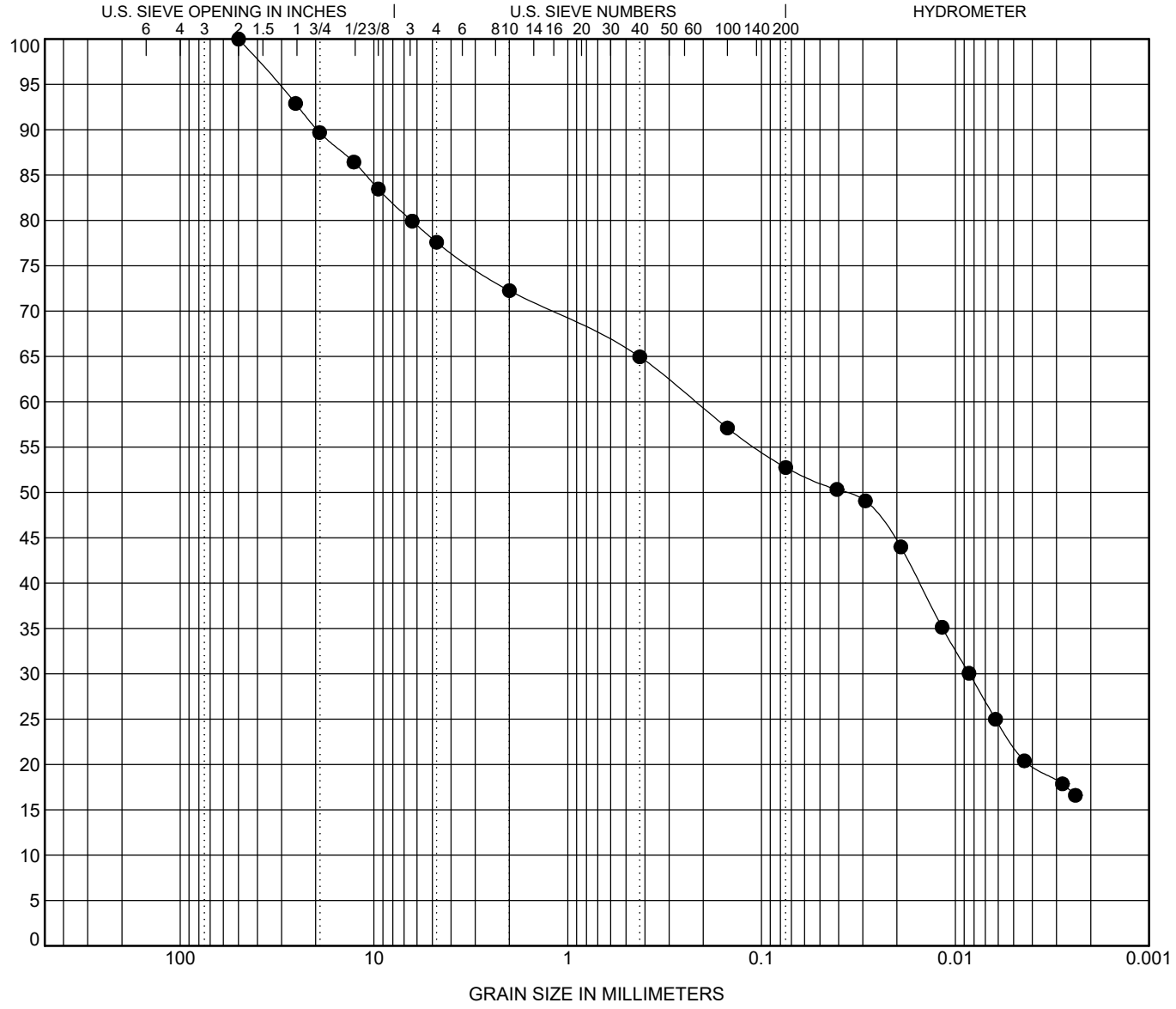
PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-2	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**22**	**15**	**7**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-2	7.5	**50**	**0.22**	**0.008**		**22.4**	**24.8**	**30.6**	**22.1**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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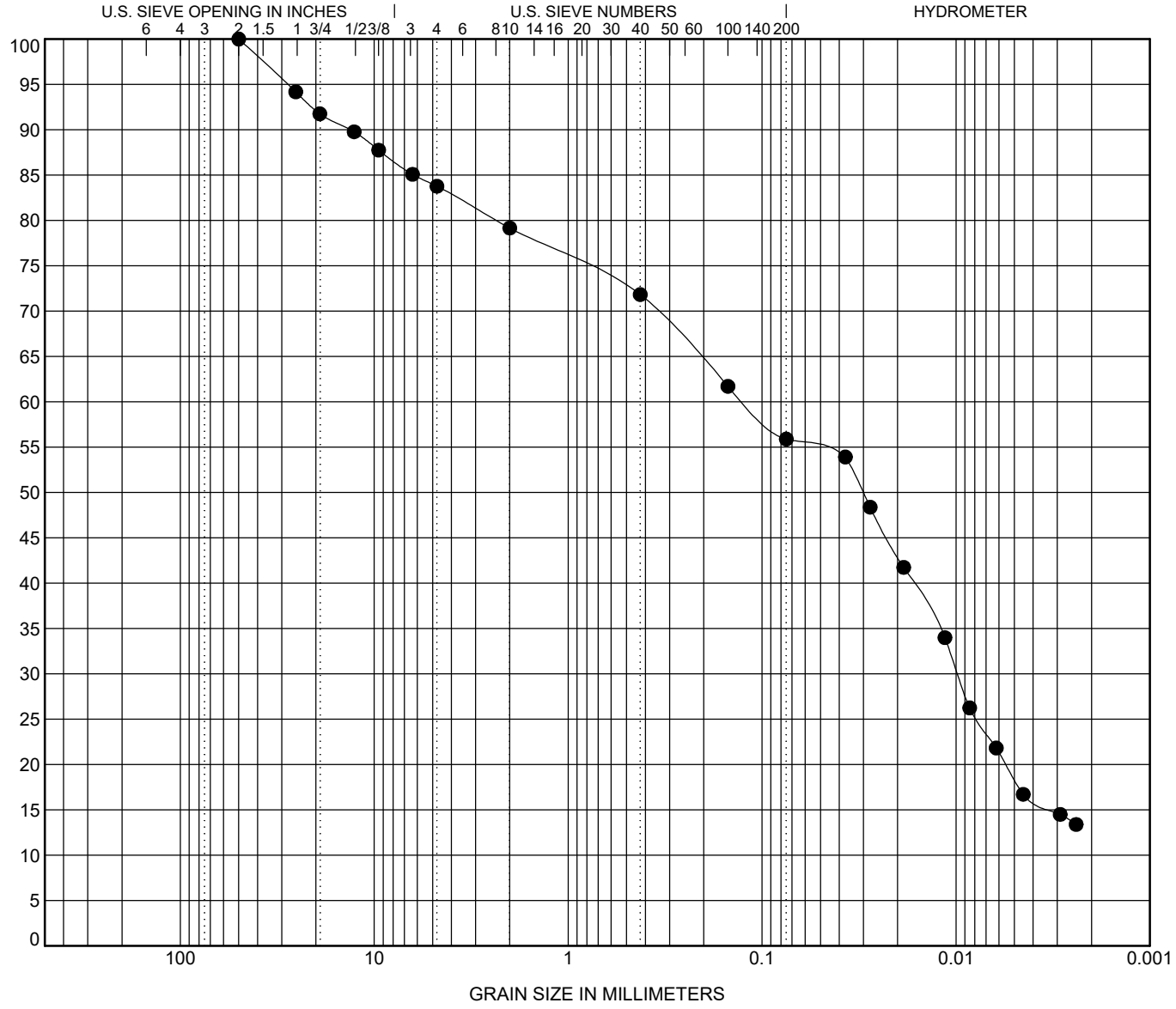

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-3	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**14**	**7**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-3	7.5	**50**	**0.123**	**0.01**		**16.2**	**27.9**	**37.5**	**18.4**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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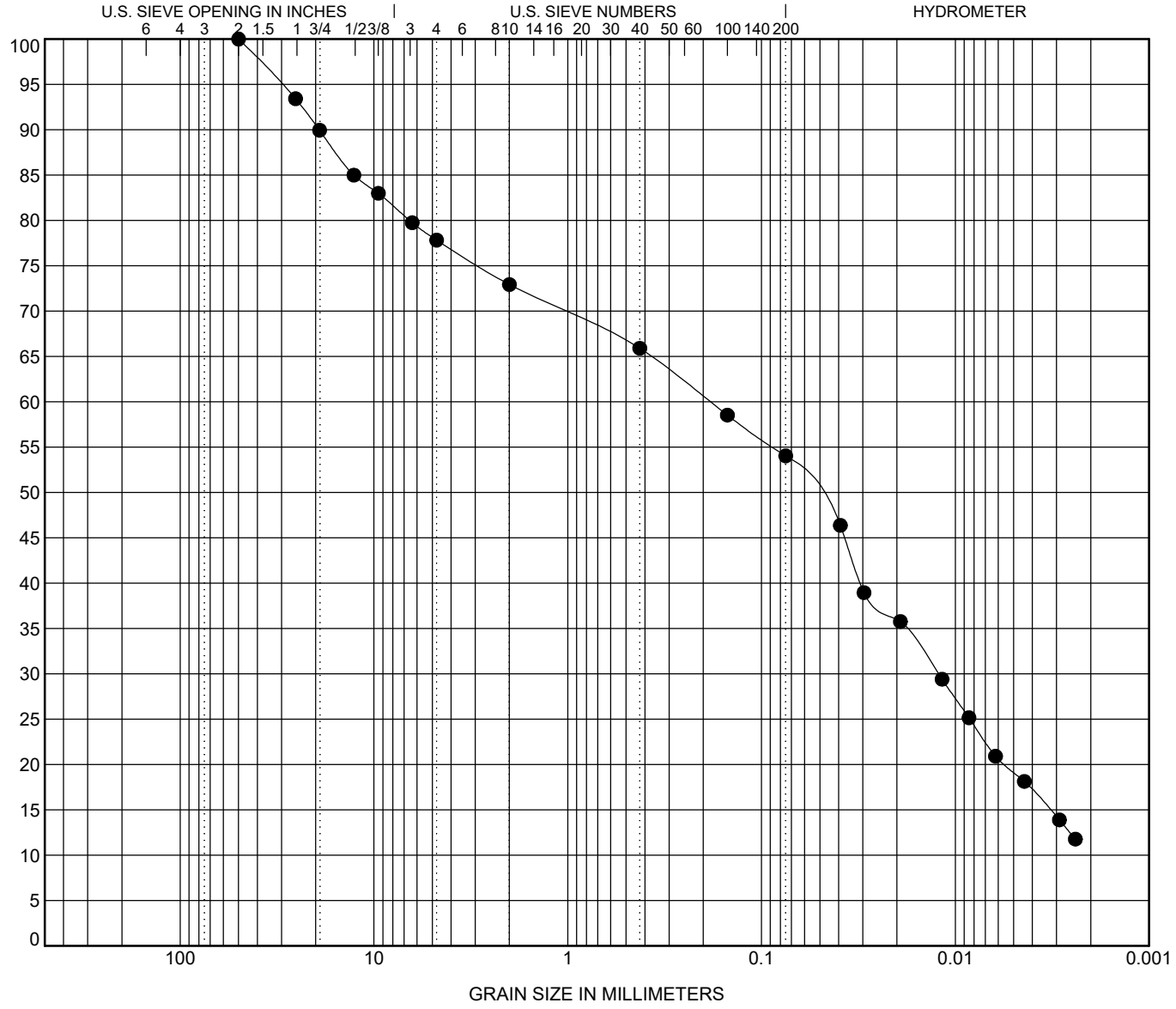

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-4	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**23**	**19**	**4**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-4	7.5	**50**	**0.185**	**0.012**		**22.2**	**23.8**	**34.9**	**19.2**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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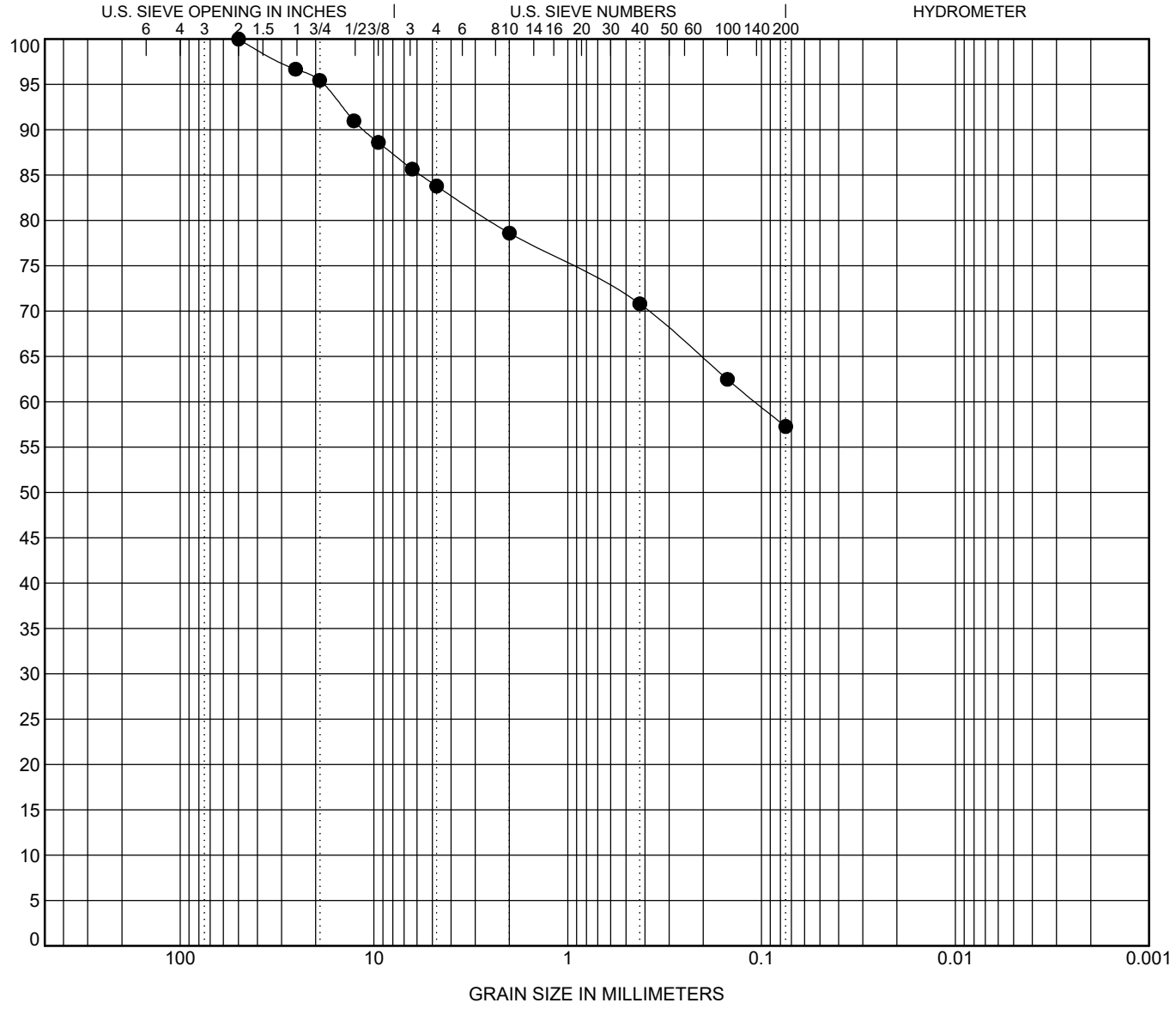

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	TPS-5	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠								
▲								
★								
⊙								

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TPS-5	7.0	**50**	**0.108**			**16.2**	**26.5**	**57.3**	
⊠										
▲										
★										
⊙										

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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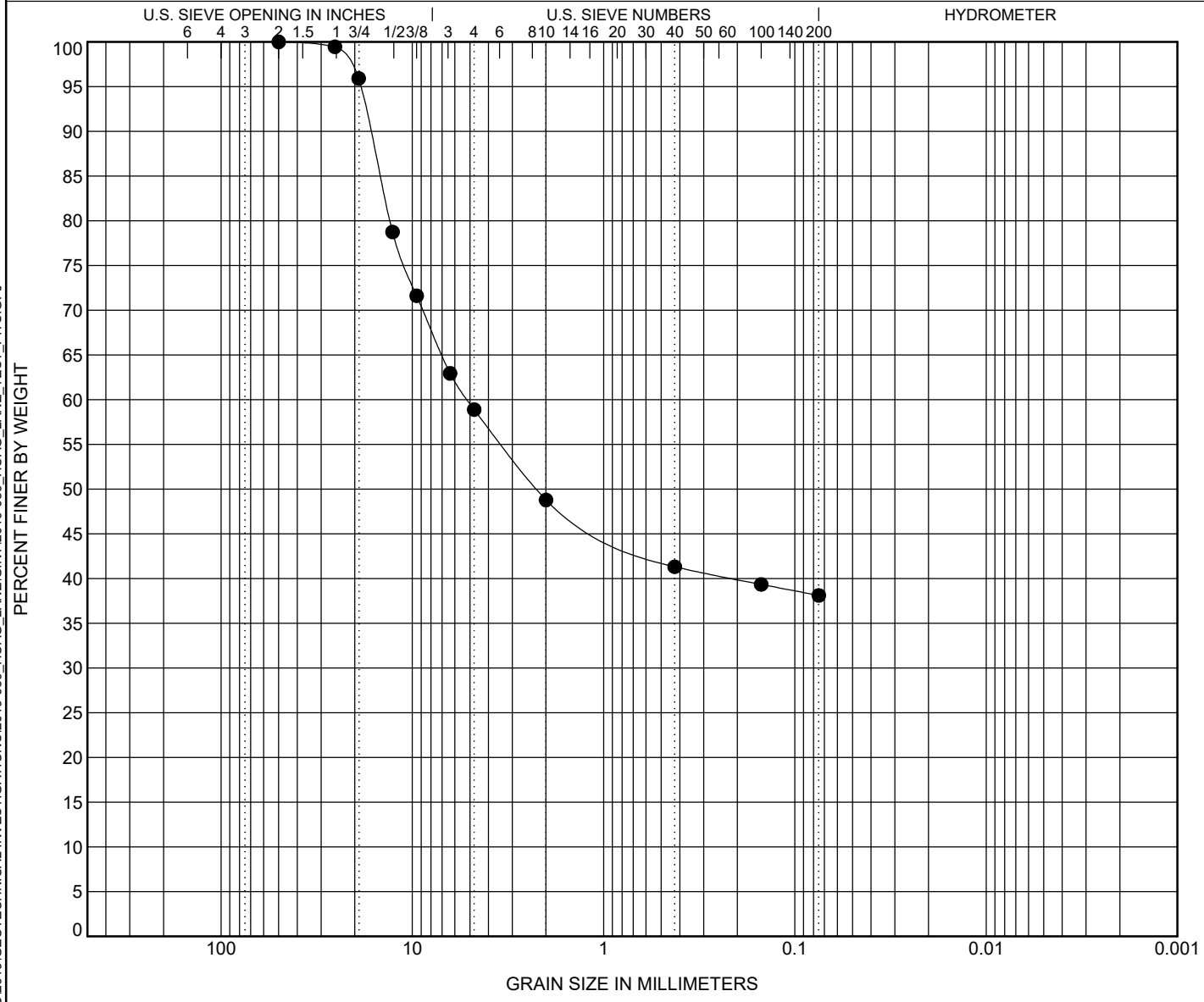

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	2.0	**BROWN SILTY GRAVEL WITH SAND**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TPS-6**	**2.0**	**50**	**5.144**			**41.1**	**20.8**	**38.1**	
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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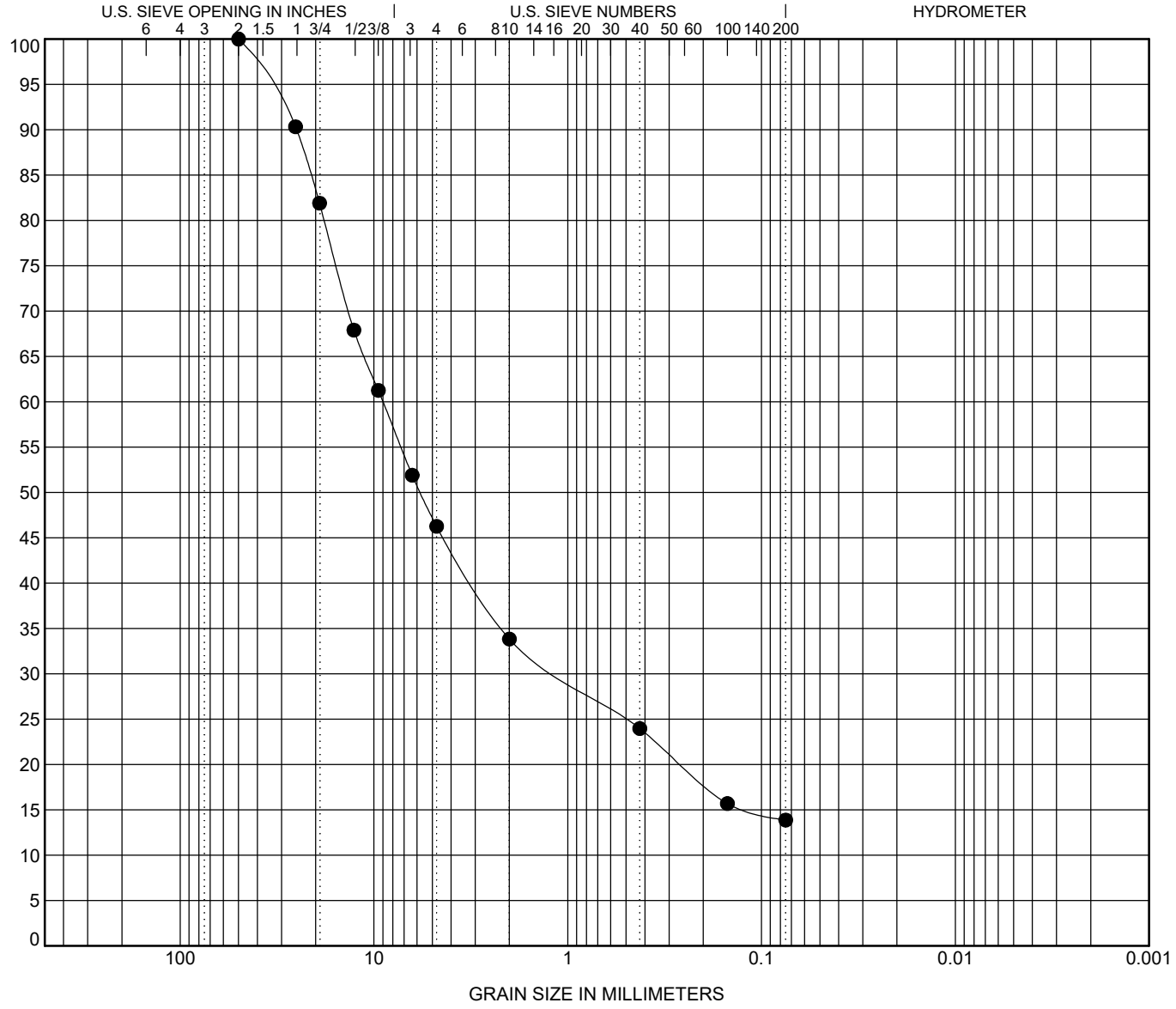

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	4.0	**GREY/OLIVE HIGHLY WEATHERED SHALE**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-6	4.0	**50**	**9.001**	**1.096**		**53.7**	**32.4**	**13.9**	
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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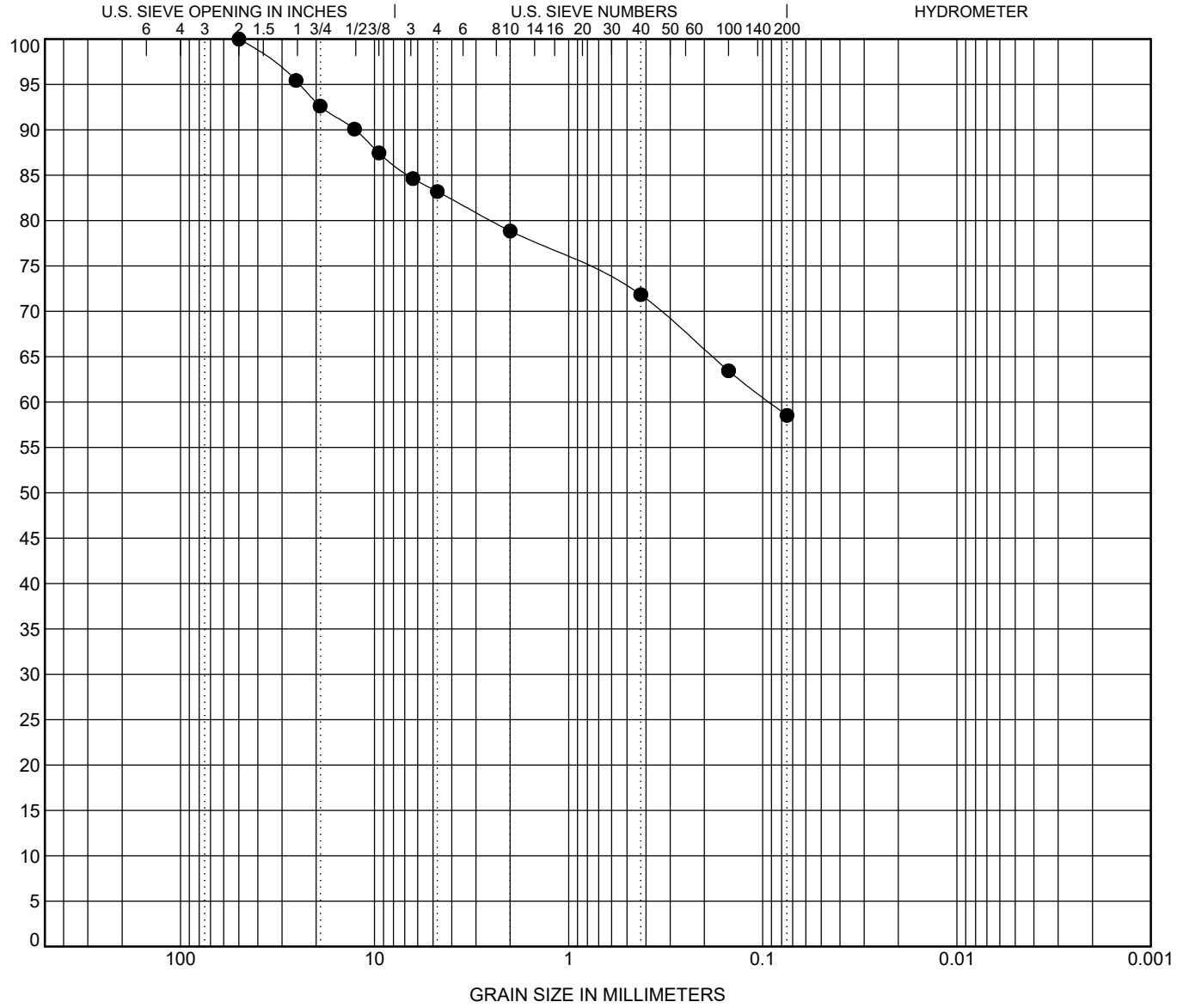

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-7	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-7	7.0	**50**	**0.092**			**16.8**	**24.7**	**58.5**	
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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GRAIN SIZE DISTRIBUTION

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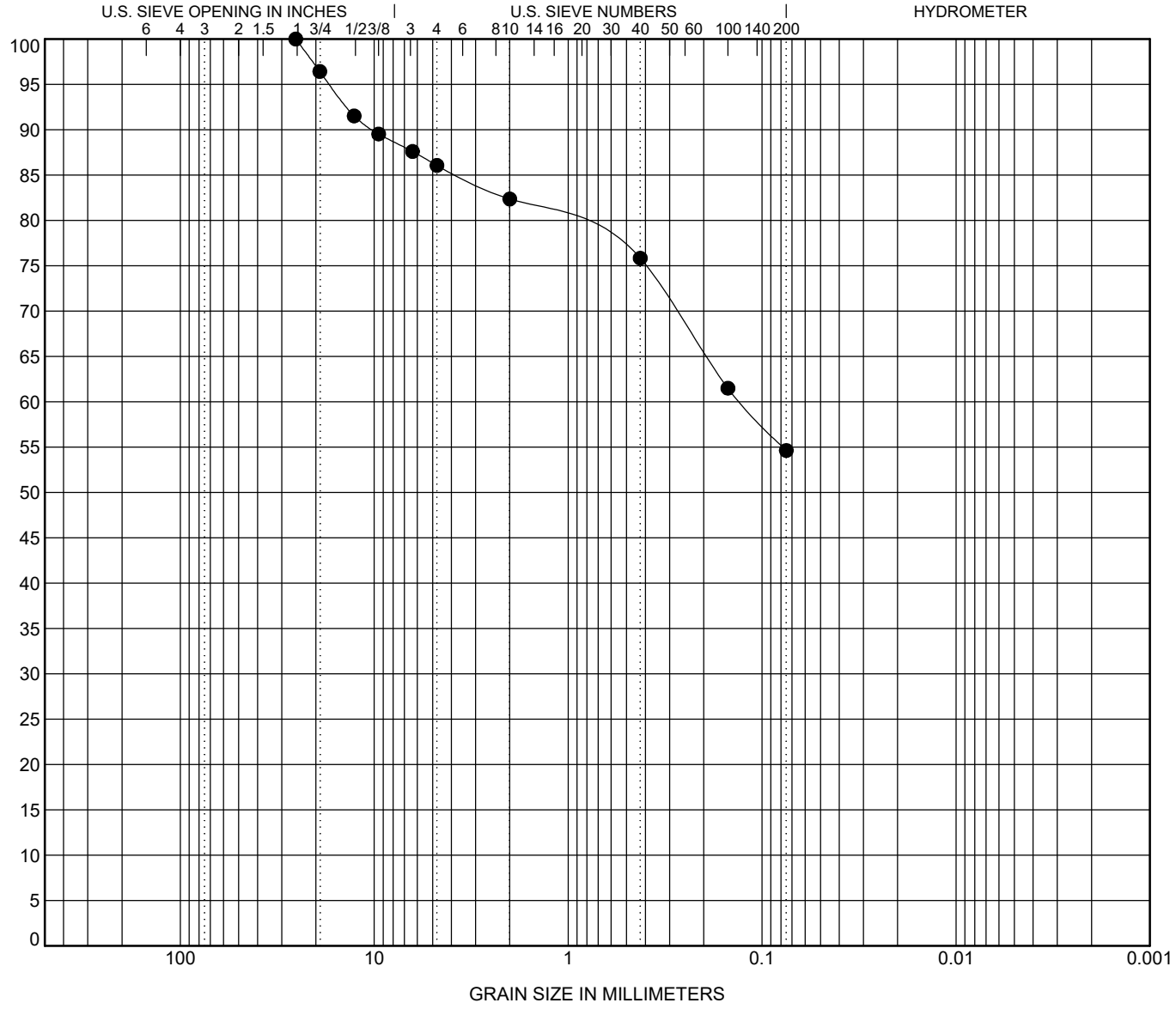

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-8	3.0	**BROWN SANDY SILT WITH CLAY AND GRAVEL**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-8	3.0	**25.4**	**0.129**			**13.9**	**31.4**	**54.6**	
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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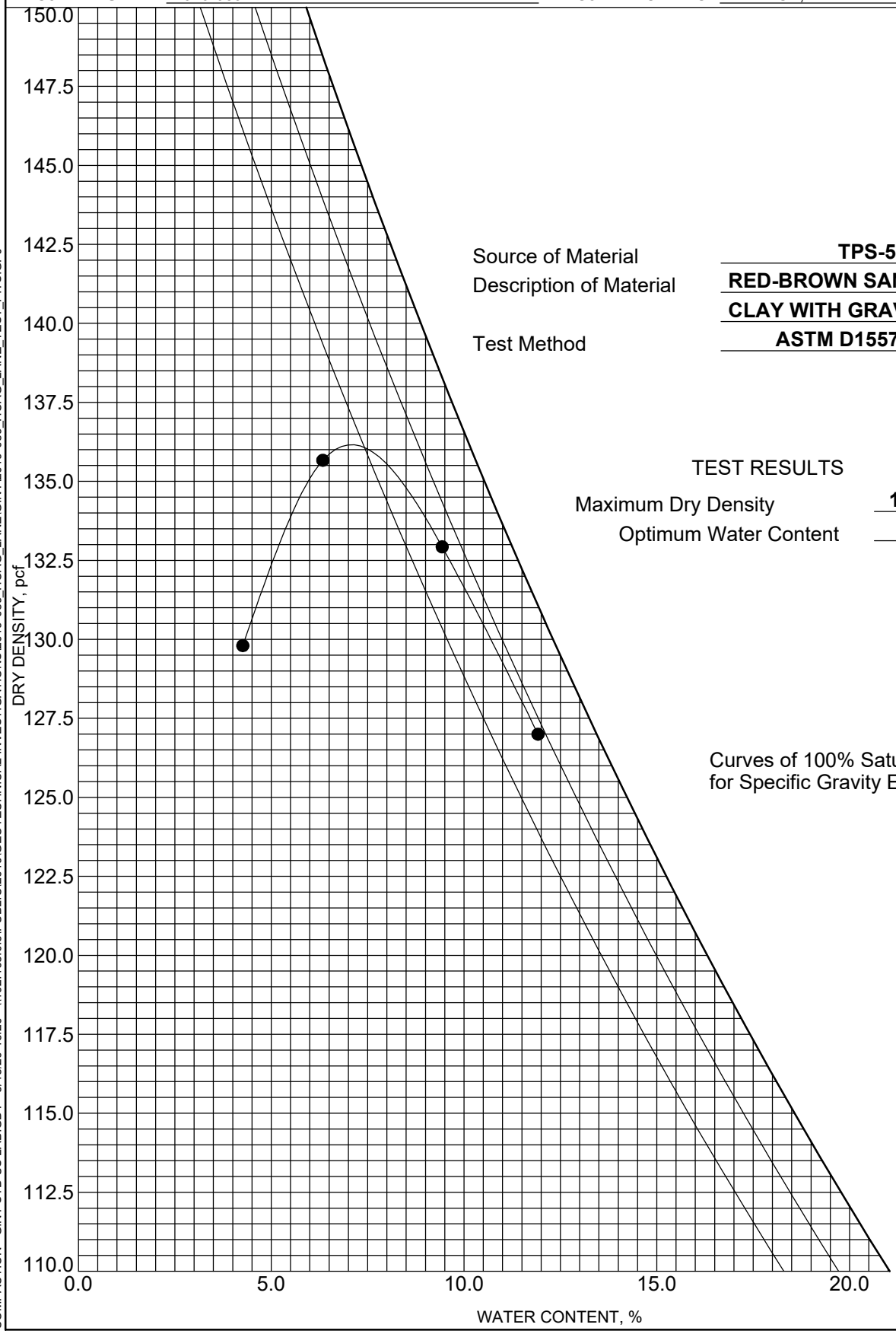
MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-5 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **136.2** PCF
Optimum Water Content: **7.2** %

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:20 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

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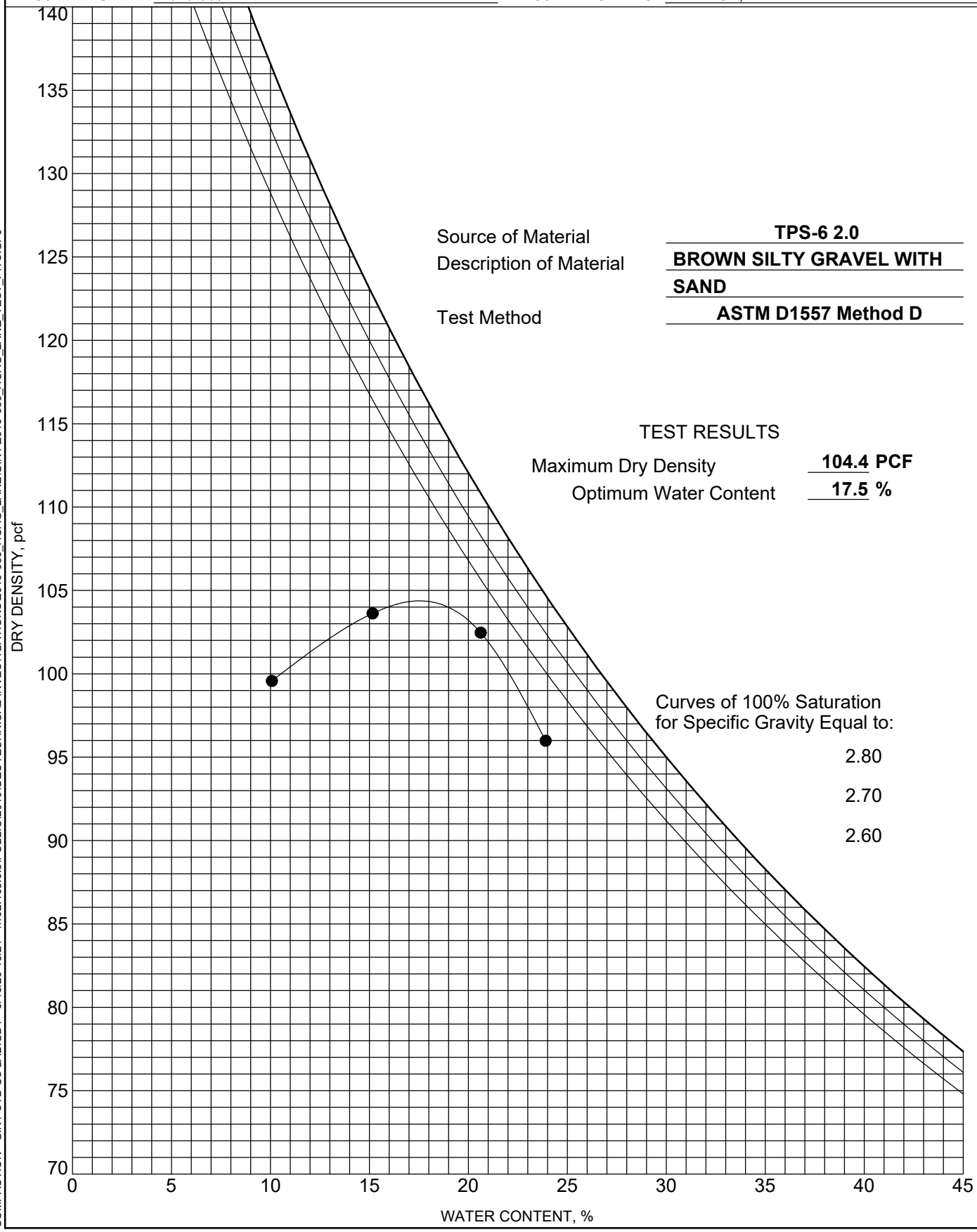

Source of Material: **TPS-6 2.0**
Description of Material: **BROWN SILTY GRAVEL WITH SAND**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **104.4** PCF
Optimum Water Content: **17.5** %

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:21 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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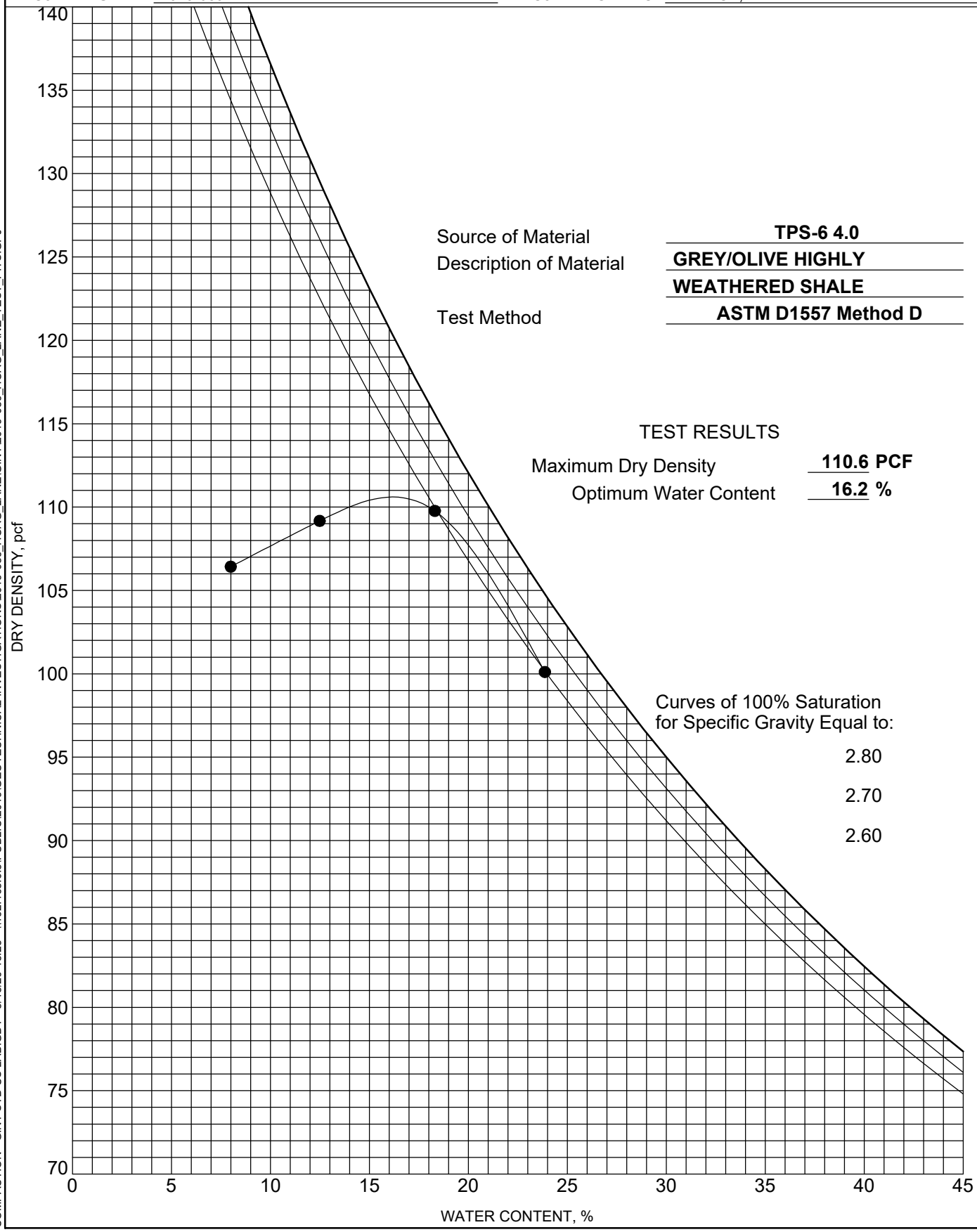

Source of Material: **TPS-6 4.0**
Description of Material: **GREY/OLIVE HIGHLY WEATHERED SHALE**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **110.6** PCF
Optimum Water Content: **16.2** %

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:23 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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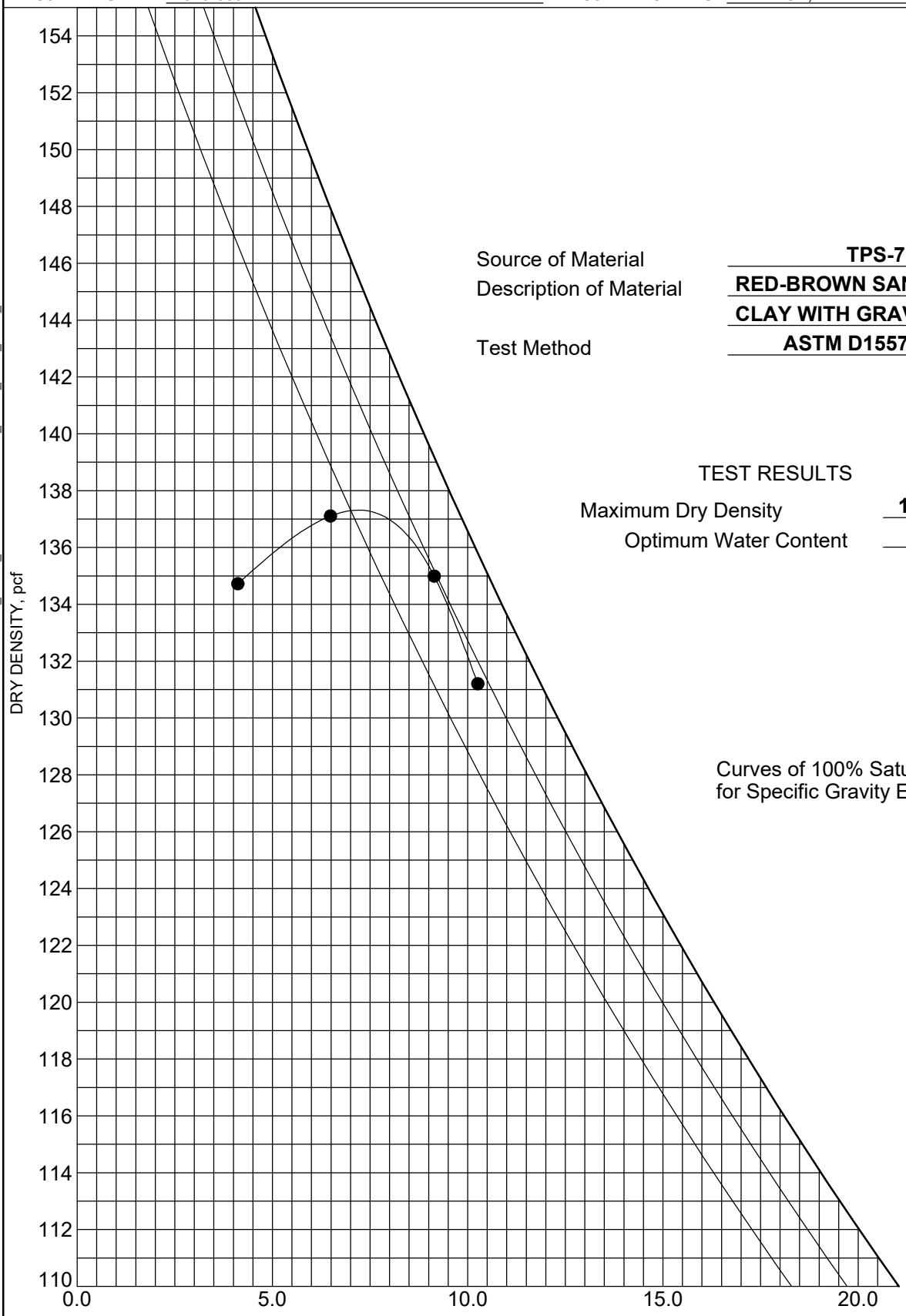

Source of Material: **TPS-7 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **137.3** PCF
Optimum Water Content: **7.2** %

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:23 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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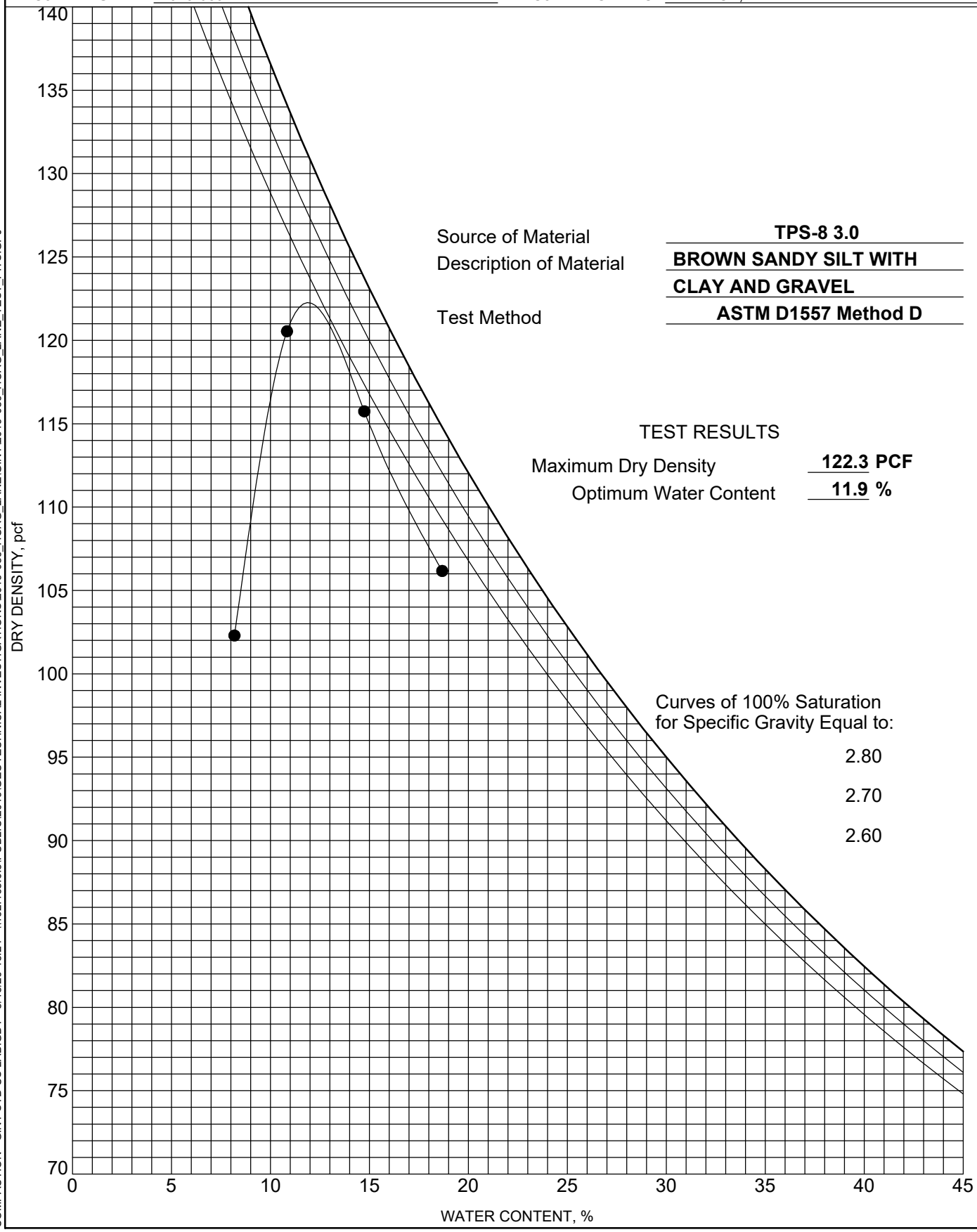


Source of Material: **TPS-8 3.0**
Description of Material: **BROWN SANDY SILT WITH CLAY AND GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **122.3** PCF
Optimum Water Content: **11.9** %

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:24 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

PERCOLATION TEST RESULTS

X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14' - SANDY SILTY CLAY	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS

TPS-#

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PT-1	674.00	664.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-2	672.00	662.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-3	677.00	667.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-4	680.00	662.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-5	715.00	709.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-6	705.00	700.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOBIN.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS

B-#

B -1 0"-6" TOPSOIL 6"-24" SILTY CLAY 24"-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -2 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -3 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -4 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -5 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -6 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B -7 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -8 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

LEGEND

X-HOAG-LEGEND

EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR		UD	UNDERDRAIN			PEA GRAVEL DIAPHRAGM/STONE SHOULDER
+377.7		SPOT ELEVATION	EX SAN	S	SANITARY PIPE-GRAVITY			OUTLET PROTECTION
	HP/LP	HIGH / LOW POINT		FM 3" LPS	SANITARY PIPE-LOW PRESSURE		6' 10' 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	PT-2	PERCOLATION TEST PIT	E/T		OVERHEAD ELECTRIC		3' 15' 10'	OUTLET PROTECTION FOR 8"- 12" PIPE
	B-#	DEEP HOLE	E		UNDERGROUND ELECTRIC		X Y 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		FENCE	T		TELEPHONE			TRAFFIC SIGN
		UTILITY POLE		ST MH	STORM STRUCTURE		SF	SILT FENCE
W	W	WATER LINE						EROSION CONTROL BLANKET
		FIRE HYDRANT		DI	INLET			
EX ST	ST	STORM PIPE		CB MH	CATCH BASIN/MANHOLE			
		TREE		CO	CLEAN OUT			
		SHRUB			SANITARY MANHOLE			
	QUANTITY / PLANT TYPE	PLANT KEY			ASPHALT PAVEMENT-DRIVEWAY			
		VEGETATION			ASPHALT PAVEMENT-ROAD			

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE. MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. THE STUMPS, TREES AND SMALLER VEGETATION REMAINS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.

2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.

8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.

9. U.F.P.O. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.

10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.

11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.

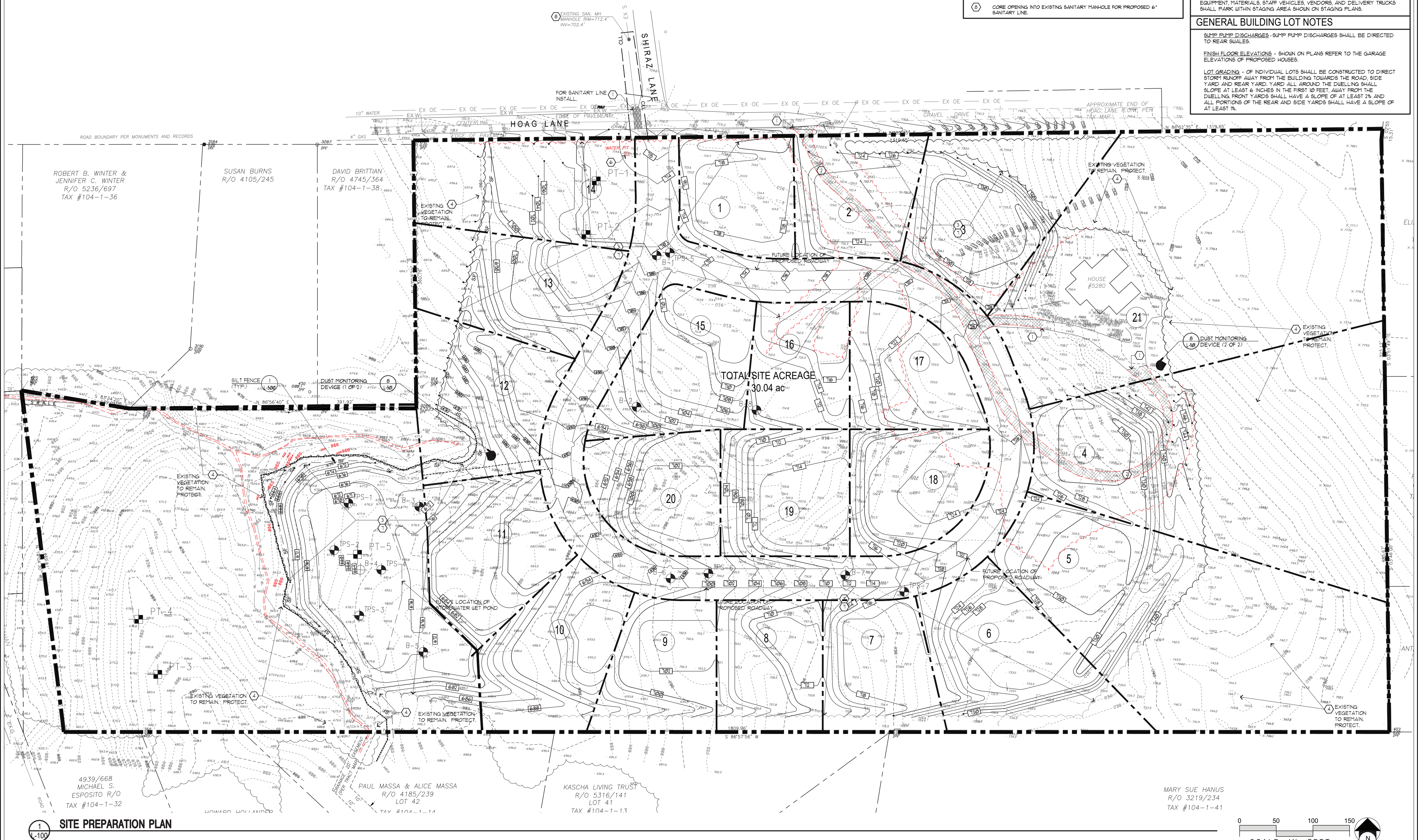
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 L-100 **SITE PREPARATION PLAN**

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK · RUDY L. ZONA · 079543 · LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	10/22/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/09/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	06/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/02/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	09/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	12/30/18				

△ - Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT · SCOTT LEE FREEMAN · 001473 · STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Plotted By:
Date Plotted:
Drawing File:

List Points Sat May 09 15:46:32 2020

File> Z:\SLS SURVEY FILES\HOAG ROAD SUBD\HOAG ROAD.crd
Projection: State Plane 83: NY Central
Lat/Lon Datum: NAD83
Geoid: NONE
Point# 3365
Northing 1099874.8709
Easting 980369.3843
Latitude (Dec Deg) N43.0171
Longitude (Dec Deg) W75.9844
Description BORE TPS 1

Point# 3366
Northing 1099809.7089
Easting 980353.4860
Latitude (Dec Deg) N43.0169
Longitude (Dec Deg) W75.9845
Description BORE TPS 2

Point# 3367
Northing 1099722.2497
Easting 980392.4004
Latitude (Dec Deg) N43.0167
Longitude (Dec Deg) W75.9844
Description BORE TPS 3

Point# 3368
Northing 1100240.0930
Easting 980789.7175
Latitude (Dec Deg) N43.0181
Longitude (Dec Deg) W75.9829
Description BORE TPS 5

Point# 3369
Northing 1099794.4420
Easting 981134.4084
Latitude (Dec Deg) N43.0169
Longitude (Dec Deg) W75.9816
Description BORE TPS 7

Point# 3370
Northing 1099786.3150
Easting 980419.0482
Latitude (Dec Deg) N43.0168
Longitude (Dec Deg) W75.9843
Description BORE TPS 4

Point# 3371
Northing 1099805.1532

Easting	980865.7272
Latitude (Dec Deg)	N43.0169
Longitude (Dec Deg)	W75.9826
Description	BORE TPS 6

Point#	3372
Northing	1099927.9367
Easting	980723.2566
Latitude (Dec Deg)	N43.0172
Longitude (Dec Deg)	W75.9831
Description	BORE TPS 8

Number of points listed> 8

Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 27, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Berm Stability Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed a geotechnical evaluation of the proposed berms to be constructed for stormwater management features at the referenced site. The purpose of our analysis was to evaluate the stability of the berms under anticipated loading conditions. This report presents the results of our evaluation and provides output from stability analyses.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Analysis Scenarios

The proposed berms are illustrated on drawings prepared by Keplinger Freeman Associates Landscape Architecture (see attached). It was assumed for the purposes of our analysis that the berms would be constructed to the lines and grades indicated on the design drawings using on-site material with the engineering characteristics described in our previously submitted Hoag Lane Earthwork Report.

The engineering characteristics of the on-site materials, when recompacted in accordance with our recommendations, are well suited for berm construction. The recompacted glacial till exhibited good undrained shear strength (greater than 2500 pounds per square foot) and low permeability (less than 1 x 10-6 cm/sec). It should be noted that the in-situ glacial till exhibited even higher strength and also had low permeability. Topsoil and organic matter, up to approximately 24 inches in thickness at the berm area, will be removed from beneath the berm footprint during construction.

The recompacted till will be in direct contact with the in-situ till. The interface between the two materials will be scarified to promote bonding and prevent the creation of a seepage interface. Seepage rates through the berm are anticipated to be very low based on the engineering characteristics of the in-situ glacial till and recompacted on-site materials. Therefore it is our opinion that a keyway at the base of the berm is not necessary.

The maximum slopes illustrated on the drawings are a 33% exterior berm grade, 20% interior berm grade, and a maximum berm height of 12 feet. We assumed water levels in the berm at flood stage were 1 foot below the crest. Water depth at typical service conditions is 6 feet.

Our analysis utilized the geotechnical evaluation guidelines presented in the NYSDEC Dam Design publication as requested by the Town of Manlius. Common geotechnical practice was also employed. The following evaluations were performed:

- Bearing Pressure and Settlement
- Sliding
- Soil Piping
- Slope Stability:
    - Water at Flood Level
    - Rapid Drawdown
    - Seismic Event

The analyses modeled the highest berm to be constructed (west slope of westernmost stormwater management feature). Soil used in berm construction was assumed to be the on site glacial till, a low plasticity sandy clay with gravel. The assumed geotechnical strength parameters are summarized in the following table.

Material	Condition	Unit Weight (pcf)	Cohesion (psf)	Internal Friction (degrees)
Recompacted Till (Engineered Fill)	Short Term	140	1000	0
	Long Term	140	100	32
Undisturbed Glacial Till	Short Term	145	2500	0
	Long Term	145	350	34

For seismic analysis, a ground acceleration factor of 0.05 was utilized.

Results

The geotechnical evaluations performed indicate the berm will remain stable under the modeled service scenarios. The following table summarizes evaluation results. Full output is attached for reference.

Scenario	Condition	Calculated Minimum Factor of Safety	Result
Service Condition with Full Pool	Short Term	9.4	Acceptable
Service Condition with Full Pool	Long Term	2.9	Acceptable
Flood Stage	Short Term	9.4	Acceptable
Flood Stage	Long Term	2.7	Acceptable
Rapid Drawdown after Flood Stage	Short Term	8.7	Acceptable
Rapid Drawdown after Flood Stage	Long Term	2.7	Acceptable
Earthquake	Short Term	2.3	Acceptable

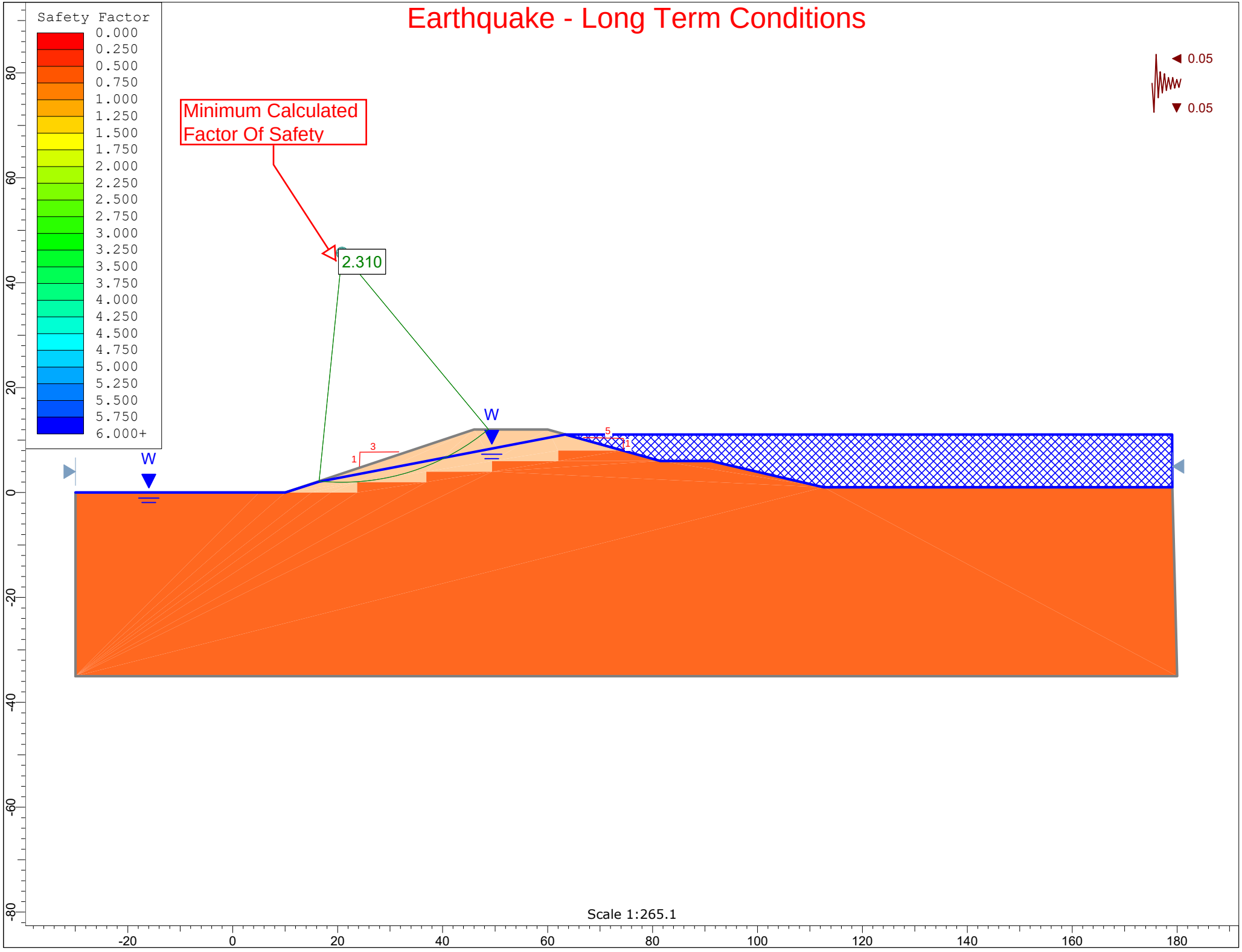
Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
KENNEY GEOTECHNICAL ENGINEERING SERVICES PLLC

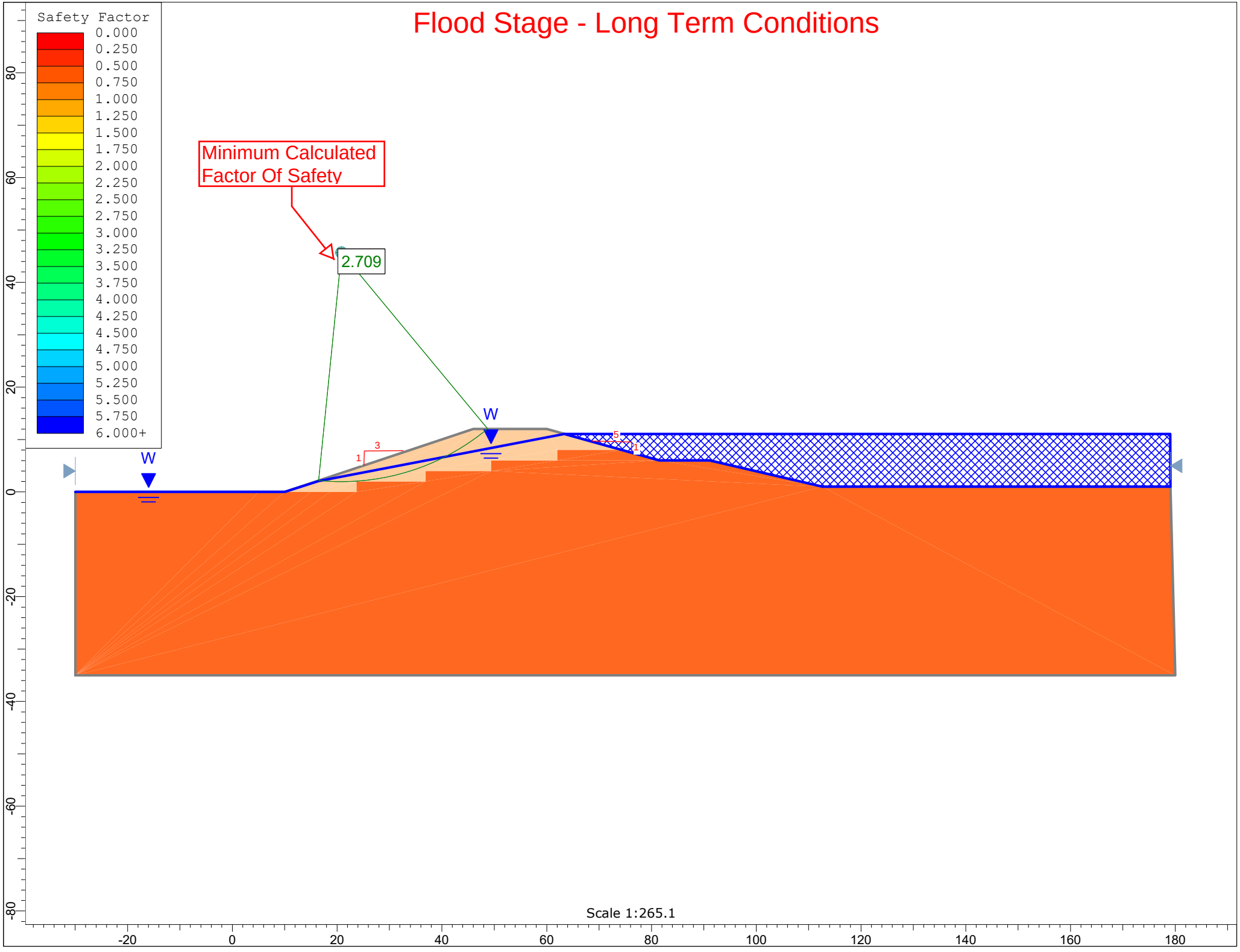
Christopher Kenney

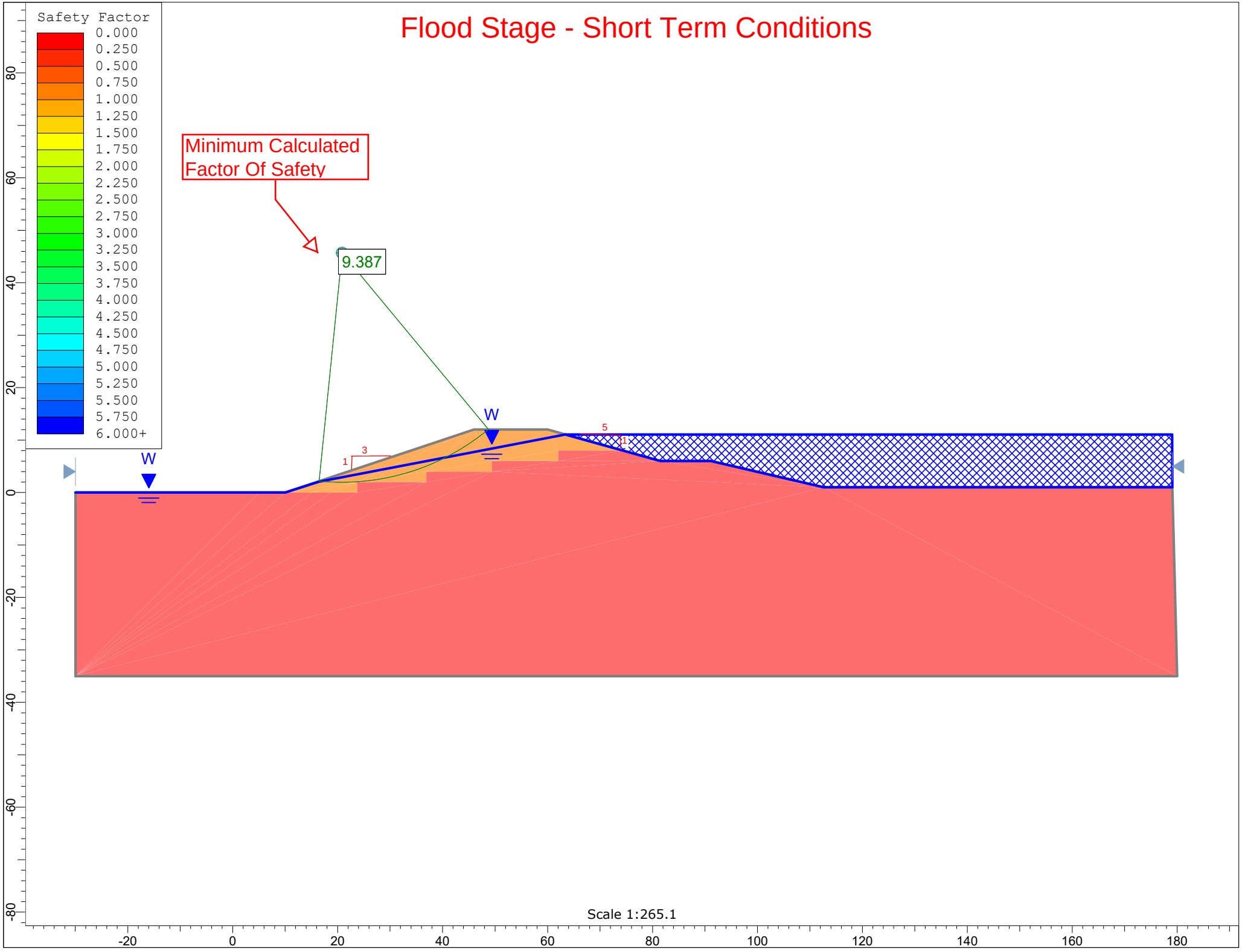
Christopher M. Kenney, P.E.
President

Earthquake - Long Term Conditions

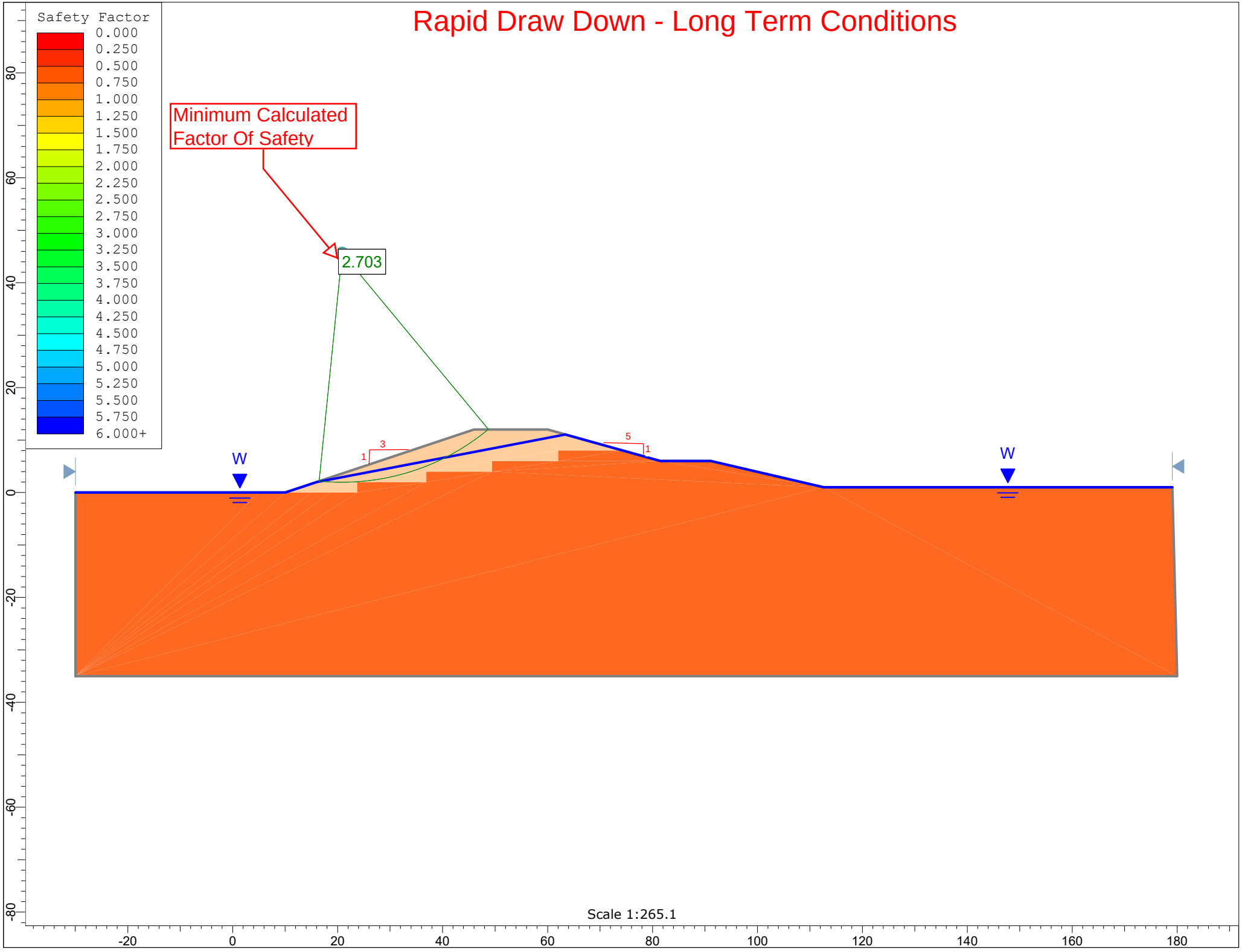


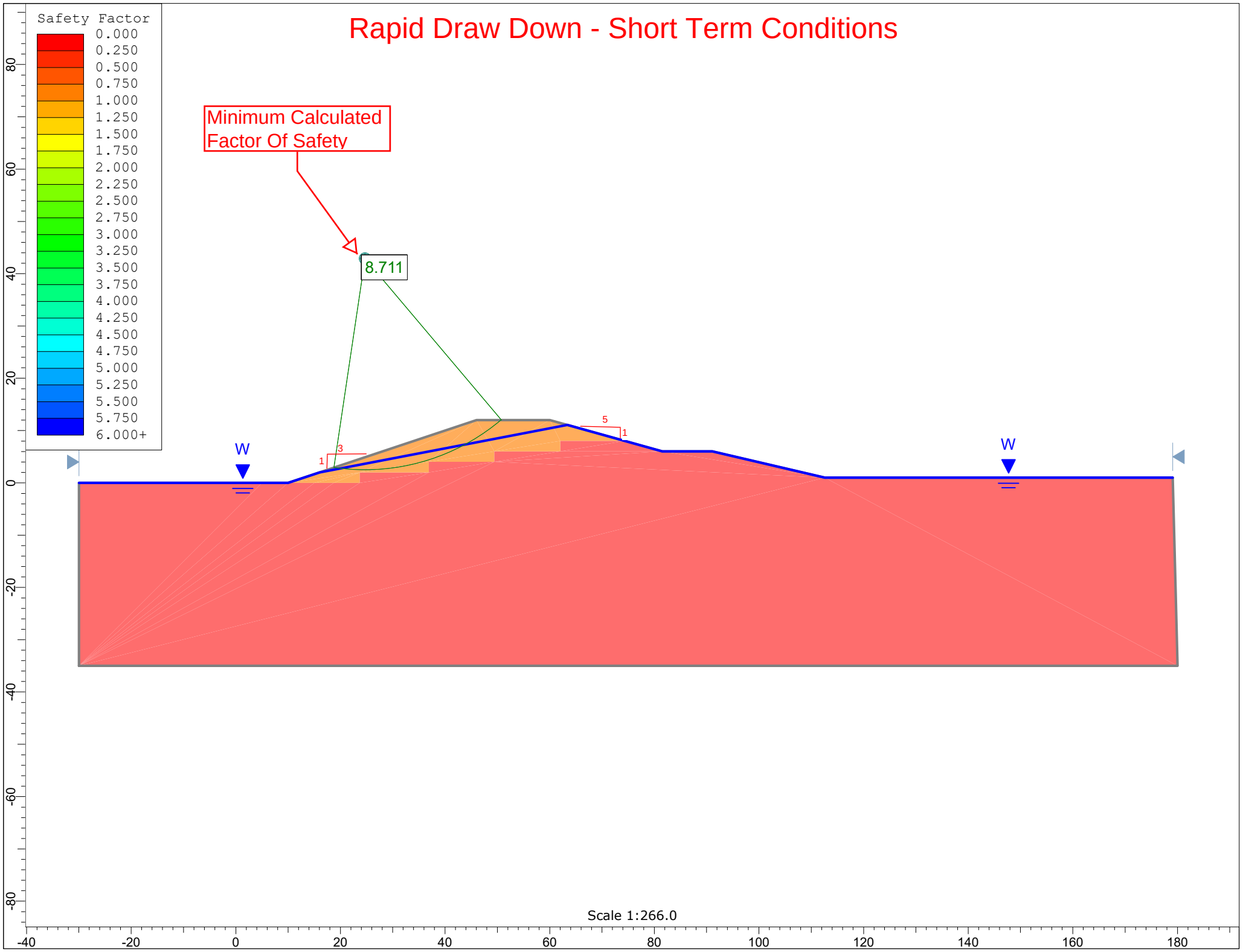
Flood Stage - Long Term Conditions



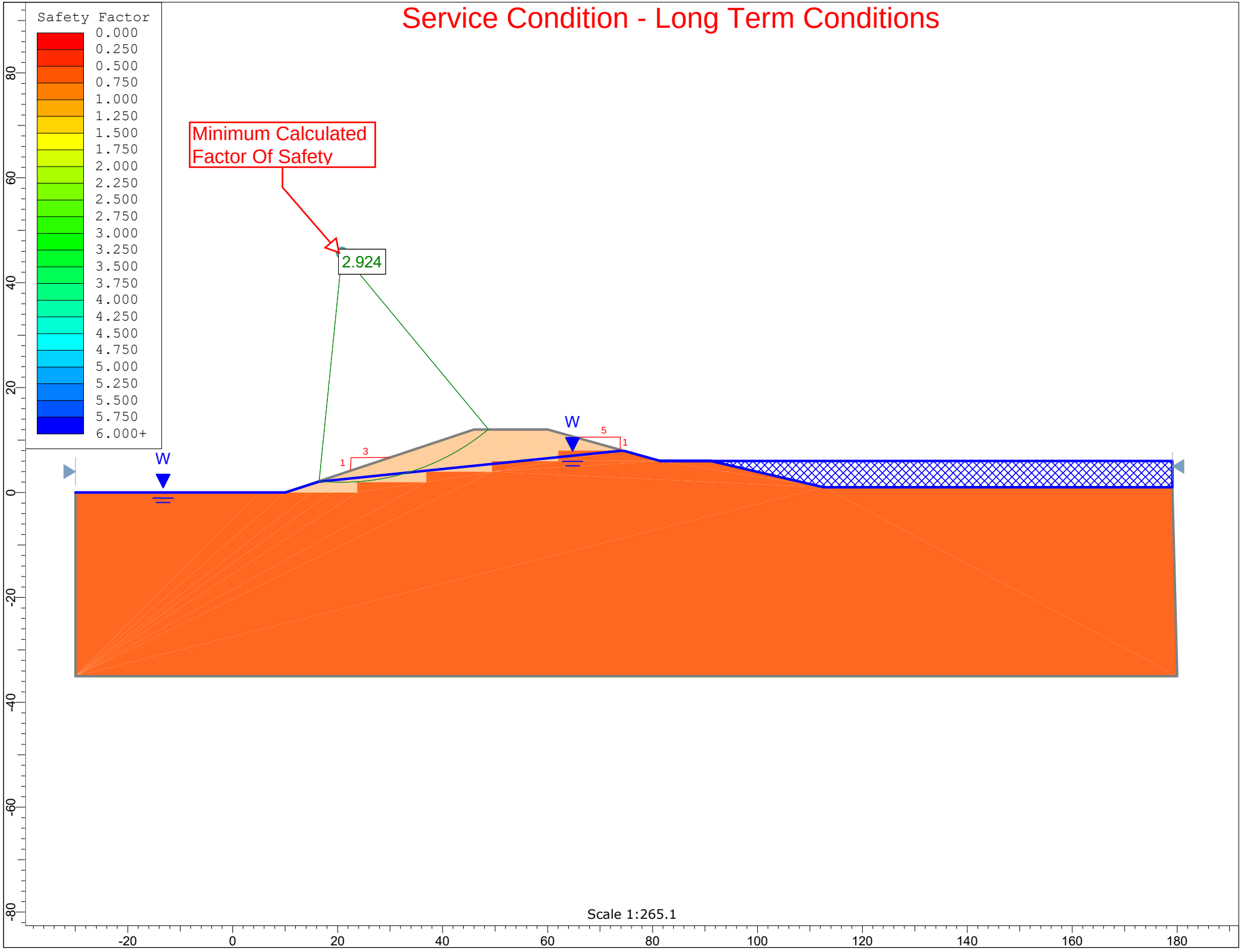

Flood Stage - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
9.387
W
W
3
1
5
1
Scale 1:265.1
80
60
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180

Rapid Draw Down - Long Term Conditions

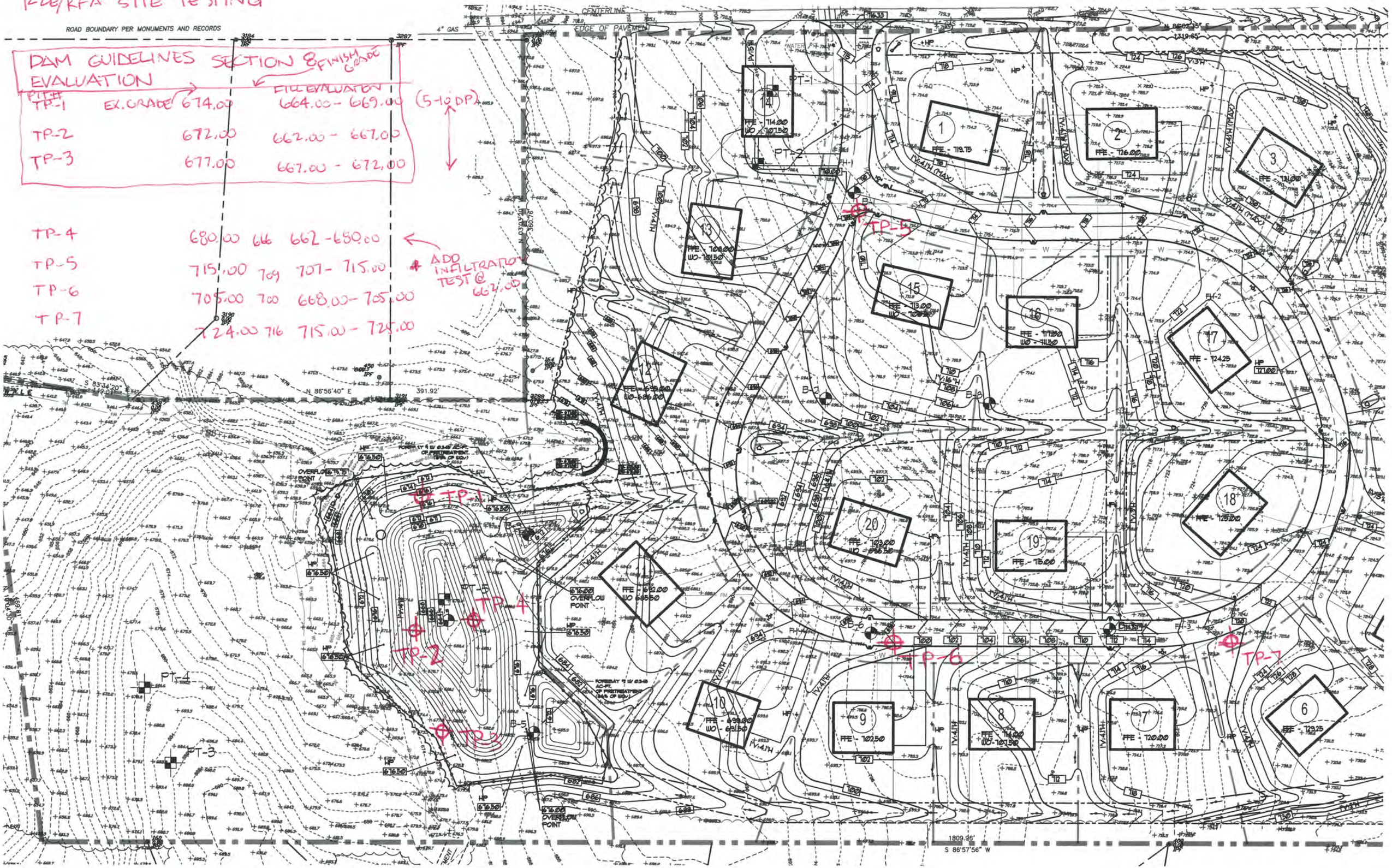



Rapid Draw Down - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
8.711
W
W
3
1
5
1
Scale 1:266.0
80
60
40
20
0
-20
-40
-60
-80
-40
-20
0
20
40
60
80
100
120
140
160
180

Service Condition - Long Term Conditions



RZE/KFA SITE TESTING



DAM GUIDELINES SECTION 8 EVALUATION

PIT #	EX. GRADE	FINISH GRADE	FILL EVALUATION
TP-1	674.00		664.00 - 669.00 (5-10 DP)
TP-2	672.00		662.00 - 667.00
TP-3	677.00		667.00 - 672.00
TP-4	680.00	666	662 - 680.00
TP-5	715.00	709	707 - 715.00
TP-6	705.00	700	668.00 - 705.00
TP-7	724.00	716	715.00 - 725.00

* ADD INFILTRATION TEST @ 662.00

HOAG - DOUG MILLER TESTING RQST.

PERCOLATION TEST RESULTS

X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14' - SANDY SILTY CLAY	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PT-1	674.00	664.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-2	672.00	662.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-3	677.00	667.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-4	680.00	662.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-5	715.00	709.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-6	705.00	700.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOBIN.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS

B -1 0"-6" TOPSOIL 6"-24" SILTY CLAY 24"-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -2 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -3 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -4 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -5 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -6 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B -7 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
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NOTES:
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2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-#	DEEP HOLE
		FENCE
		UTILITY POLE
W	W	WATER LINE
		FIRE HYDRANT
EX ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY / PLANT TYPE	PLANT KEY
		VEGETATION
	UD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	FM 3" LPS	SANITARY PIPE-LOW PRESSURE
E/T		OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	ST MH	STORM STRUCTURE
	DI	INLET
	CB / MH	CATCH BASIN/MANHOLE
	CO	CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6' 10' 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' 15' 10'	OUTLET PROTECTION FOR 8"- 12" PIPE
	X Y 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

X-HOAG-LEGEND

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

- REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW
1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE. MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. THE STUMPS, TREES AND SMALLER VEGETATION REMAINS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.

2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.

8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.

9. U.F.P.O. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.

10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.

11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.

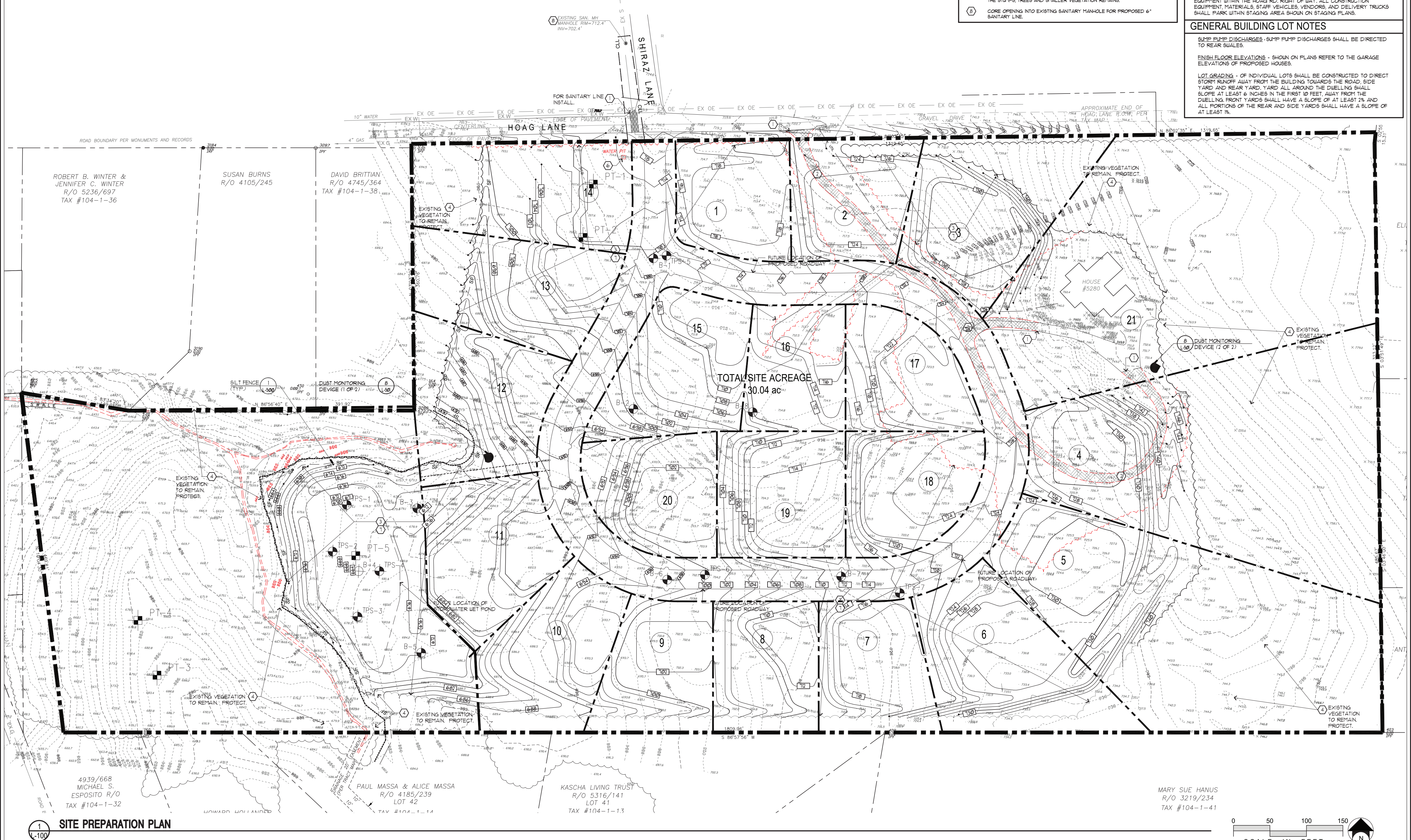
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 / L-100 SITE PREPARATION PLAN

SCALE IN FEET 0 50 100 150

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	10/22/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/09/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/02/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	09/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	12/30/18				

△ - Symbol Indicates Revision Issued

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Plotted By:
Date Plotted:
Drawing File:

Bearing Capacity Calculations

$q = N_c \cdot C$

$q = \frac{5.14 \cdot 2500}{3}$

$q = 4,283 \text{ psf}$

$N_c = 5.14$

$C = 2500 \text{ psf}$

$F.S. = 3$

Load applied by fill $= \gamma_{fill} \cdot H$

$H = 12'$ (maximum)

$\gamma_{fill} = 140 \text{ pcf}$

Load applied by fill $= 140 \cdot 12$

$= 1,680 \text{ psf}$

$1,680 \text{ psf} < 4,283 \text{ psf}$ ✓

Settlement Calculations

- Elastic Settlement

$$P_c = \frac{\Delta\sigma (1-\nu^2)\sqrt{A}}{E B_2}$$

$= \frac{1680 (1-0.35^2)\sqrt{14}}{160,000 (1.41)}$

$= 0.29 \text{ in.}$ ✓

$\Delta\sigma = 1680 \text{ psf}$

$\nu = 0.35$

$A = 14 \text{ ft}^2$

$E = 160,000 \text{ psf}$

$B_2 = 1.41$

Soil Piping

Laboratory testing resulted in low plasticity cohesive soils that are non-dispersive and not prone to soil piping.

DEEP HOLE TEST RESULTS

DH-#

DH -1 LAT/LONG: N43.0180/ W75.9836 EX. EL.=697.6, FN. EL.=692.1 0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-66" SANDY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -2 LAT/LONG: N43.0176/ W75.9835 EX. EL.= 688.2, FN. EL.= 681.6 0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-80" SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -3 LAT/LONG: N43.0170/ W75.9849 EX. EL.=672.5, FN. EL.=666.5 0"-12" TOPSOIL 12"-48" GRAVEL LOAM 48"-72" GRAVELLY SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -4 LAT/LONG: N43.0170/ W75.9829 EX. EL.=703.0, FN. EL.=697.0 0"-12" TOPSOIL 12"-36" SANDY SILT LOAM 36"-72" SILTY CLAY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -5 LAT/LONG: N43.0172/ W75.9804 0"-6" TOPSOIL 6"-36" SANDY LOAM 36"-66" SANDY SILT LOAM W/ COBBLES	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY REPRESENTATIVES OF RZ ENGINEERING & KEPLINGER FREEMAN ASSOCIATES

PERCOLATION TEST RESULTS

PT-#

PIT# / LAT/LONG	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1 N43.0183/ W75.9831	24" - SANDY LOAM EX. EL.= 710.5, FN. EL.= 708.5	35 MINUTES/INCH
PT-2 N43.0181/ W75.9832	24" - SILT LOAM EX. EL.= 705.0, FN. EL.= 703.0	GREATER THAN 120 MIN/INCH
PT-3 N43.0165/ W75.9851	24" - SANDY SILT LOAM EX. EL.= 685.0, FN. EL.= 683.0	3 MINUTES/INCH
PT-4 N43.0168/ W75.9853	24" - SANDY SILT LOAM EX. EL.= 681.4, FN. EL.= 679.4	21 MINUTES/INCH
PT-5[2] N43.0169, W75.9844	14' - SANDY SILTY CLAY EX. EL.= 678.4, FN. EL.= 664.4	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

INFILTRATION TEST RESULTS

IT-#

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
OPT-1 N43.0170/ W75.9855	18' - SANDY CLAY EX. EL.= 664.0, FN. EL.= 646.0	0 MINUTES/INCH
OPT-2 N43.0170/ W75.9853	25.3' - SILT LOAM EX. EL.= 671.3, FN. EL.= 646.0	0 MINUTES/INCH
OPT-3 N43.0168/ W75.9857	24' - SANDY SILT LOAM EX. EL.= 670.0, FN. EL.= 646.0	0 MINUTES/INCH

NOTES:
1. CONDUCTED JANUARY 11, 2018 BY A REPRESENTATIVE OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

BORING TEST RESULTS

B-#

B-1 LAT/LONG: N43.0180 / W75.9829 0"-6" TOPSOIL 6"-24" SILTY CLAY 24"-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-2 LAT/LONG: N43.0175 / W75.9830 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-3 LAT/LONG: N43.0170 / W75.9839 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-4[2] LAT/LONG: N43.0169 / W75.9843 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-5 LAT/LONG: N43.0166 / W75.9840 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-6 LAT/LONG: N43.0169 / W75.9827 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B-7 LAT/LONG: N43.0171 / W75.9814 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-8 LAT/LONG: N43.0175 / W75.9823 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-9[2] LAT/LONG: N43.0169 / W75.9843 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-9 WAS CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. B-9 IS A REVISON TO B-4.

ADDITIONAL BORING TEST RESULTS

TPS-#

TPS -1 EX. EL.= 676.0, FN. EL.= 666.0 LAT/LONG: N43.0171 / W75.9844 0'-1.5' TOPSOIL 1.5'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -2 EX. EL.= 674.0, FN. EL.=664.0 LAT/LONG: N43.0169 / W75.9845 01-1.5' TOPSOIL 1.5'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -3 EX. EL.= 680.0, FN. EL.=670.0 LAT/LONG: N43.0167 / W75.9844 0'-1' TOPSOIL 1'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -4 EX. EL.=681.0, FN. EL.=671.0 LAT/LONG: N43.0169 / W75.9816 0'-1' TOPSOIL 1'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -5 EX. EL.=716.0, FN .EL.=709.0 LAT/LONG: N43.0181 / W75.9829 0'-1' TOPSOIL 1'-7' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -6 EX. EL.=704.0, FN. EL.= 699.0 LAT/LONG: N43.0169 / W75.9826 0'-1' TOPSOIL 1'-3' BROWN SILTY GRAVEL 3'-5' GREY HIGHLY WEATHERED SHALE	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -7 EX. EL.=722.0, FN. EL.=715.0 LAT/LONG: N43.0169 / W75.9816 0'-1' TOPSOIL 1'-7' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -8 EX. EL.=683.0, FN. EL.=680.0 LAT/LONG: N43.0172 / W75.9831 0'-1' TOPSOIL 1'-3' BROWN SANDY SILT	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED APRIL 30TH, 2020 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. AND J.K. TOBIN.
2. SEGUIN LAND SURVEYING LOCATED TEST POINTS ON STATE PLANE 83 AND DATUM NAD83.

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL PER STAGED DRAWINGS.
3. EXISTING VEGETATION SHALL BE REMOVED IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS. REMOVED MATERIAL SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE. REFER TO LAYOUT PLANS FOR LIMITS OF PROPOSED FOREVER WILD AREAS.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION UPON RECEIPT OF SITE PLAN APPROVAL AND PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT PER OCWA REQUIREMENTS. PROJECT DRAWINGS TO BE SUBMITTED TO OCWA UPON RECEIPT OF SITE PLAN APPROVAL FOR DECOMMISSIONING AND WATER SYSTEM DESIGN. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. APPROVED BY TOWN ON MARCH 7TH, 2019. REMOVAL OCCURRED MARCH 13TH, 2019. THE STUMPS, DOWNED TREES AND BRANCHES SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.
9. INSTALL ORANGE CONSTRUCTION FENCE (OCF) PER DETAIL 8/L-500 WITHIN 25' OF ALL WETLANDS AS IDENTIFIED IN WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 CONDUCTED BY ENVIROMENTAL RESOURCES, LLC.

LEGEND

X-HOAG-LEGEND

EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-#	DEEP HOLE
		FENCE
		UTILITY POLE
W	W	WATER LINE
		FIRE HYDRANT
EX ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY / PLANT TYPE	PLANT KEY
		VEGETATION
	UD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	FM 3" LPS	SANITARY PIPE-LOW PRESSURE
E/T		OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	ST MH	STORM STRUCTURE
	DI	INLET
	CB MH	CATCH BASIN/MANHOLE
	CO	CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6' 10' 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' 15' 10'	OUTLET PROTECTION FOR 8"- 12" PIPE
	X Y 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.

2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

3. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.

8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.

9. DIG SAFELY NEW YORK TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.

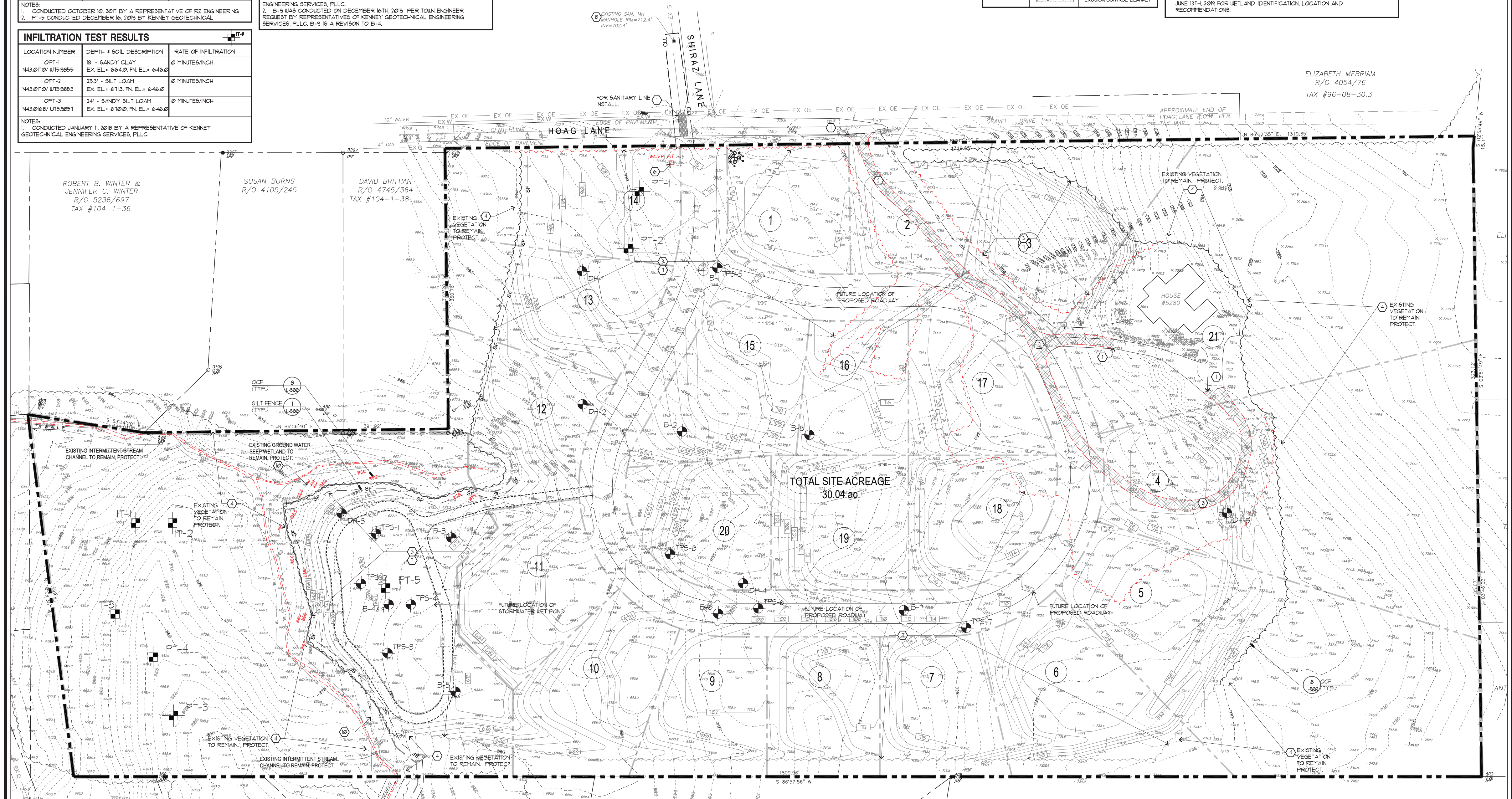
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.

11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.

12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

13. SEE GEOTECHNICAL REPORTS ENTITLED EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED MAY 18TH, 2020 & MAY 27TH, 2020 RESPECTIVELY, FOR DETAILED GEOTECHNICAL INFORMATION AND SOIL PLACEMENT RECOMMENDATIONS.

14. SEE WETLAND REPORT ENTITLED WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 FOR WETLAND IDENTIFICATION, LOCATION AND RECOMMENDATIONS.



1 L-100 **SITE PREPARATION PLAN**

0 50 100 150 SCALE IN FEET N

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK RUDY L. ZONA 079543 LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

△ - Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Plotted By:
Date Plotted:
Drawing File:

Monday, June 15, 2020 8:51:32 AM

APPENDIX B

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	No
State	New York
Location	
Longitude	75.982 degrees West
Latitude	43.019 degrees North
Elevation	0 feet
Date/Time	Mon, 13 Nov 2017 11:35:17 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.52	0.70	0.86	0.99	**1yr**	0.75	0.96	1.10	1.39	1.68	2.05	2.30	**1yr**	1.82	2.21	2.64	3.18	3.70	**1yr**
2yr	0.33	0.50	0.62	0.84	1.04	1.18	**2yr**	0.89	1.16	1.30	1.63	1.97	2.39	2.69	**2yr**	2.12	2.59	3.04	3.65	4.22	**2yr**
5yr	0.39	0.60	0.75	1.02	1.30	1.47	**5yr**	1.12	1.43	1.62	2.00	2.43	2.94	3.32	**5yr**	2.60	3.19	3.72	4.39	5.01	**5yr**
10yr	0.45	0.69	0.86	1.20	1.55	1.72	**10yr**	1.34	1.69	1.92	2.34	2.85	3.44	3.89	**10yr**	3.04	3.74	4.35	5.05	5.71	**10yr**
25yr	0.55	0.84	1.04	1.49	1.96	2.15	**25yr**	1.69	2.10	2.39	2.87	3.53	4.23	4.81	**25yr**	3.75	4.62	5.35	6.08	6.80	**25yr**
50yr	0.64	0.97	1.21	1.74	2.34	2.53	**50yr**	2.02	2.48	2.82	3.37	4.14	4.96	5.65	**50yr**	4.39	5.43	6.25	7.00	7.75	**50yr**
100yr	0.75	1.12	1.41	2.03	2.79	3.00	**100yr**	2.41	2.93	3.34	3.94	4.87	5.80	6.63	**100yr**	5.13	6.38	7.31	8.07	8.85	**100yr**
200yr	0.87	1.31	1.65	2.39	3.34	3.55	**200yr**	2.88	3.47	3.95	4.61	5.72	6.79	7.80	**200yr**	6.01	7.50	8.56	9.29	10.09	**200yr**
500yr	1.07	1.59	2.05	2.97	4.23	4.44	**500yr**	3.65	4.34	4.95	5.68	7.09	8.38	9.66	**500yr**	7.41	9.29	10.54	11.21	12.02	**500yr**

Lower Confidence Limits

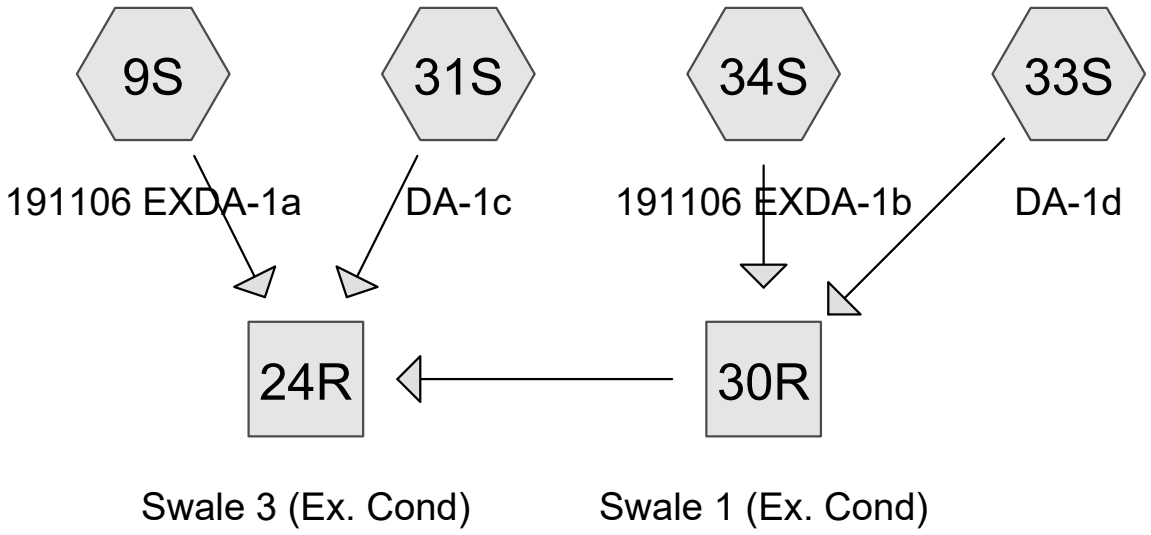
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.38	0.46	0.62	0.76	0.87	**1yr**	0.66	0.85	0.92	1.10	1.40	1.65	2.02	**1yr**	1.46	1.94	2.38	2.79	3.35	**1yr**
2yr	0.32	0.49	0.61	0.82	1.01	1.13	**2yr**	0.87	1.11	1.26	1.56	1.90	2.33	2.61	**2yr**	2.06	2.51	2.94	3.56	4.12	**2yr**
5yr	0.35	0.55	0.68	0.93	1.18	1.34	**5yr**	1.02	1.31	1.48	1.85	2.27	2.73	3.09	**5yr**	2.42	2.97	3.49	4.11	4.72	**5yr**
10yr	0.39	0.60	0.74	1.04	1.34	1.49	**10yr**	1.15	1.46	1.67	2.07	2.54	3.09	3.49	**10yr**	2.73	3.36	3.94	4.57	5.22	**10yr**
25yr	0.44	0.66	0.82	1.18	1.55	1.71	**25yr**	1.34	1.67	1.96	2.40	2.92	3.58	4.07	**25yr**	3.17	3.91	4.62	5.24	5.97	**25yr**
50yr	0.46	0.71	0.88	1.26	1.70	1.89	**50yr**	1.47	1.85	2.19	2.65	3.23	4.01	4.55	**50yr**	3.55	4.37	5.22	5.82	6.60	**50yr**
100yr	0.50	0.76	0.95	1.38	1.89	2.32	**100yr**	1.63	2.27	2.46	2.93	3.58	4.46	5.08	**100yr**	3.95	4.89	5.88	6.44	7.30	**100yr**
200yr	0.54	0.82	1.04	1.50	2.09	2.65	**200yr**	1.81	2.59	2.74	3.23	3.96	4.97	5.68	**200yr**	4.40	5.46	6.62	7.11	8.06	**200yr**
500yr	0.87	1.29	1.66	2.42	3.44	3.17	**500yr**	2.97	3.10	3.14	3.68	4.53	5.72	6.56	**500yr**	5.06	6.30	7.74	8.09	9.19	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.56	0.76	0.93	1.07	**1yr**	0.80	1.05	1.20	1.55	1.84	2.23	2.61	**1yr**	1.97	2.51	2.84	3.40	3.99	**1yr**
2yr	0.35	0.54	0.66	0.89	1.10	1.23	**2yr**	0.95	1.21	1.37	1.71	2.07	2.50	2.80	**2yr**	2.21	2.70	3.13	3.76	4.34	**2yr**
5yr	0.42	0.65	0.81	1.11	1.42	1.61	**5yr**	1.22	1.57	1.76	2.18	2.62	3.12	3.53	**5yr**	2.76	3.40	3.98	4.67	5.33	**5yr**
10yr	0.50	0.76	0.94	1.32	1.70	1.99	**10yr**	1.47	1.95	2.16	2.67	3.20	3.82	4.25	**10yr**	3.38	4.08	4.79	5.52	6.23	**10yr**
25yr	0.62	0.95	1.18	1.69	2.22	2.65	**25yr**	1.92	2.60	2.83	3.51	4.18	4.73	5.46	**25yr**	4.19	5.25	6.15	6.89	7.68	**25yr**
50yr	0.74	1.13	1.40	2.02	2.72	3.31	**50yr**	2.35	3.23	3.48	4.31	5.11	5.68	6.59	**50yr**	5.03	6.34	7.44	8.17	8.99	**50yr**
100yr	0.89	1.34	1.68	2.43	3.34	3.96	**100yr**	2.88	3.87	4.30	5.31	6.26	6.83	7.98	**100yr**	6.04	7.68	9.02	9.70	10.54	**100yr**
200yr	1.06	1.60	2.03	2.94	4.10	4.89	**200yr**	3.54	4.78	5.30	6.56	7.68	8.20	9.67	**200yr**	7.25	9.30	10.93	11.52	12.37	**200yr**
500yr	1.25	1.87	2.40	3.49	4.96	6.47	**500yr**	4.28	6.32	7.00	8.68	10.06	10.46	12.50	**500yr**	9.26	12.02	14.13	14.46	15.31	**500yr**

Po

APPENDIX C



Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 11/6/2019
HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment 9S: 191106 EXDA-1a

Runoff = 50.22 cfs @ 12.39 hrs, Volume= 6.209 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (ac)	CN	Description
*	0.520	98	Existing Impervious
	6.935	55	Woods, Good, HSG B
	8.769	70	Woods, Good, HSG C
	7.328	65	Brush, Good, HSG C
	3.628	74	>75% Grass cover, Good, HSG C
	5.312	65	2 acre lots, 12% imp, HSG B
	32.492	66	Weighted Average
	31.335		96.44% Pervious Area
	1.157		3.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.9	353	0.0453	1.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.0	1,705	0.0610	1.23		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
41.0	2,178	Total			

Summary for Subcatchment 31S: DA-1c

Runoff = 4.32 cfs @ 12.31 hrs, Volume= 0.458 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
2.078	70	Woods, Good, HSG C
2.078		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	100	0.0500	0.06		**Sheet Flow, Offsite** Woods: Dense underbrush n= 0.800 P2= 2.39"
2.7	207	0.0676	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	135	0.0518	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	442	Total			

Summary for Subcatchment 33S: DA-1d

Runoff = 55.57 cfs @ 12.10 hrs, Volume= 3.961 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
11.672	79	1 acre lots, 20% imp, HSG C
1.167	98	Paved parking, HSG C
12.839	81	Weighted Average
9.338		72.73% Pervious Area
3.501		27.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0660	0.16		**Sheet Flow, Offsite** Grass: Dense n= 0.240 P2= 2.39"
7.9	753	0.0510	1.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.1	853	Total			

Summary for Subcatchment 34S: 191106 EXDA-1b

Runoff = 28.76 cfs @ 12.74 hrs, Volume= 4.957 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
1.894	68	1 acre lots, 20% imp, HSG B
2.794	79	1 acre lots, 20% imp, HSG C
3.299	65	2 acre lots, 12% imp, HSG B
10.064	55	Woods, Good, HSG B
8.901	70	Woods, Good, HSG C
26.952	65	Weighted Average
25.619		95.05% Pervious Area
1.333		4.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Summary for Reach 24R: Swale 3 (Ex. Cond)

Inflow Area = 74.361 ac, 8.06% Impervious, Inflow Depth = 2.52" for 100-yr event
Inflow = 97.89 cfs @ 12.21 hrs, Volume= 15.585 af
Outflow = 97.84 cfs @ 12.23 hrs, Volume= 15.585 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.50 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 4.17 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2,655 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 2.00' Flow Area= 30.0 sf, Capacity= 541.03 cfs

5.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 25.00'
Length= 312.0' Slope= 0.0737 '/'
Inlet Invert= 661.00', Outlet Invert= 638.00'



‡

Summary for Reach 30R: Swale 1 (Ex. Cond)

Inflow Area = 39.791 ac, 12.15% Impervious, Inflow Depth = 2.69" for 100-yr event
Inflow = 61.89 cfs @ 12.12 hrs, Volume= 8.918 af
Outflow = 61.72 cfs @ 12.14 hrs, Volume= 8.918 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 8.99 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.13 fps, Avg. Travel Time= 2.4 min

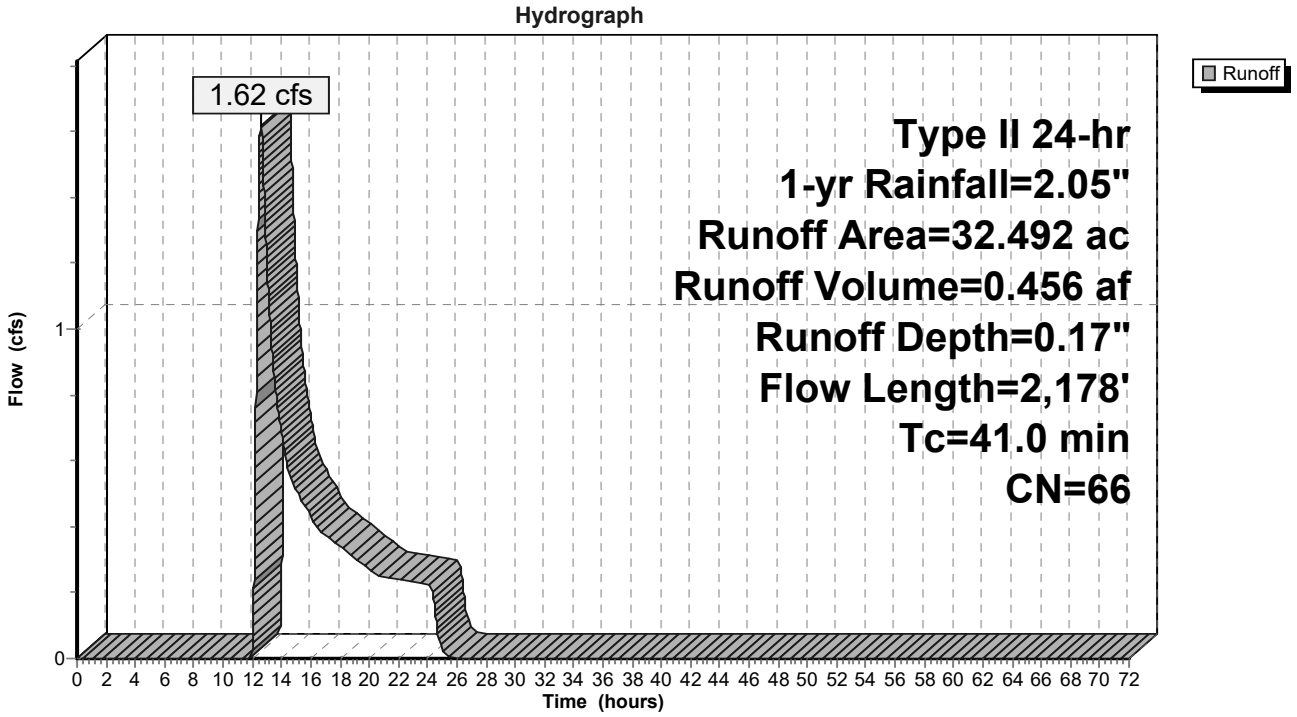
Peak Storage= 3,112 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 1.00' Flow Area= 10.0 sf, Capacity= 103.50 cfs

5.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 15.00'
Length= 453.0' Slope= 0.0530 '/'
Inlet Invert= 680.00', Outlet Invert= 656.00'



‡

Subcatchment 9S: 191106 EXDA-1a



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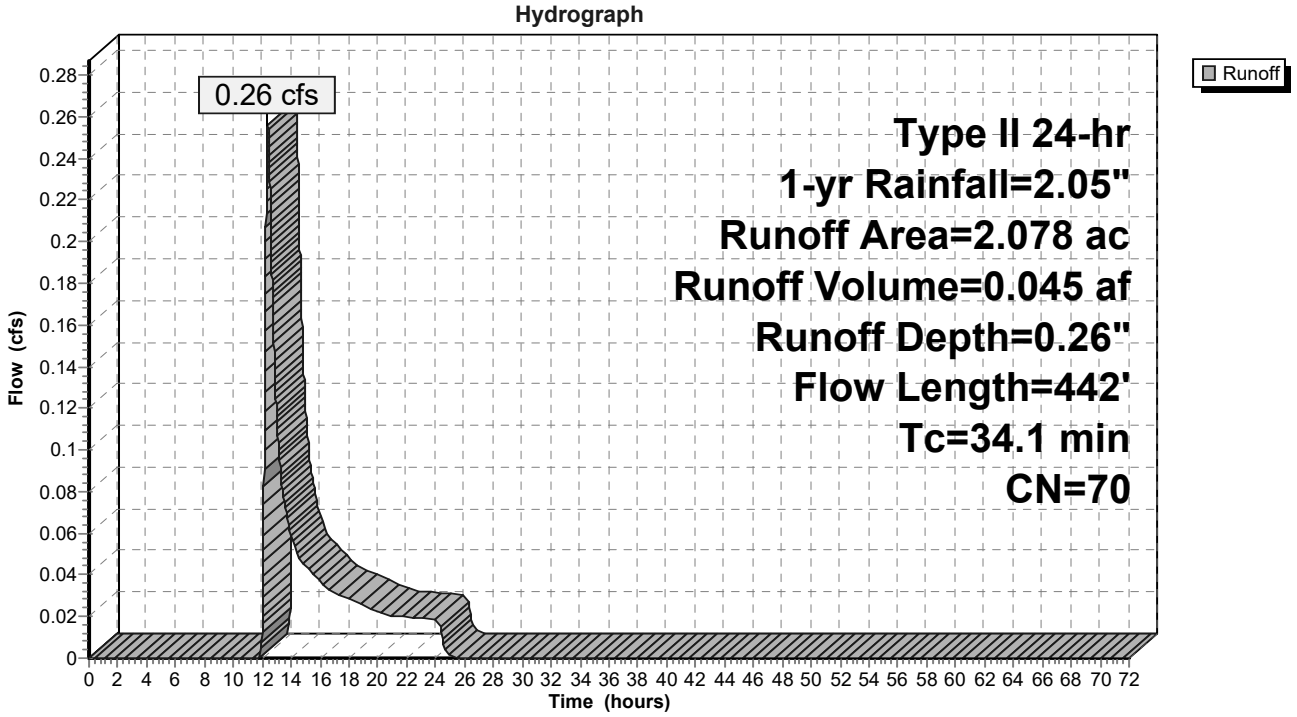

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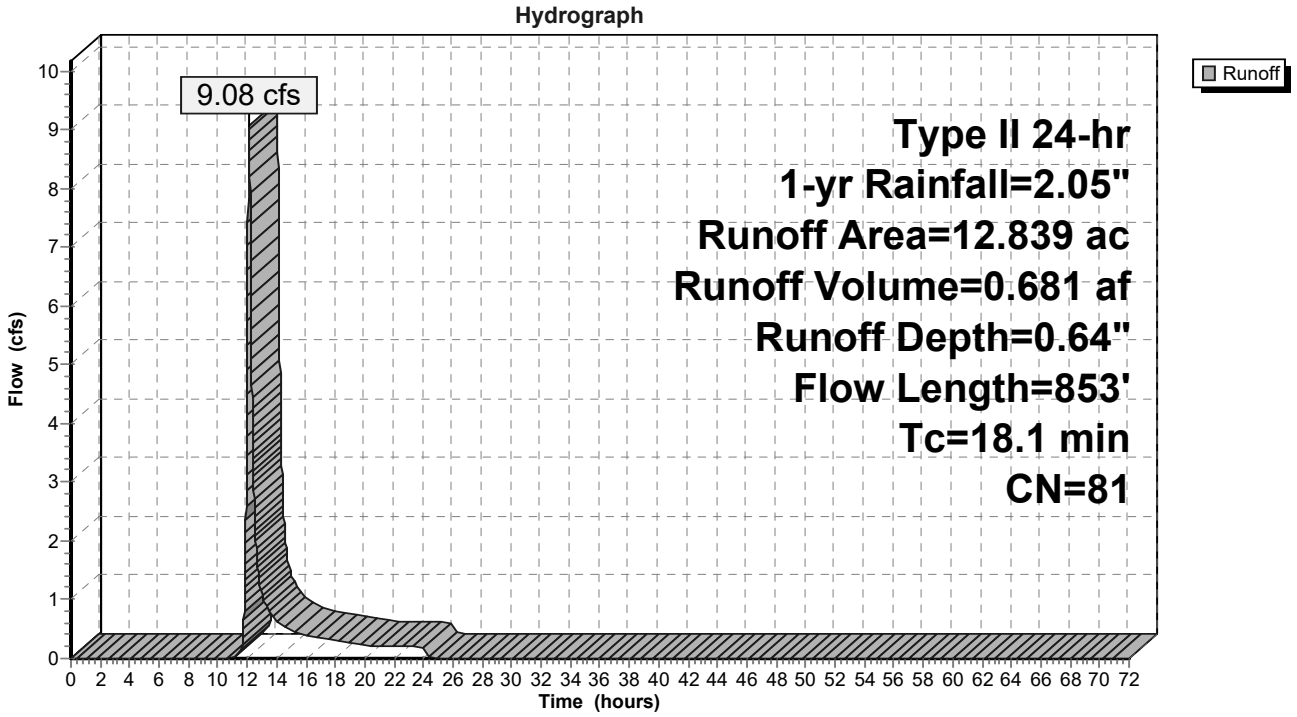

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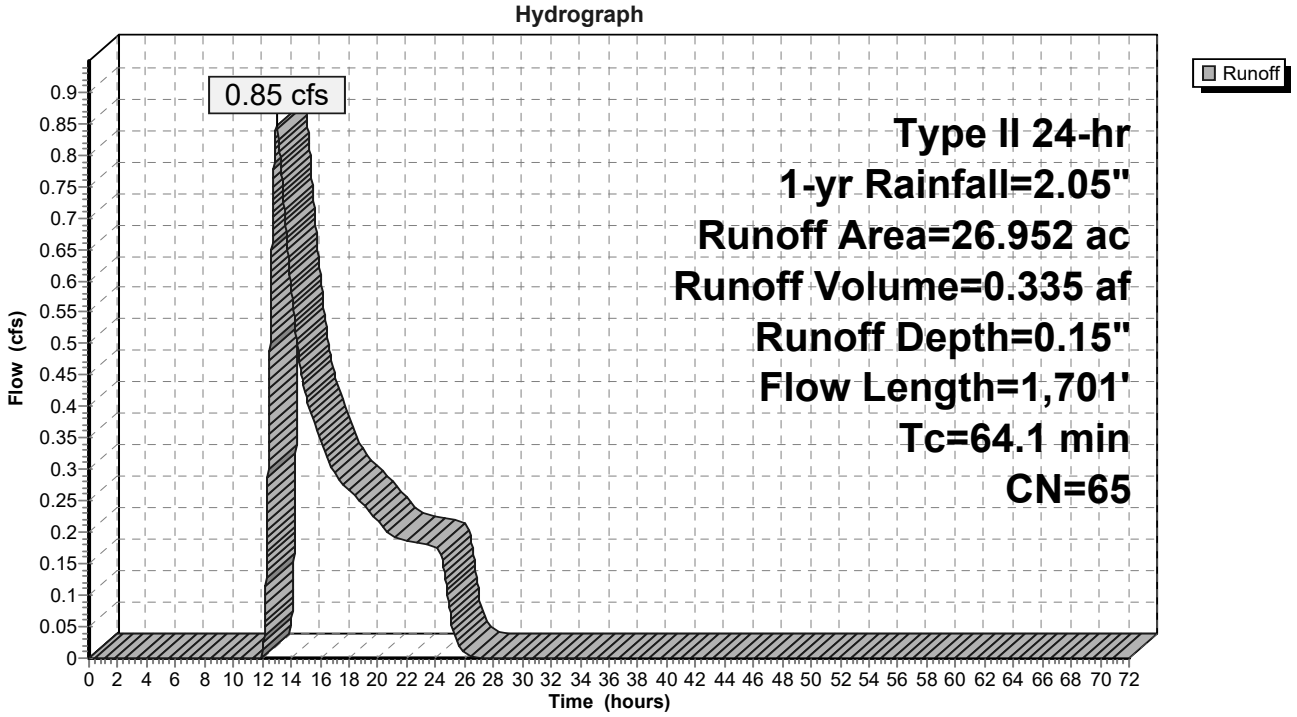
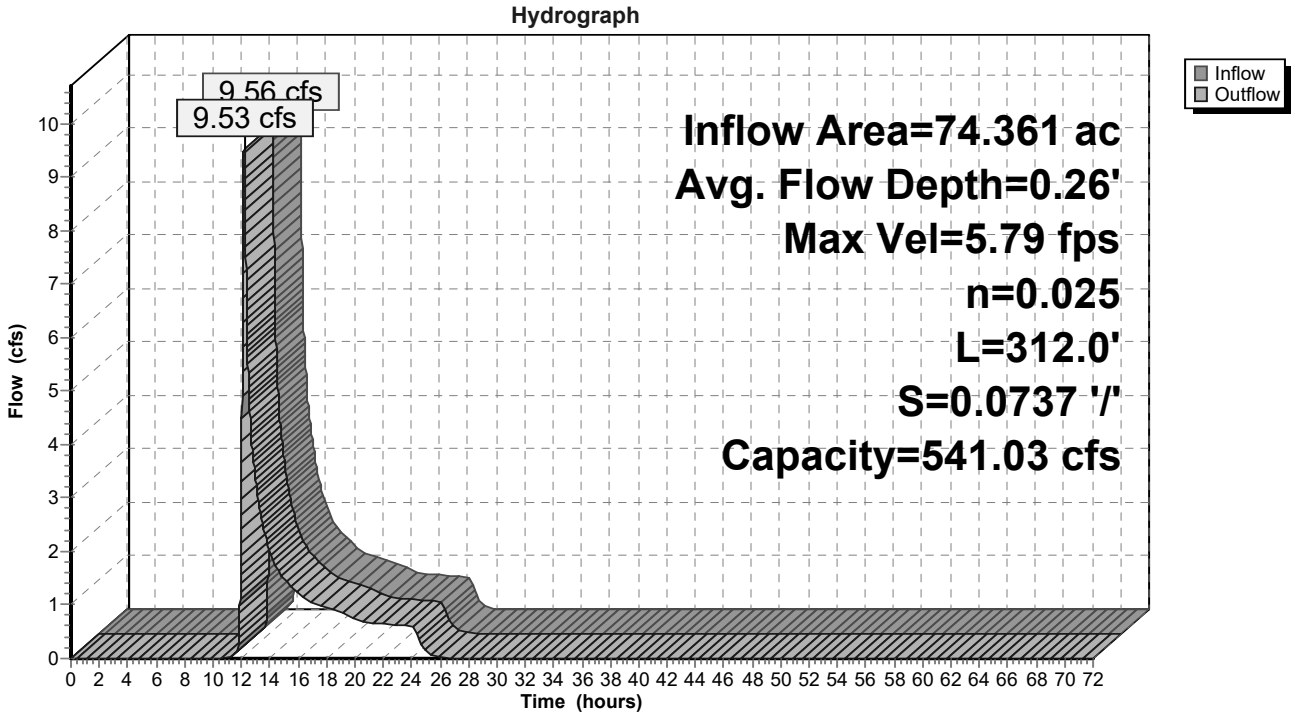


Reach 24R: Swale 3 (Ex. Cond)



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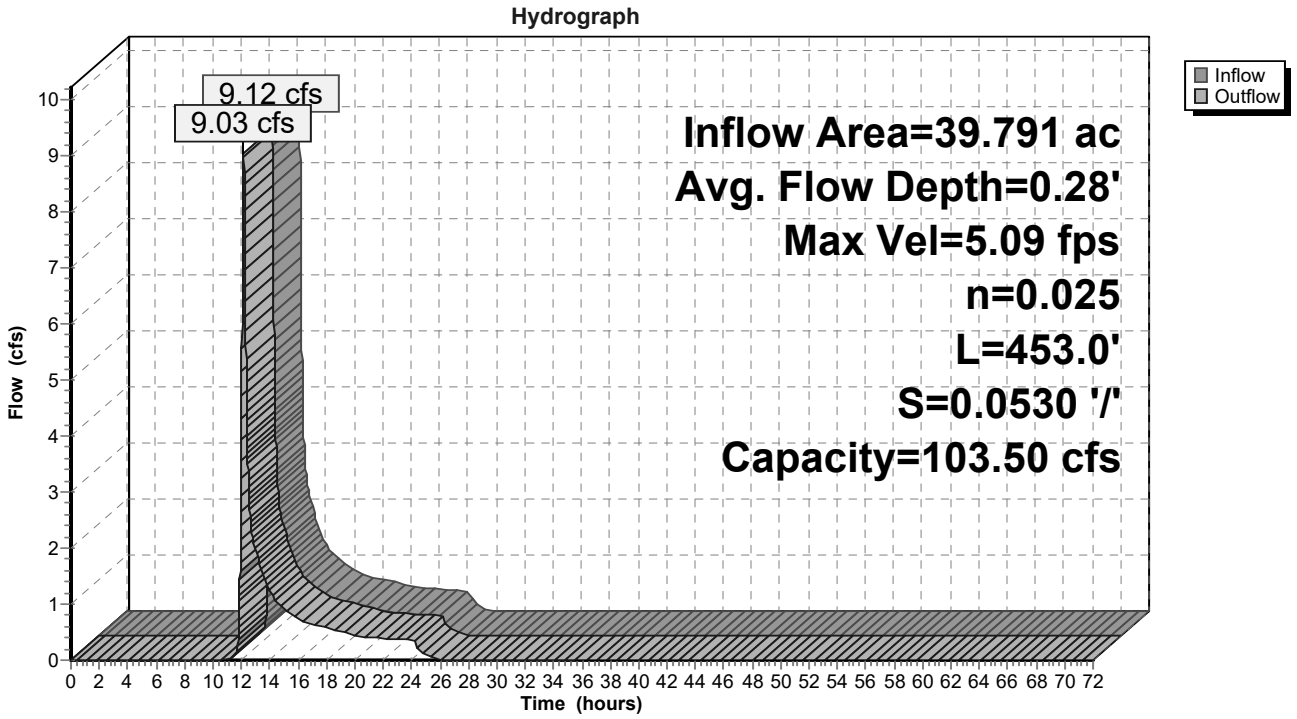

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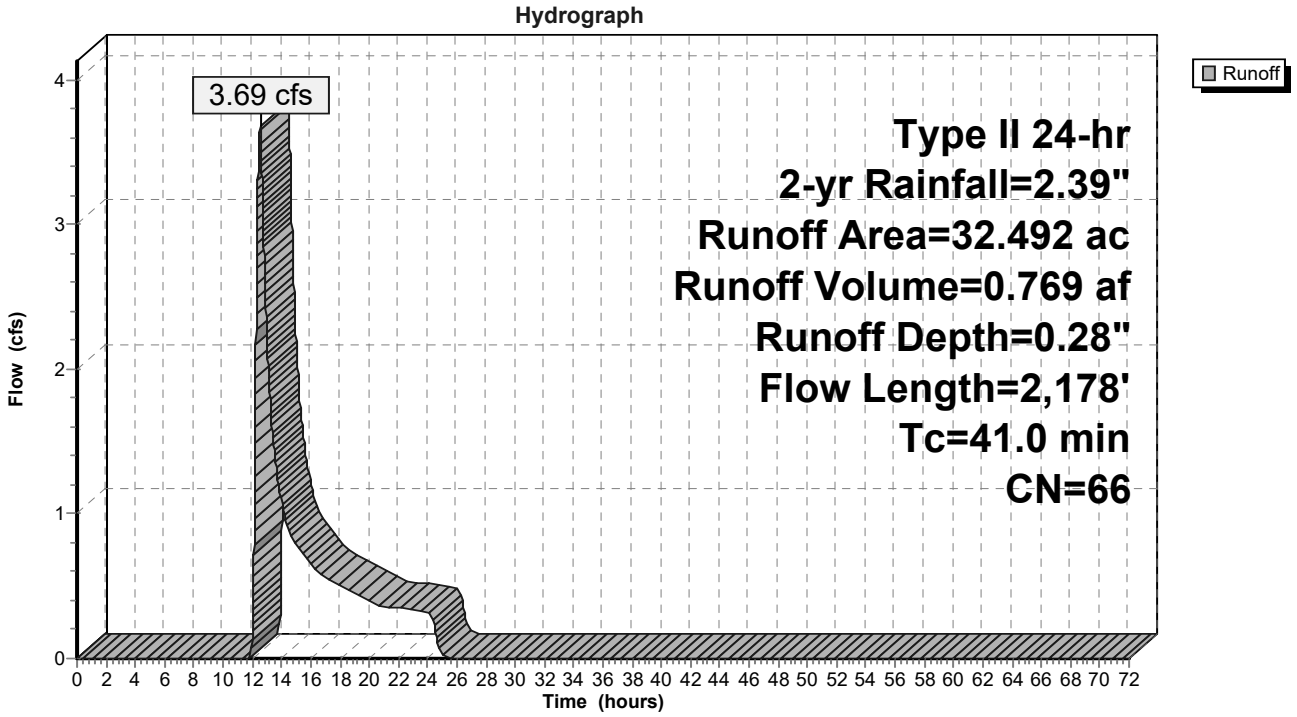

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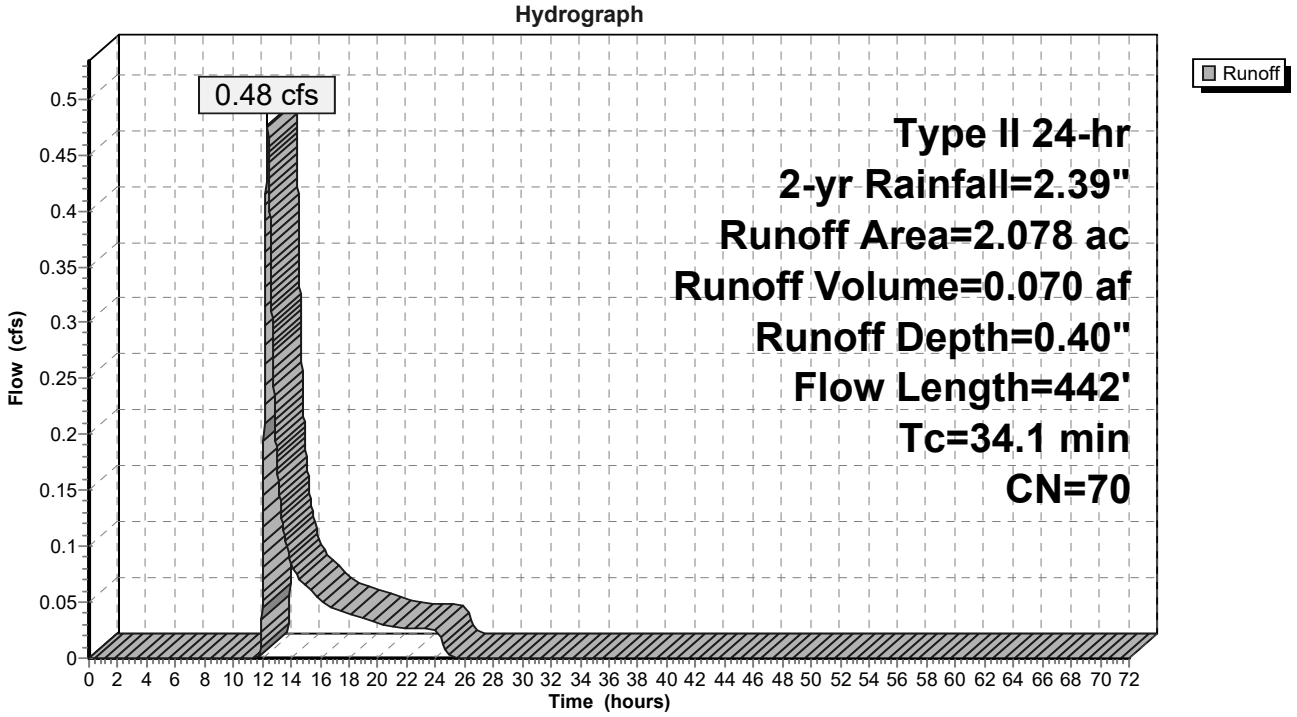

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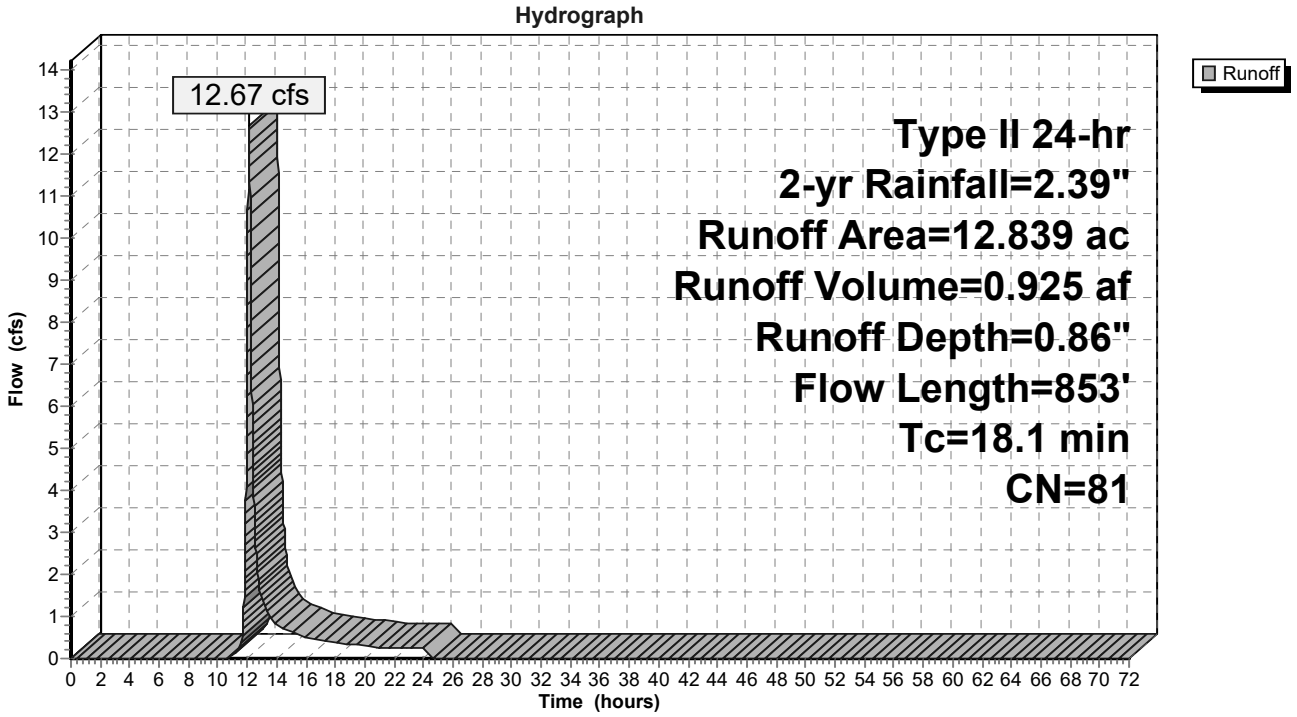

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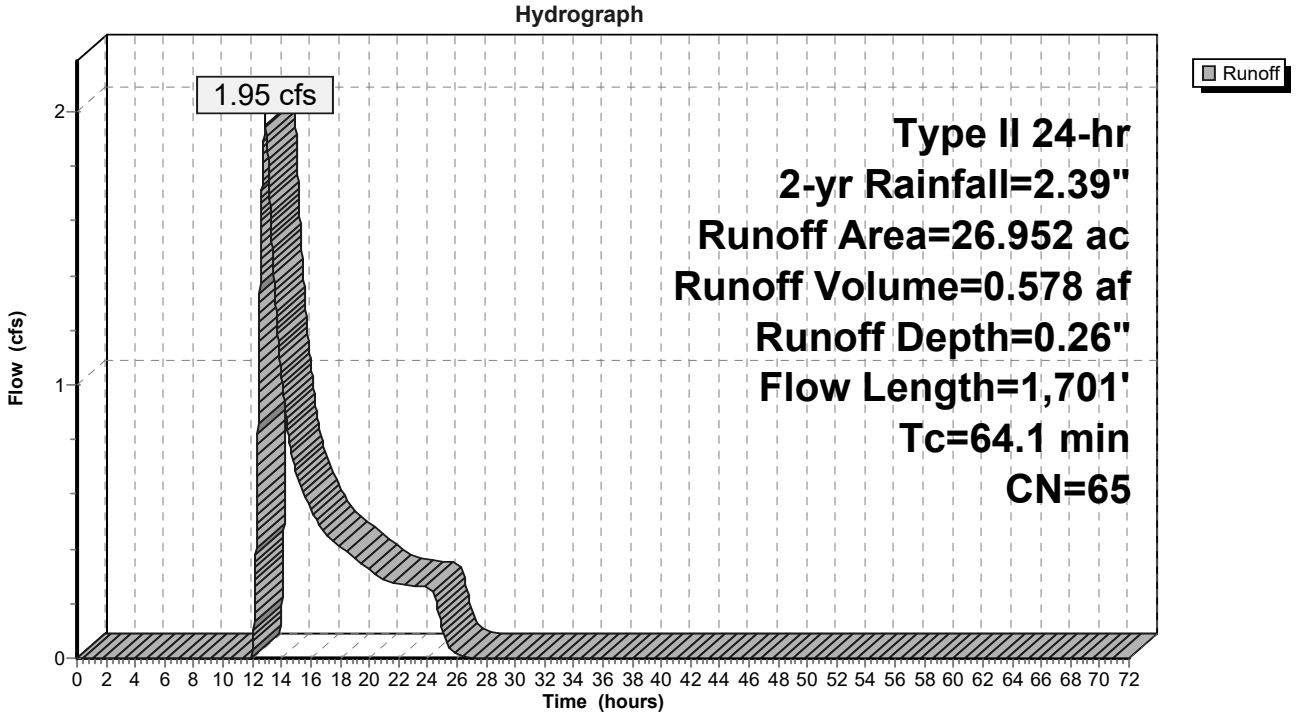

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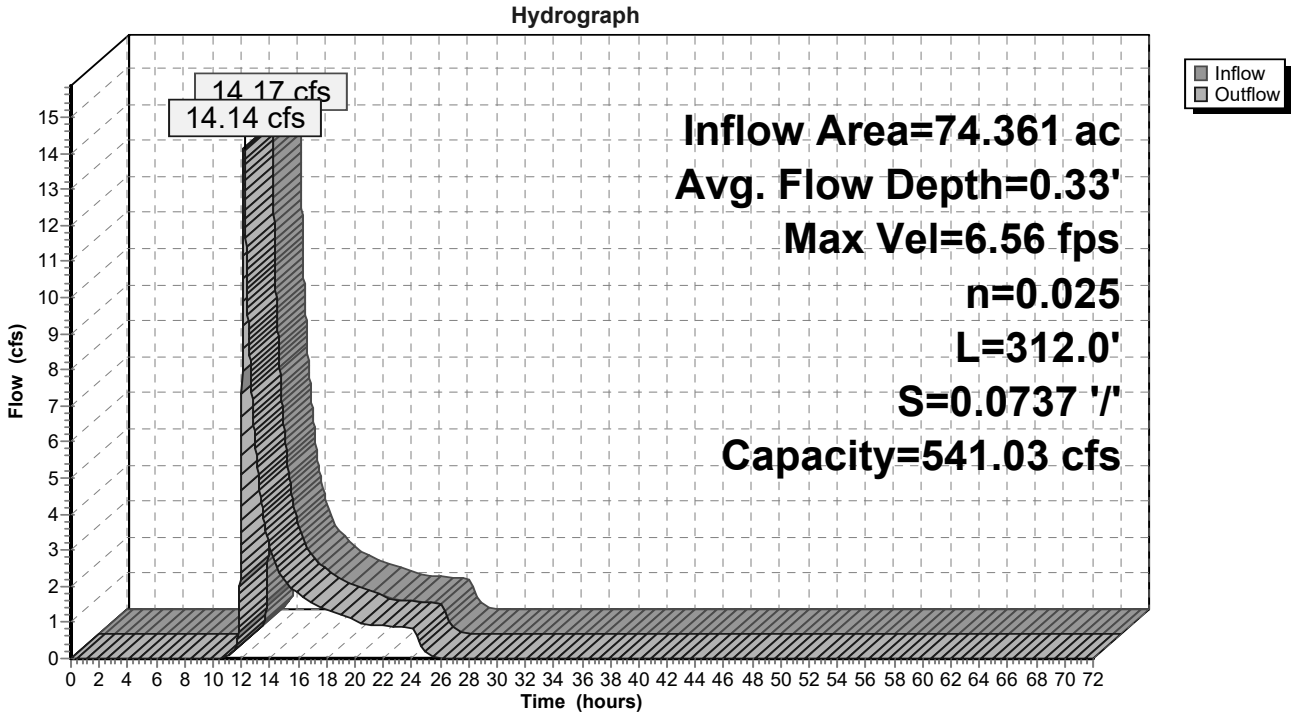

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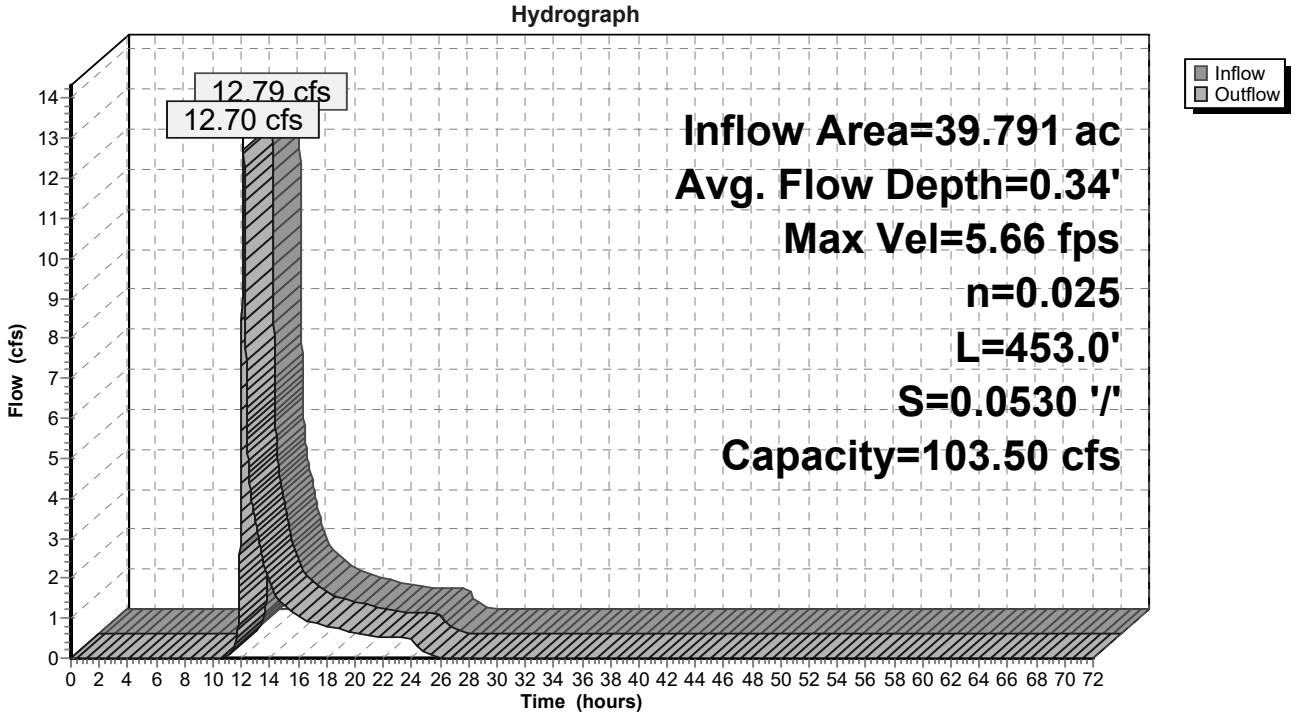

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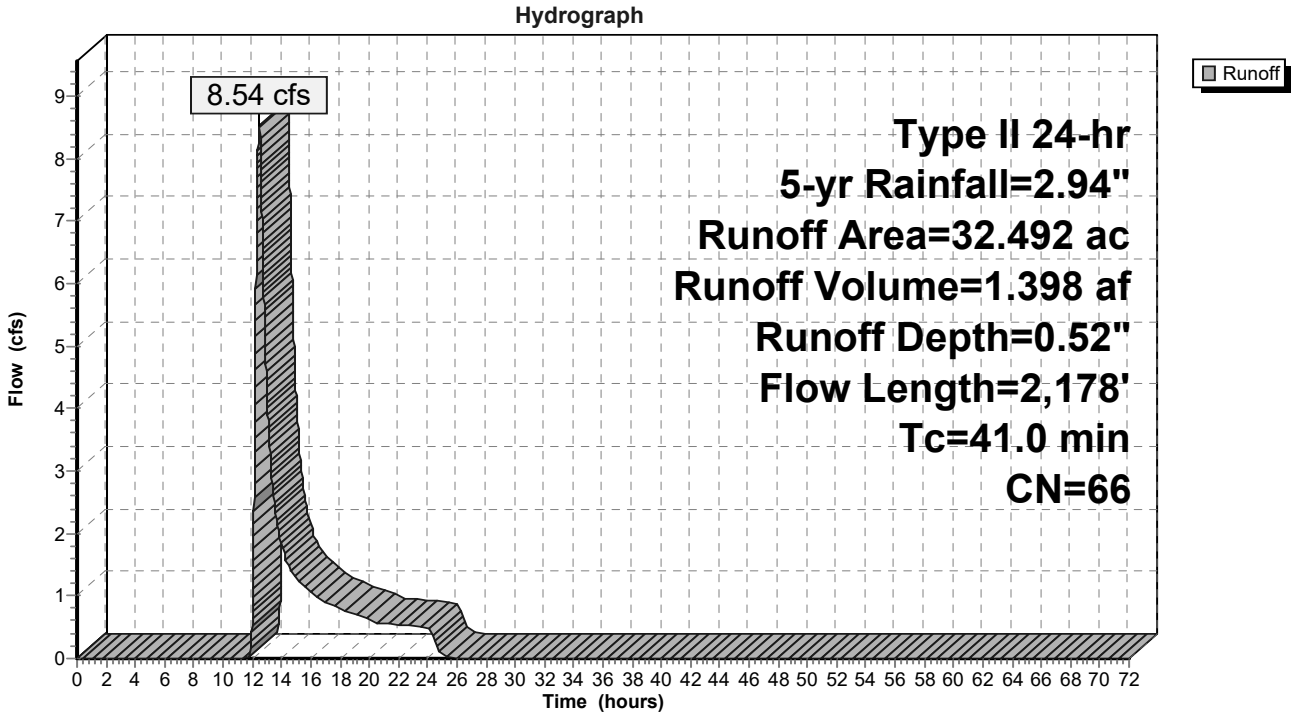

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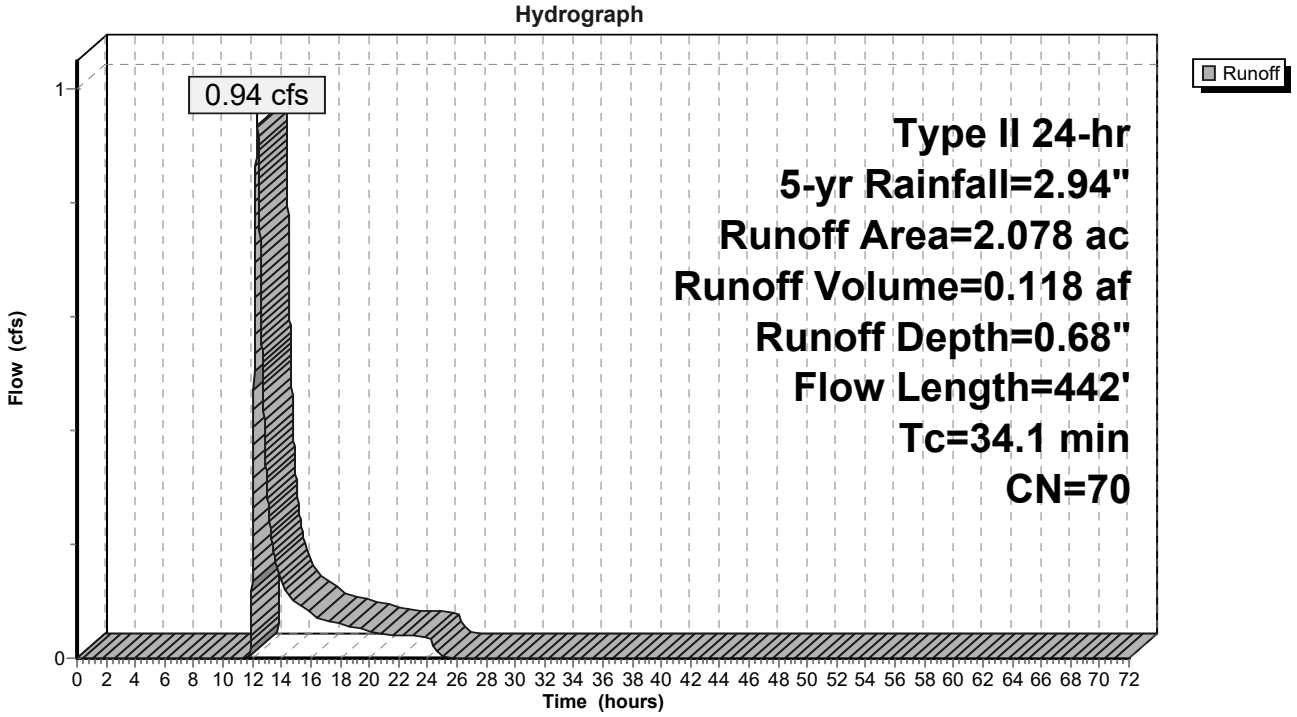

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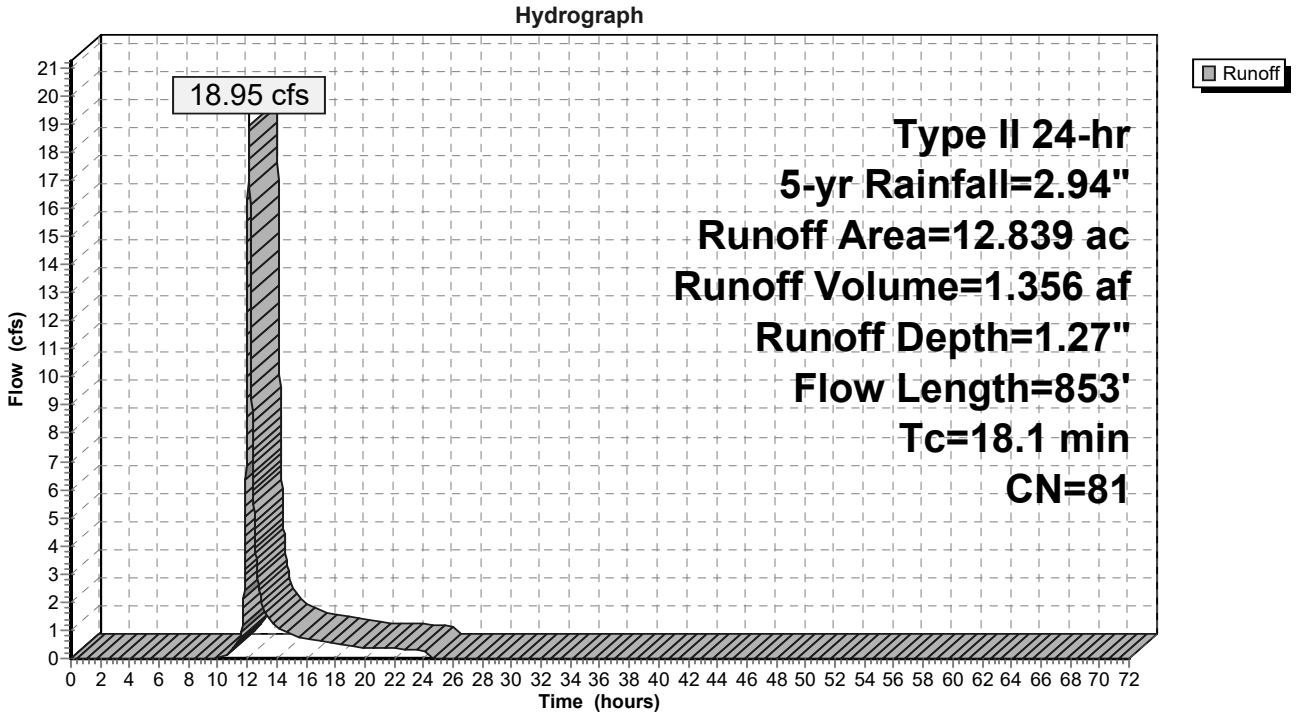
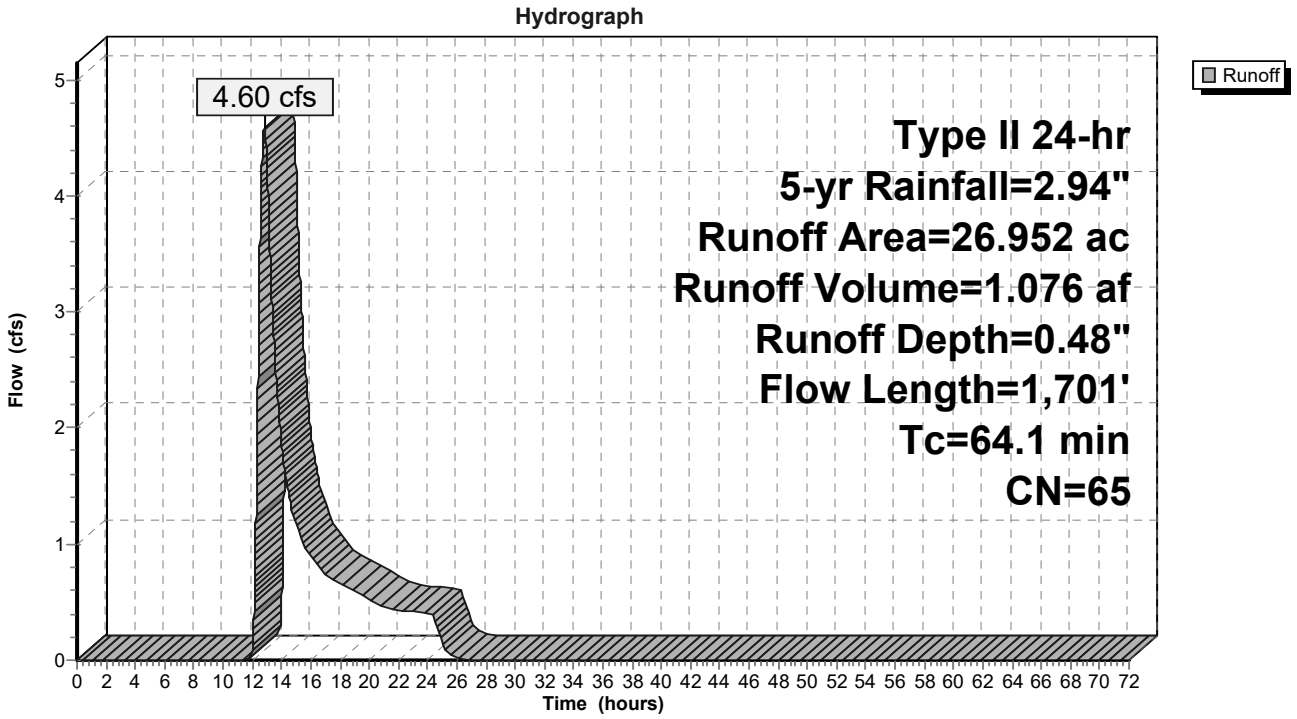
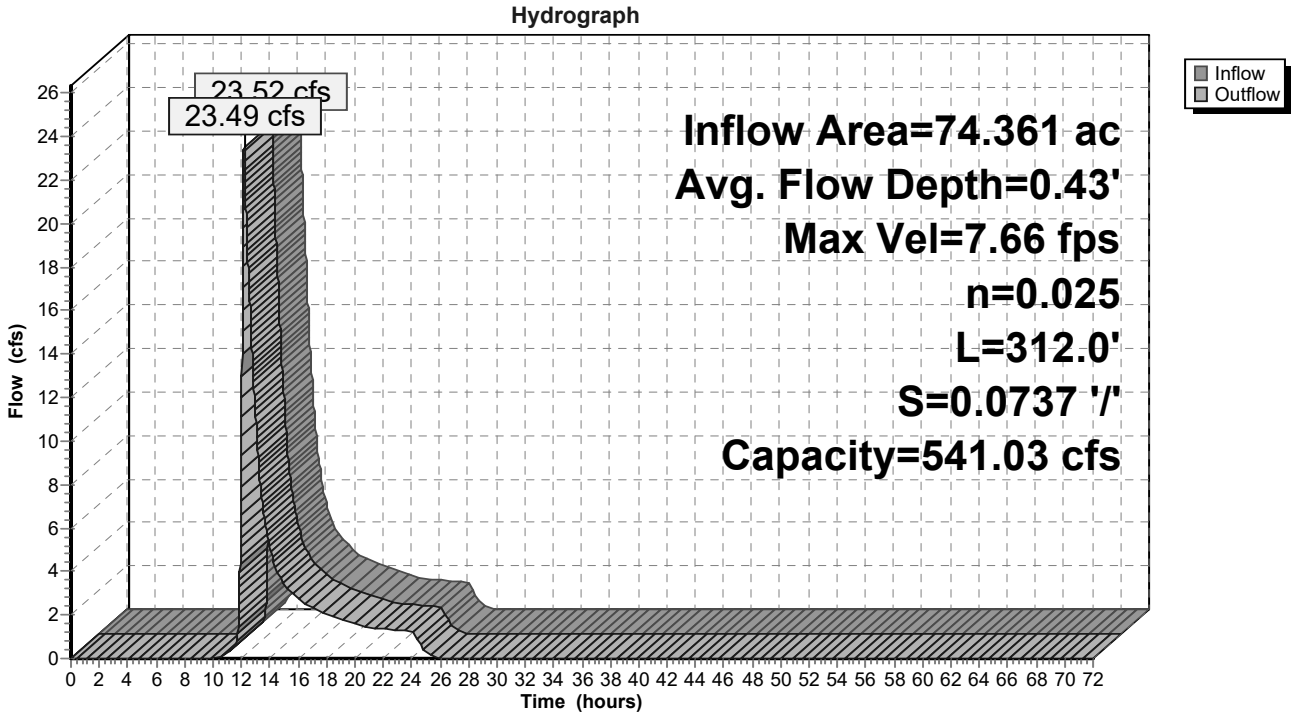


Subcatchment 34S: 191106 EXDA-1b



Reach 24R: Swale 3 (Ex. Cond)



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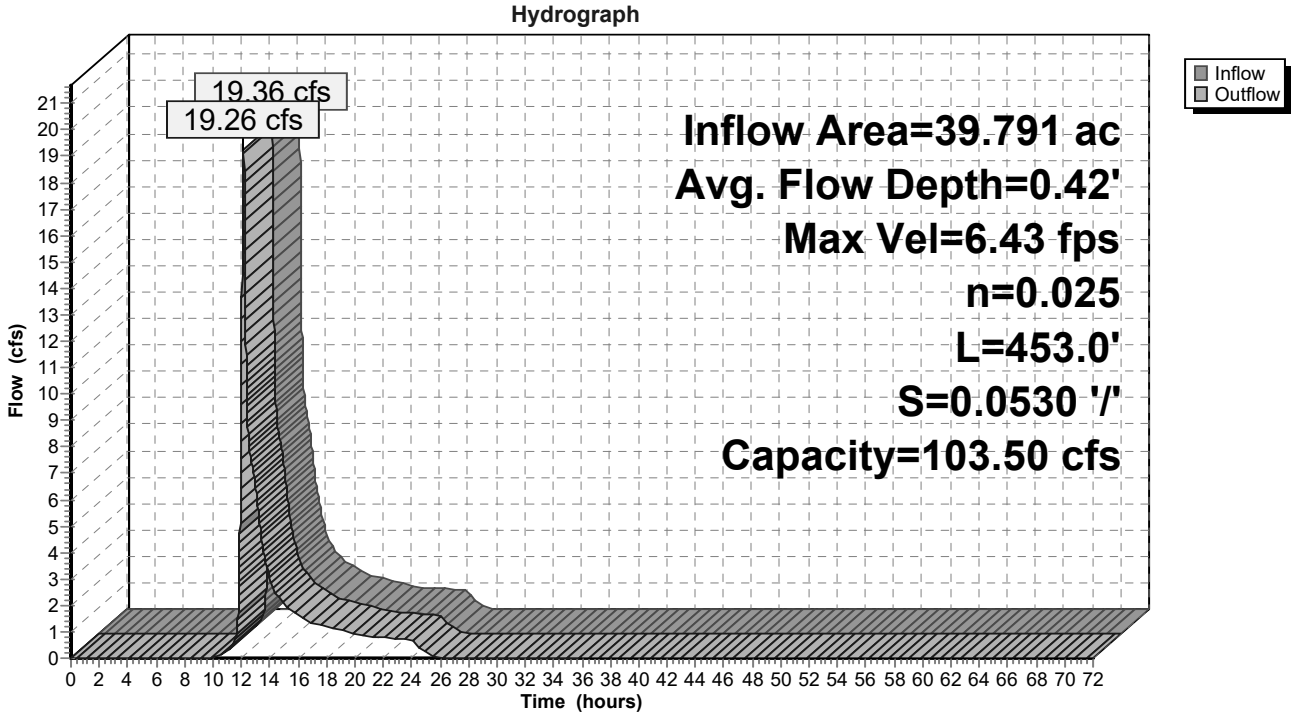

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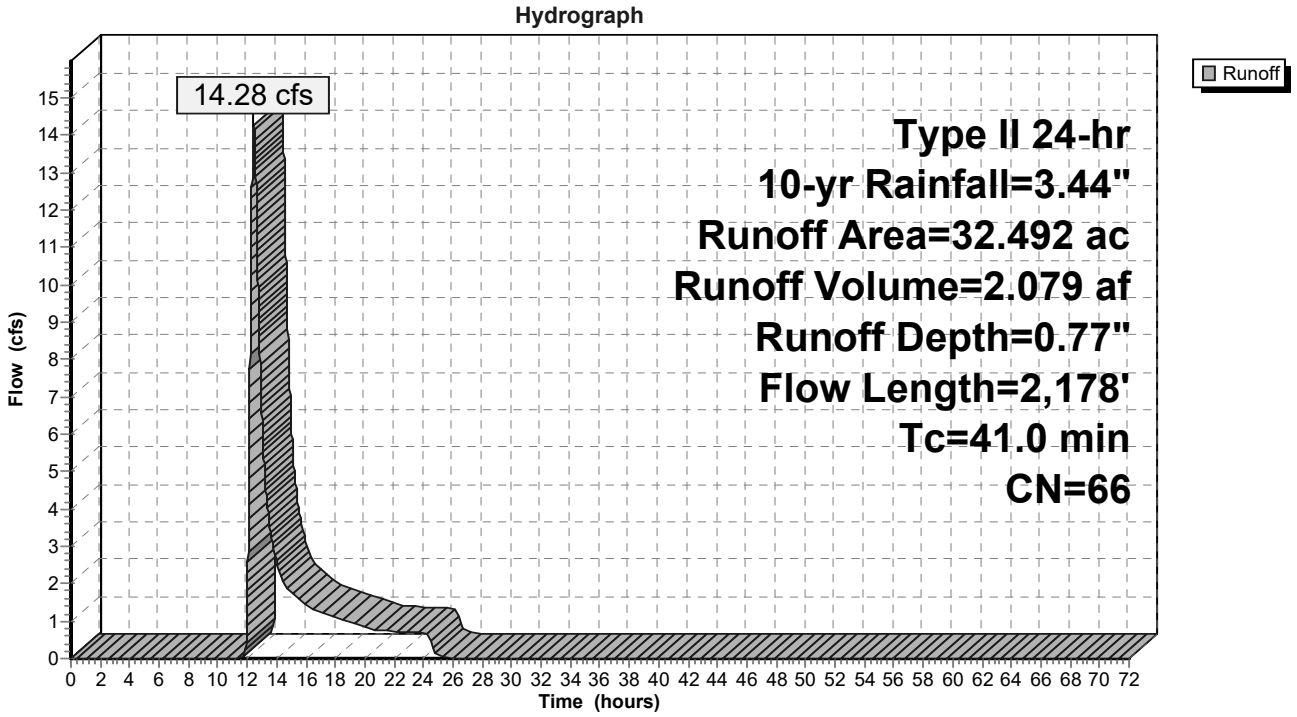

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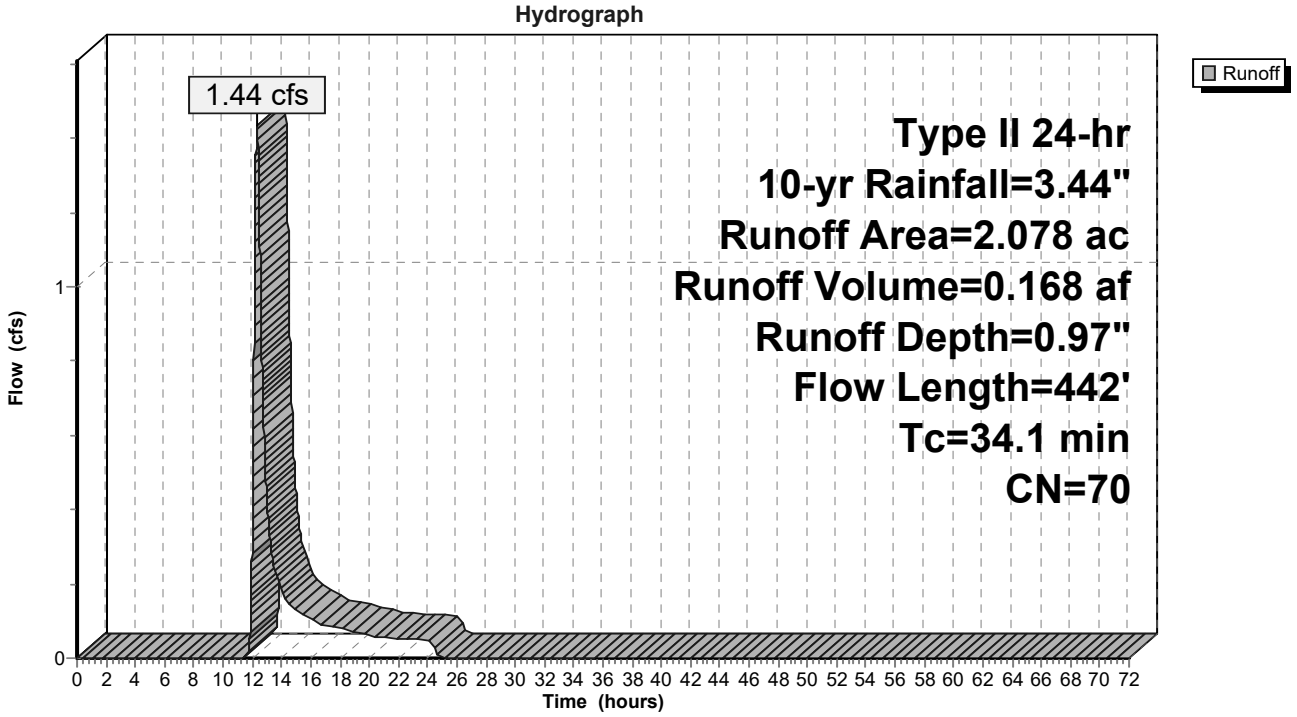
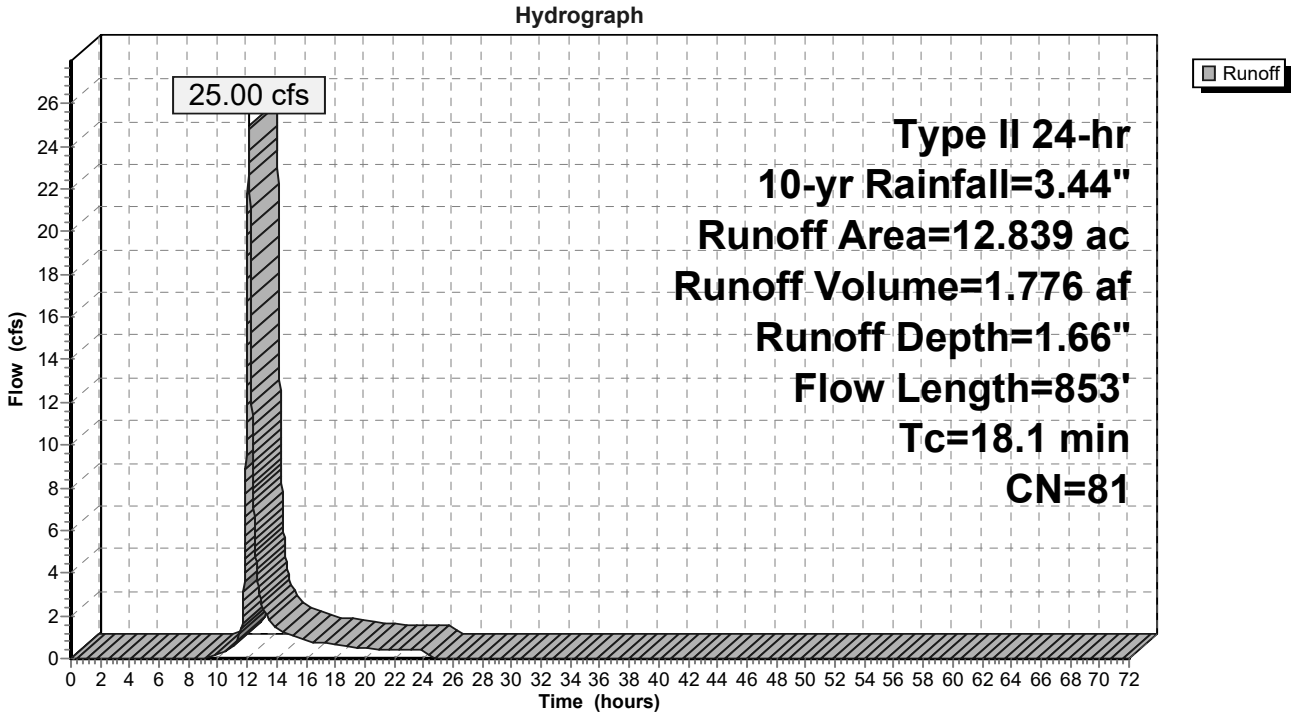
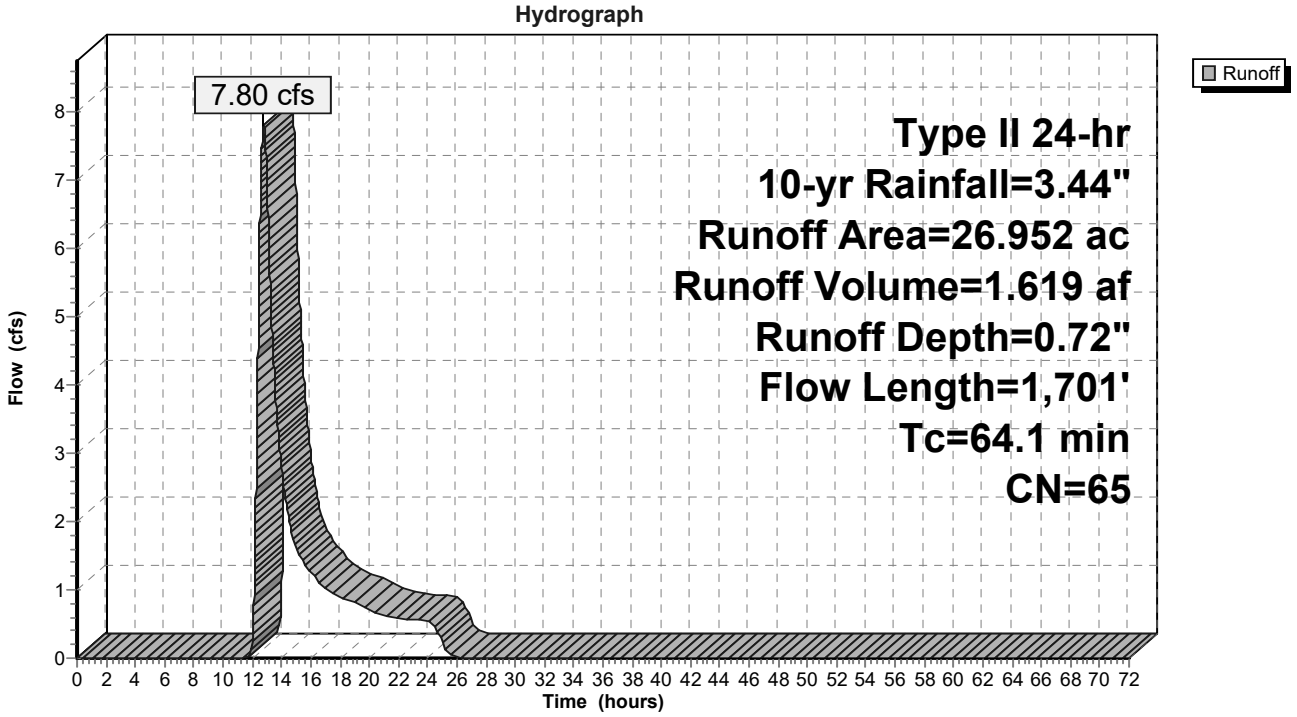


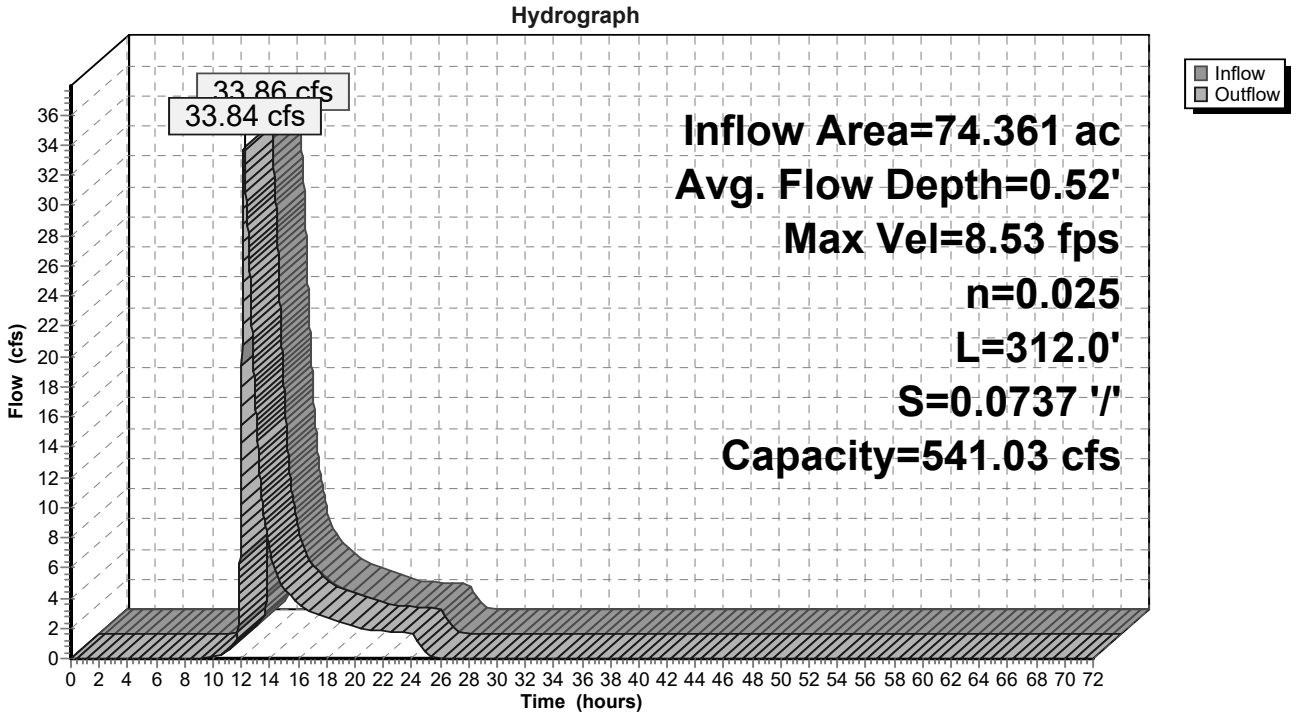
Subcatchment 33S: DA-1d



Subcatchment 34S: 191106 EXDA-1b



Reach 24R: Swale 3 (Ex. Cond)



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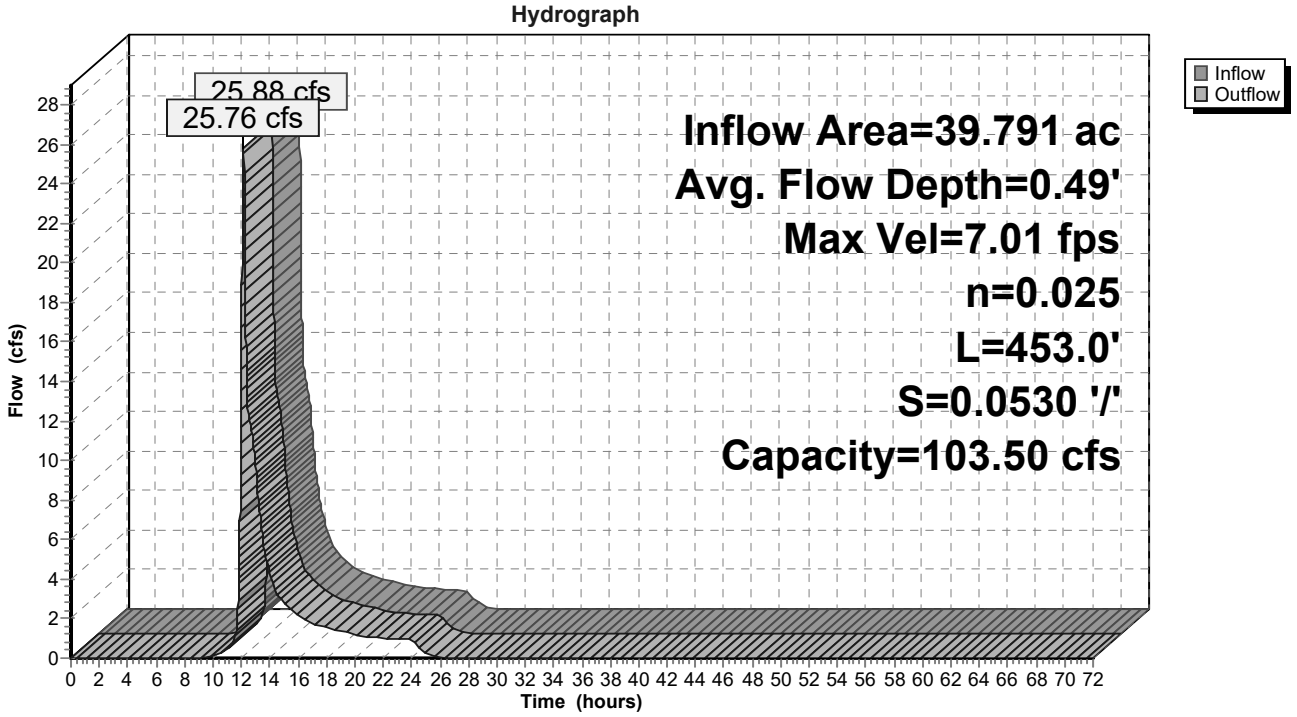
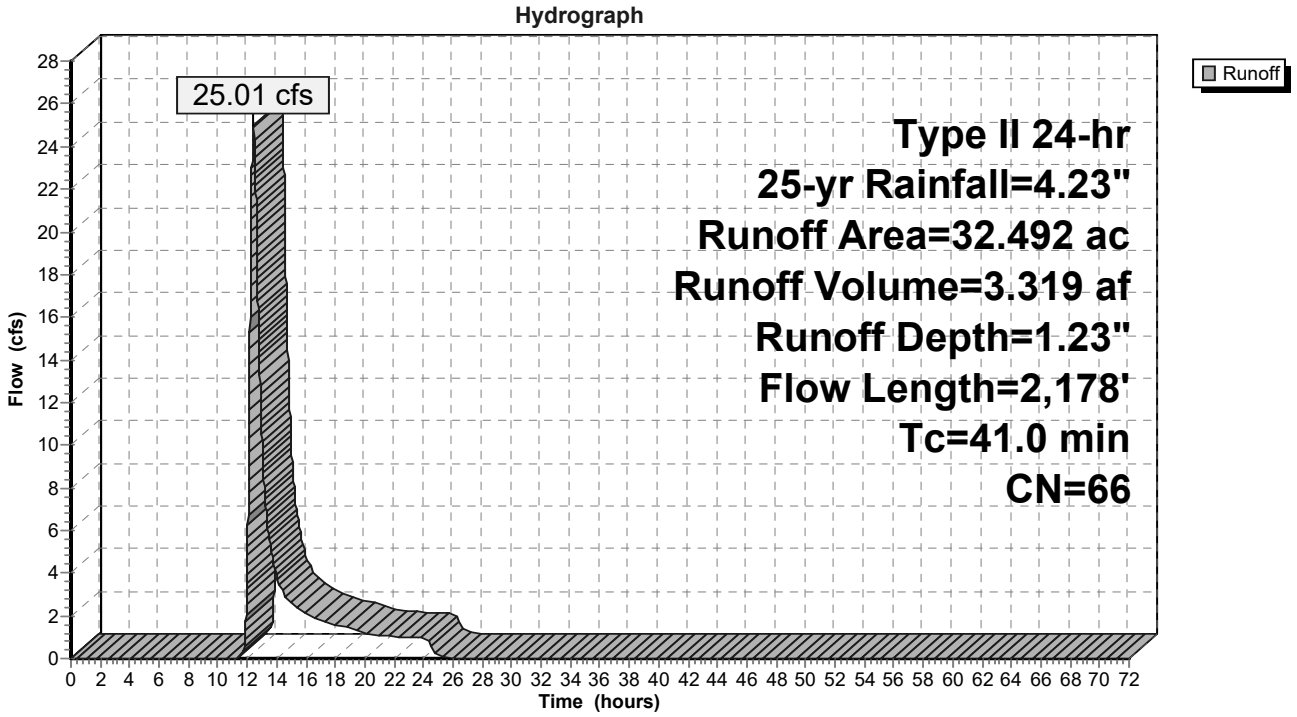


Subcatchment 9S: 191106 EXDA-1a



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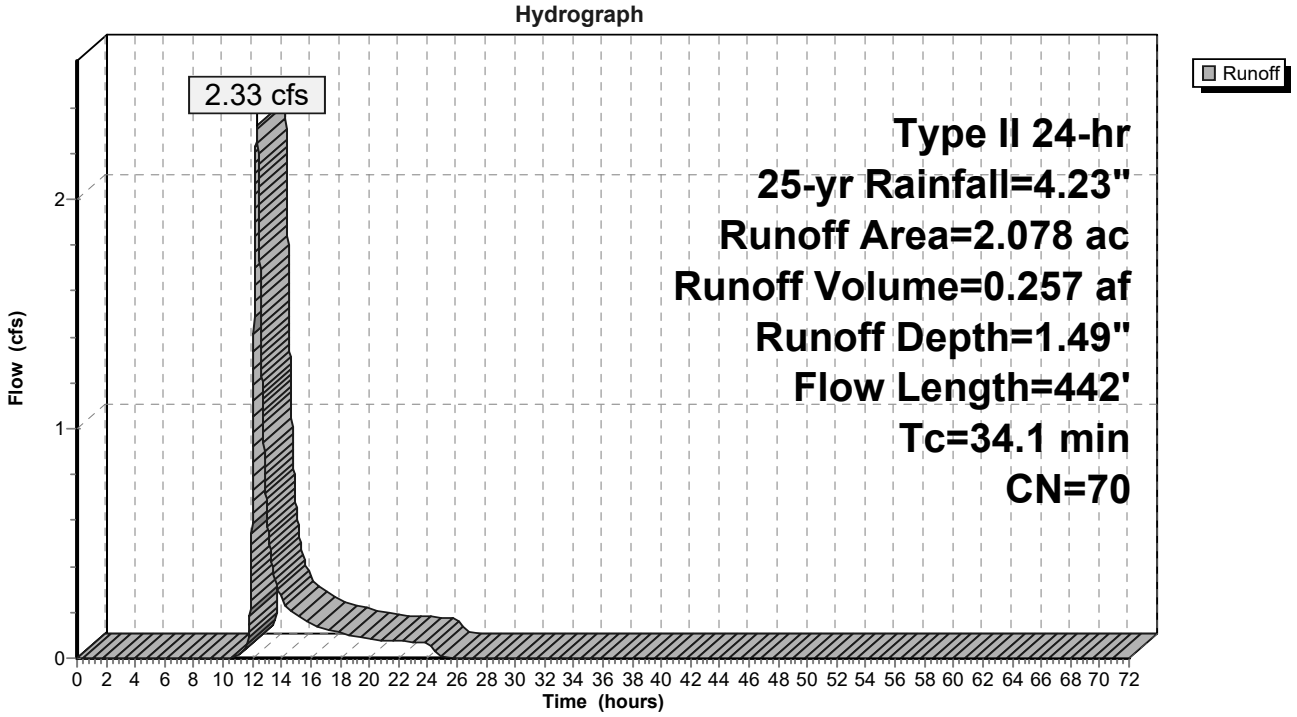
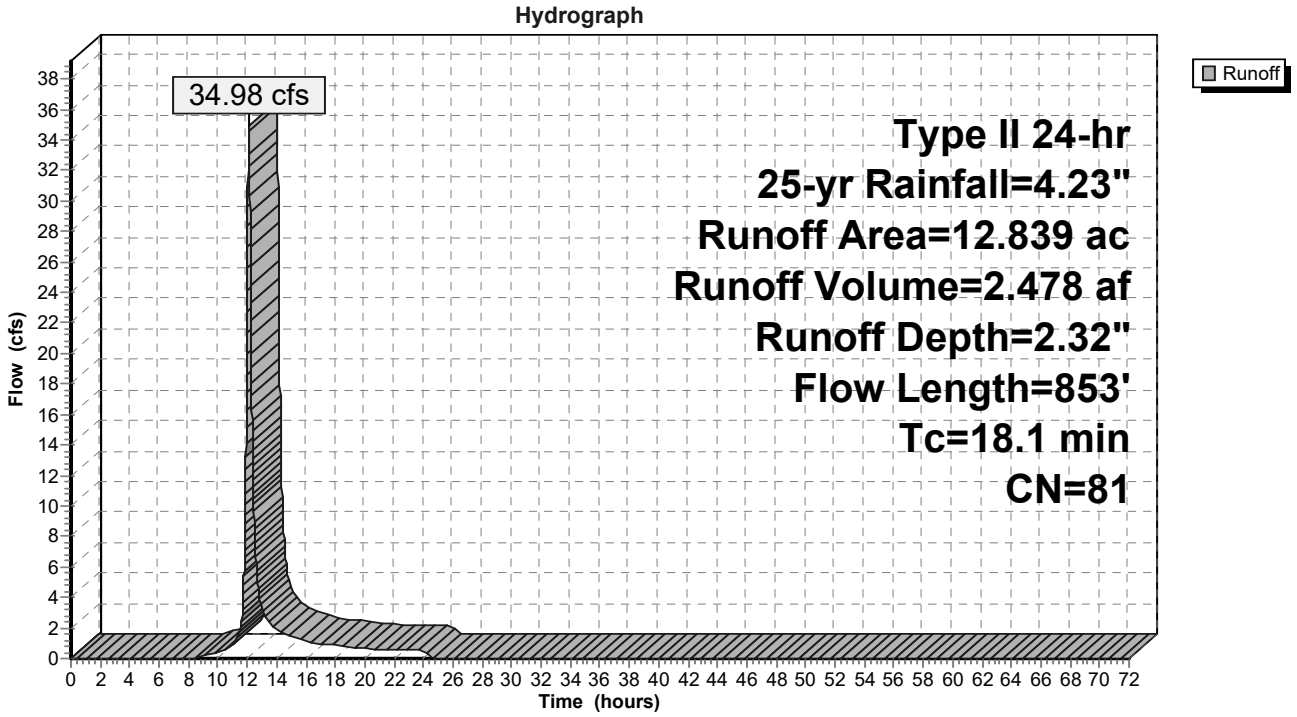
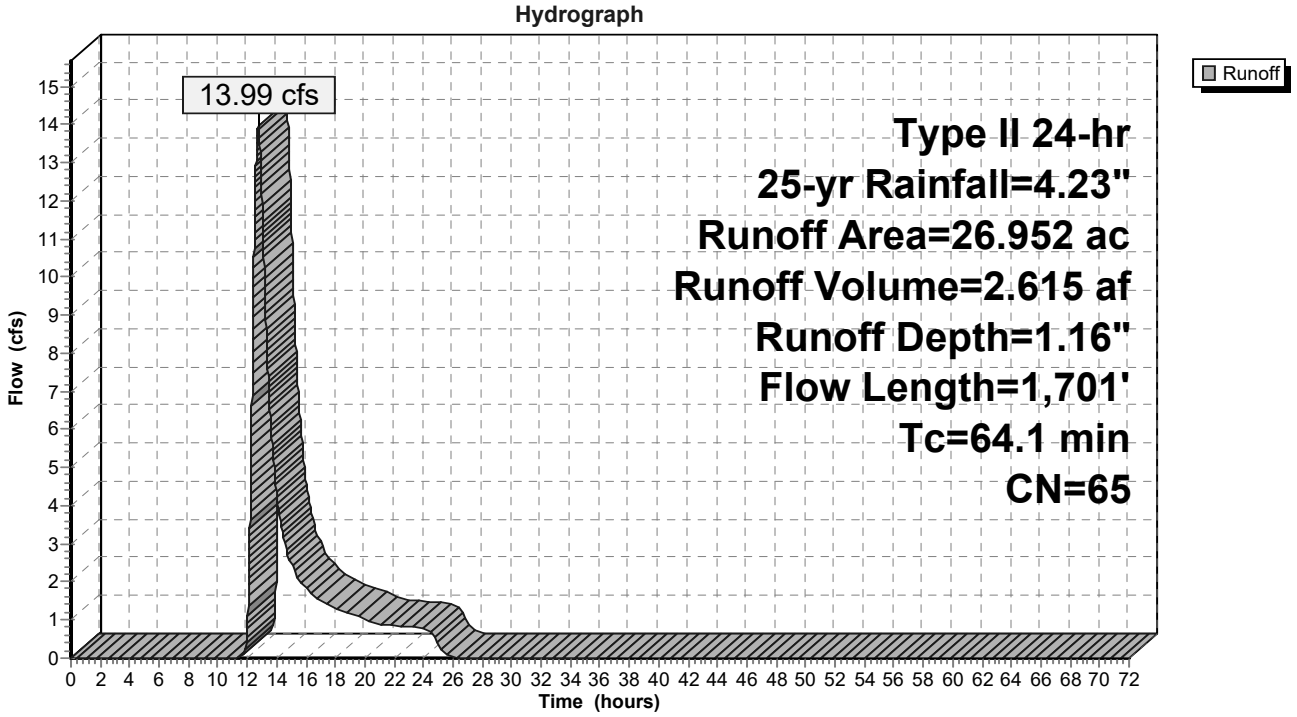


Subcatchment 33S: DA-1d



Subcatchment 34S: 191106 EXDA-1b



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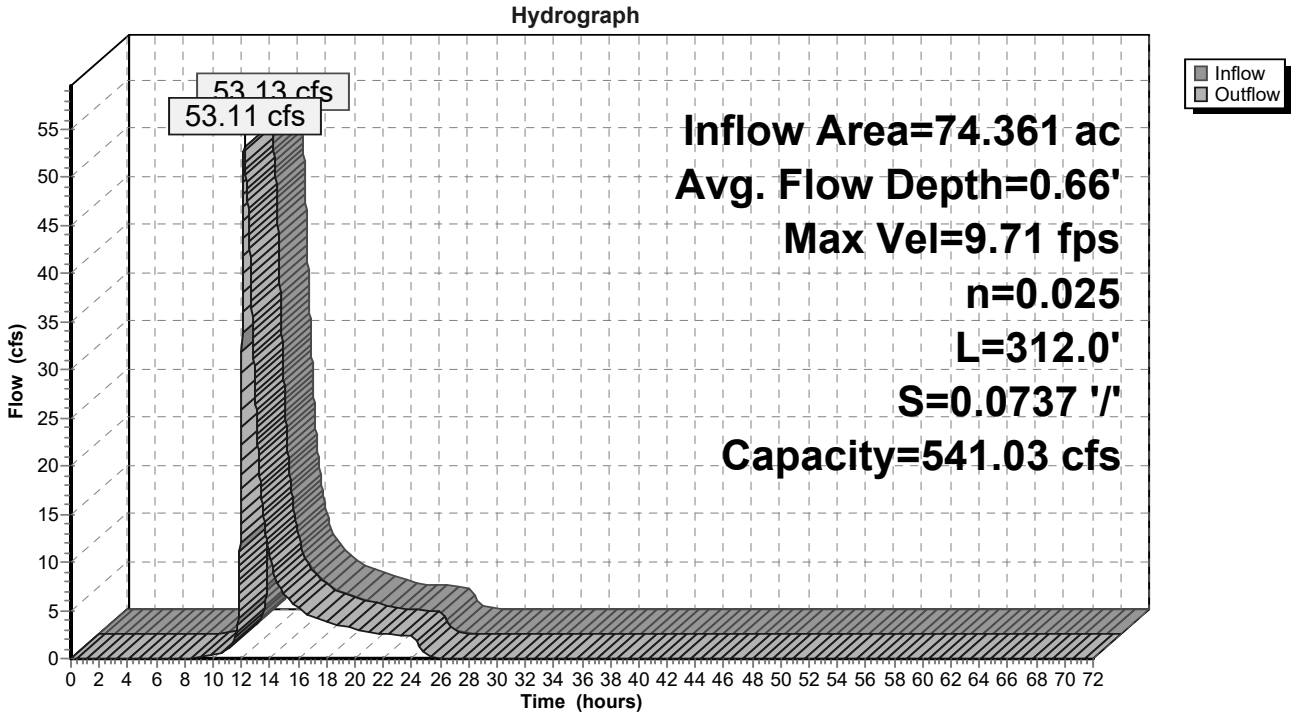

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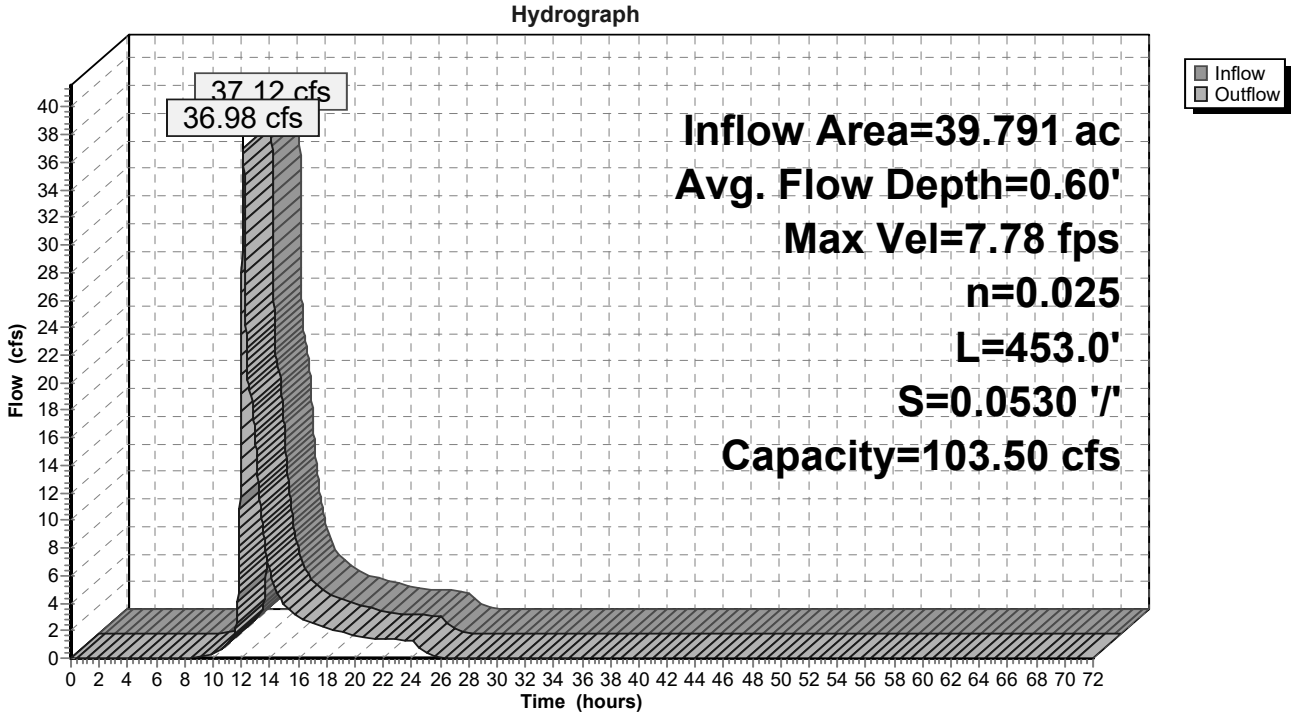
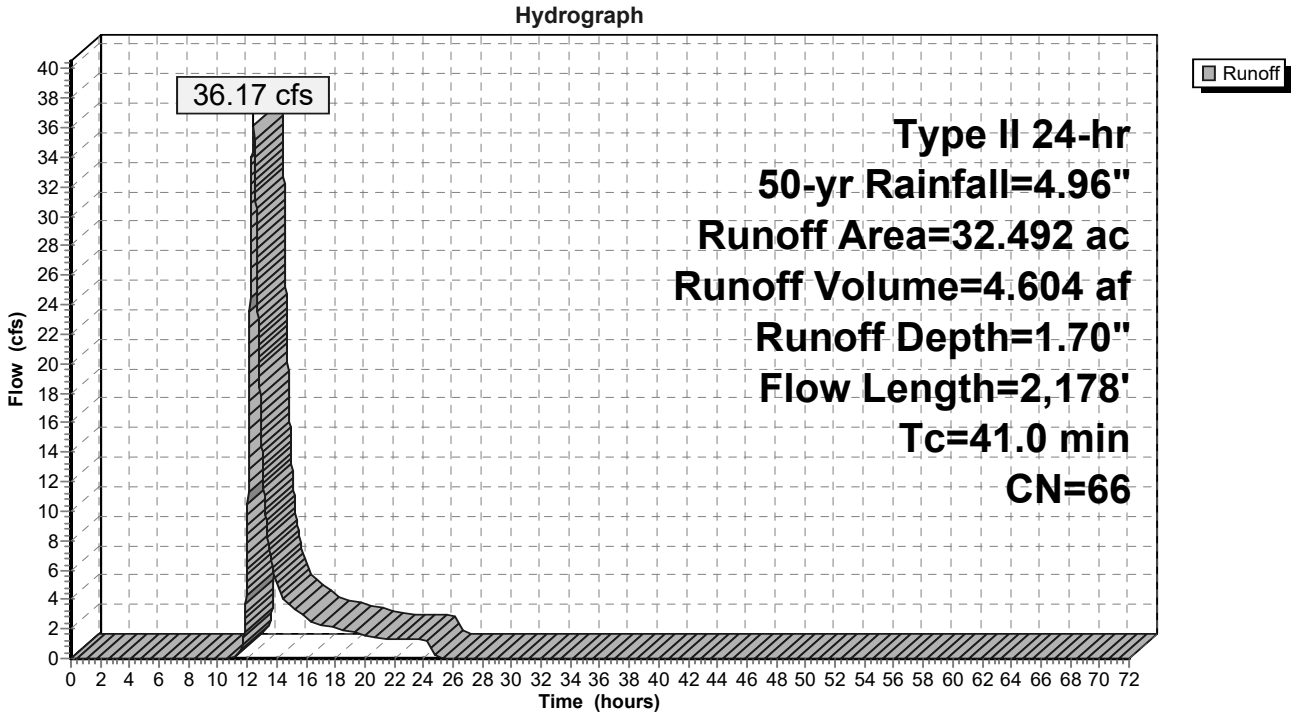
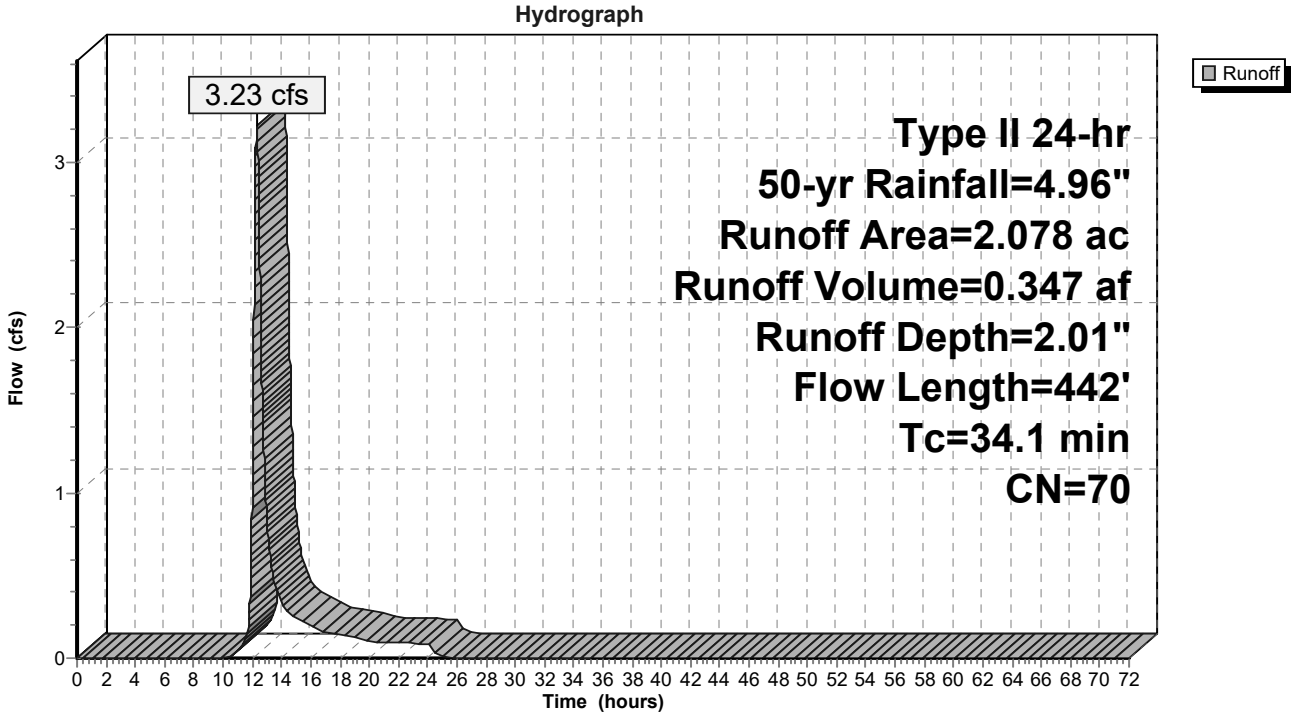


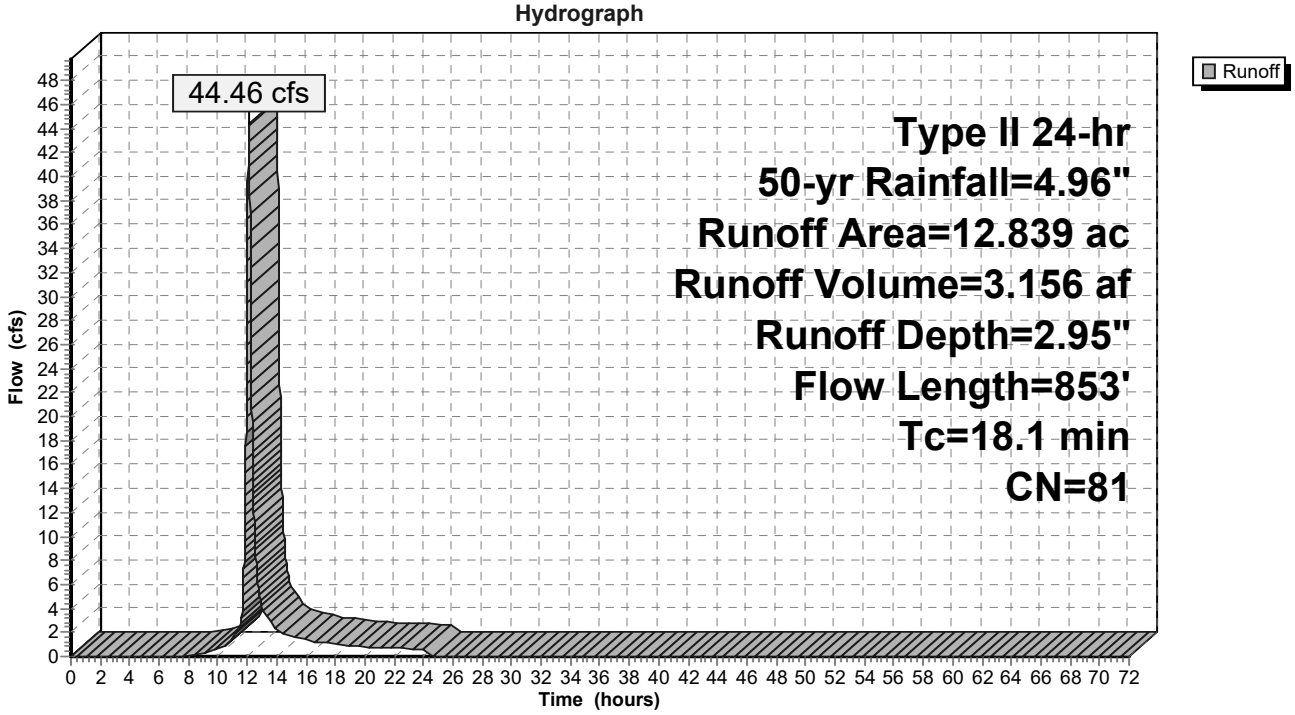
Subcatchment 9S: 191106 EXDA-1a



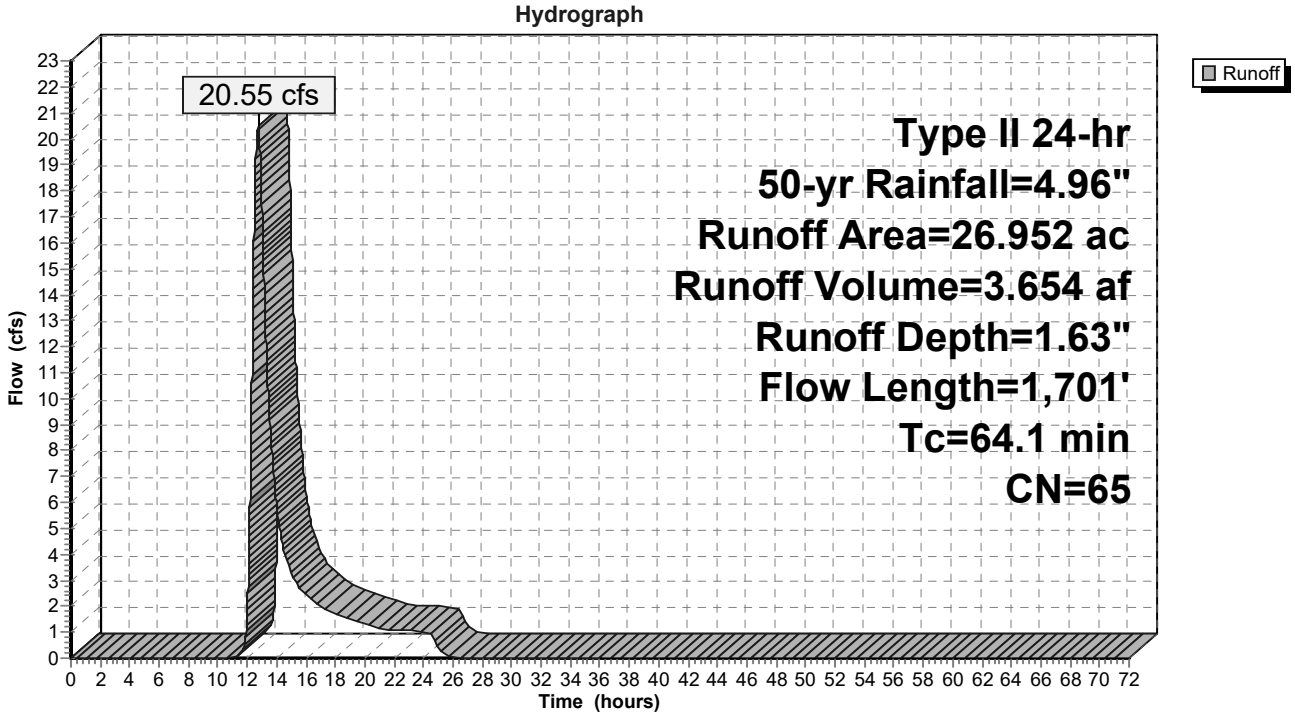
Subcatchment 31S: DA-1c



Subcatchment 33S: DA-1d



Subcatchment 34S: 191106 EXDA-1b



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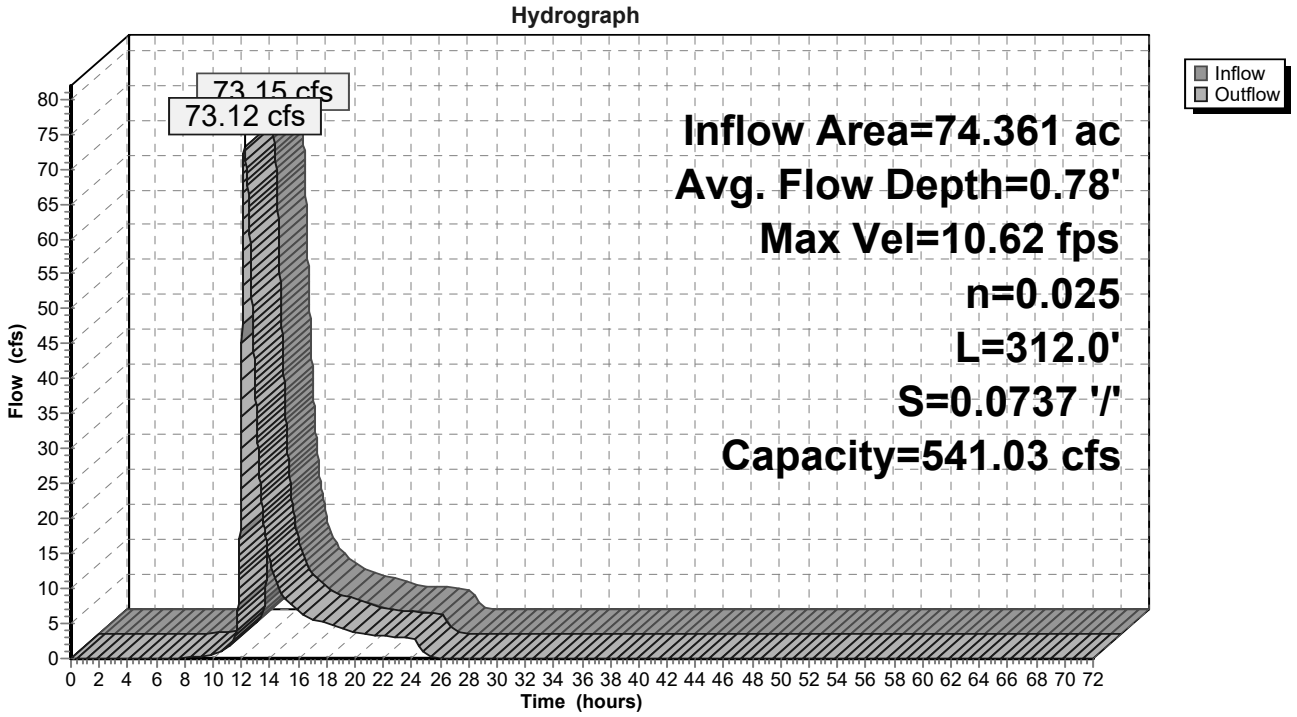

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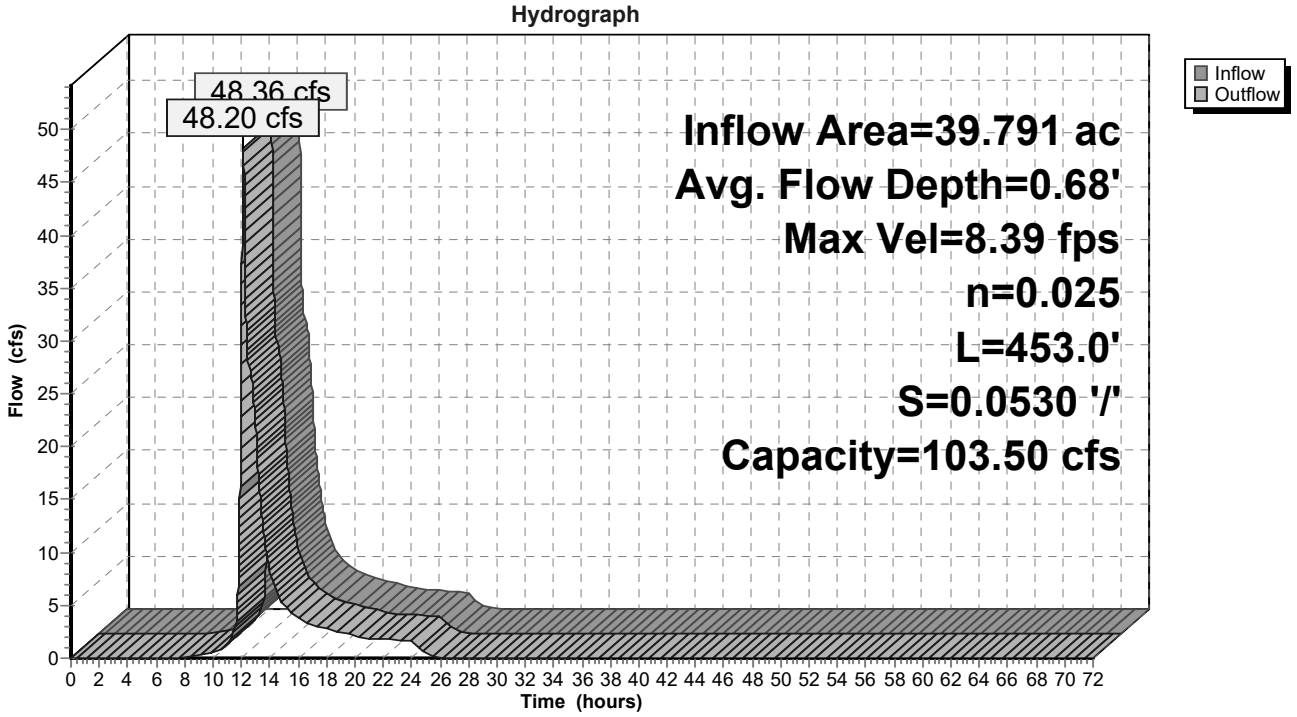
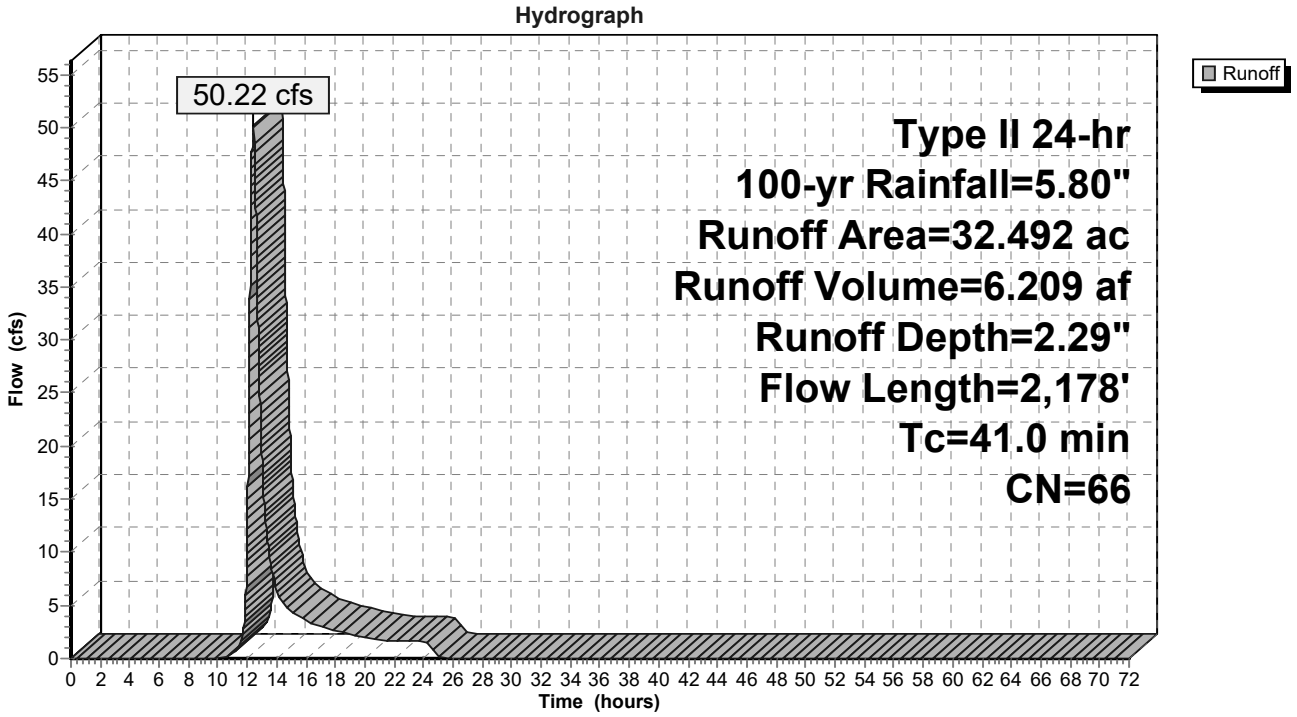
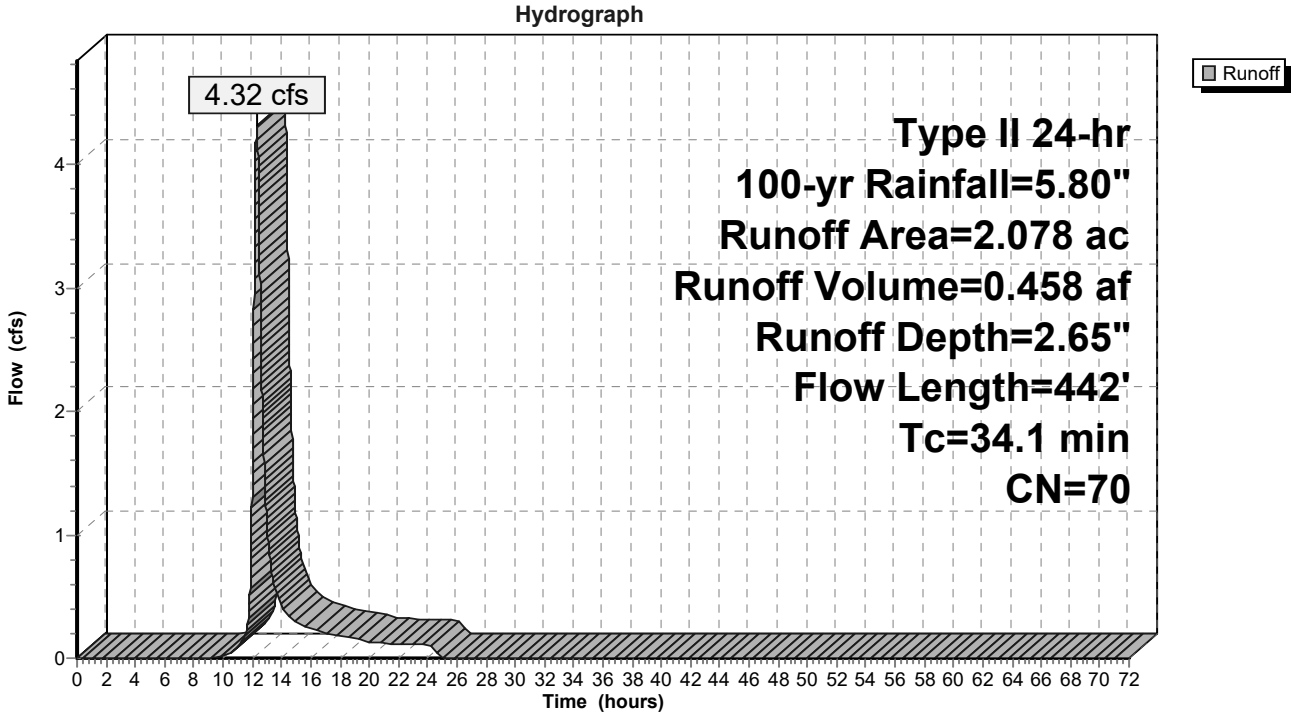


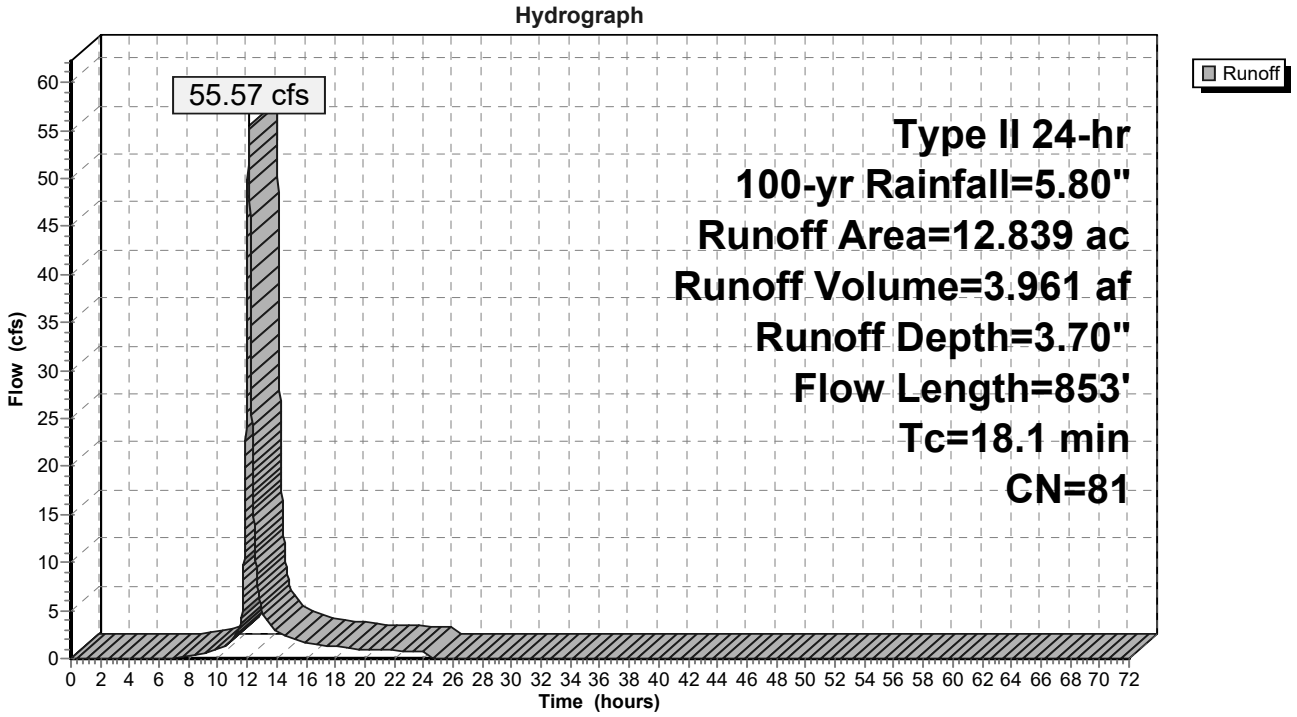
Subcatchment 9S: 191106 EXDA-1a



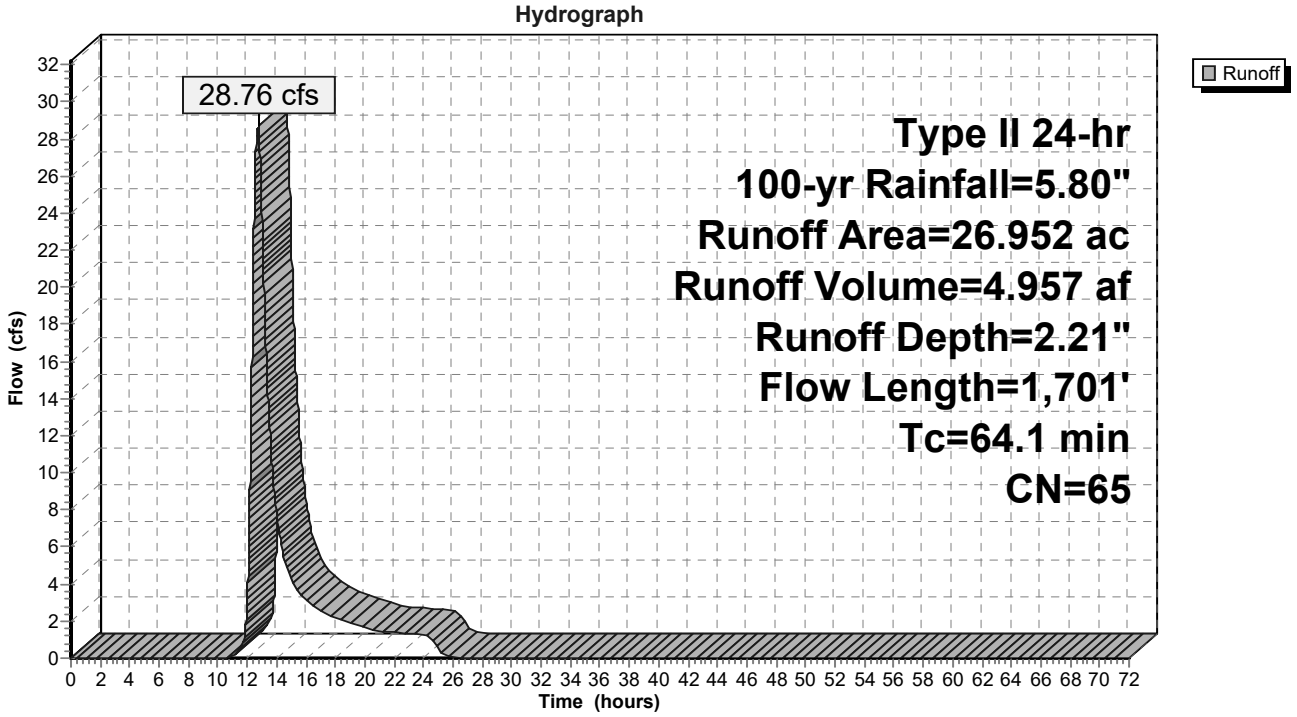
Subcatchment 31S: DA-1c



Subcatchment 33S: DA-1d



Subcatchment 34S: 191106 EXDA-1b



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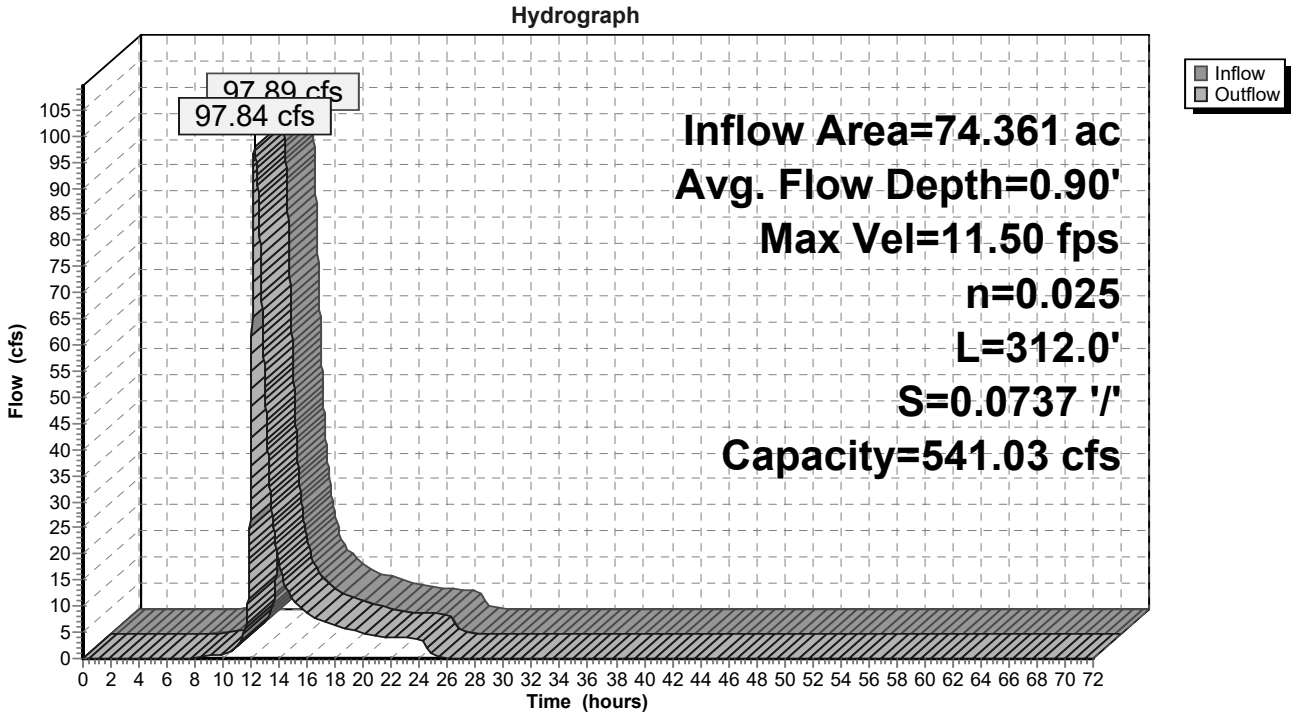
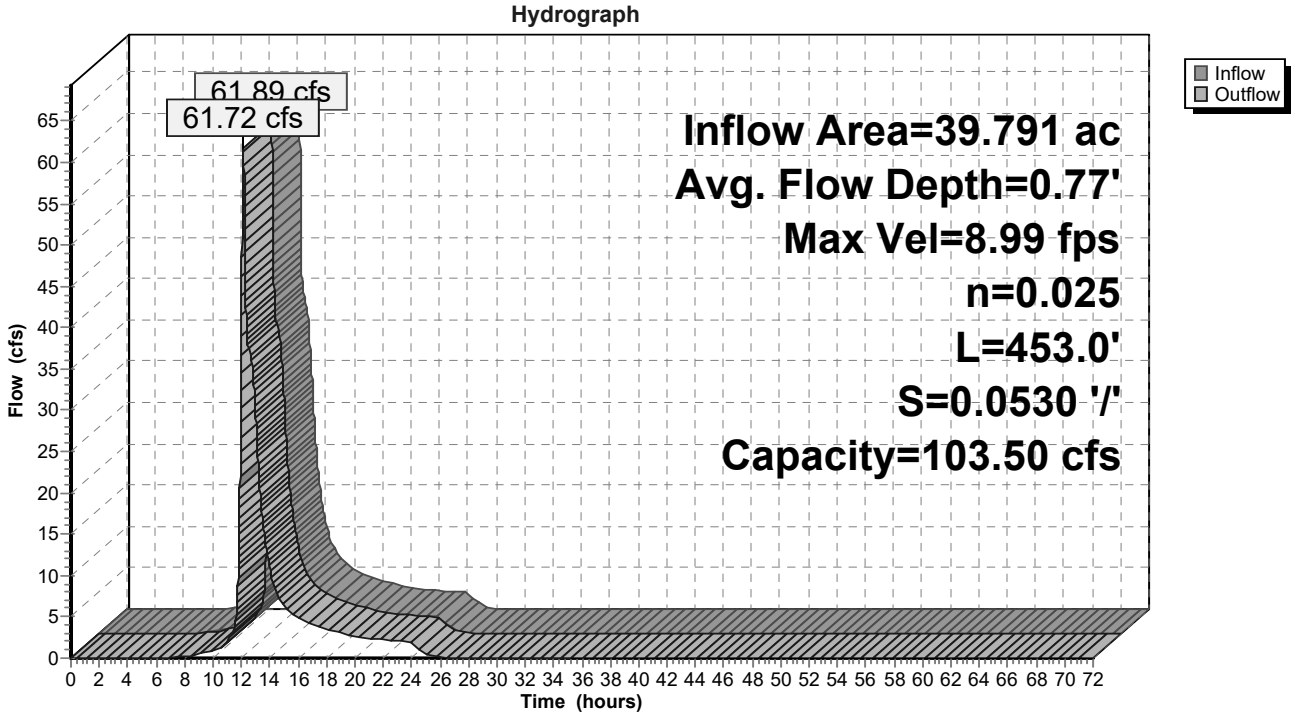
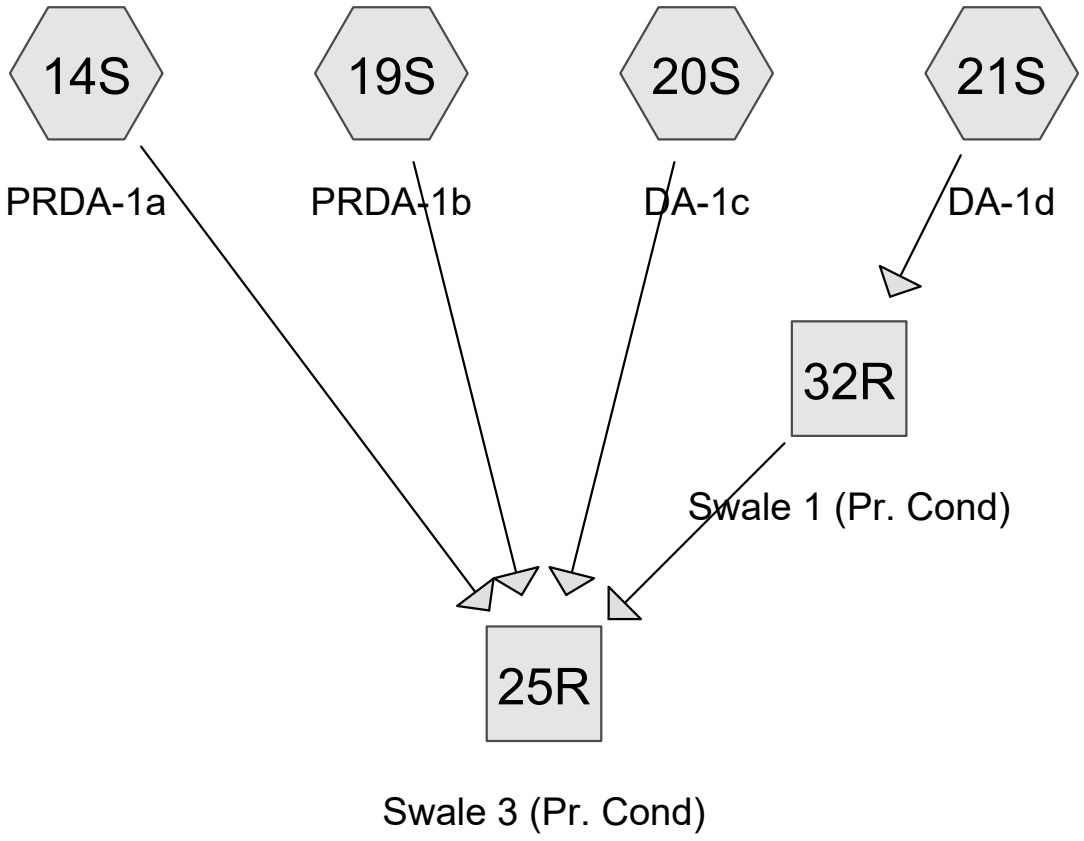


Reach 30R: Swale 1 (Ex. Cond)



APPENDIX D



Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 6/10/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 14S: PRDA-1a

Runoff = 48.75 cfs @ 12.32 hrs, Volume= 5.277 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (ac)	CN	Description
	0.314	70	Woods, Good, HSG C
	2.348	55	Woods, Good, HSG B
	13.435	74	>75% Grass cover, Good, HSG C
*	3.341	98	Proposed Subject Site Impervious
*	0.300	98	Permanent Pool of Wet Pond
	19.738	76	Weighted Average
	16.097		81.55% Pervious Area
	3.641		18.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.3	100	0.0450	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
2.7	234	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	227	0.1450	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	52	0.0400	8.03	4.38	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.4	567	0.0405	21.34	1,216.50	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=3.00' Z= 3.0 '/' Top.W=28.00' n= 0.022 Earth, clean & straight
35.9	1,180	Total			

Summary for Subcatchment 19S: PRDA-1b

Runoff = 40.88 cfs @ 12.74 hrs, Volume= 7.045 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (ac)	CN	Description
	1.883	68	1 acre lots, 20% imp, HSG B
	2.802	79	1 acre lots, 20% imp, HSG C
	8.616	65	2 acre lots, 12% imp, HSG B
	14.060	55	Woods, Good, HSG B
	8.507	70	Woods, Good, HSG C
	1.905	74	>75% Grass cover, Good, HSG C
*	0.531	98	Proposed Site Impervious
	38.304	65	Weighted Average
	35.802		93.47% Pervious Area
	2.502		6.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Summary for Subcatchment 20S: DA-1c

Runoff = 7.24 cfs @ 12.31 hrs, Volume= 0.768 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
3.294	70	Woods, Good, HSG C
0.188	74	>75% Grass cover, Good, HSG C
3.482	70	Weighted Average
3.482		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	100	0.0500	0.06		**Sheet Flow, Offsite** Woods: Dense underbrush n= 0.800 P2= 2.39"
2.7	207	0.0676	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	135	0.0518	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	442	Total			

Summary for Subcatchment 21S: DA-1d

Runoff = 55.57 cfs @ 12.10 hrs, Volume= 3.961 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
11.672	79	1 acre lots, 20% imp, HSG C
1.167	98	Paved parking, HSG C
12.839	81	Weighted Average
9.338		72.73% Pervious Area
3.501		27.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0660	0.16		**Sheet Flow, Offsite** Grass: Dense n= 0.240 P2= 2.39"
7.9	753	0.0510	1.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.1	853	Total			

Summary for Reach 25R: Swale 3 (Pr. Cond)

Inflow Area = 74.363 ac, 12.97% Impervious, Inflow Depth = 2.75" for 100-yr event
Inflow = 112.09 cfs @ 12.21 hrs, Volume= 17.051 af
Outflow = 112.03 cfs @ 12.22 hrs, Volume= 17.051 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.93 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 4.38 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2,930 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.96' , Surface Width= 14.59'
Bank-Full Depth= 2.00' Flow Area= 30.0 sf, Capacity= 541.03 cfs

5.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 25.00'
Length= 312.0' Slope= 0.0737 '/'
Inlet Invert= 661.00', Outlet Invert= 638.00'



‡

Summary for Reach 32R: Swale 1 (Pr. Cond)

Inflow Area = 12.839 ac, 27.27% Impervious, Inflow Depth = 3.70" for 100-yr event
Inflow = 55.57 cfs @ 12.10 hrs, Volume= 3.961 af
Outflow = 55.40 cfs @ 12.13 hrs, Volume= 3.961 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.72 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.50 fps, Avg. Travel Time= 3.0 min

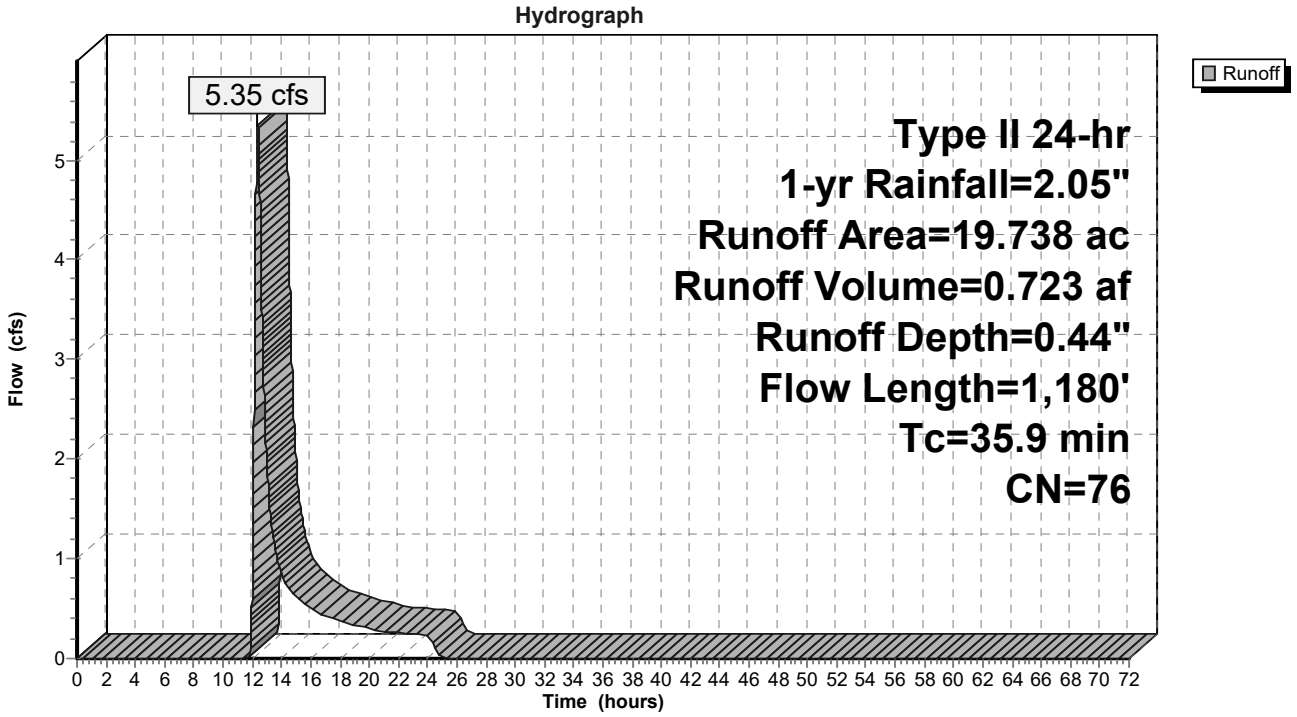
Peak Storage= 2,878 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.73' , Surface Width= 12.33'
Bank-Full Depth= 1.00' Flow Area= 10.0 sf, Capacity= 103.50 cfs

5.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 15.00'
Length= 453.0' Slope= 0.0530 '/'
Inlet Invert= 680.00', Outlet Invert= 656.00'

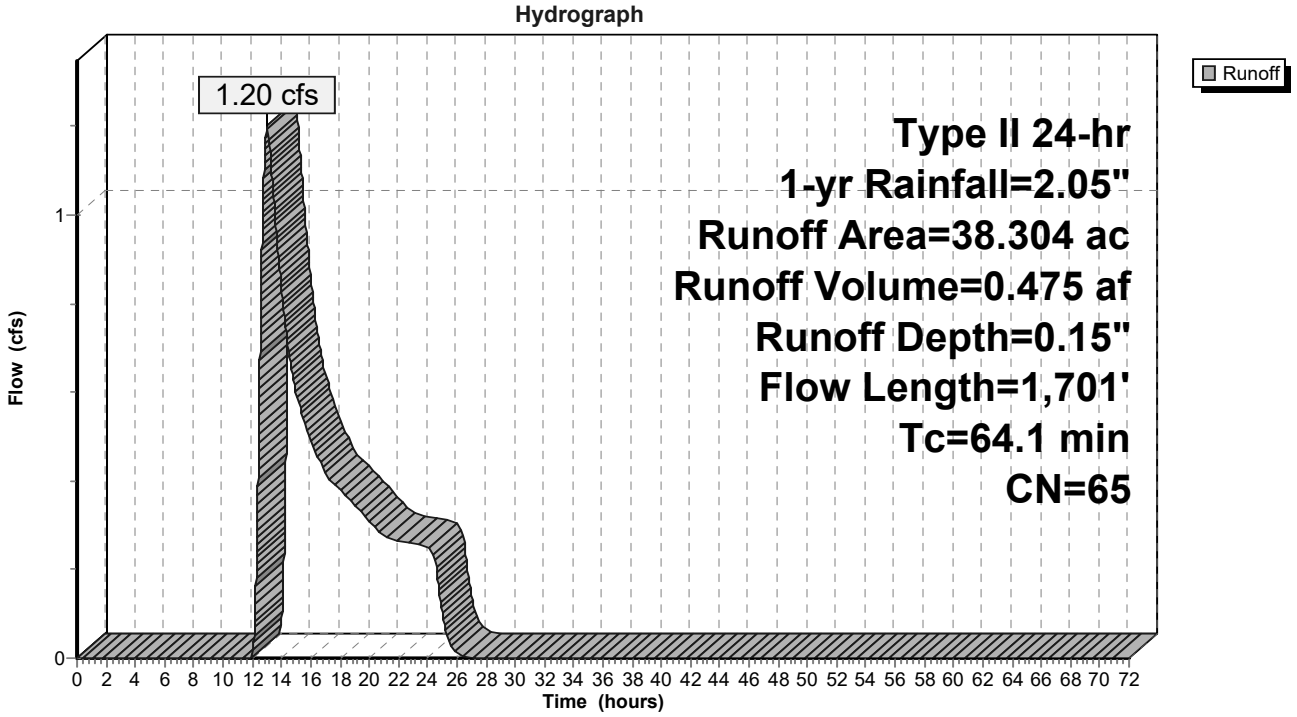


‡

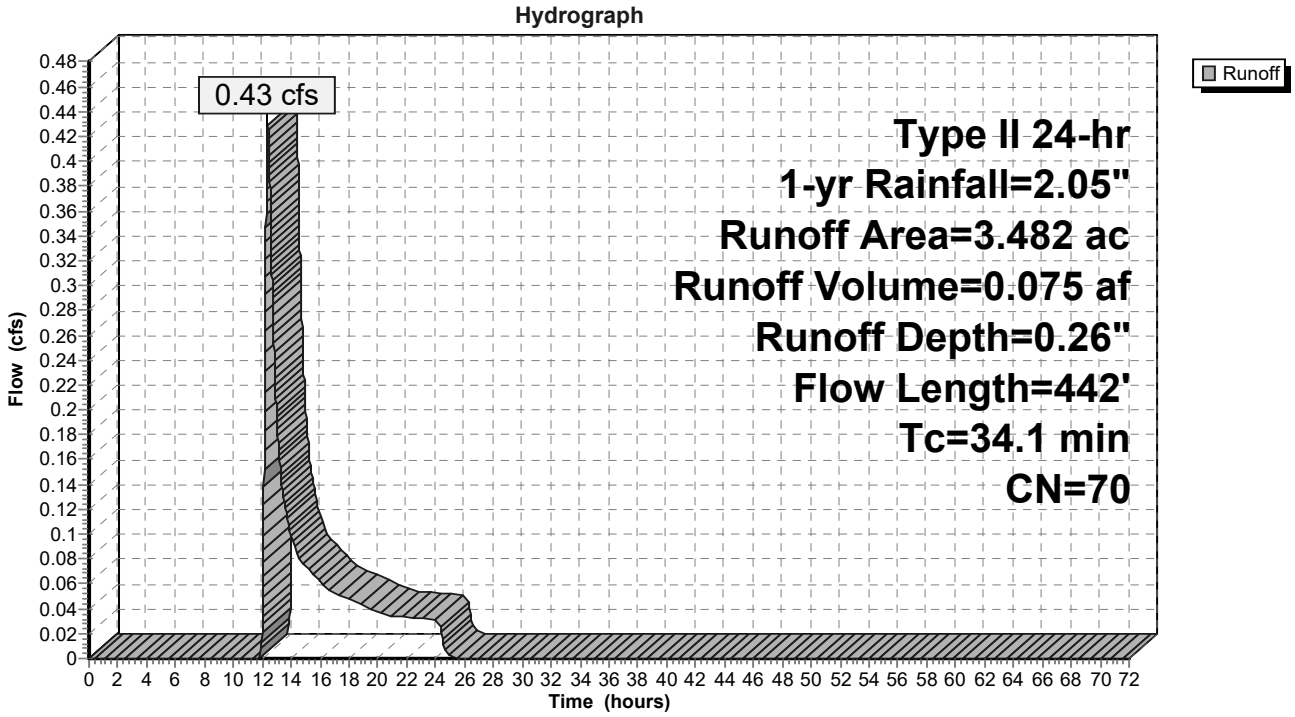
Subcatchment 14S: PRDA-1a



Subcatchment 19S: PRDA-1b



Subcatchment 20S: DA-1c



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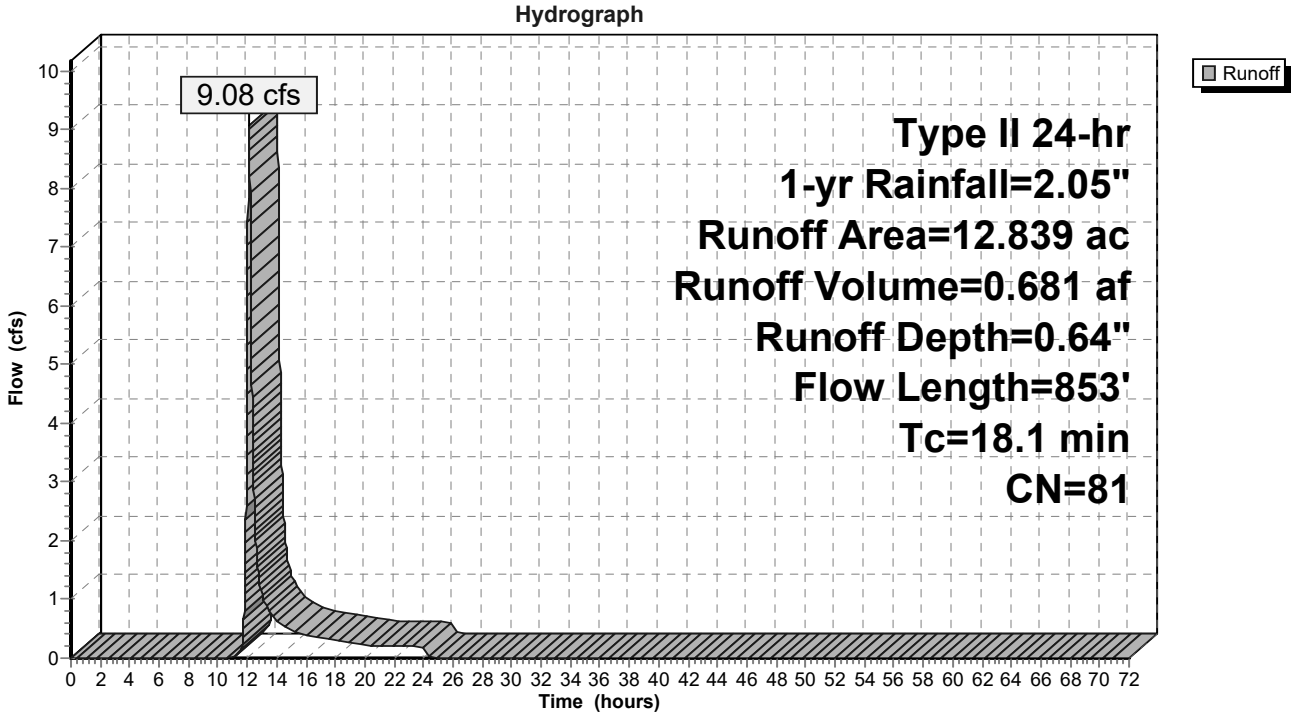
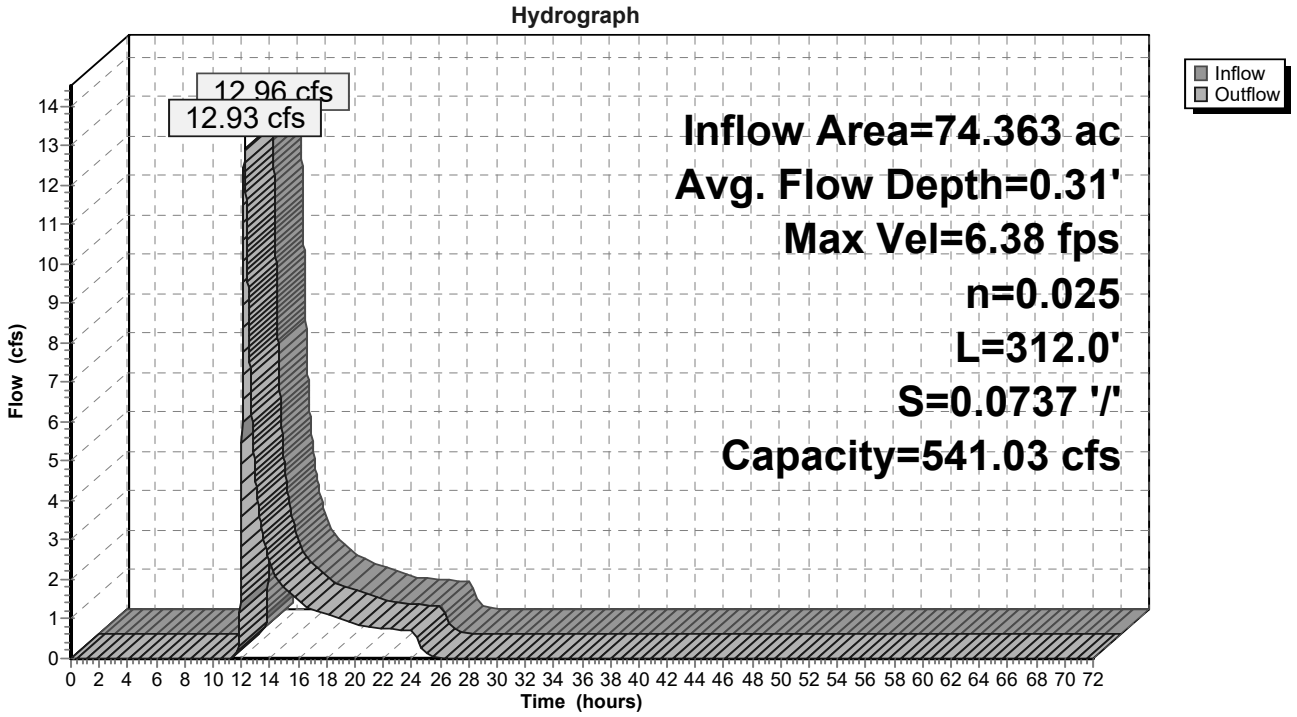
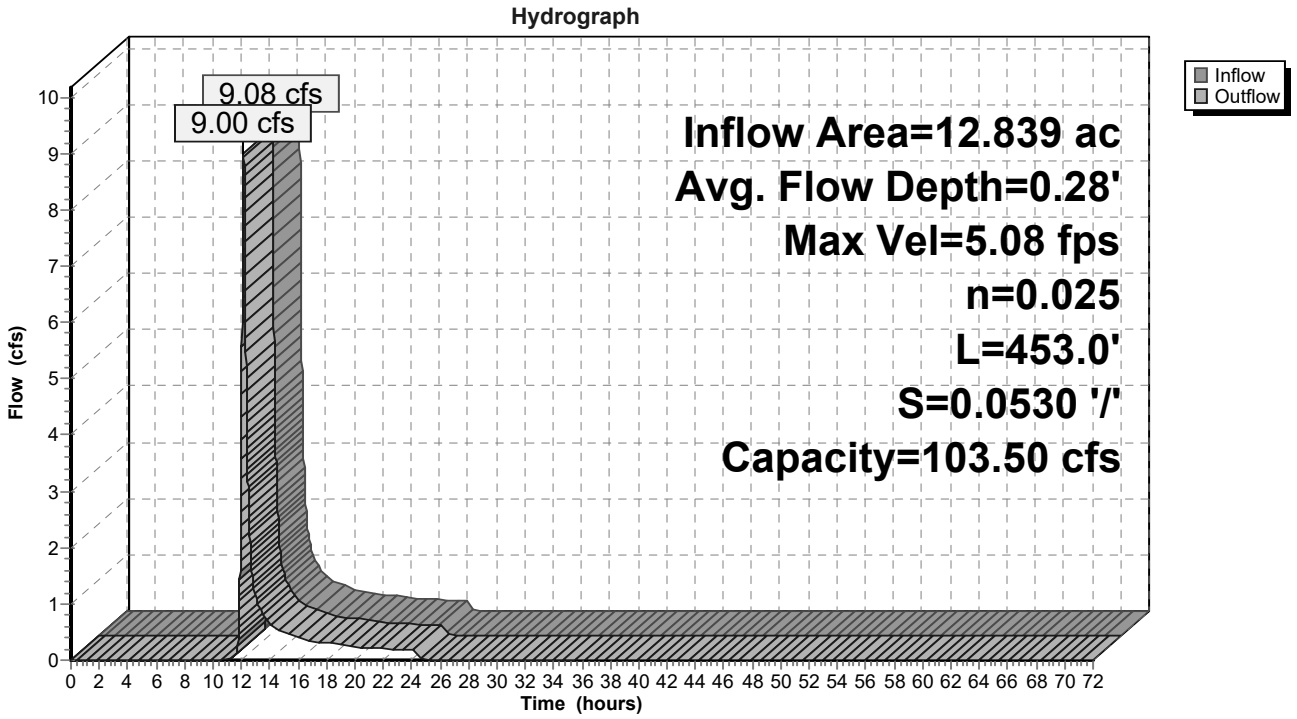


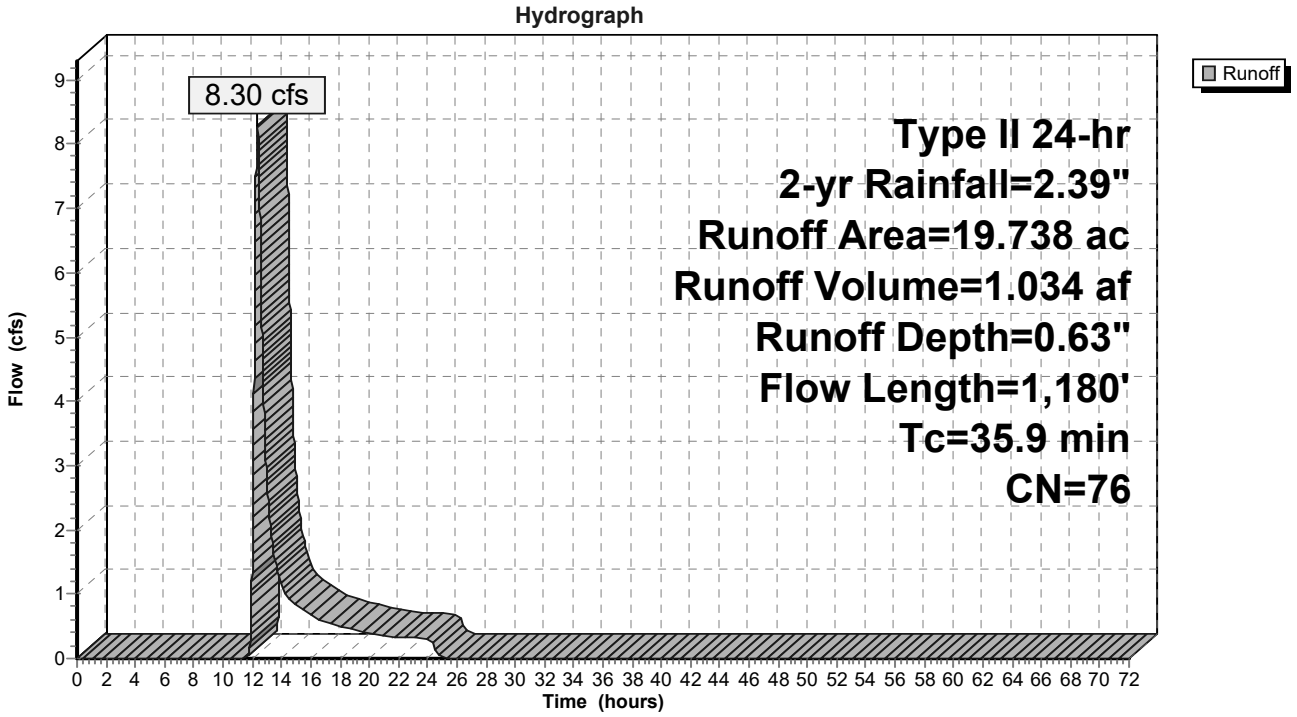
Reach 25R: Swale 3 (Pr. Cond)



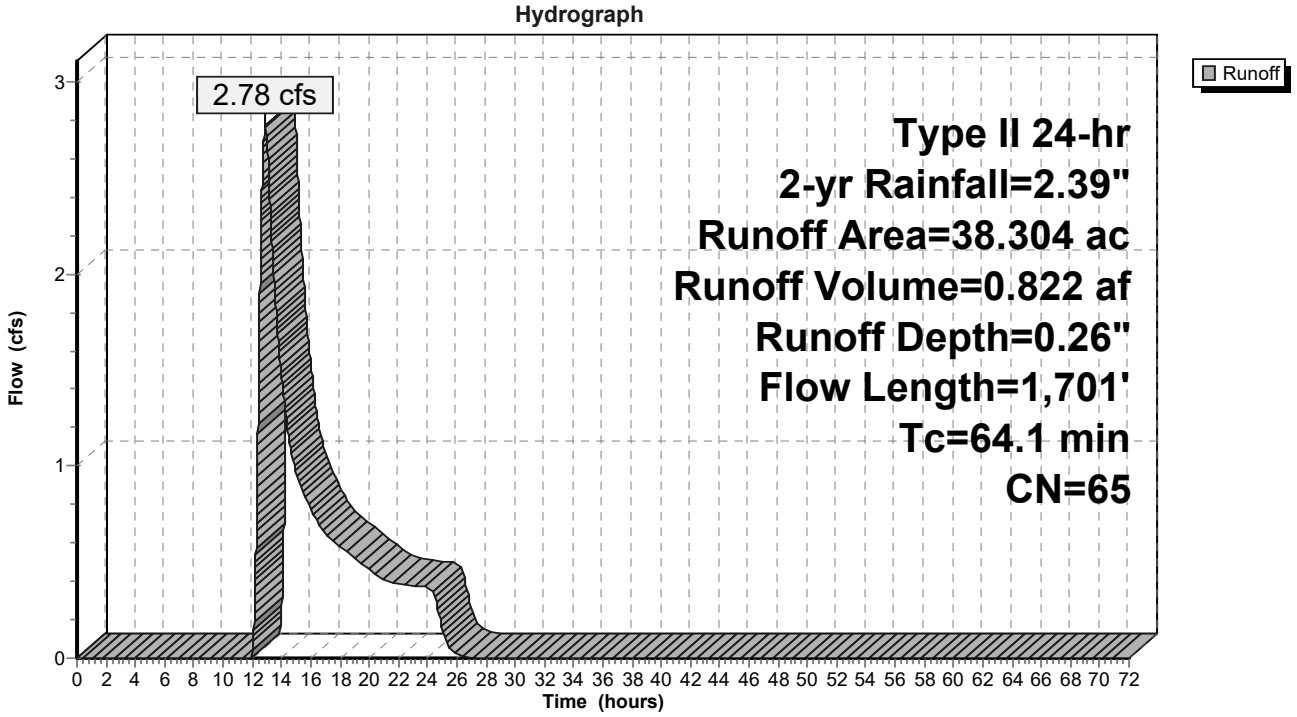
Reach 32R: Swale 1 (Pr. Cond)



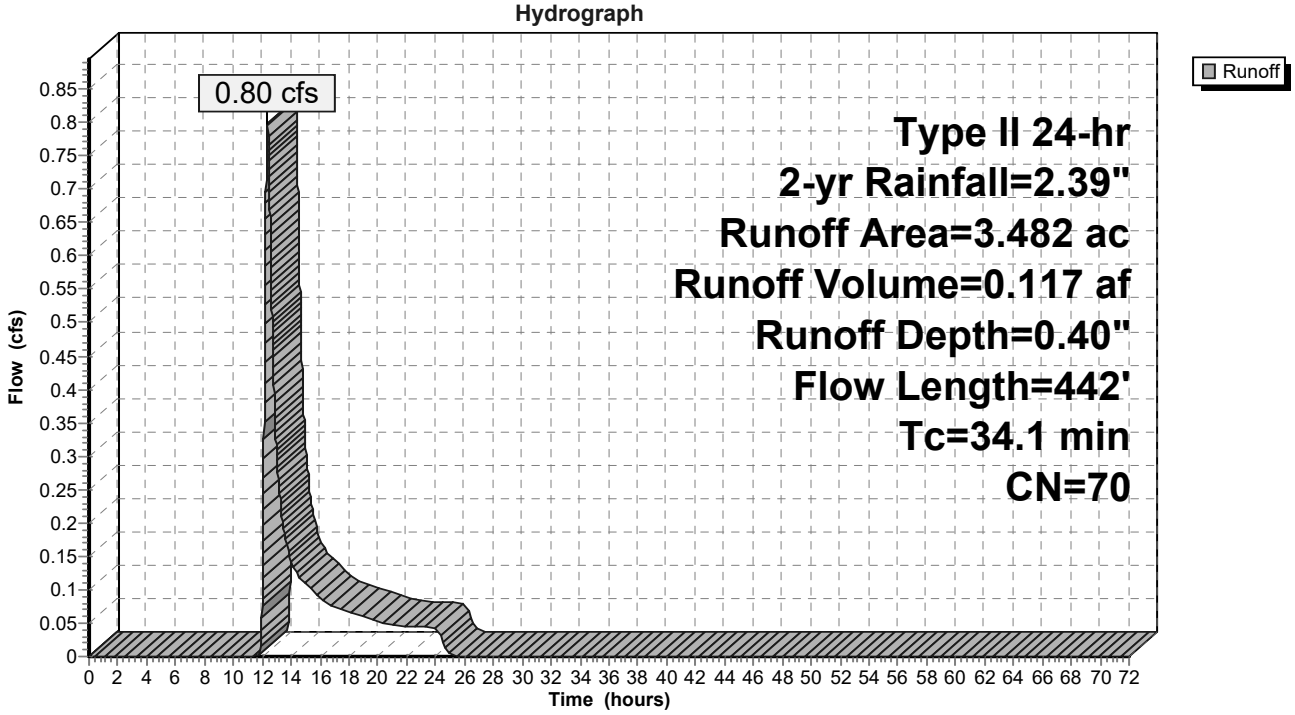
Subcatchment 14S: PRDA-1a



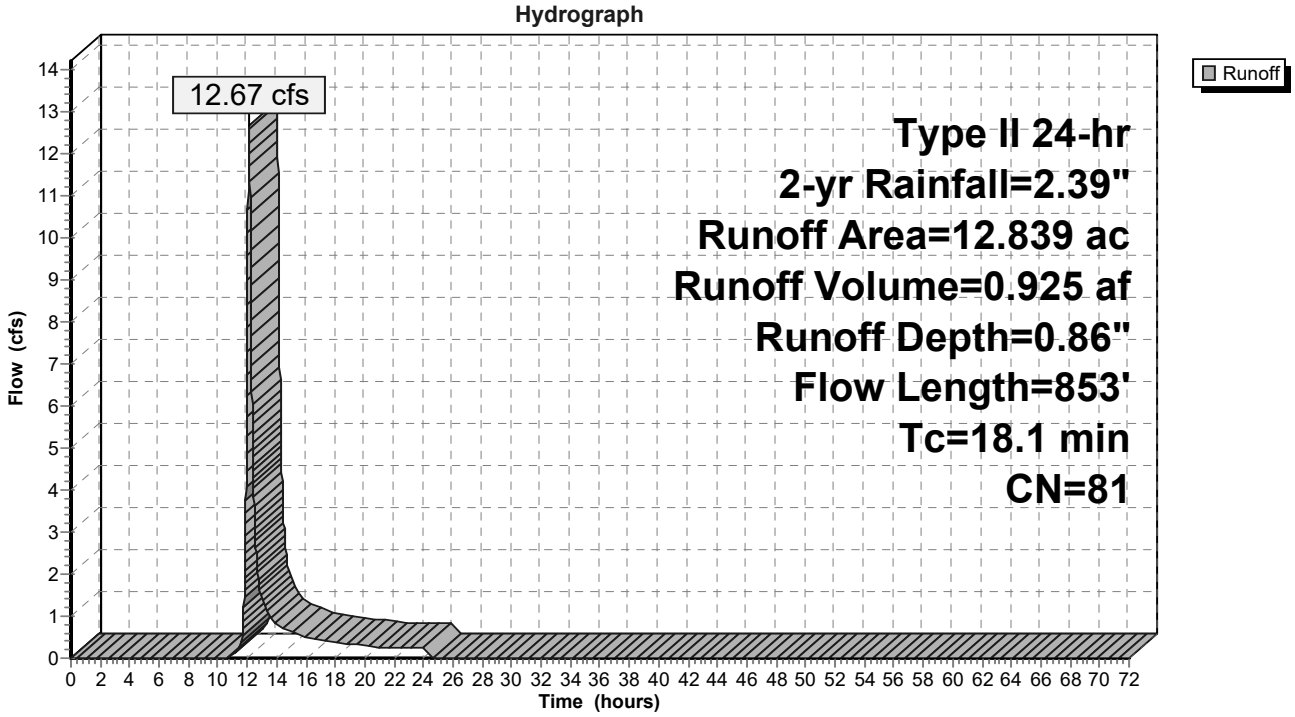
Subcatchment 19S: PRDA-1b



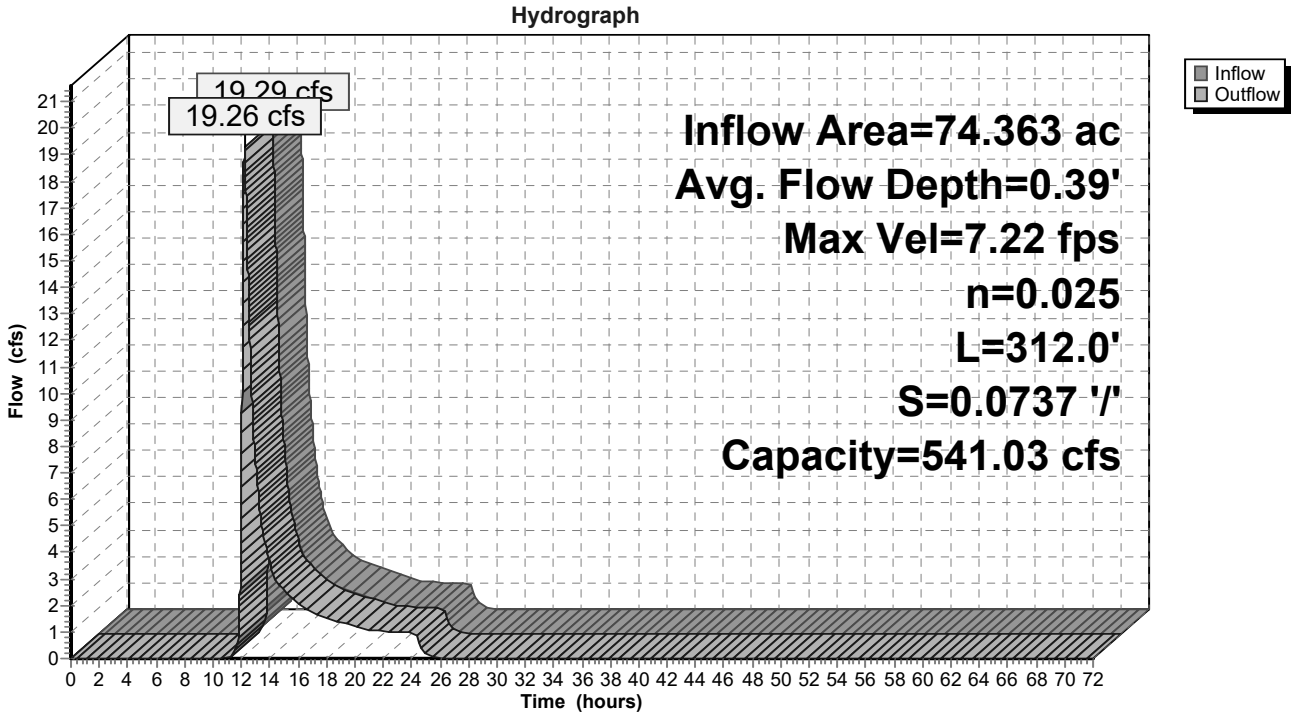
Subcatchment 20S: DA-1c



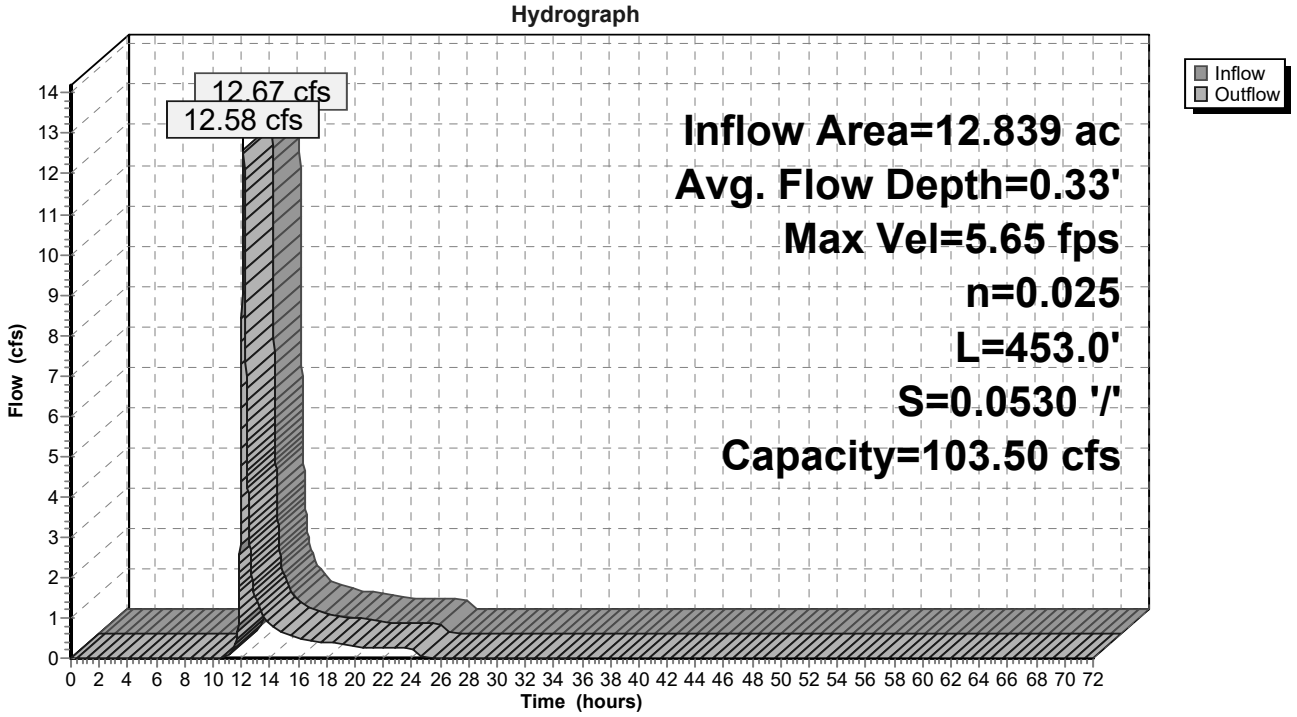
Subcatchment 21S: DA-1d



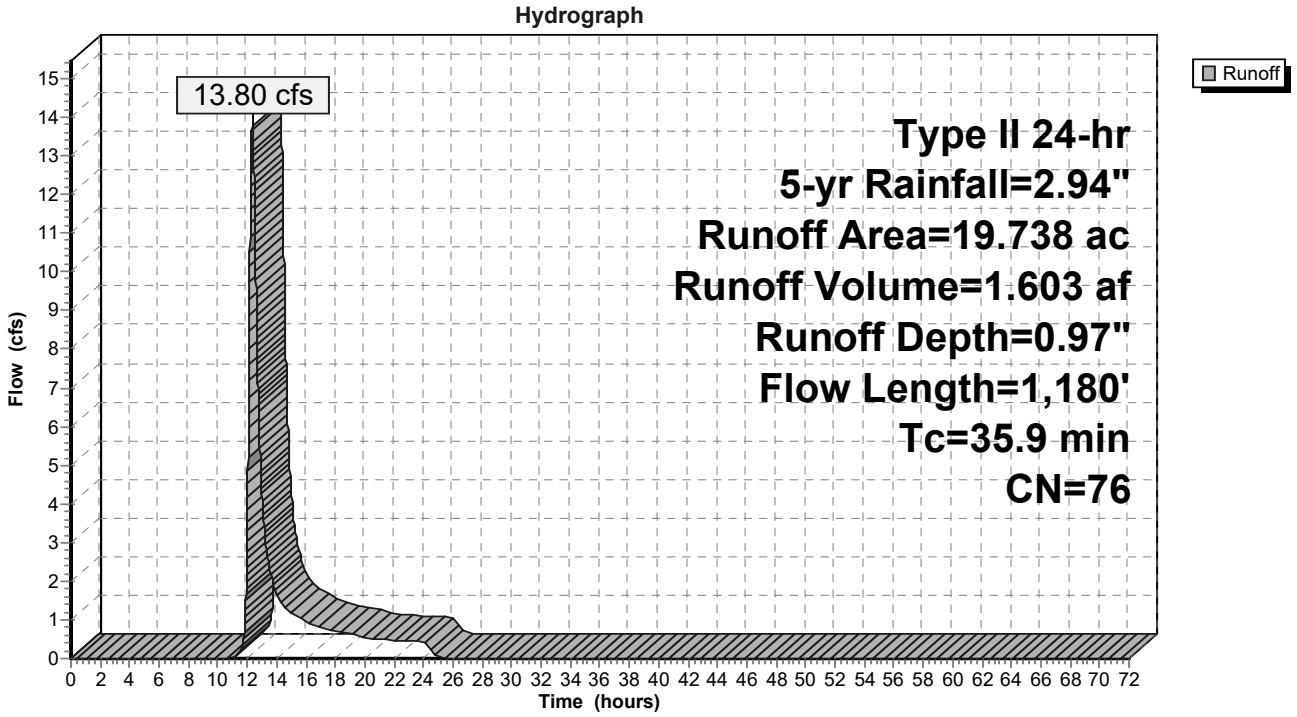
Reach 25R: Swale 3 (Pr. Cond)



Reach 32R: Swale 1 (Pr. Cond)



Subcatchment 14S: PRDA-1a



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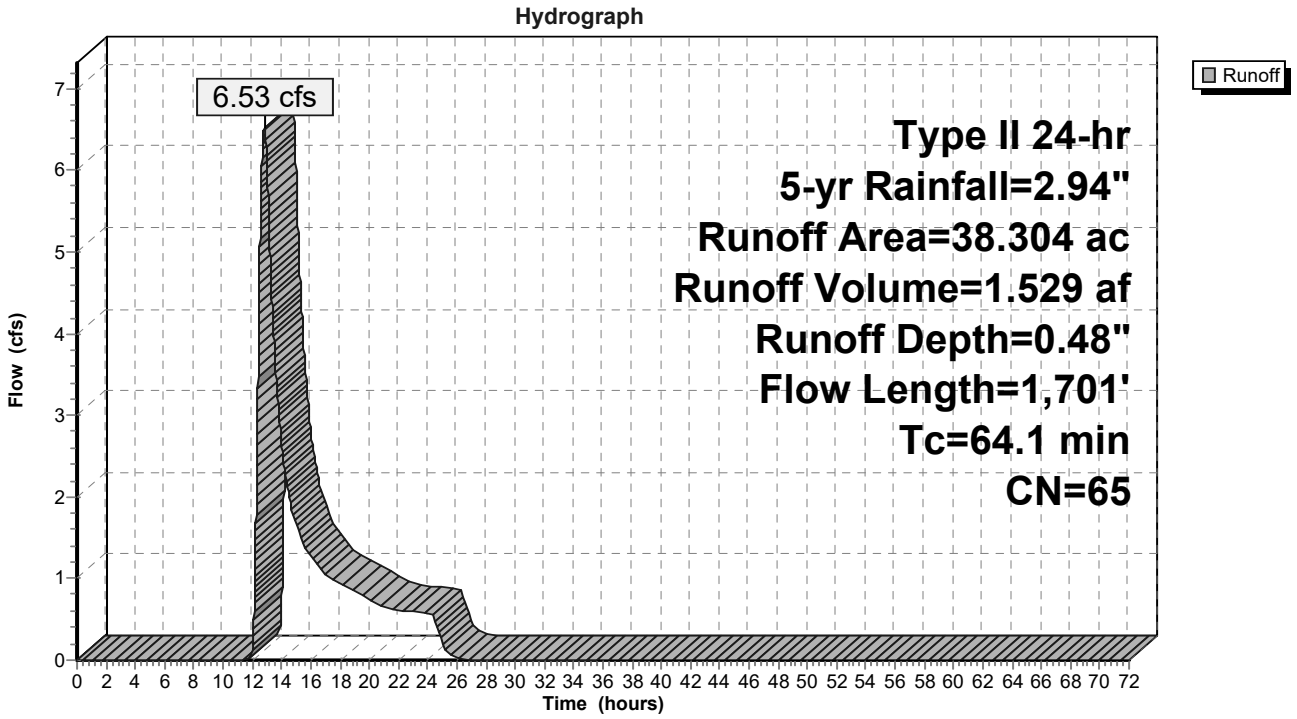
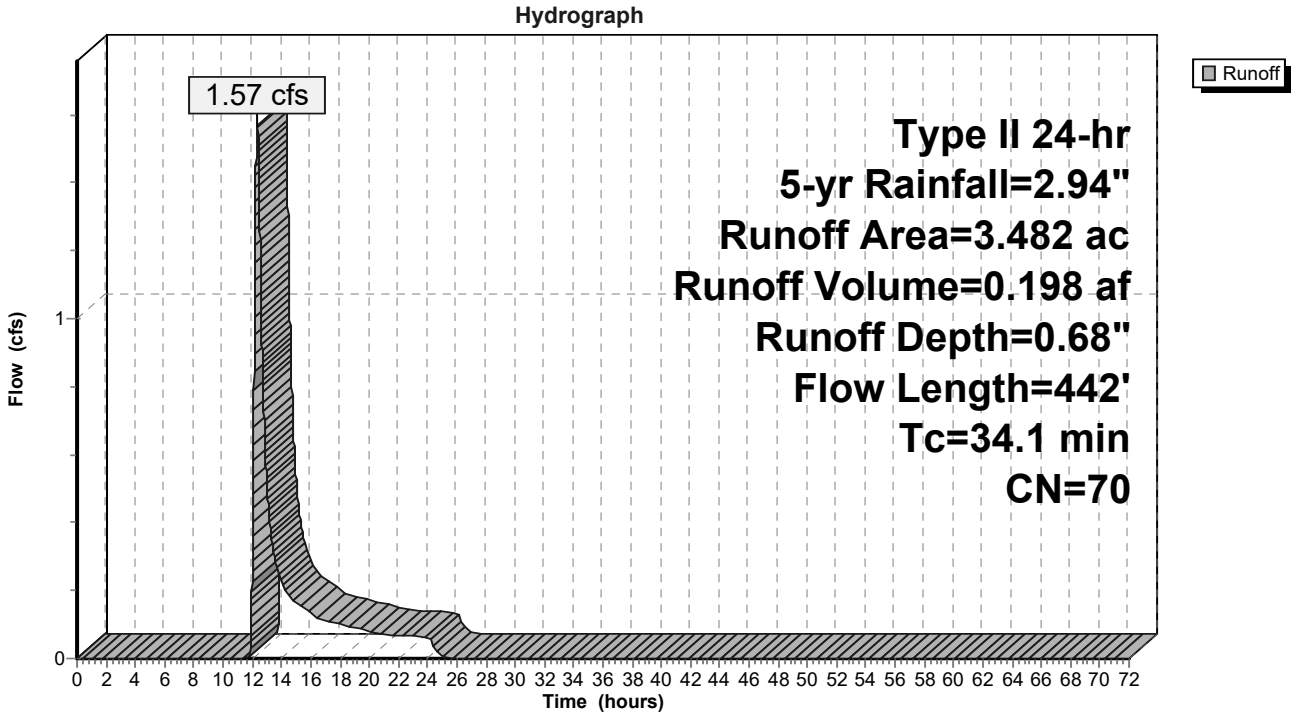
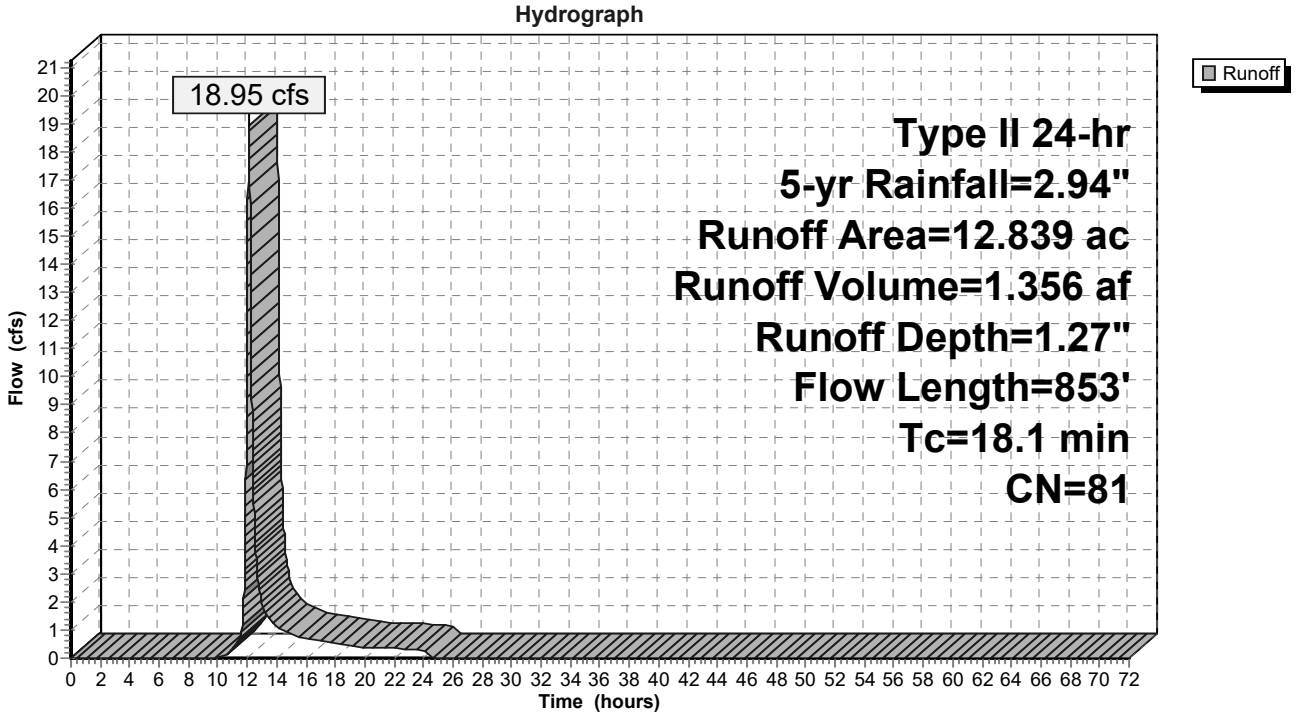


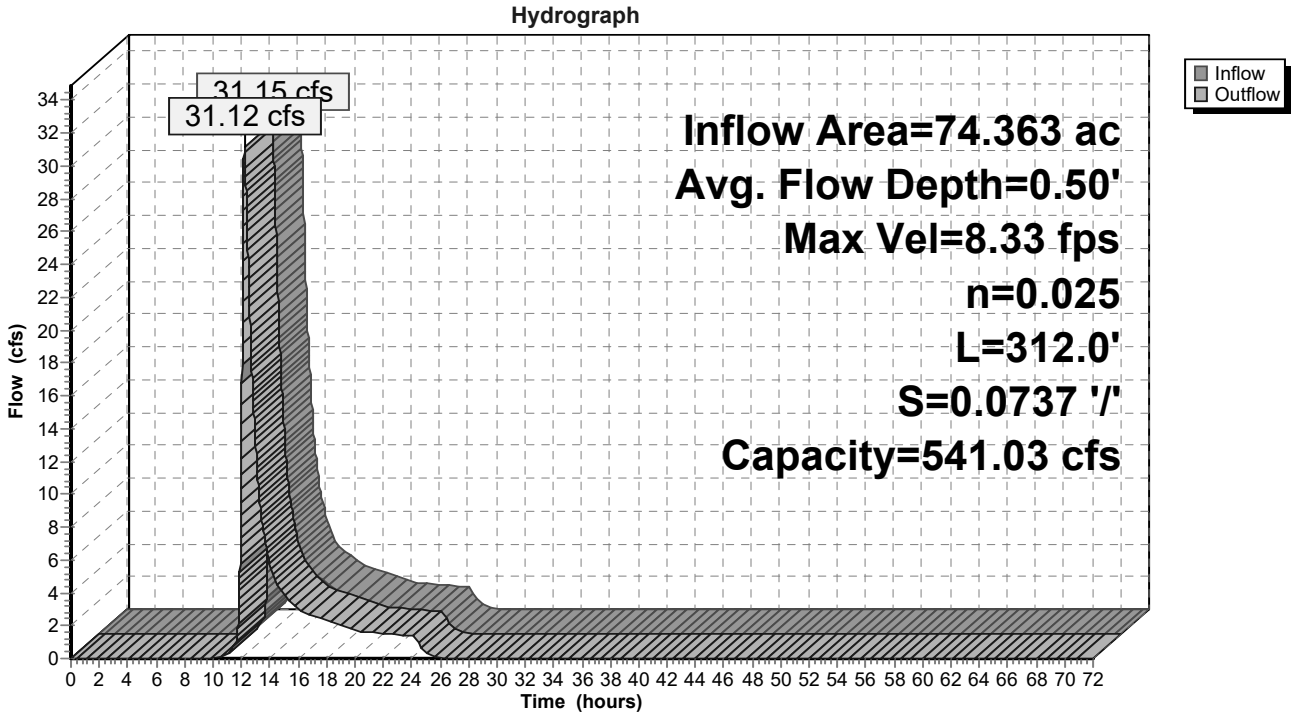
Subcatchment 20S: DA-1c



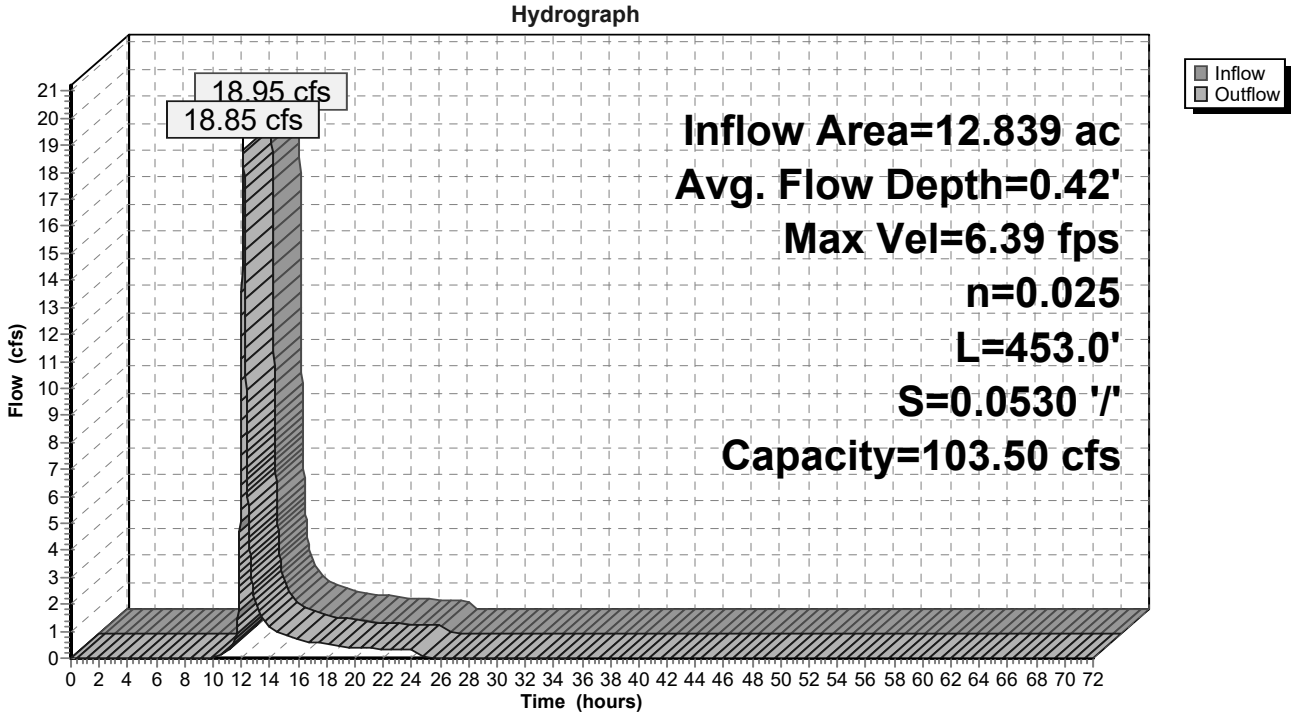
Subcatchment 21S: DA-1d



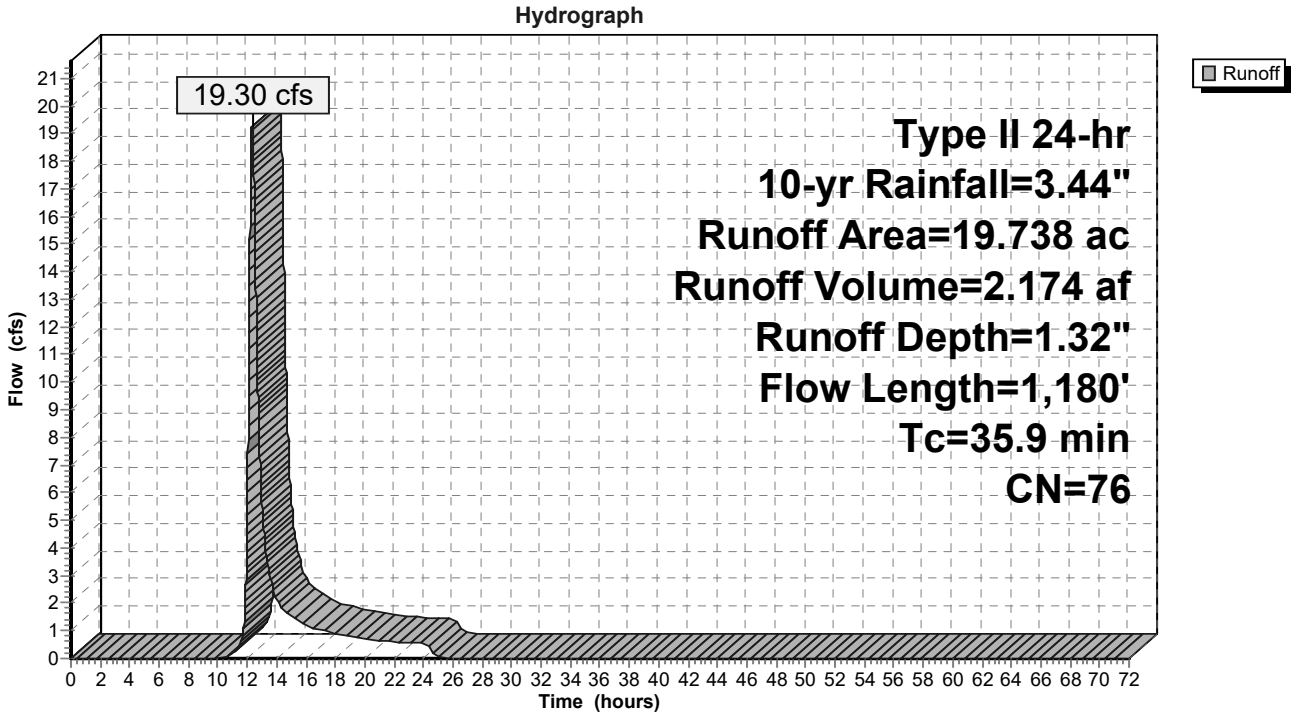
Reach 25R: Swale 3 (Pr. Cond)



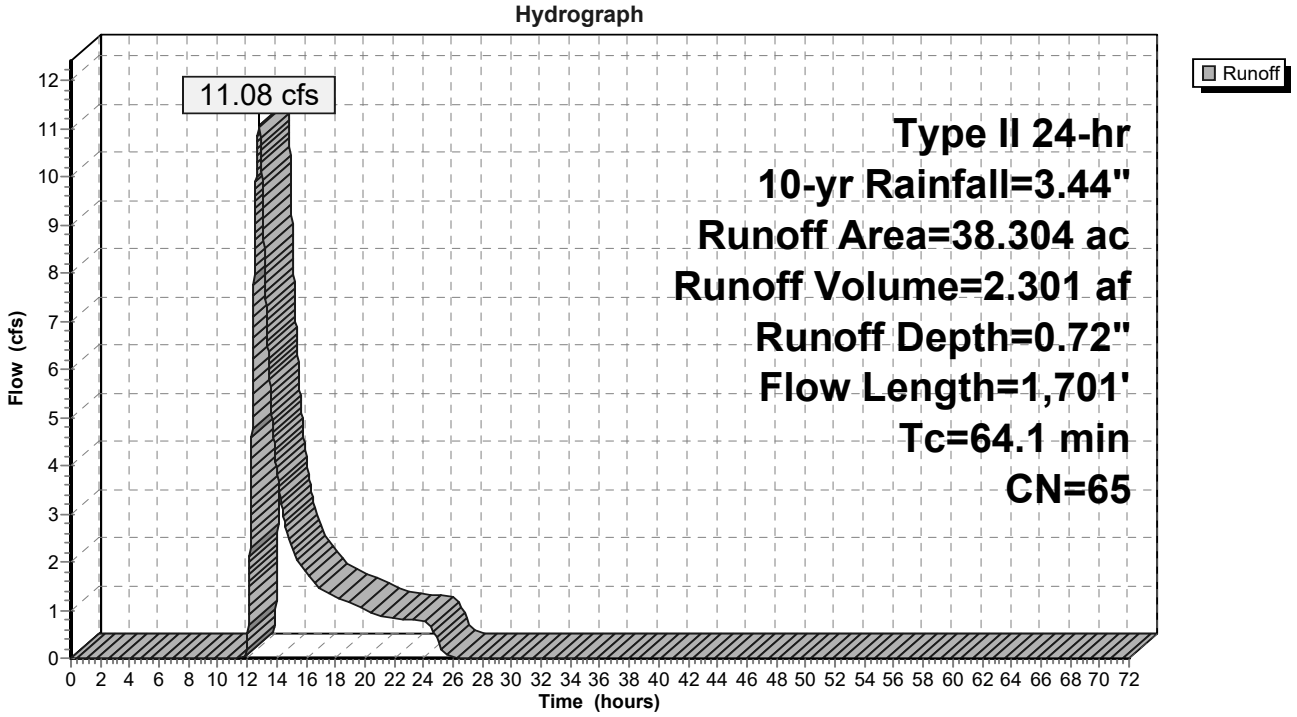
Reach 32R: Swale 1 (Pr. Cond)



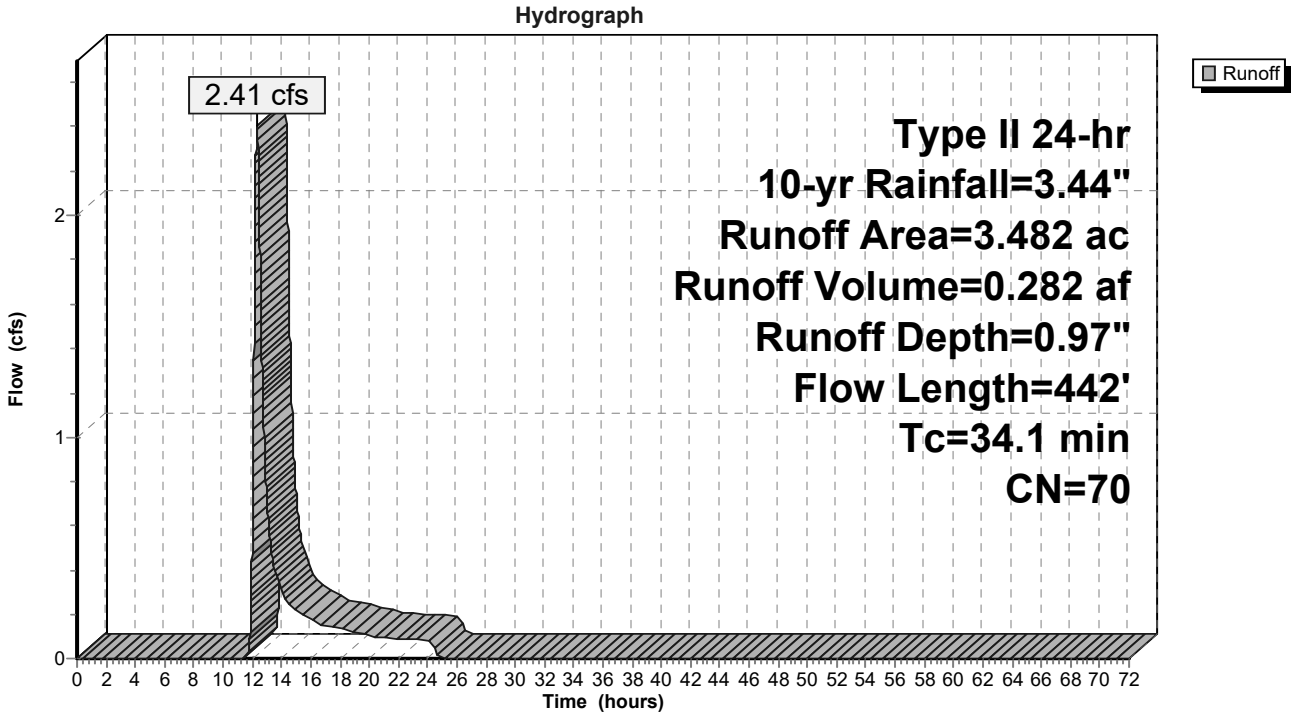
Subcatchment 14S: PRDA-1a



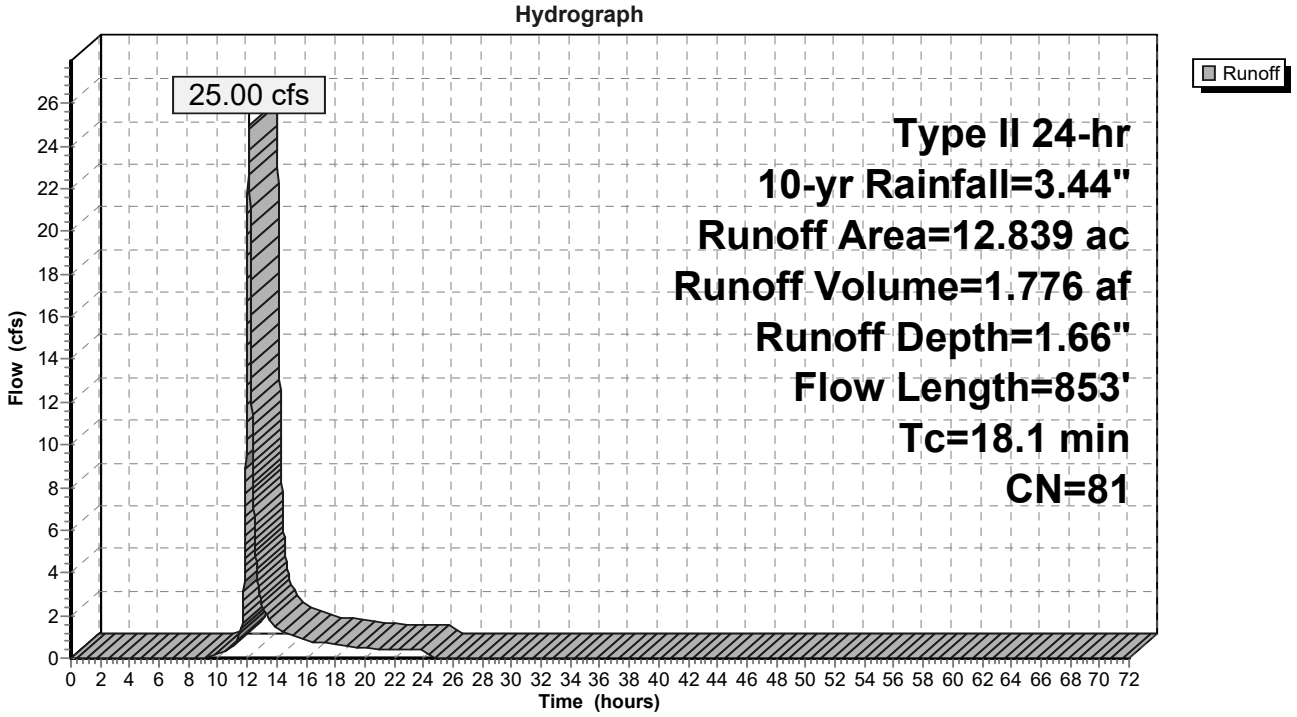
Subcatchment 19S: PRDA-1b



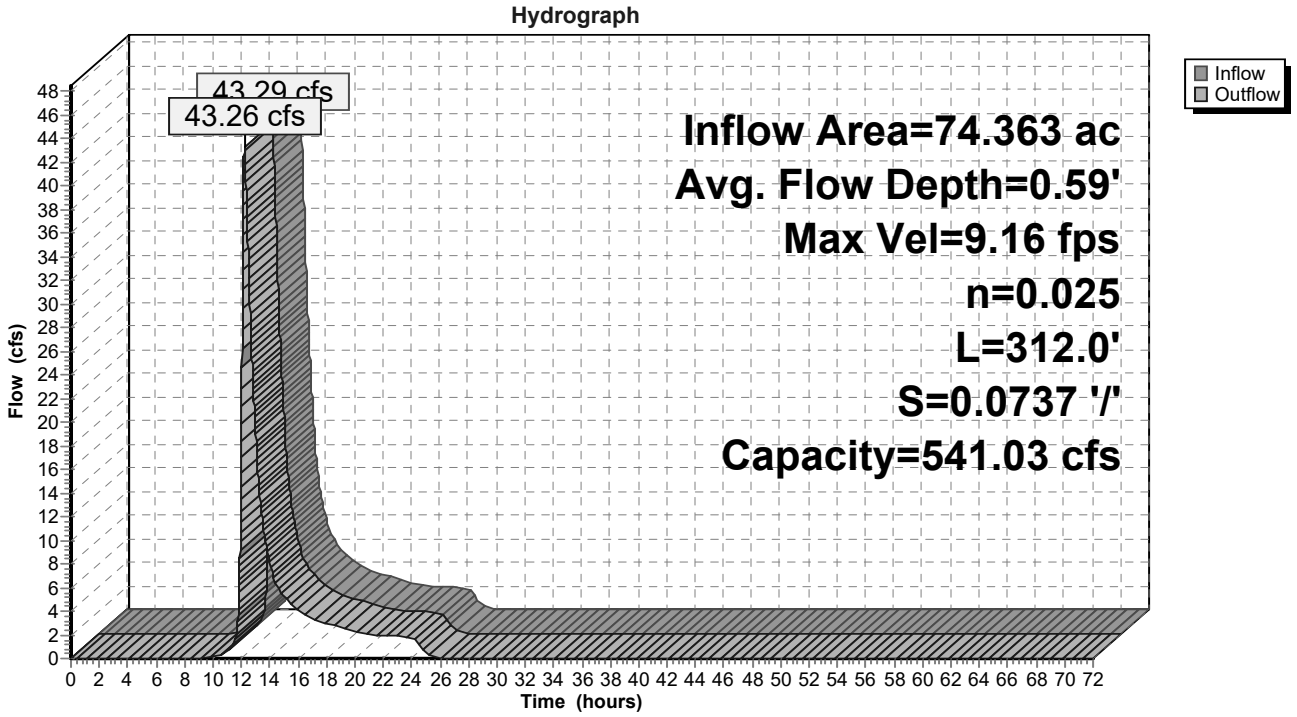
Subcatchment 20S: DA-1c



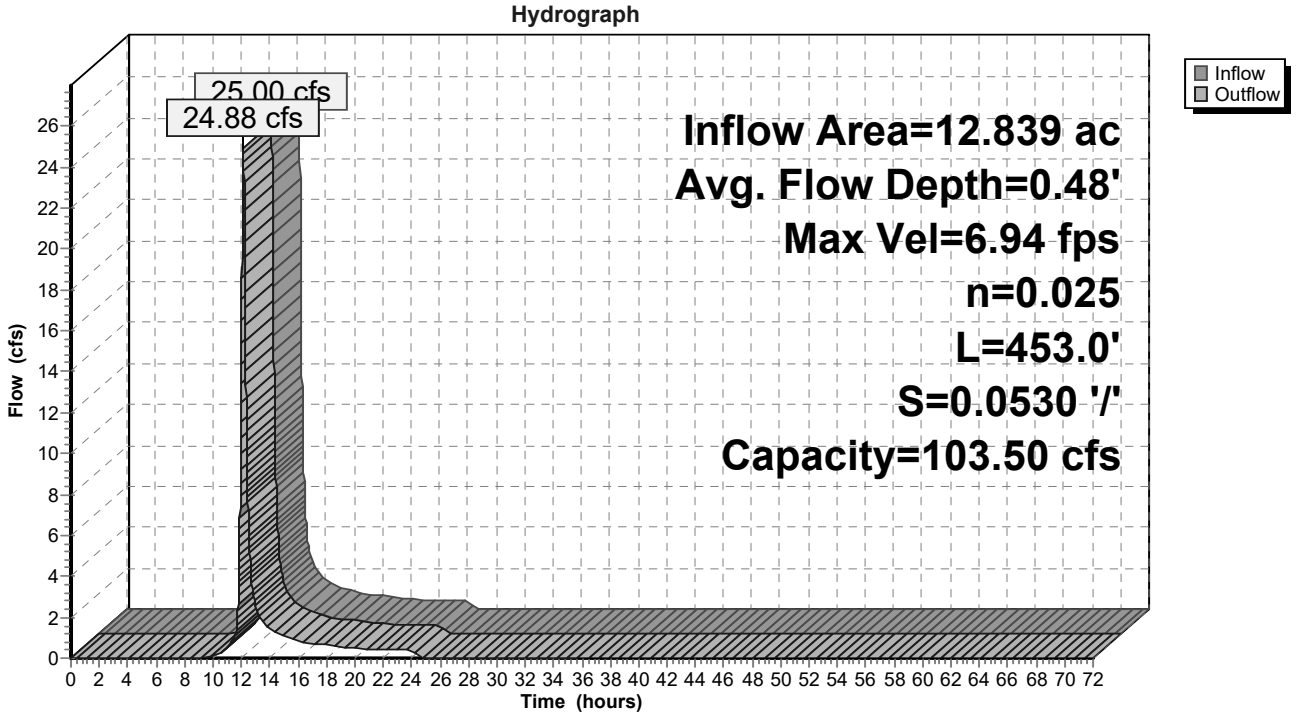
Subcatchment 21S: DA-1d



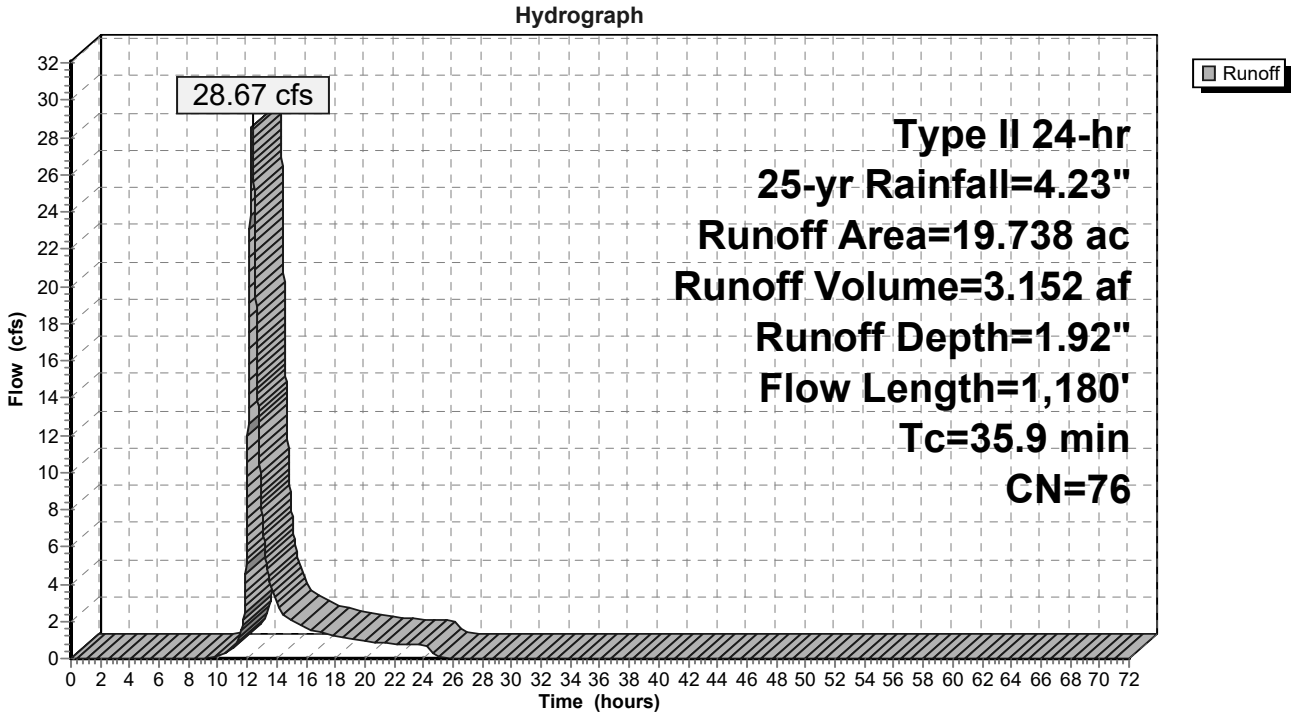
Reach 25R: Swale 3 (Pr. Cond)



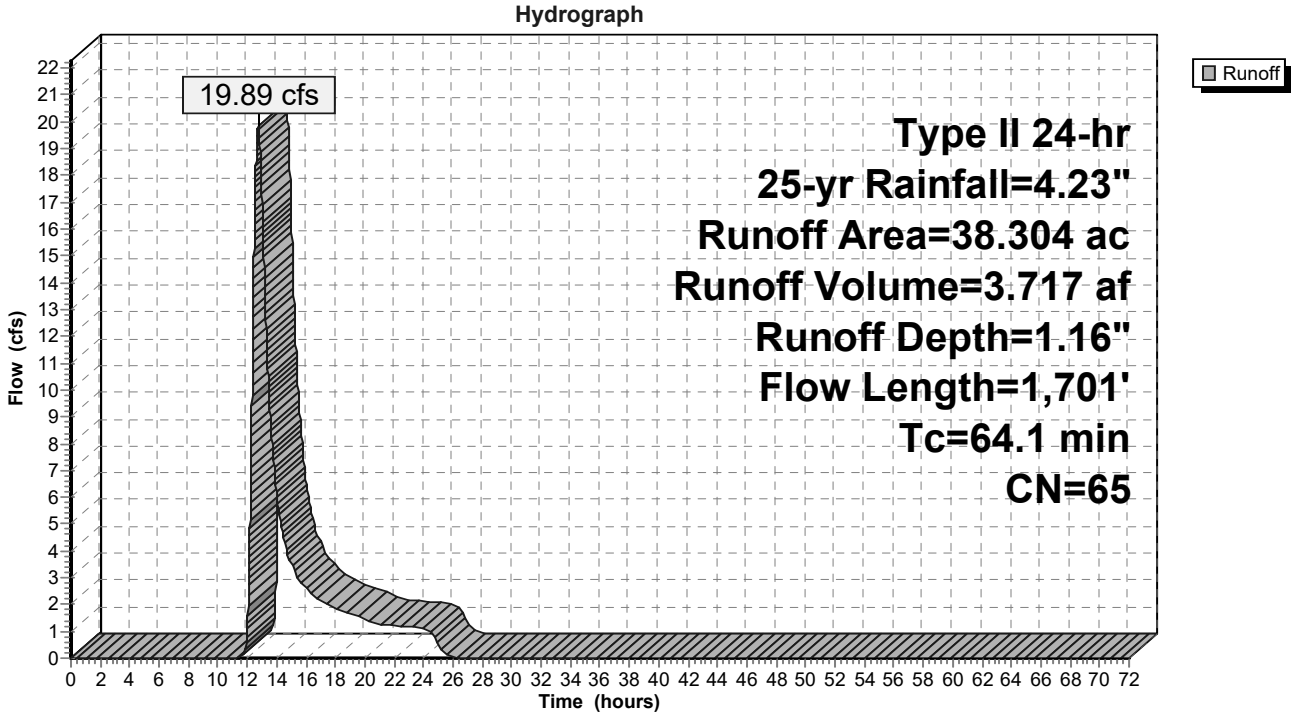
Reach 32R: Swale 1 (Pr. Cond)



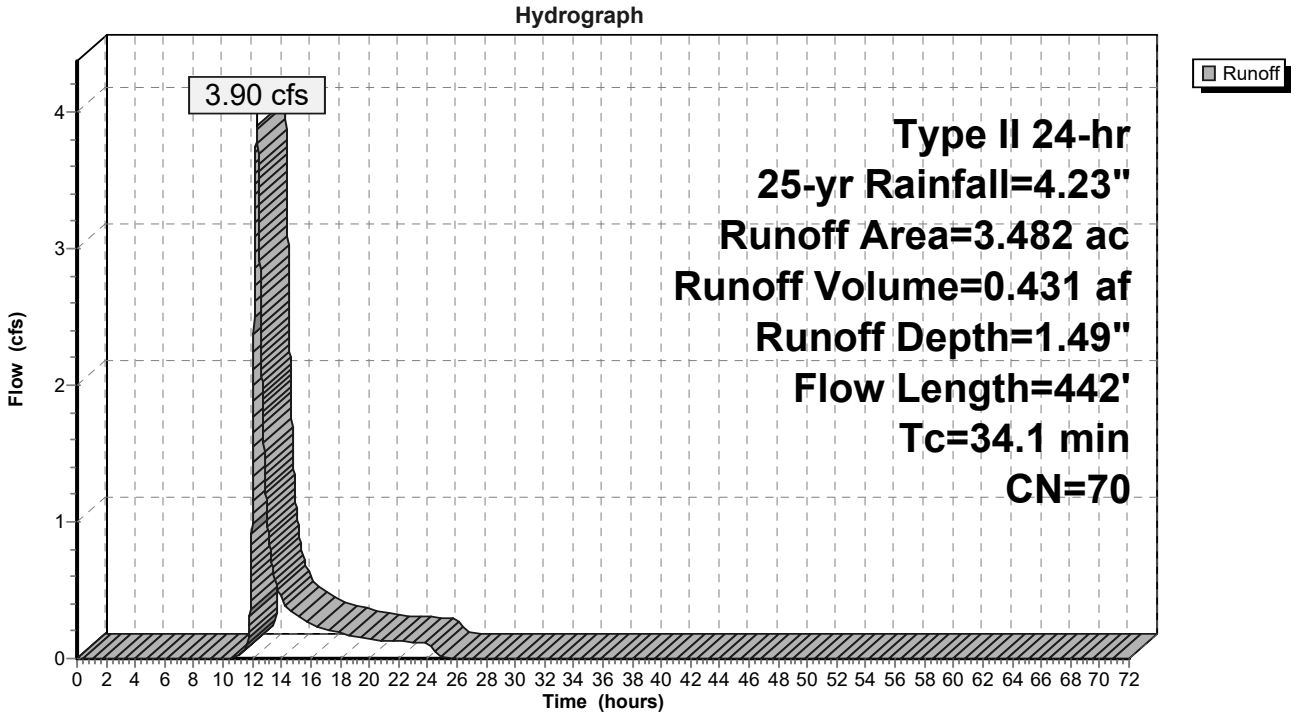
Subcatchment 14S: PRDA-1a



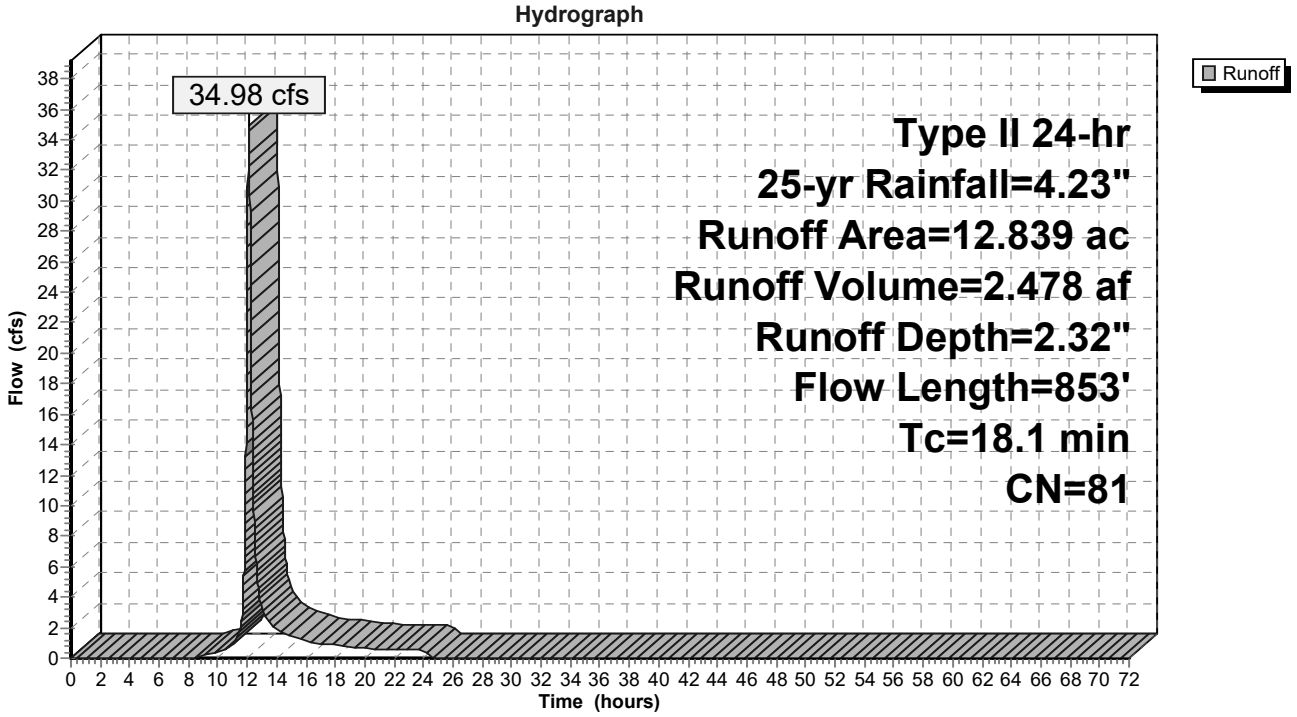
Subcatchment 19S: PRDA-1b



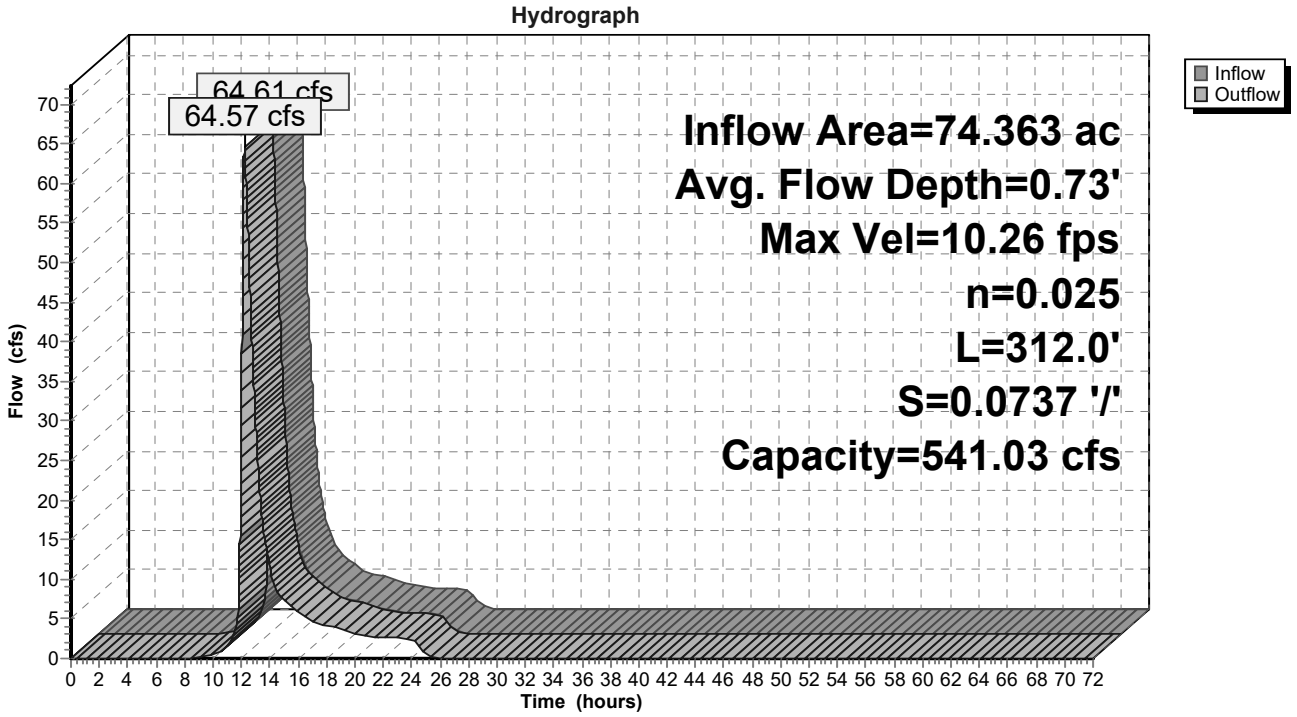
Subcatchment 20S: DA-1c



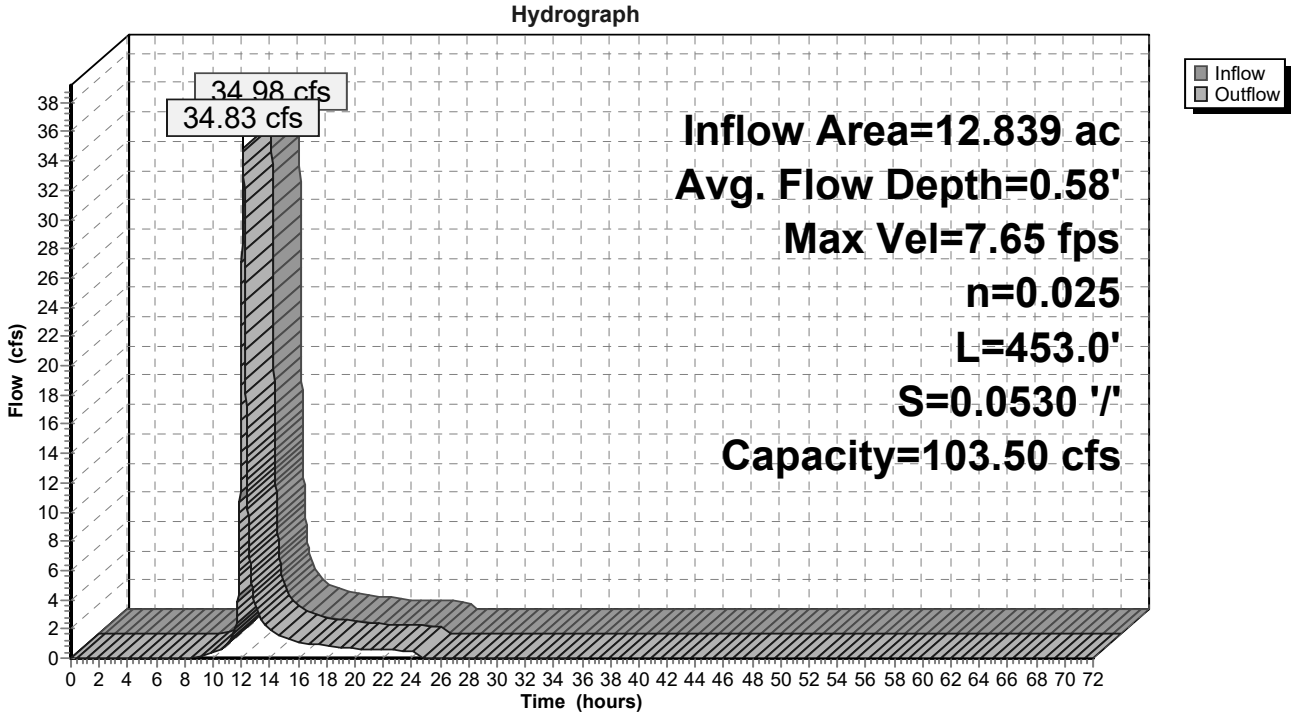
Subcatchment 21S: DA-1d



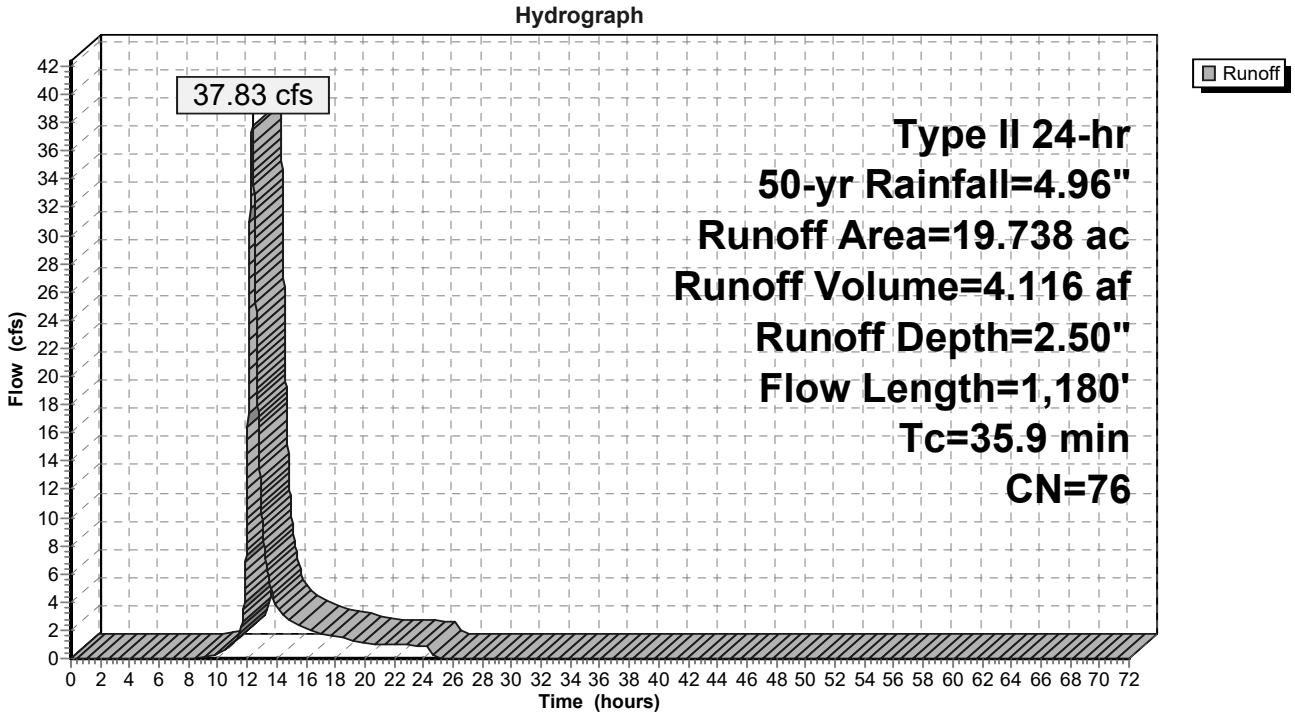
Reach 25R: Swale 3 (Pr. Cond)



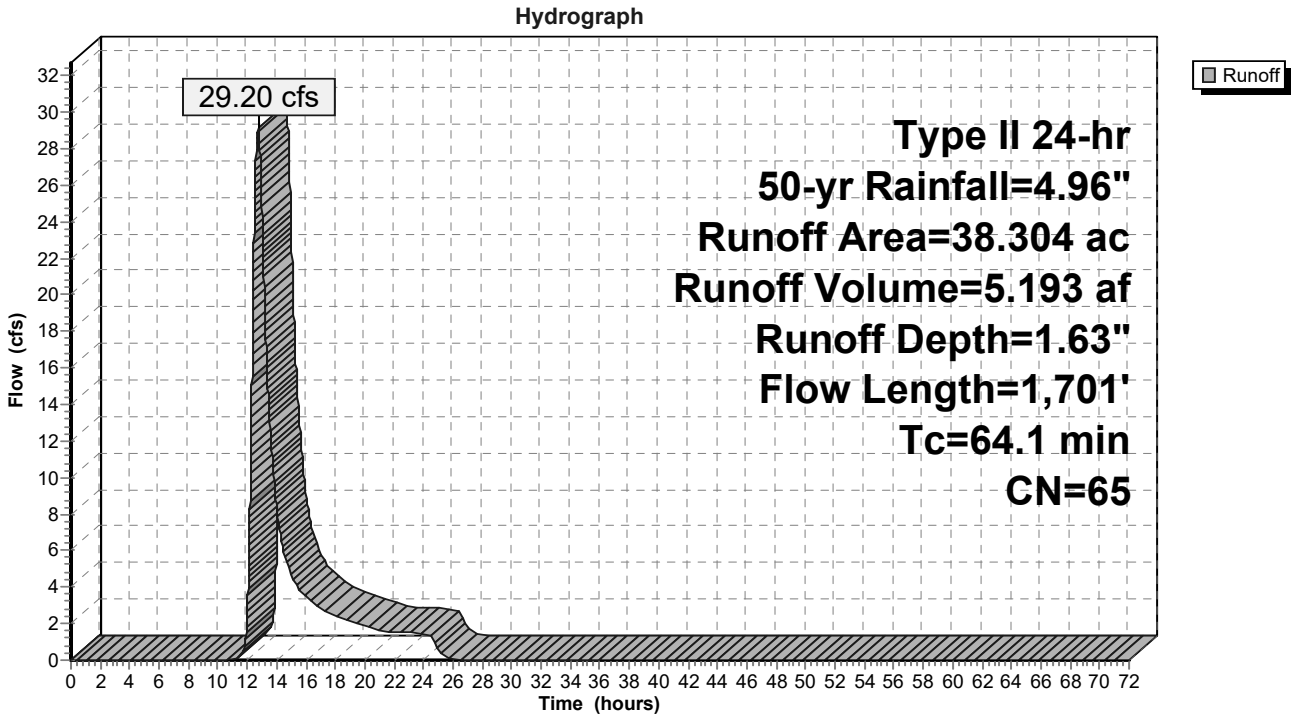
Reach 32R: Swale 1 (Pr. Cond)



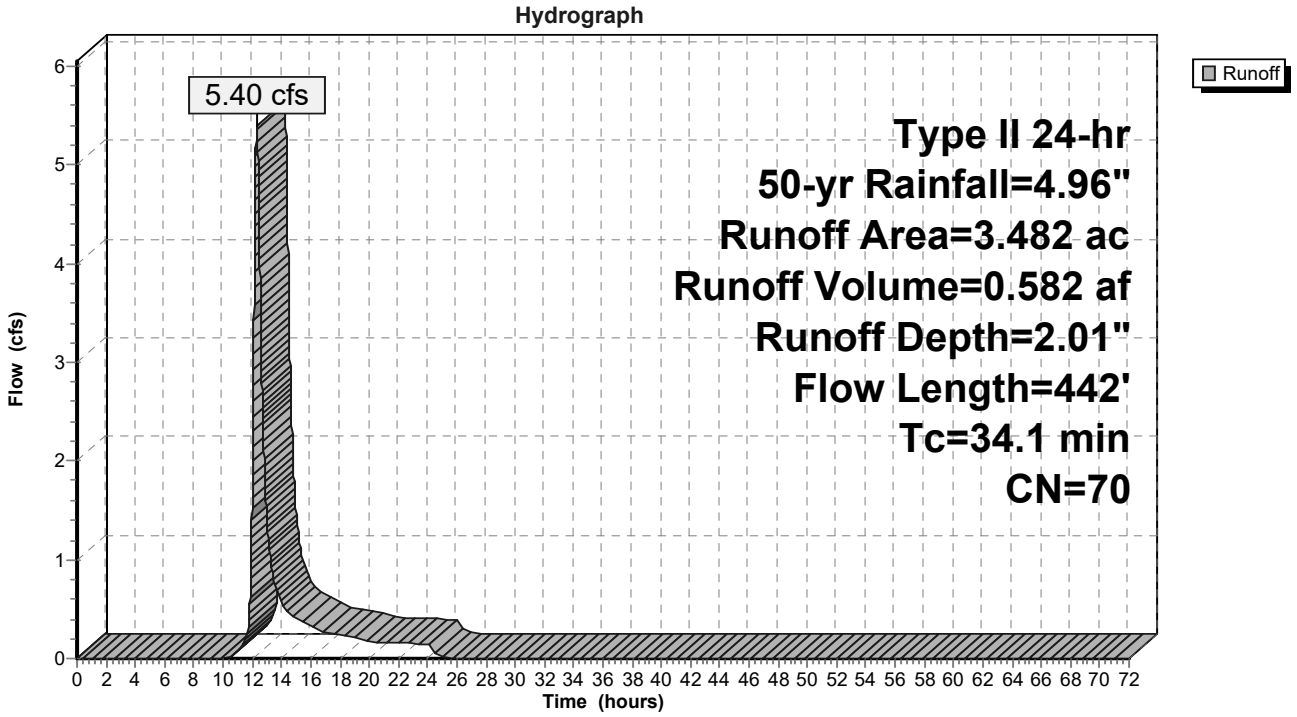
Subcatchment 14S: PRDA-1a



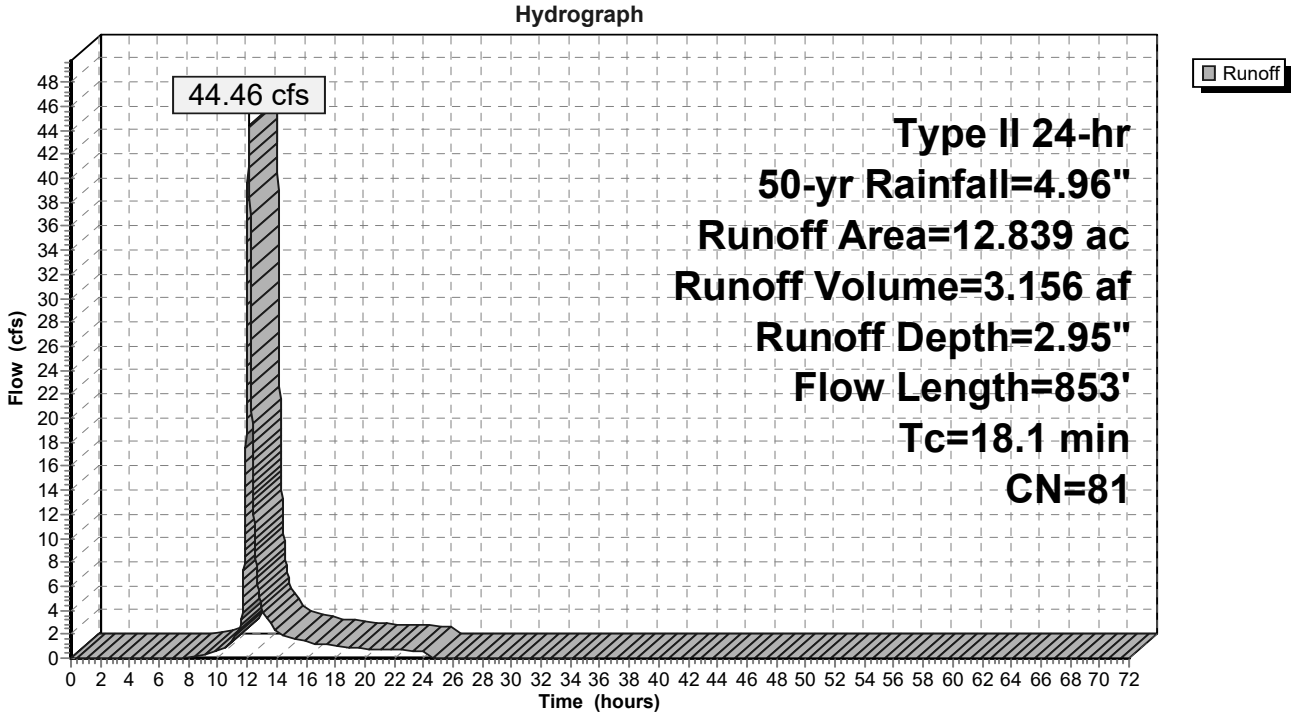
Subcatchment 19S: PRDA-1b



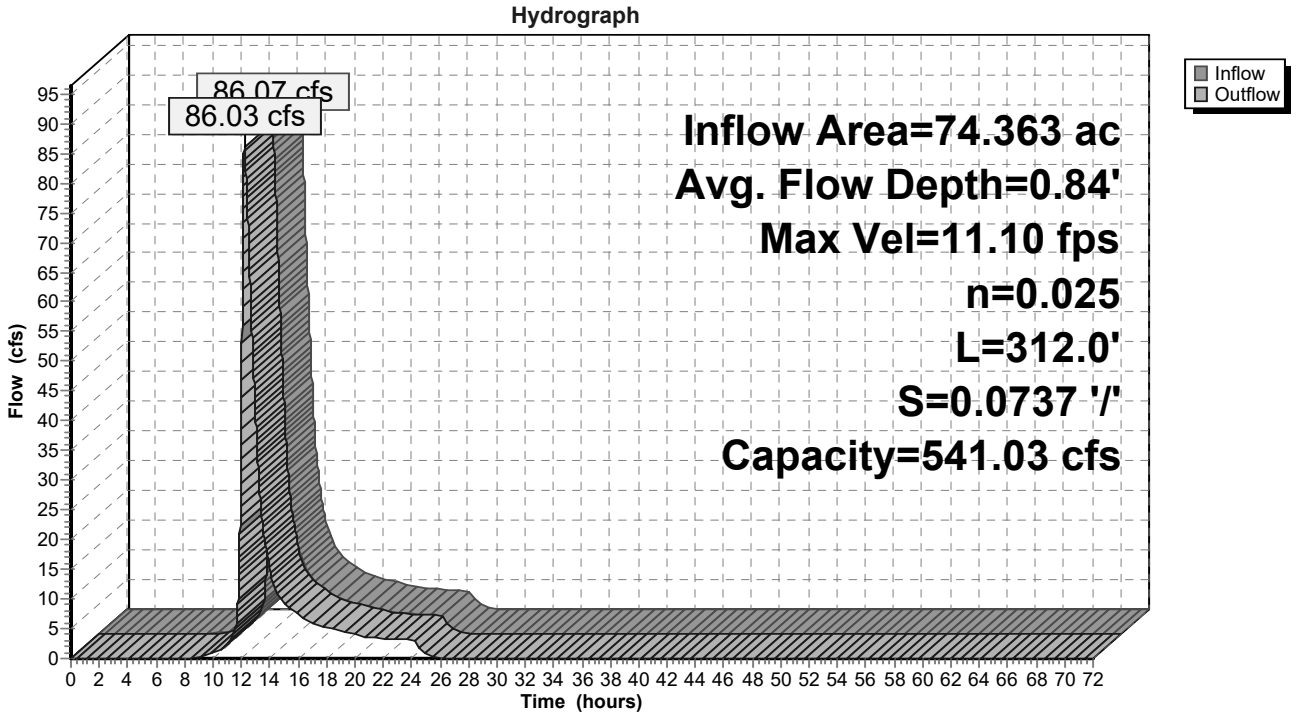
Subcatchment 20S: DA-1c



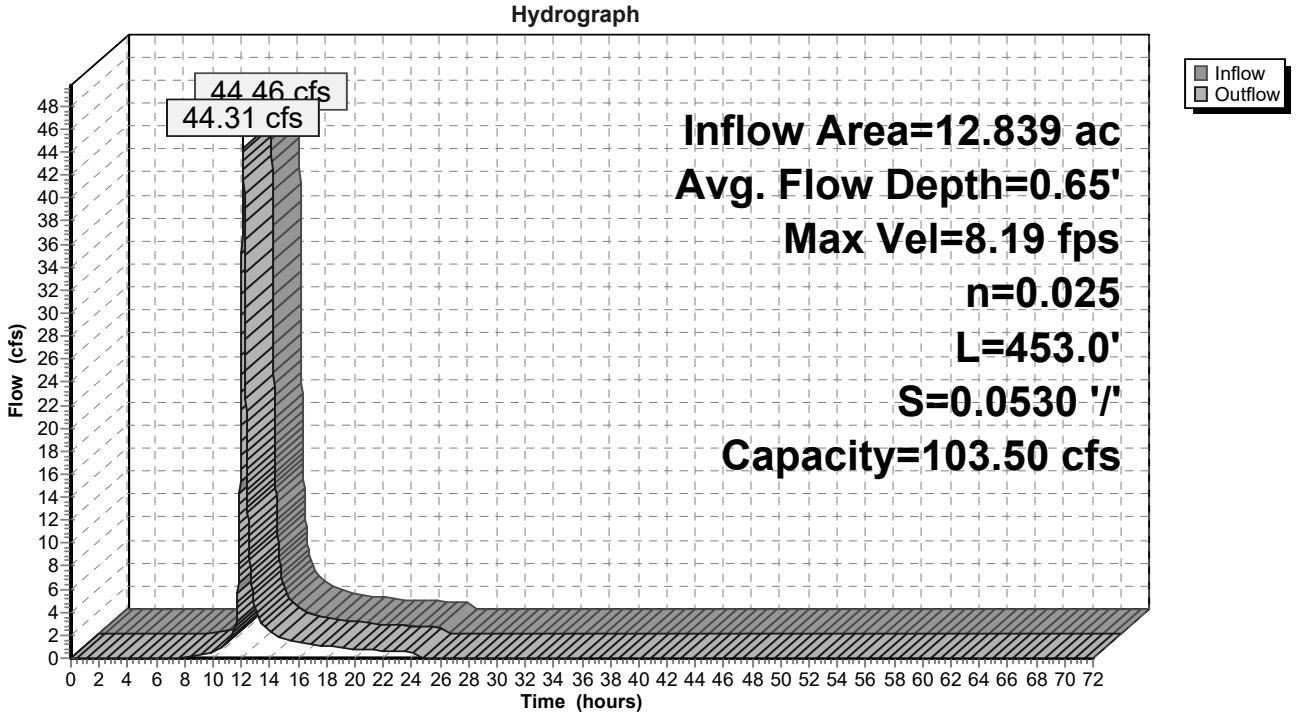
Subcatchment 21S: DA-1d



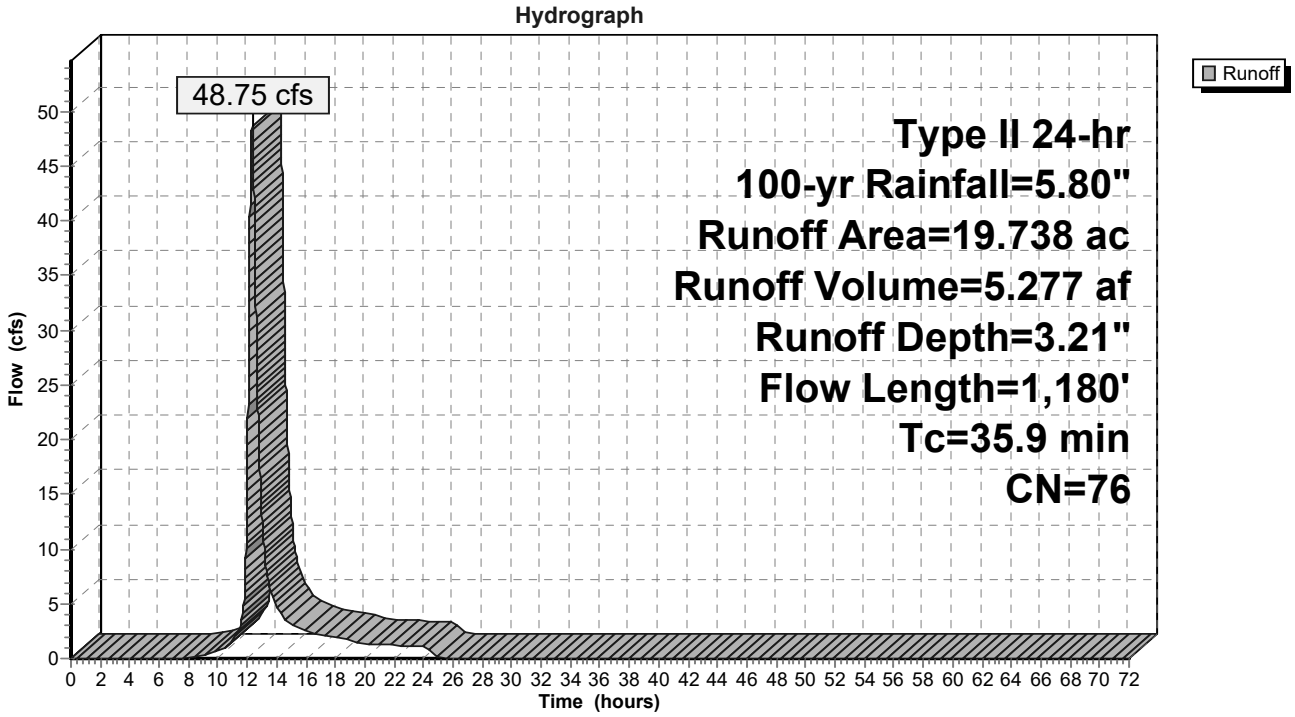
Reach 25R: Swale 3 (Pr. Cond)



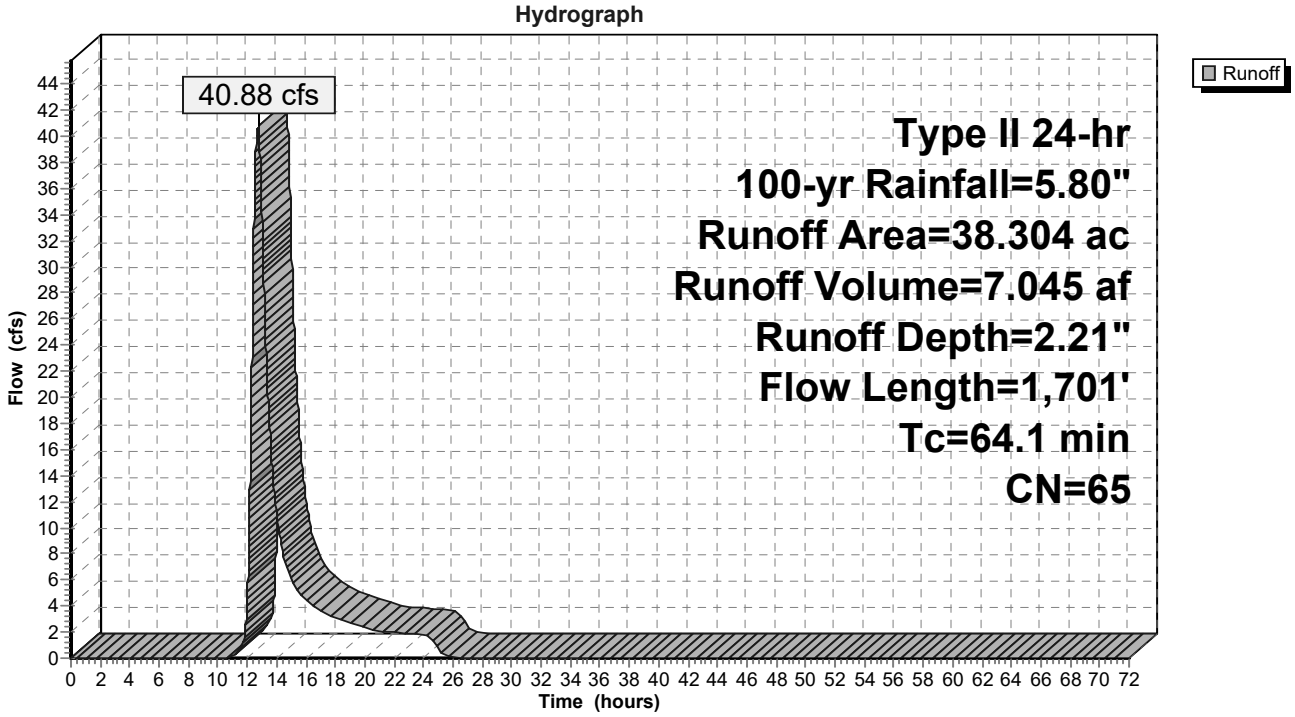
Reach 32R: Swale 1 (Pr. Cond)



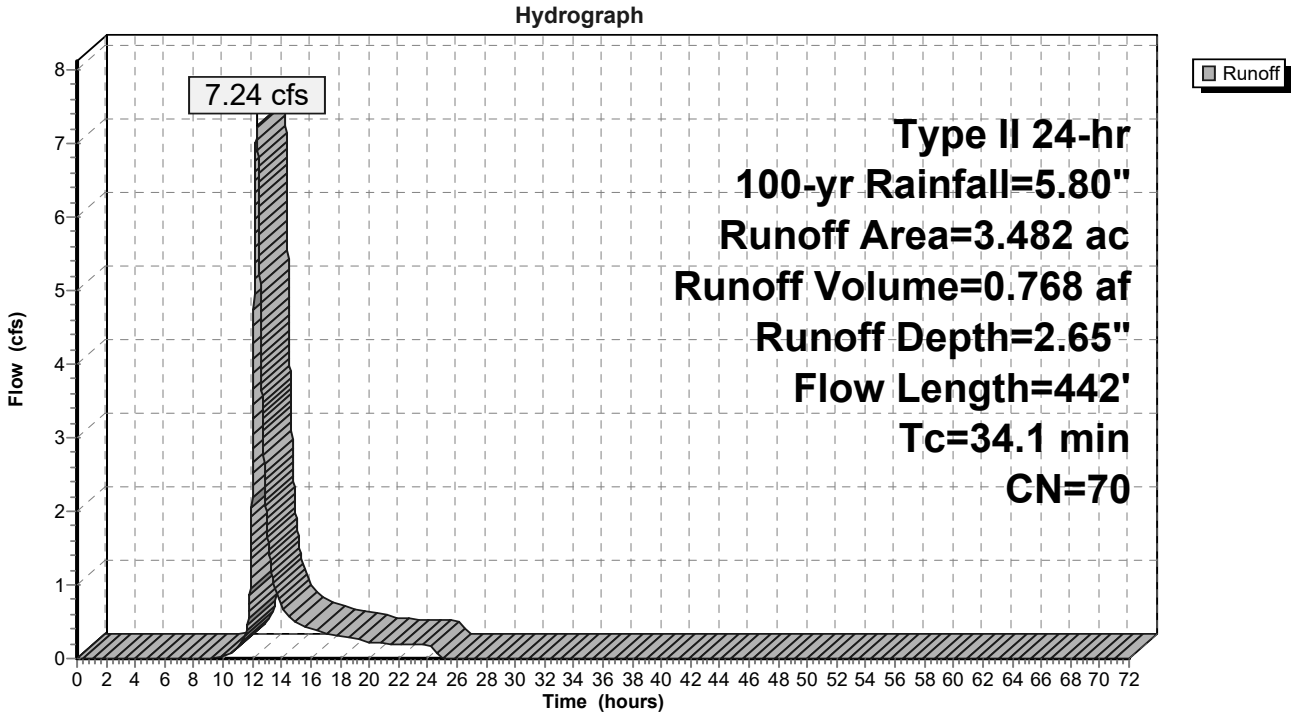
Subcatchment 14S: PRDA-1a



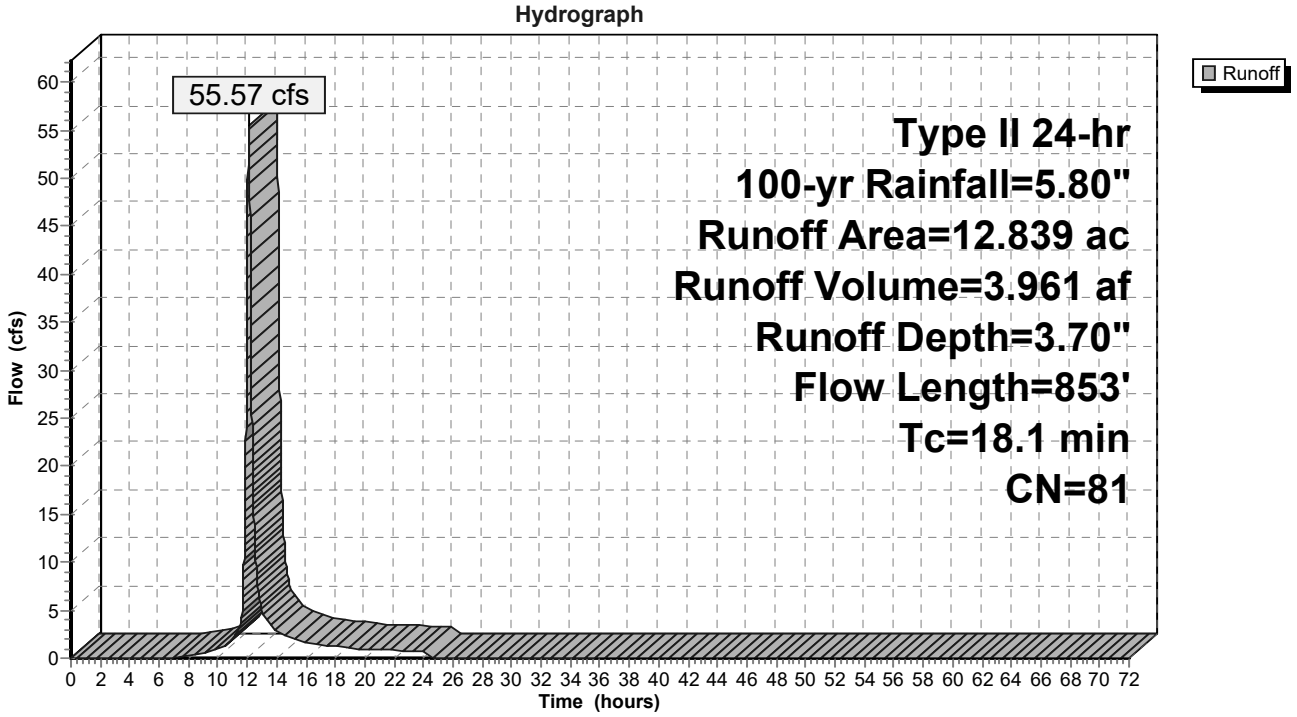
Subcatchment 19S: PRDA-1b



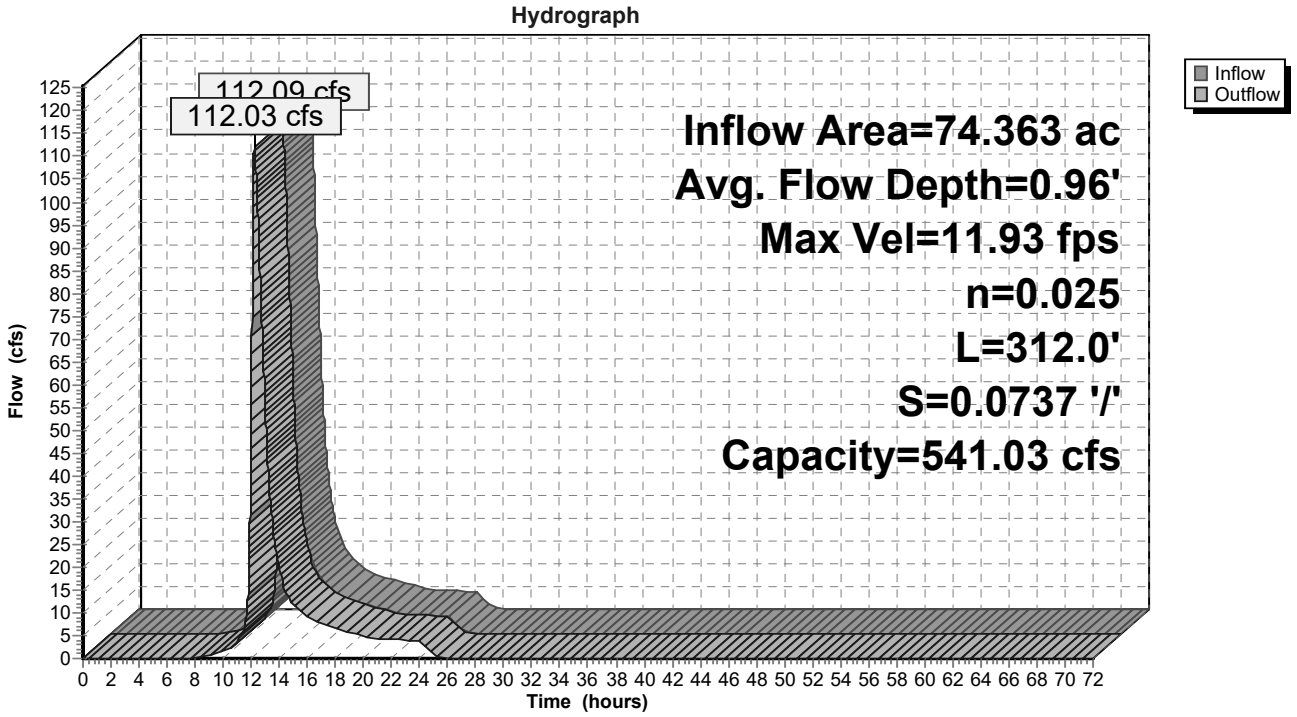
Subcatchment 20S: DA-1c



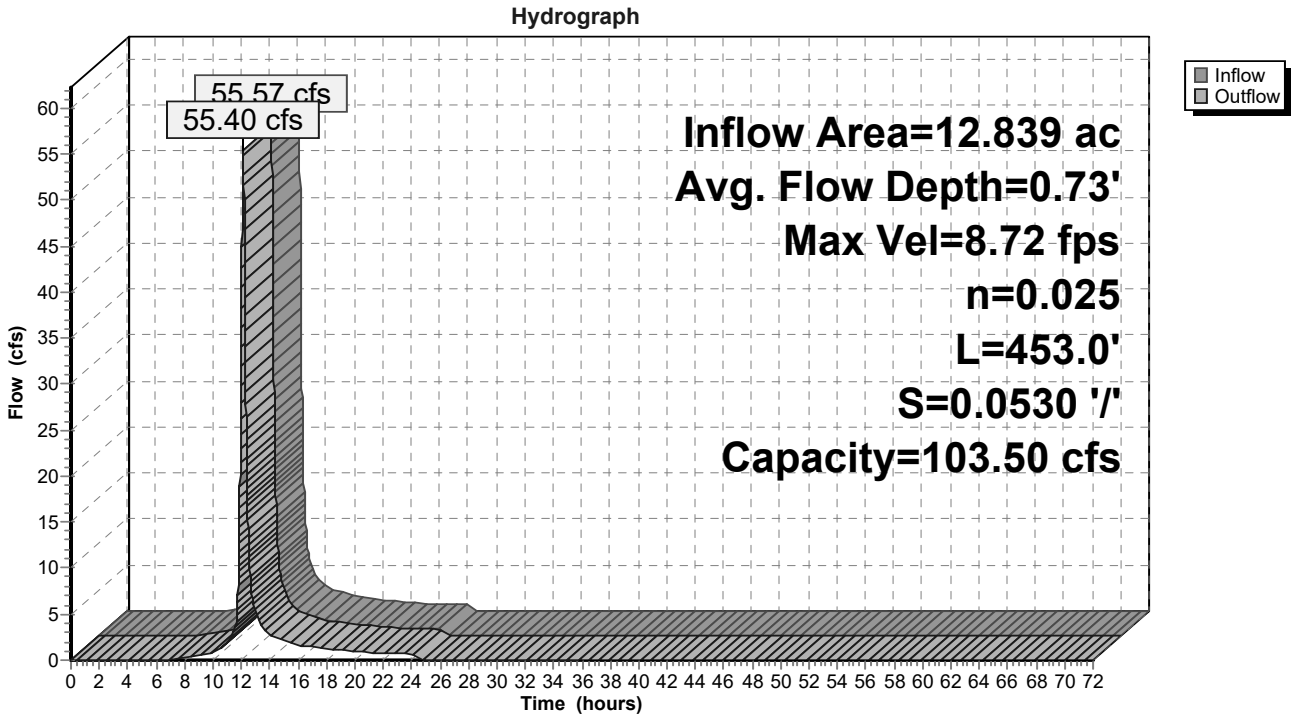
Subcatchment 21S: DA-1d



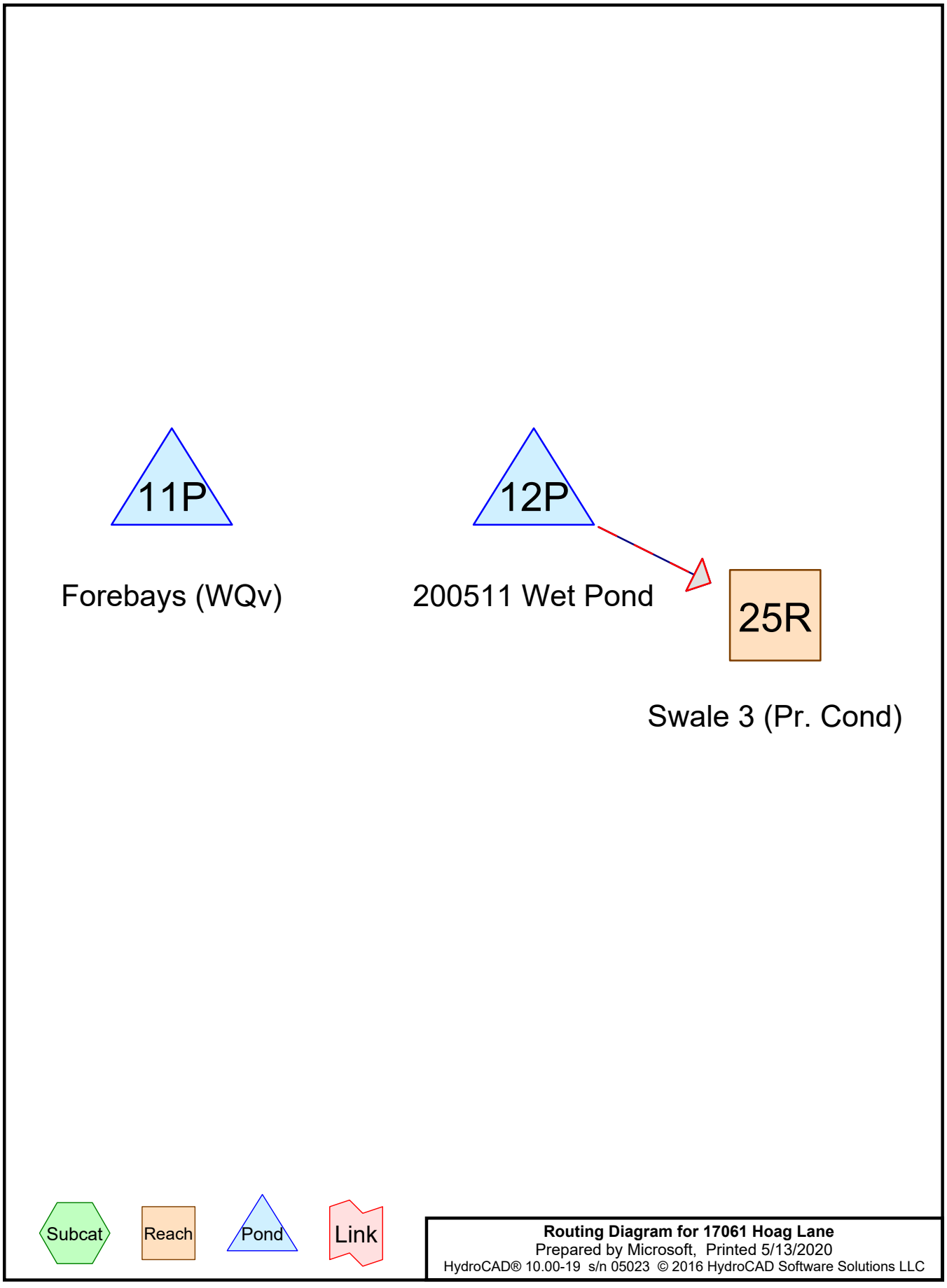
Reach 25R: Swale 3 (Pr. Cond)



Reach 32R: Swale 1 (Pr. Cond)



APPENDIX E


11P
12P
Forebays (WQv)
200511 Wet Pond
25R
Swale 3 (Pr. Cond)
Subcat
Reach
Pond
Link
Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 5/13/2020
HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Summary for Reach 25R: Swale 3 (Pr. Cond)

Inflow Area = 74.363 ac, 12.97% Impervious, Inflow Depth > 0.30" for 1-yr event
Inflow = 9.24 cfs @ 12.16 hrs, Volume= 1.839 af
Outflow = 9.20 cfs @ 12.19 hrs, Volume= 1.838 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.73 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 3.1 min

Peak Storage= 502 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 2.00' Flow Area= 30.0 sf, Capacity= 541.03 cfs

5.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 25.00'
Length= 312.0' Slope= 0.0737 '/'
Inlet Invert= 661.00', Outlet Invert= 638.00'



‡

Stage-Area-Storage for Reach 25R: Swale 3 (Pr. Cond)

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
661.00	0.0	0
661.02	0.1	32
661.04	0.2	65
661.06	0.3	99
661.08	0.4	135
661.10	0.6	172
661.12	0.7	210
661.14	0.8	249
661.16	0.9	290
661.18	1.1	331
661.20	1.2	374
661.22	1.3	419
661.24	1.5	464
661.26	1.6	511
661.28	1.8	559
661.30	1.9	608
661.32	2.1	659
661.34	2.3	711
661.36	2.4	764
661.38	2.6	818
661.40	2.8	874
661.42	3.0	930
661.44	3.2	988
661.46	3.4	1,048
661.48	3.6	1,108
661.50	3.8	1,170
661.52	4.0	1,233
661.54	4.2	1,297
661.56	4.4	1,363
661.58	4.6	1,430
661.60	4.8	1,498
661.62	5.0	1,567
661.64	5.2	1,637
661.66	5.5	1,709
661.68	5.7	1,782
661.70	6.0	1,856
661.72	6.2	1,932
661.74	6.4	2,009
661.76	6.7	2,087
661.78	6.9	2,166
661.80	7.2	2,246
661.82	7.5	2,328
661.84	7.7	2,411
661.86	8.0	2,495
661.88	8.3	2,581
661.90	8.6	2,668
661.92	8.8	2,756
661.94	9.1	2,845
661.96	9.4	2,935
661.98	9.7	3,027
662.00	10.0	3,120
662.02	10.3	3,214
662.04	10.6	3,310
662.06	10.9	3,406
662.08	11.2	3,504
662.10	11.6	3,604
662.12	11.9	3,704
662.14	12.2	3,806
662.16	12.5	3,909
662.18	12.9	4,013
662.20	13.2	4,118
662.22	13.5	4,225
662.24	13.9	4,333
662.26	14.2	4,442
662.28	14.6	4,553
662.30	15.0	4,664
662.32	15.3	4,777
662.34	15.7	4,892
662.36	16.0	5,007
662.38	16.4	5,124
662.40	16.8	5,242
662.42	17.2	5,361
662.44	17.6	5,481
662.46	18.0	5,603
662.48	18.4	5,726
662.50	18.8	5,850
662.52	19.2	5,975
662.54	19.6	6,102
662.56	20.0	6,230
662.58	20.4	6,359
662.60	20.8	6,490
662.62	21.2	6,621
662.64	21.6	6,754
662.66	22.1	6,888
662.68	22.5	7,024
662.70	22.9	7,160
662.72	23.4	7,298
662.74	23.8	7,437
662.76	24.3	7,578
662.78	24.7	7,720
662.80	25.2	7,862
662.82	25.7	8,007
662.84	26.1	8,152
662.86	26.6	8,299
662.88	27.1	8,446
662.90	27.6	8,596
662.92	28.0	8,746
662.94	28.5	8,898
662.96	29.0	9,050
662.98	29.5	9,205
663.00	**30.0**	**9,360**

Summary for Pond 11P: Forebays (WQv)

Volume	Invert	Avail.Storage	Storage Description
#1	672.00'	4,429 cf	**Forebay #1 (Prismatic)**Listed below (Recalc) x 2
#2	672.00'	5,446 cf	**Forebay #2 (Prismatic)**Listed below (Recalc) x 2
		9,875 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	528	0	0
673.00	1,072	800	800
674.00	1,757	1,415	2,215

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	752	0	0
673.00	1,329	1,041	1,041
674.00	2,036	1,683	2,723

Device	Routing	Invert	Outlet Devices
#1	Primary	676.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 Width (feet) 15.00 25.00

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 11P: Forebays (WQv)

Elevation (feet)	Storage (cubic-feet)
672.00	0
672.05	131
672.10	267
672.15	409
672.20	557
672.25	710
672.30	869
672.35	1,033
672.40	1,203
672.45	1,379
672.50	1,560
672.55	1,747
672.60	1,940
672.65	2,138
672.70	2,341
672.75	2,551
672.80	2,765
672.85	2,986
672.90	3,212
672.95	3,444
673.00	3,681
673.05	3,925
673.10	4,175
673.15	4,433
673.20	4,697
673.25	4,969
673.30	5,247
673.35	5,532
673.40	5,825
673.45	6,124
673.50	6,430
673.55	6,743
673.60	7,063
673.65	7,390
673.70	7,724
673.75	8,066
673.80	8,413
673.85	8,768
673.90	9,130
673.95	9,499
674.00	**9,875**
674.05	9,875
674.10	9,875
674.15	9,875
674.20	9,875
674.25	9,875
674.30	9,875
674.35	9,875
674.40	9,875
674.45	9,875
674.50	9,875
674.55	9,875
674.60	9,875
674.65	9,875
674.70	9,875
674.75	9,875
674.80	9,875
674.85	9,875
674.90	9,875
674.95	9,875
675.00	9,875
675.05	9,875
675.10	9,875
675.15	9,875
675.20	9,875
675.25	9,875
675.30	9,875
675.35	9,875
675.40	9,875
675.45	9,875
675.50	9,875
675.55	9,875
675.60	9,875
675.65	9,875
675.70	9,875
675.75	9,875
675.80	9,875
675.85	9,875
675.90	9,875
675.95	9,875
676.00	9,875
676.05	9,875
676.10	9,875
676.15	9,875
676.20	9,875
676.25	9,875
676.30	9,875
676.35	9,875
676.40	9,875
676.45	9,875
676.50	9,875

Summary for Pond 12P: 200511 Wet Pond

Inflow Area = 58.042 ac, 10.58% Impervious, Inflow Depth = 0.25" for 1-yr event
Inflow = 5.76 cfs @ 12.40 hrs, Volume= 1.199 af
Outflow = 0.30 cfs @ 24.57 hrs, Volume= 1.083 af, Atten= 95%, Lag= 729.8 min
Primary = 0.30 cfs @ 24.57 hrs, Volume= 1.083 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 4
Starting Elev= 671.00' Surf.Area= 13,672 sf Storage= 35,139 cf
Peak Elev= 673.42' @ 24.57 hrs Surf.Area= 20,625 sf Storage= 74,964 cf (39,825 cf above start)

Plug-Flow detention time= 2,829.2 min calculated for 0.276 af (23% of inflow)
Center-of-Mass det. time= 1,317.1 min (2,270.7 - 953.5)

Volume	Invert	Avail.Storage	Storage Description
#1	665.00'	164,411 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
665.00	1,537	0	0
666.00	2,644	2,091	2,091
667.00	3,903	3,274	5,364
668.00	5,307	4,605	9,969
669.00	6,960	6,134	16,103
670.00	8,720	7,840	23,943
671.00	13,672	11,196	35,139
672.00	15,804	14,738	49,877
673.00	18,037	16,921	66,797
674.00	24,162	21,100	87,897
675.00	28,220	26,191	114,088
676.00	34,146	31,183	145,271
676.50	42,414	19,140	164,411

Device	Routing	Invert	Outlet Devices
#1	Primary	665.20'	**24.0" Round Outlet Culvert X 2.00** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 665.20' / 665.00' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	675.50'	**Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 Width (feet) 15.00 25.00
#3	Device 1	671.00'	**2.0" W x 3.0" H Vert. 2"x3" Orifice** C= 0.600
#4	Device 1	675.45'	**24.0" Horiz. Rims X 2.00** C= 0.600 Limited to weir flow at low heads
#5	Device 1	673.45'	**Rectangular Orifice X 2.00, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 1.50 Width (feet) 4.00 4.00 0.00

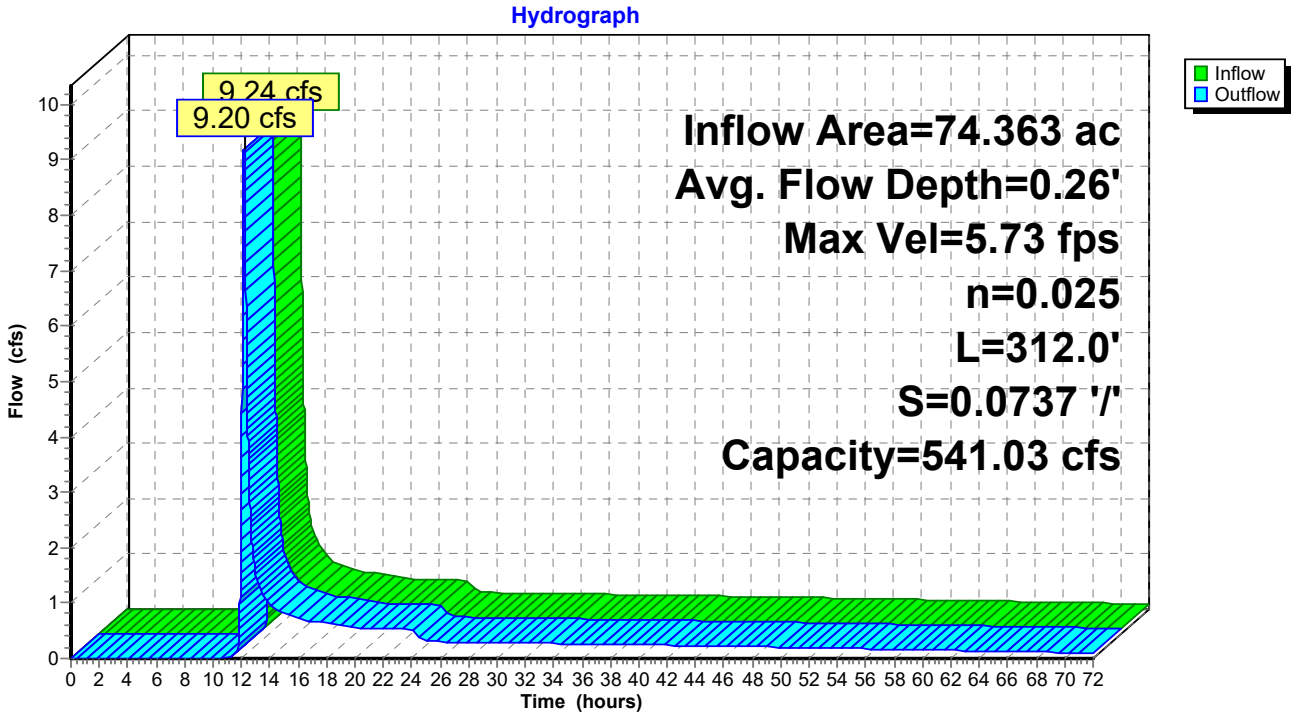
Primary OutFlow Max=0.30 cfs @ 24.57 hrs HW=673.42' (Free Discharge)
└─**1=Outlet Culvert** (Passes 0.30 cfs of 81.30 cfs potential flow)
  ├─**3=2"x3" Orifice** (Orifice Controls 0.30 cfs @ 7.30 fps)
  ├─**4=Rims** (Controls 0.00 cfs)
  └─**5=Rectangular Orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=671.00' (Free Discharge)
└─**2=Spillway** (Controls 0.00 cfs)

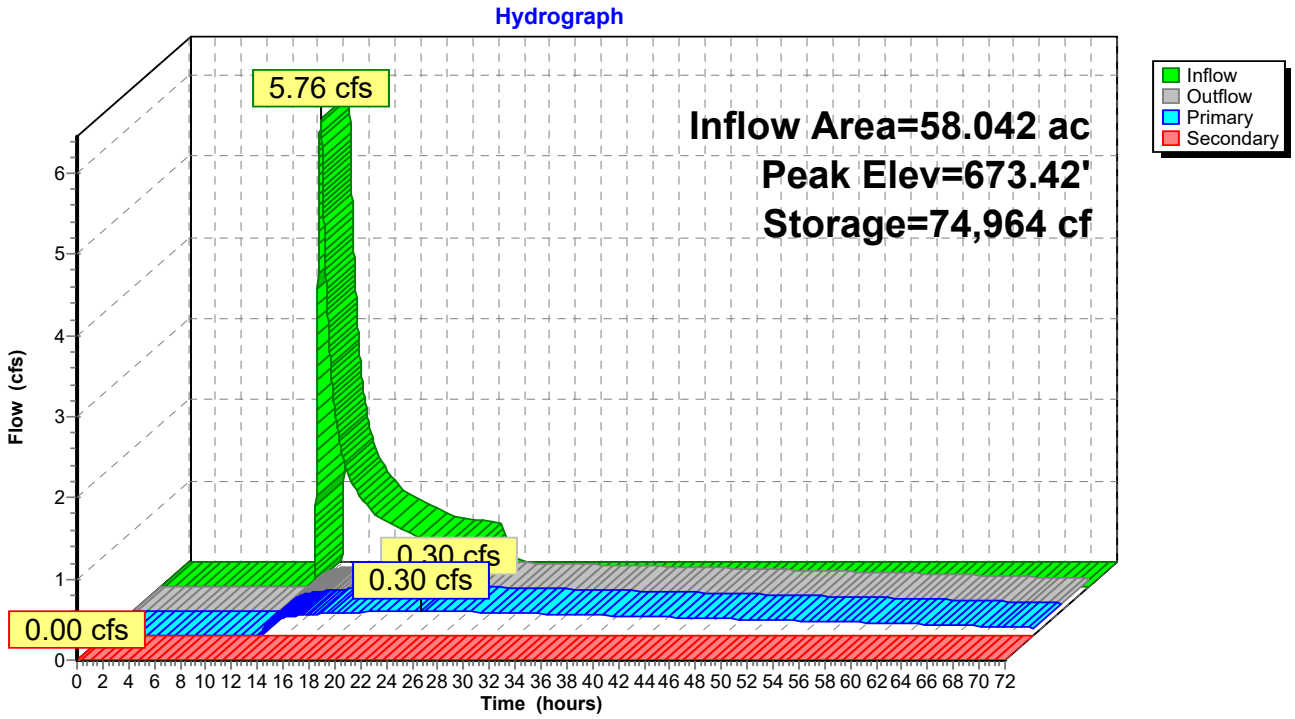
Stage-Area-Storage for Pond 12P: 200511 Wet Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
665.00	1,537	0
665.15	1,703	243
665.30	1,869	511
665.45	2,035	804
665.60	2,201	1,121
665.75	2,367	1,464
665.90	2,533	1,832
666.05	2,707	2,224
666.20	2,896	2,644
666.35	3,085	3,093
666.50	3,274	3,570
666.65	3,462	4,075
666.80	3,651	4,609
666.95	3,840	5,170
667.10	4,043	5,761
667.25	4,254	6,384
667.40	4,465	7,038
667.55	4,675	7,723
667.70	4,886	8,440
667.85	5,096	9,189
668.00	5,307	9,969
668.15	5,555	10,784
668.30	5,803	11,635
668.45	6,051	12,525
668.60	6,299	13,451
668.75	6,547	14,414
668.90	6,795	15,415
669.05	7,048	16,453
669.20	7,312	17,530
669.35	7,576	18,646
669.50	7,840	19,803
669.65	8,104	20,998
669.80	8,368	22,234
669.95	8,632	23,509
670.10	9,215	24,839
670.25	9,958	26,277
670.40	10,701	27,827
670.55	11,444	29,487
670.70	12,186	31,260
670.85	12,929	33,143
671.00	13,672	35,139
671.15	13,992	37,213
671.30	14,312	39,336
671.45	14,631	41,507
671.60	14,951	43,725
671.75	15,271	45,992
671.90	15,591	48,307
672.05	15,916	50,669
672.20	16,251	53,082
672.35	16,586	55,545
672.50	16,921	58,058
672.65	17,255	60,621
672.80	17,590	63,234
672.95	17,925	65,898
673.10	18,650	68,631
673.25	19,568	71,498
673.40	20,487	74,502
673.55	21,406	77,644
673.70	22,325	80,924
673.85	23,243	84,341
674.00	24,162	87,897
674.15	24,771	91,566
674.30	25,379	95,328
674.45	25,988	99,180
674.60	26,597	103,124
674.75	27,206	107,159
674.90	27,814	111,286
675.05	28,516	115,506
675.20	29,405	119,850
675.35	30,294	124,327
675.50	31,183	128,938
675.65	32,072	133,682
675.80	32,961	138,560
675.95	33,850	143,571
676.10	35,800	148,768
676.25	38,280	154,324
676.40	**40,760**	**160,252**
676.55	**42,414**	**164,411**
676.70	42,414	164,411
676.85	42,414	164,411
677.00	42,414	164,411

Reach 25R: Swale 3 (Pr. Cond)



Pond 12P: 200511 Wet Pond



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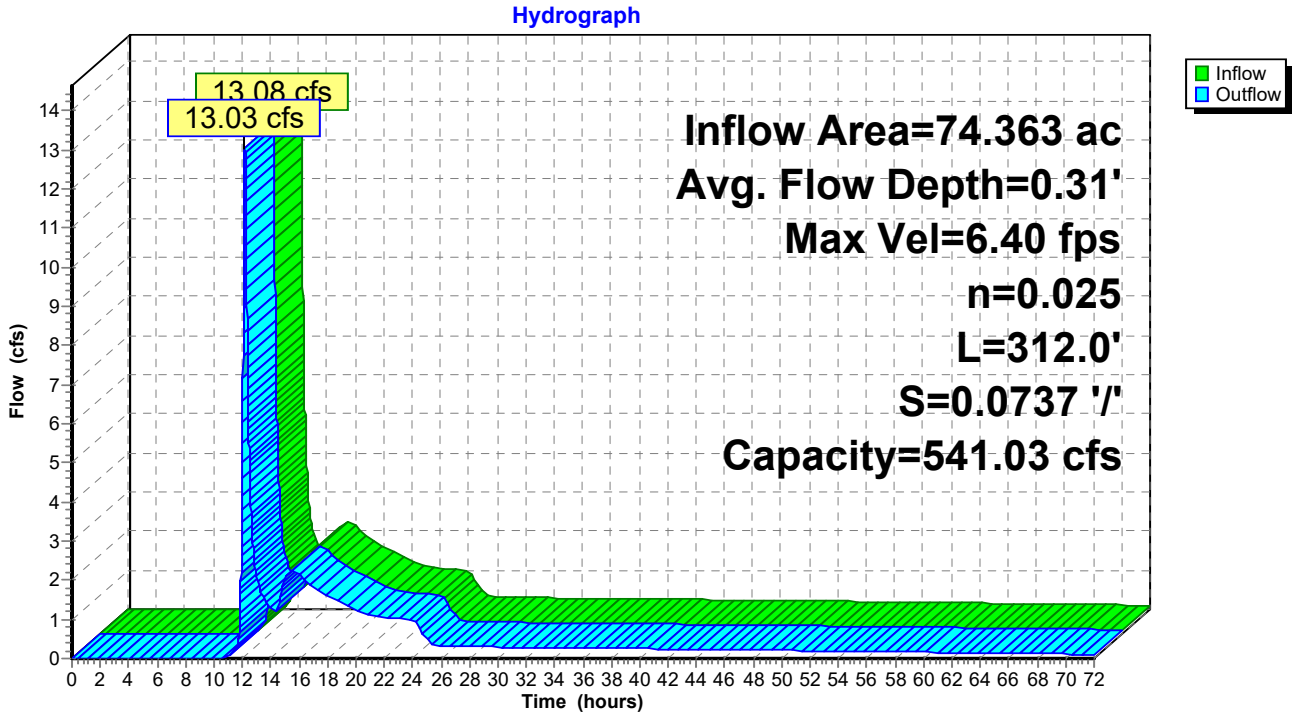
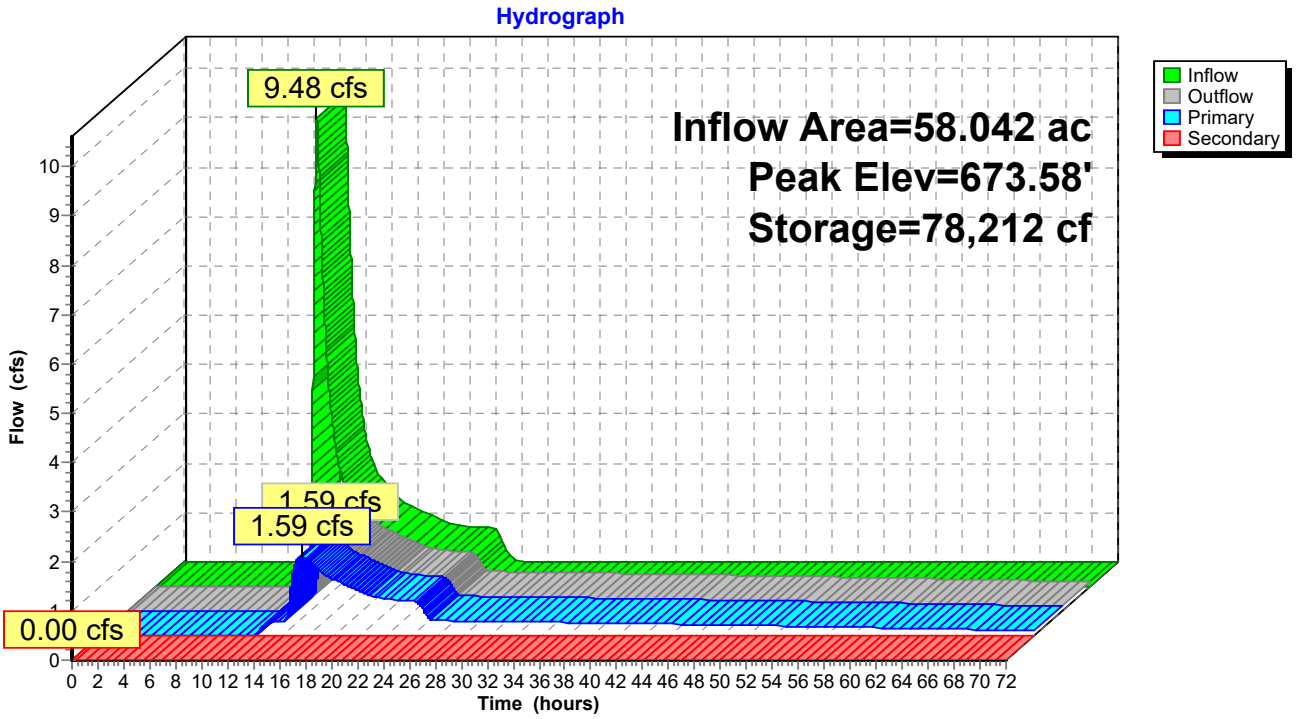


Pond 12P: 200511 Wet Pond



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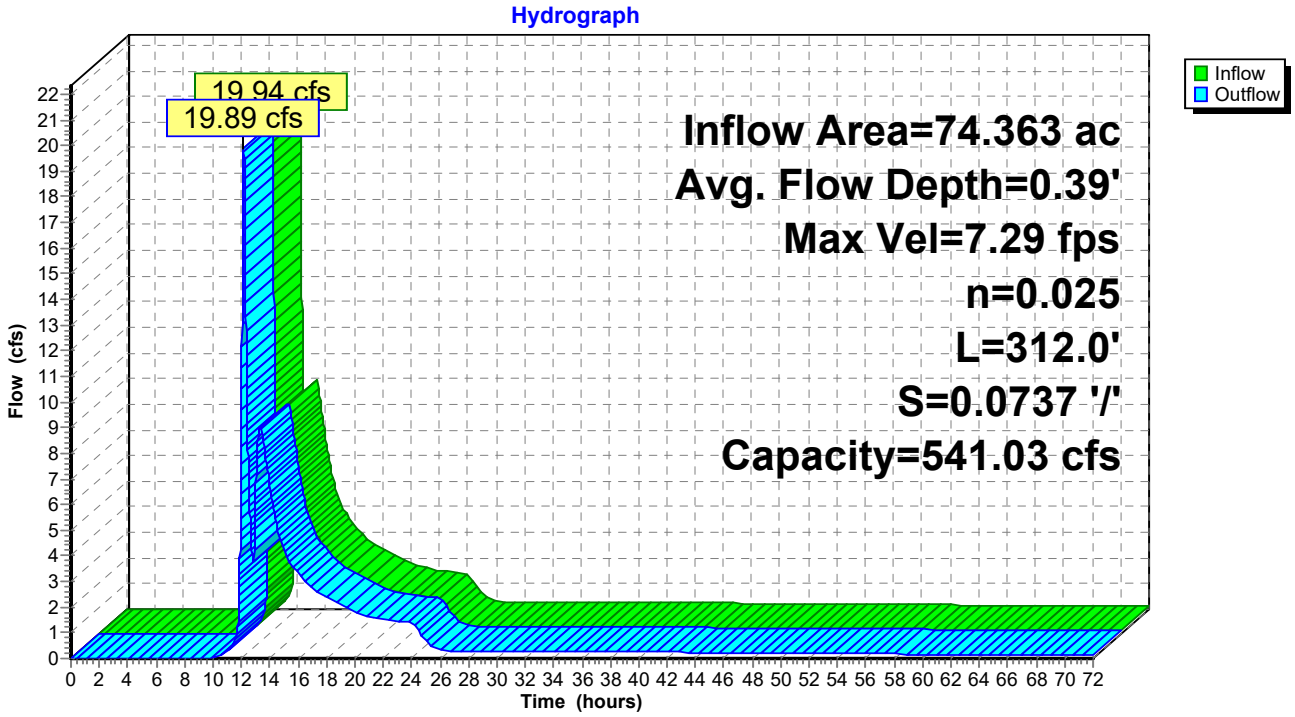
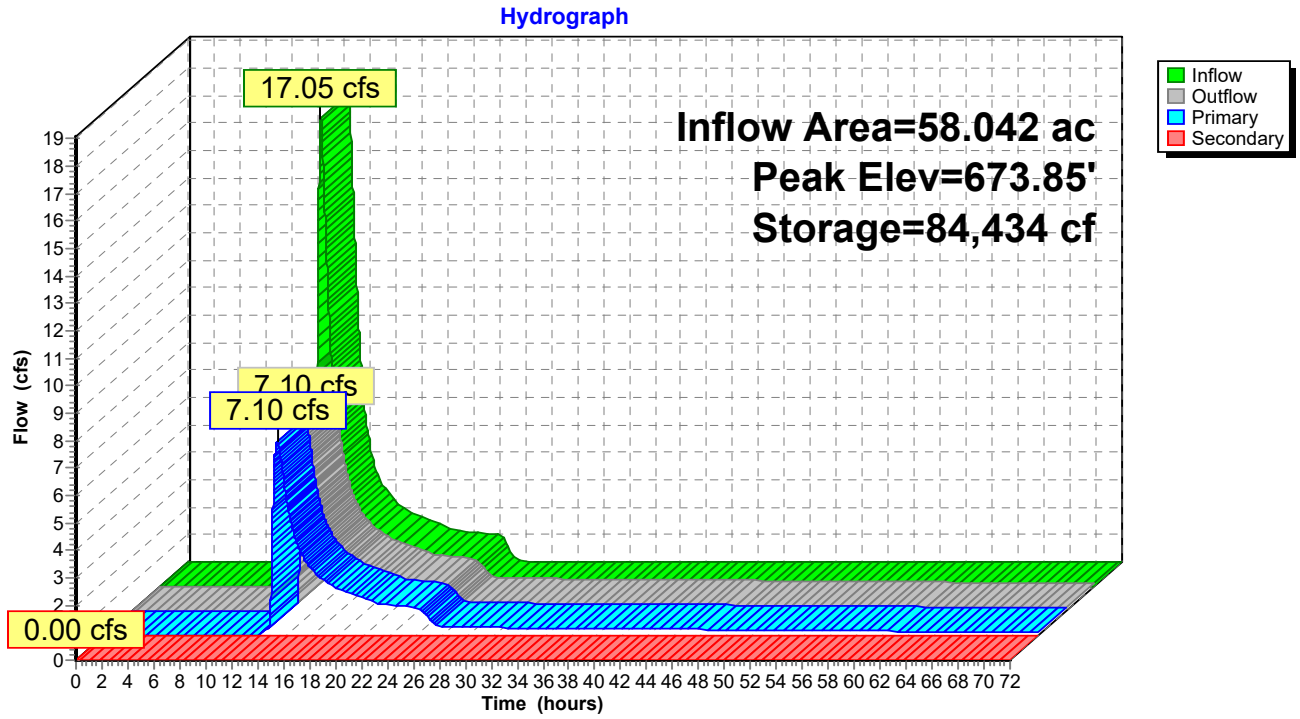
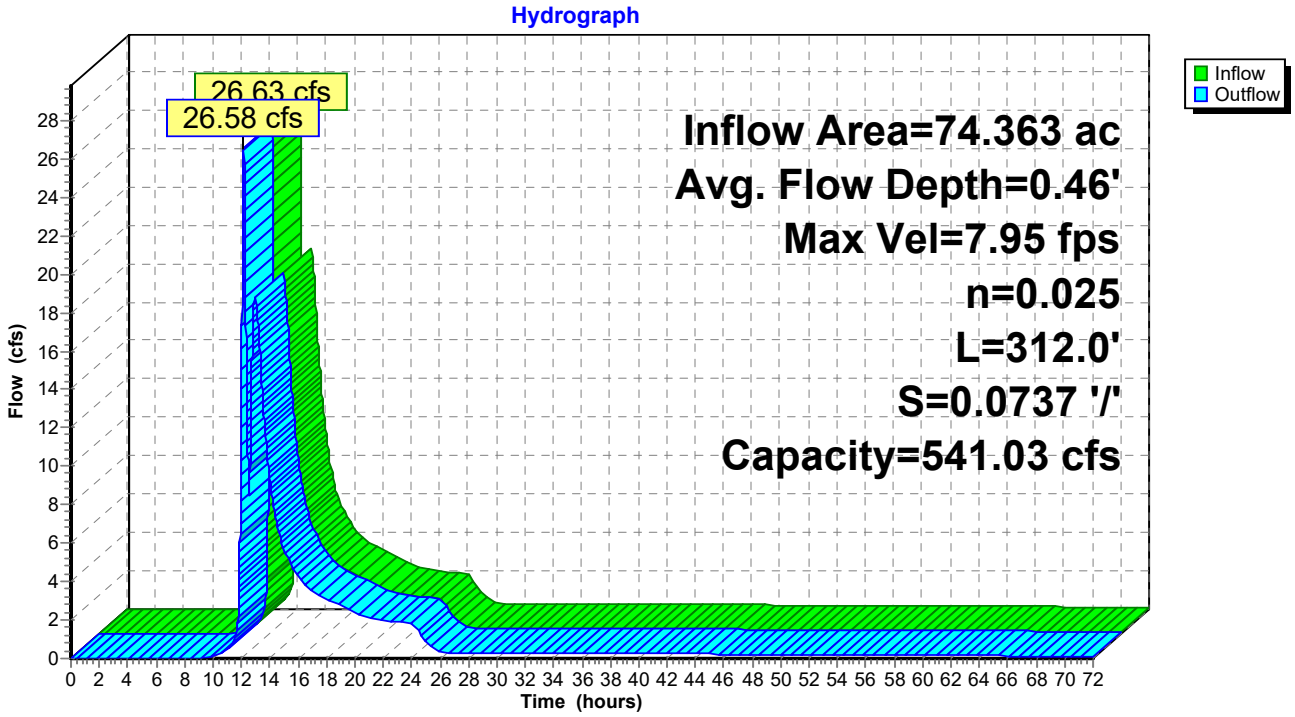


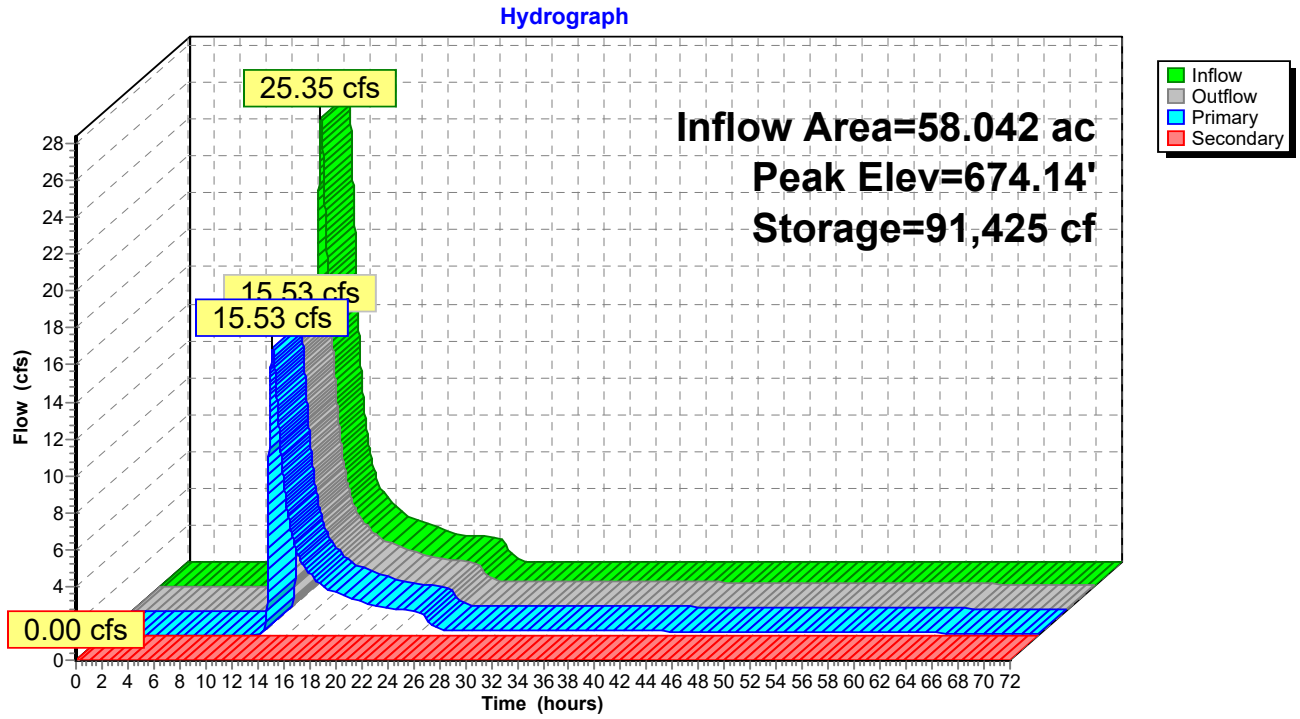
Pond 12P: 200511 Wet Pond



Reach 25R: Swale 3 (Pr. Cond)



Pond 12P: 200511 Wet Pond



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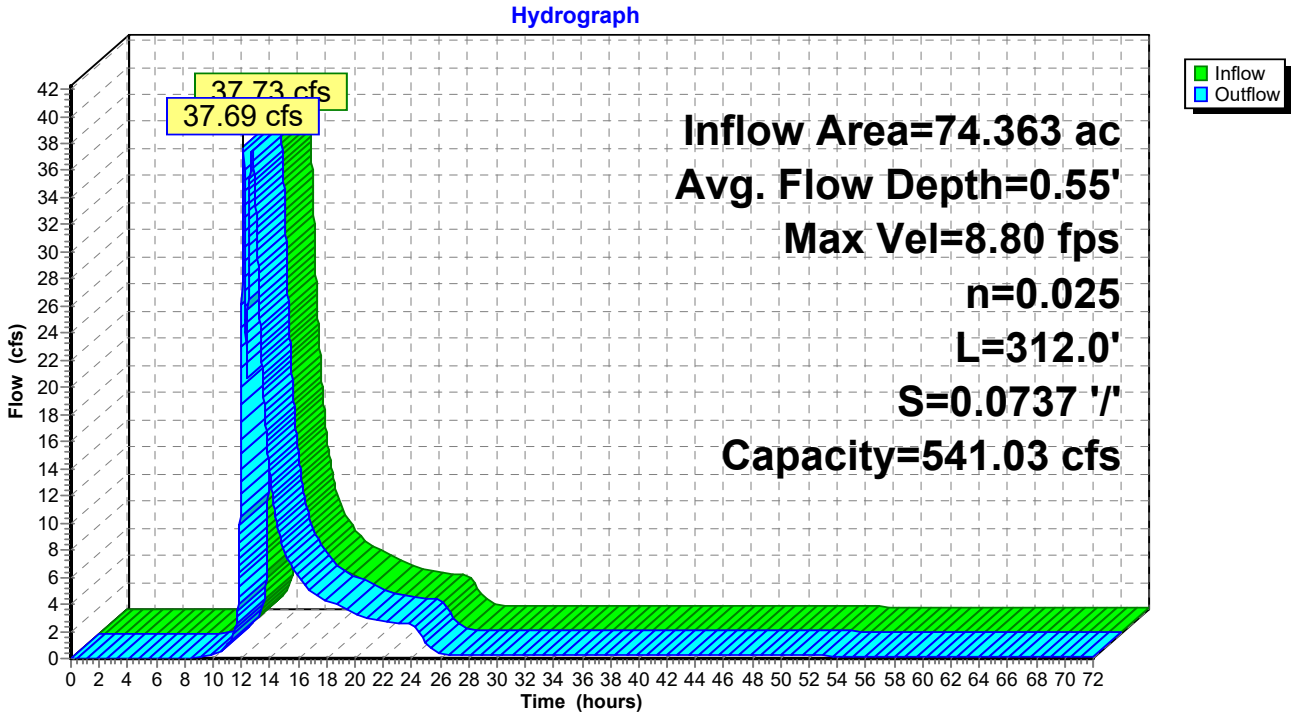

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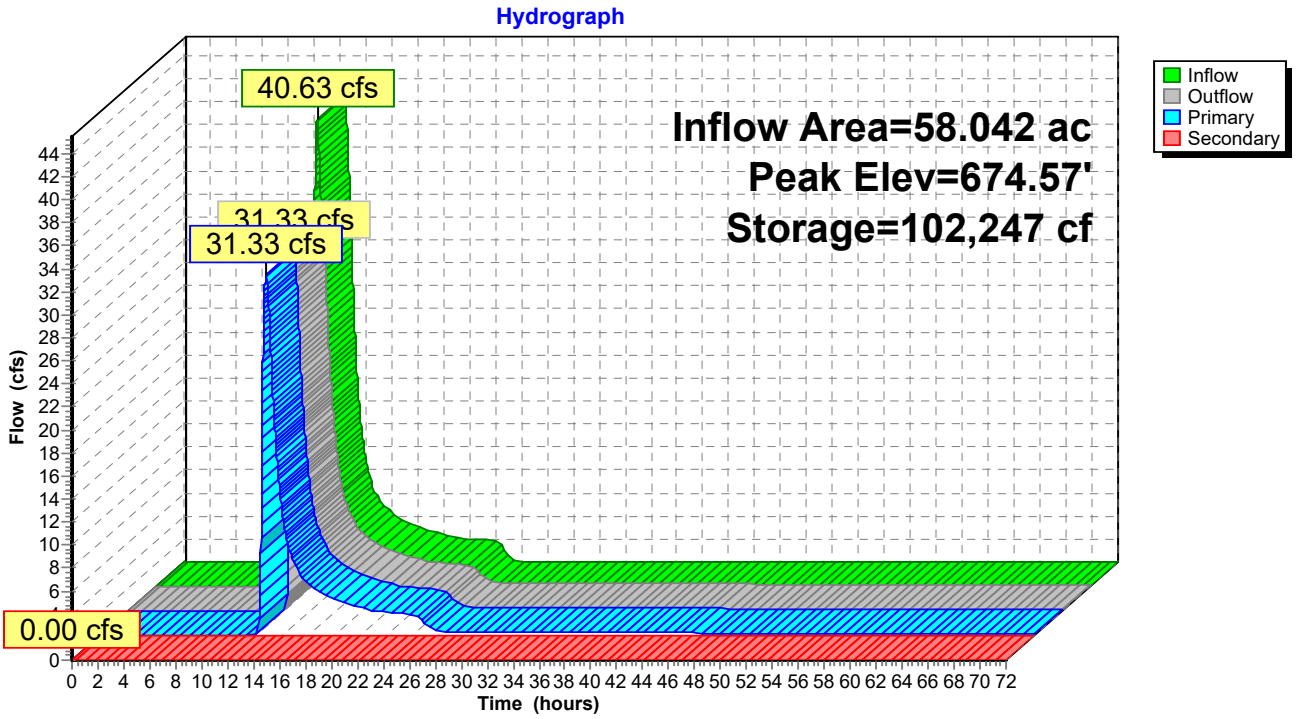

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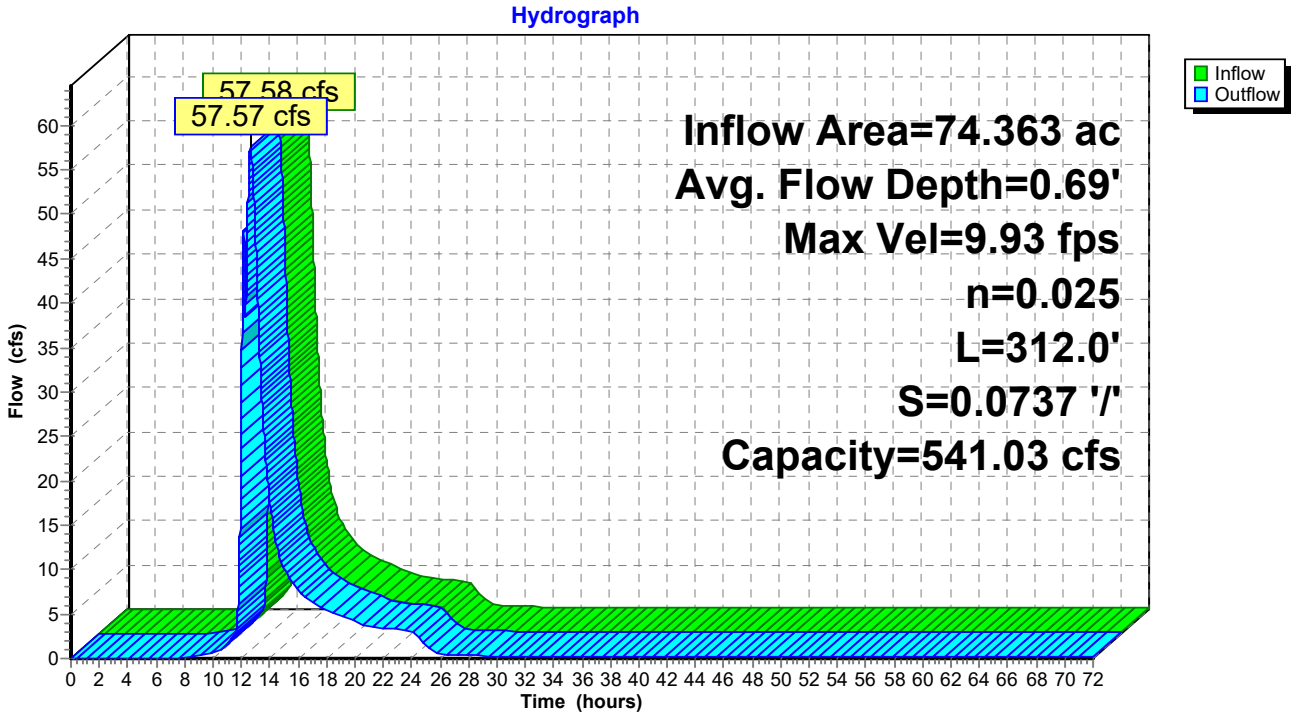

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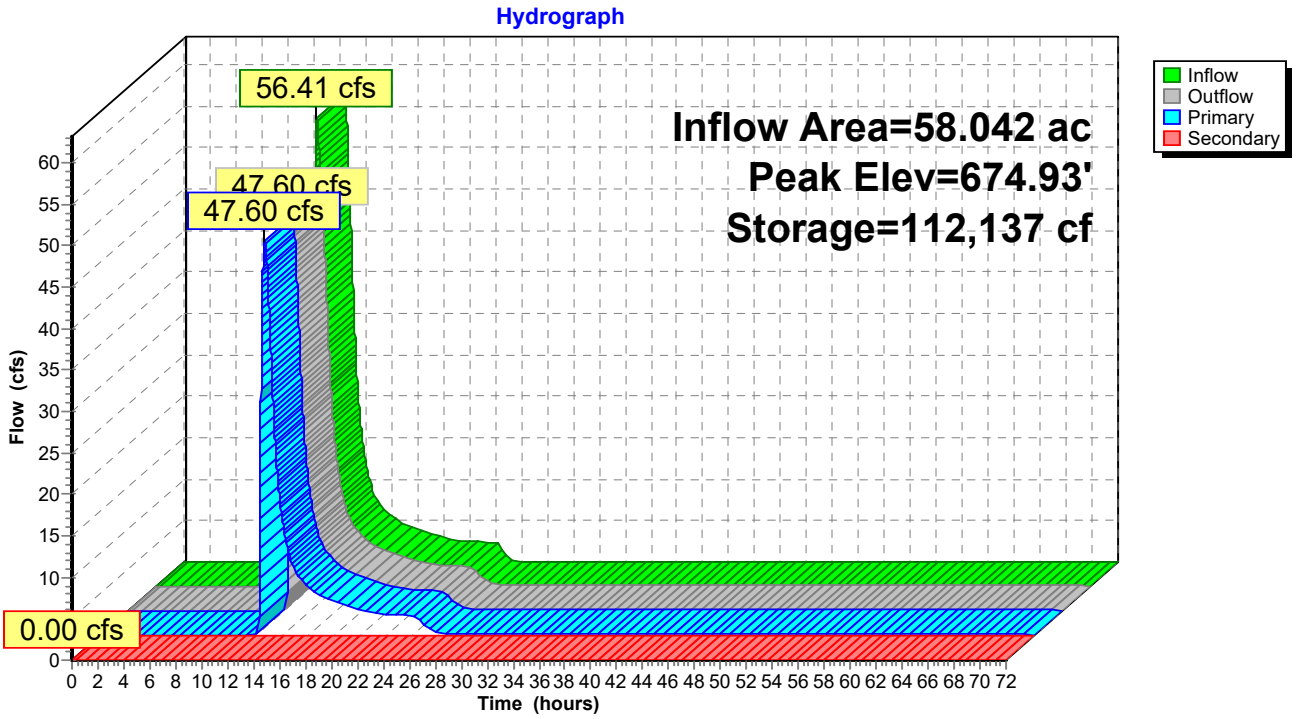
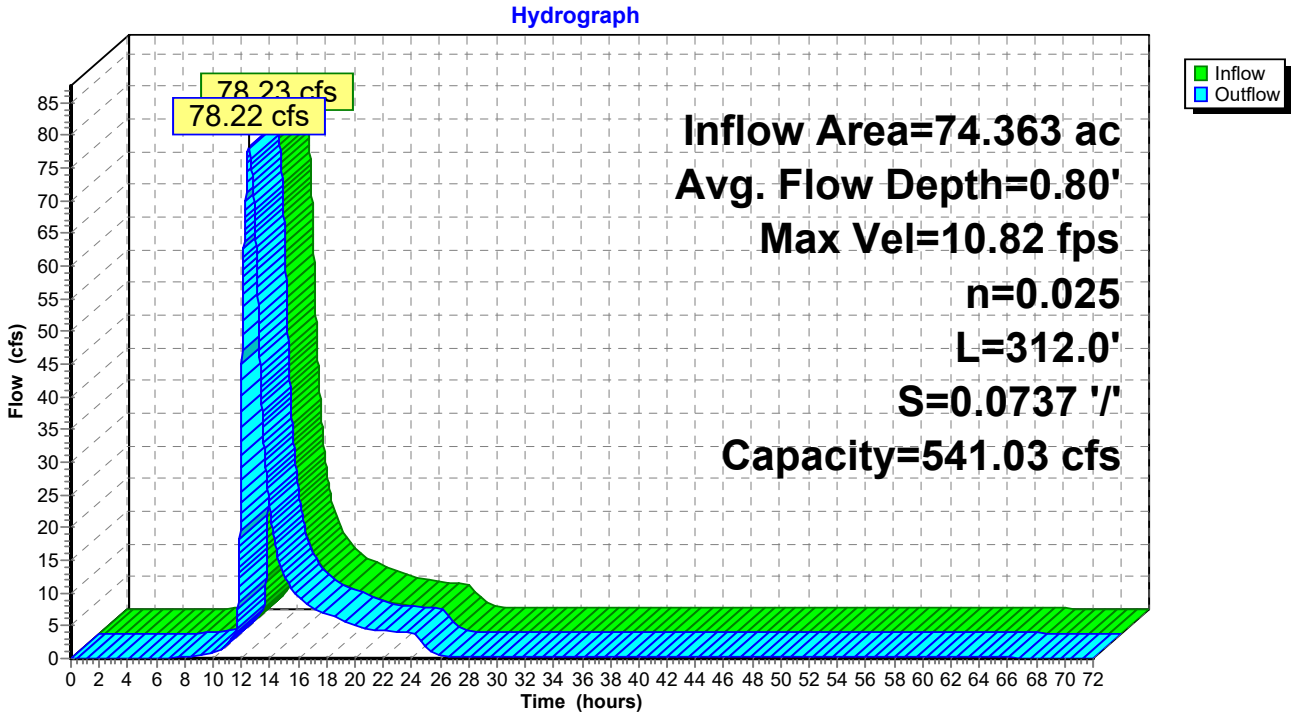
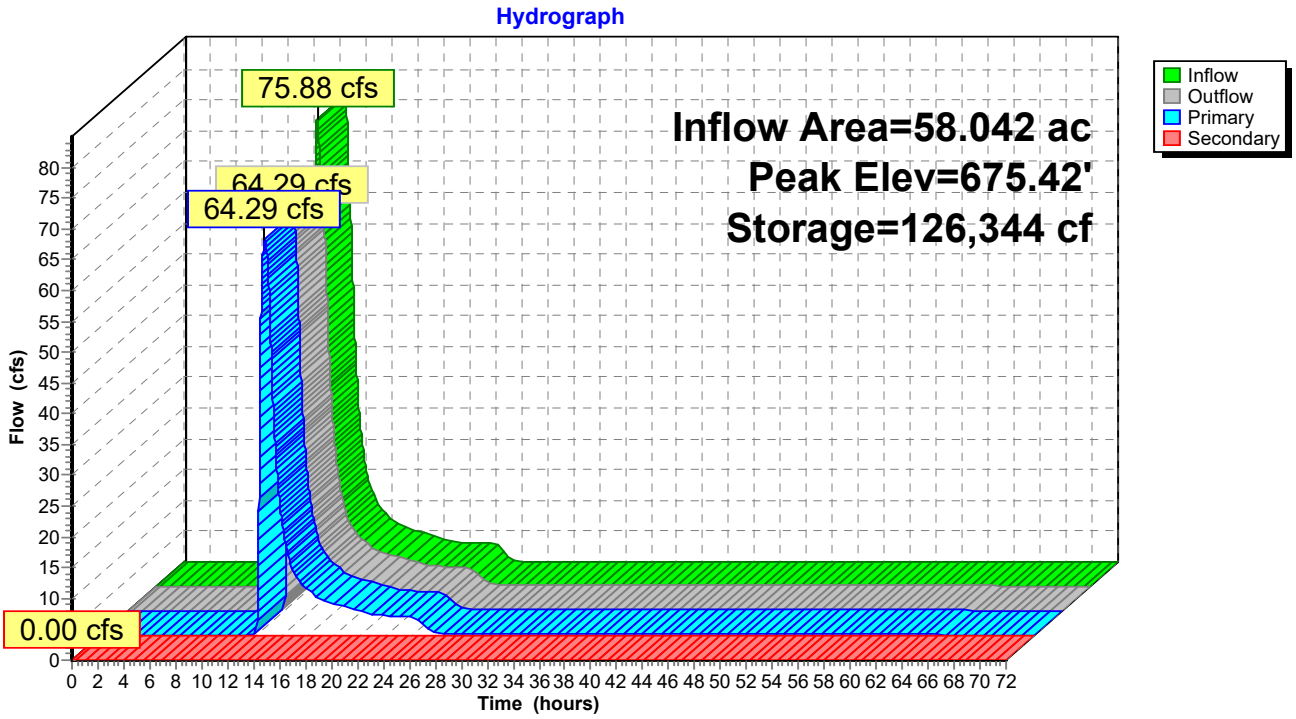


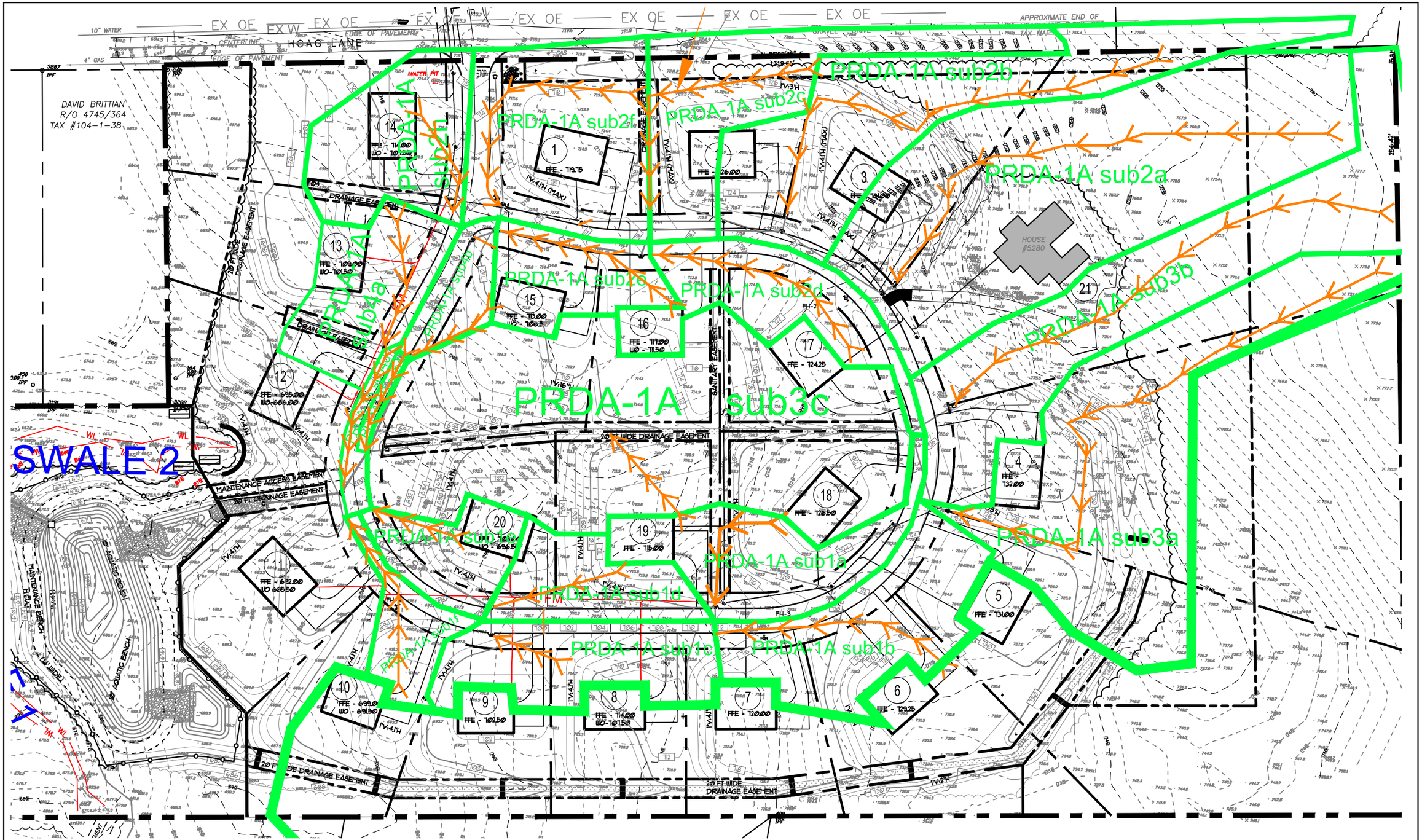
Reach 25R: Swale 3 (Pr. Cond)



Pond 12P: 200511 Wet Pond



APPENDIX F

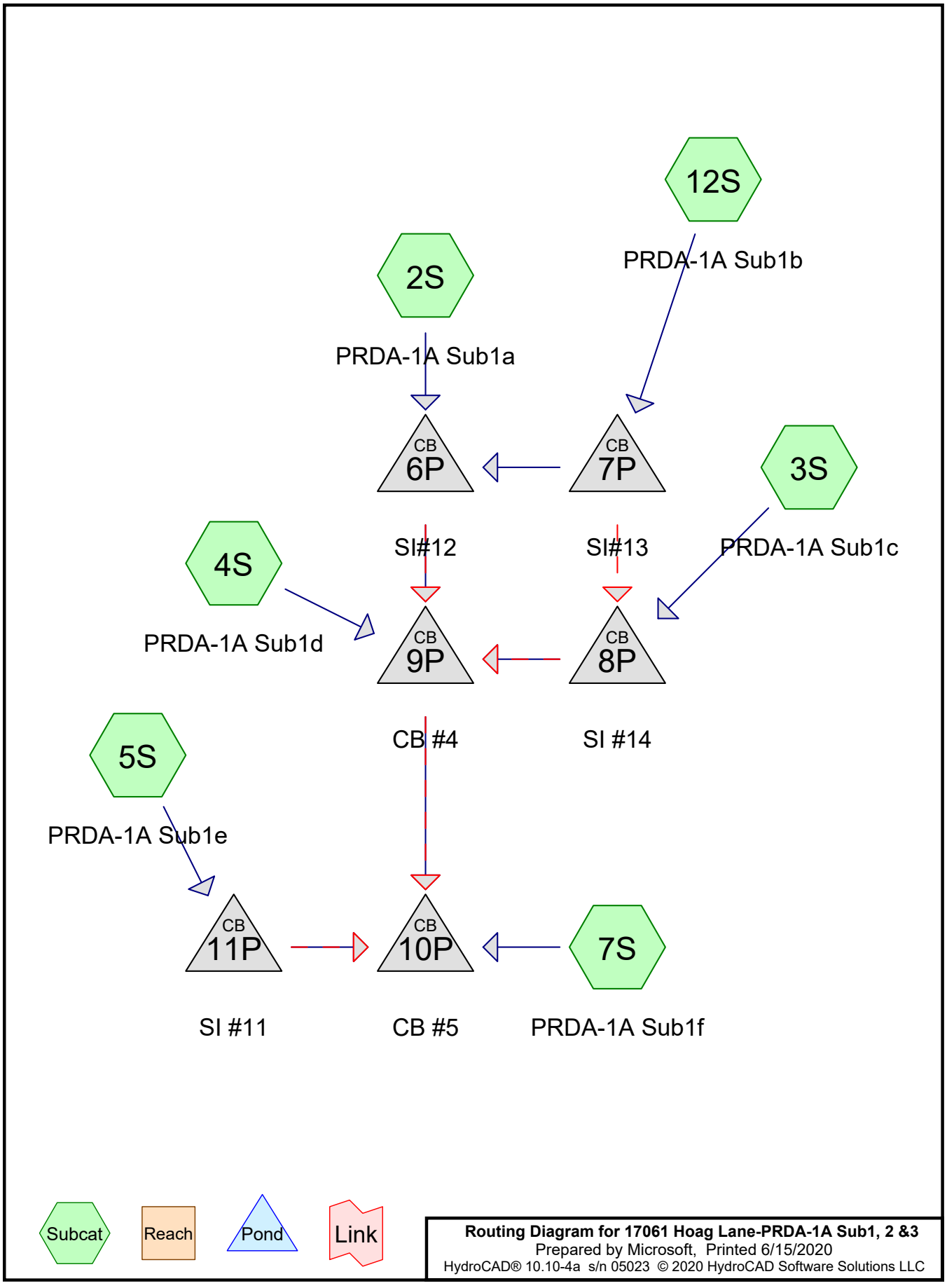


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure F: Proposed Sub-Watersheds

SCALE: 1:300
Updated: 06/15/20

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub1, 2 &3
Prepared by Microsoft, Printed 6/15/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 2S: PRDA-1A Sub1a

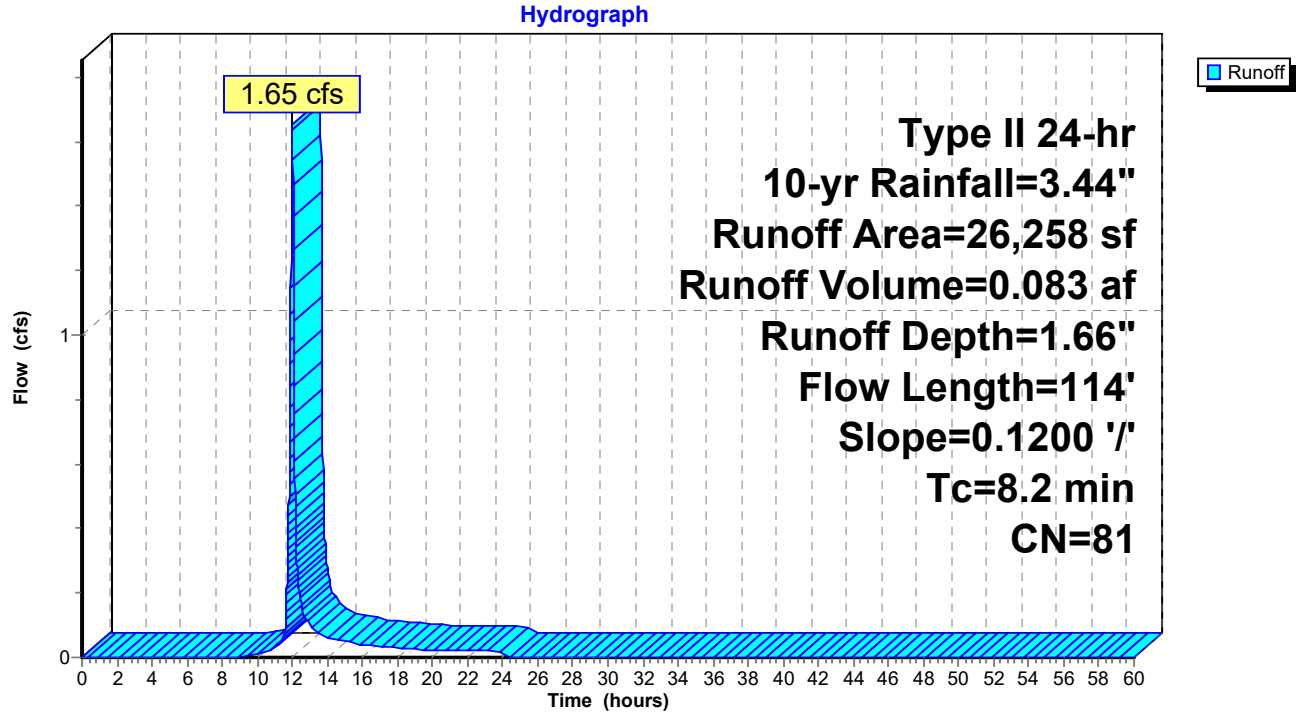
Runoff = 1.65 cfs @ 12.00 hrs, Volume= 0.083 af, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	3,870	98	Pavement, HSG D
	18,849	74	>75% Grass cover, Good, HSG C
	3,539	98	Roofs, HSG C
	26,258	81	Weighted Average
	18,849		71.78% Pervious Area
	7,409		28.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.1200	0.21		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.1	14	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.2	114	Total			

Subcatchment 2S: PRDA-1A Sub1a



Summary for Subcatchment 3S: PRDA-1A Sub1c

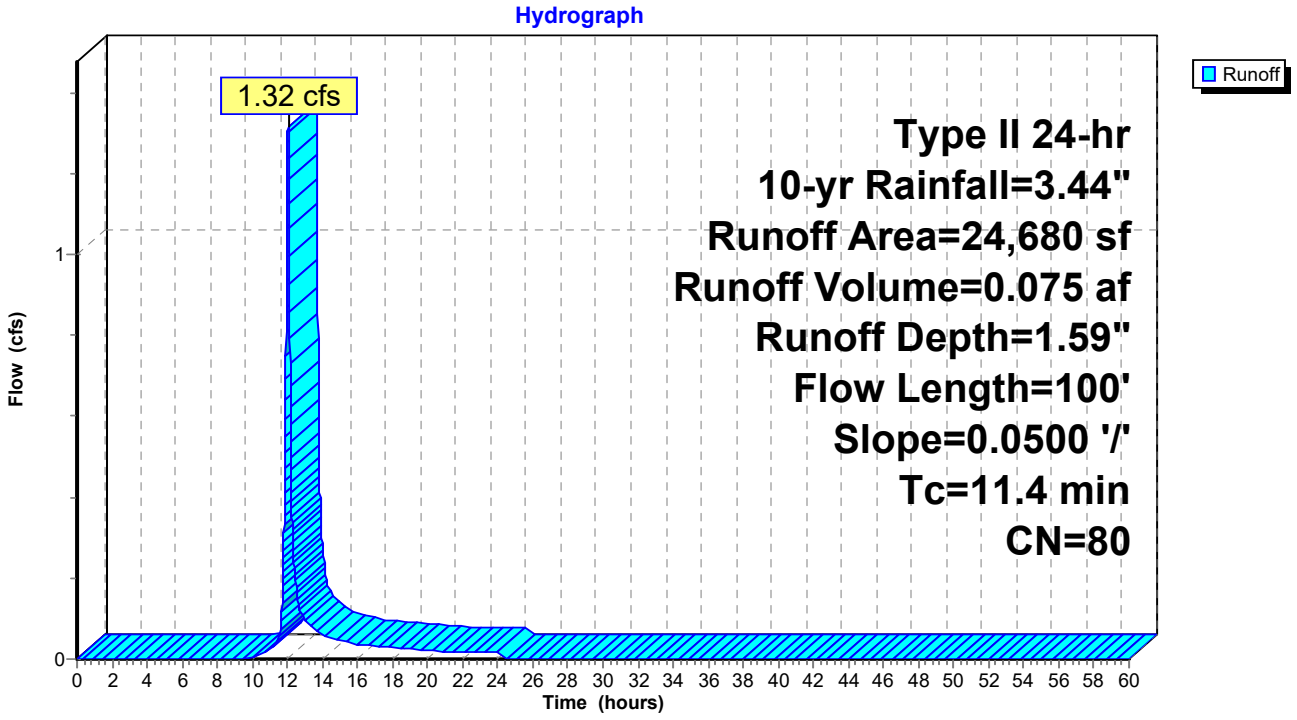
Runoff = 1.32 cfs @ 12.04 hrs, Volume= 0.075 af, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
6,172	98	Paved parking, HSG C
18,508	74	>75% Grass cover, Good, HSG C
24,680	80	Weighted Average
18,508		74.99% Pervious Area
6,172		25.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 3S: PRDA-1A Sub1c



Summary for Subcatchment 4S: PRDA-1A Sub1d

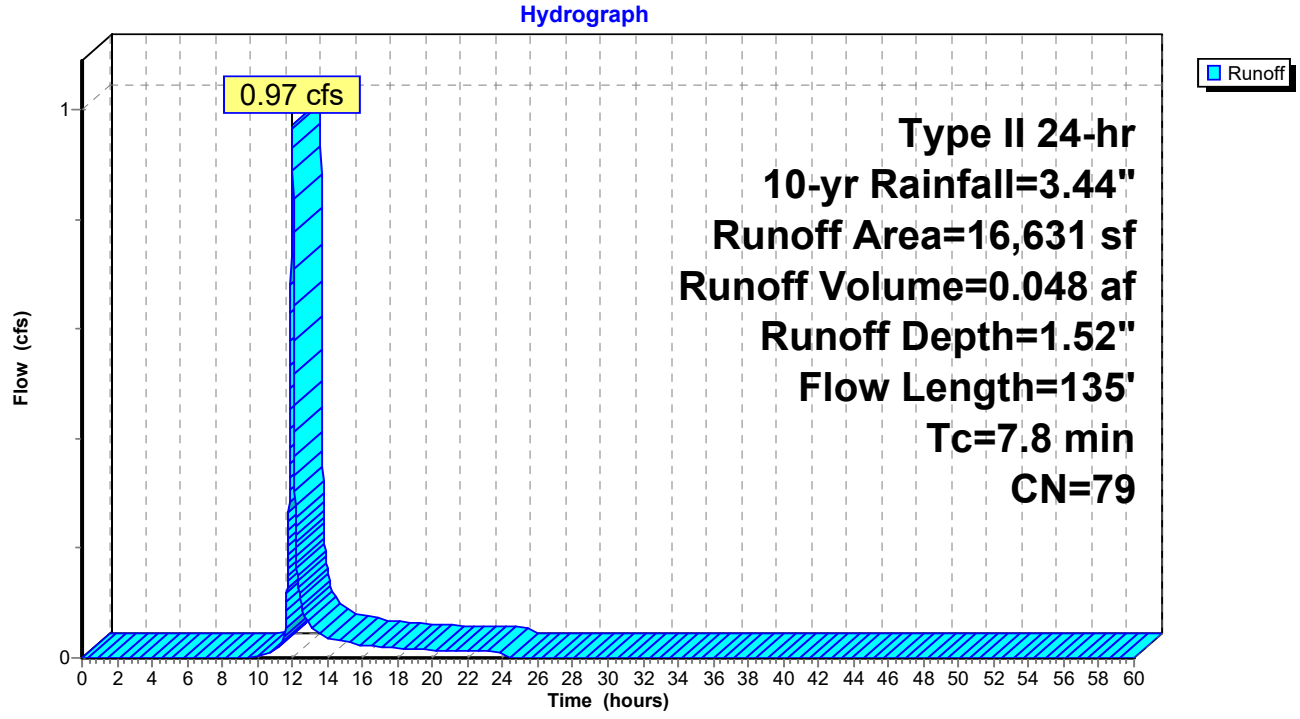
Runoff = 0.97 cfs @ 12.00 hrs, Volume= 0.048 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	3,503	98	Pavement, HSG D
	13,128	74	>75% Grass cover, Good, HSG C
	16,631	79	Weighted Average
	13,128		78.94% Pervious Area
	3,503		21.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1400	0.22		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.2	35	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.8	135	Total			

Subcatchment 4S: PRDA-1A Sub1d



Summary for Subcatchment 5S: PRDA-1A Sub1e

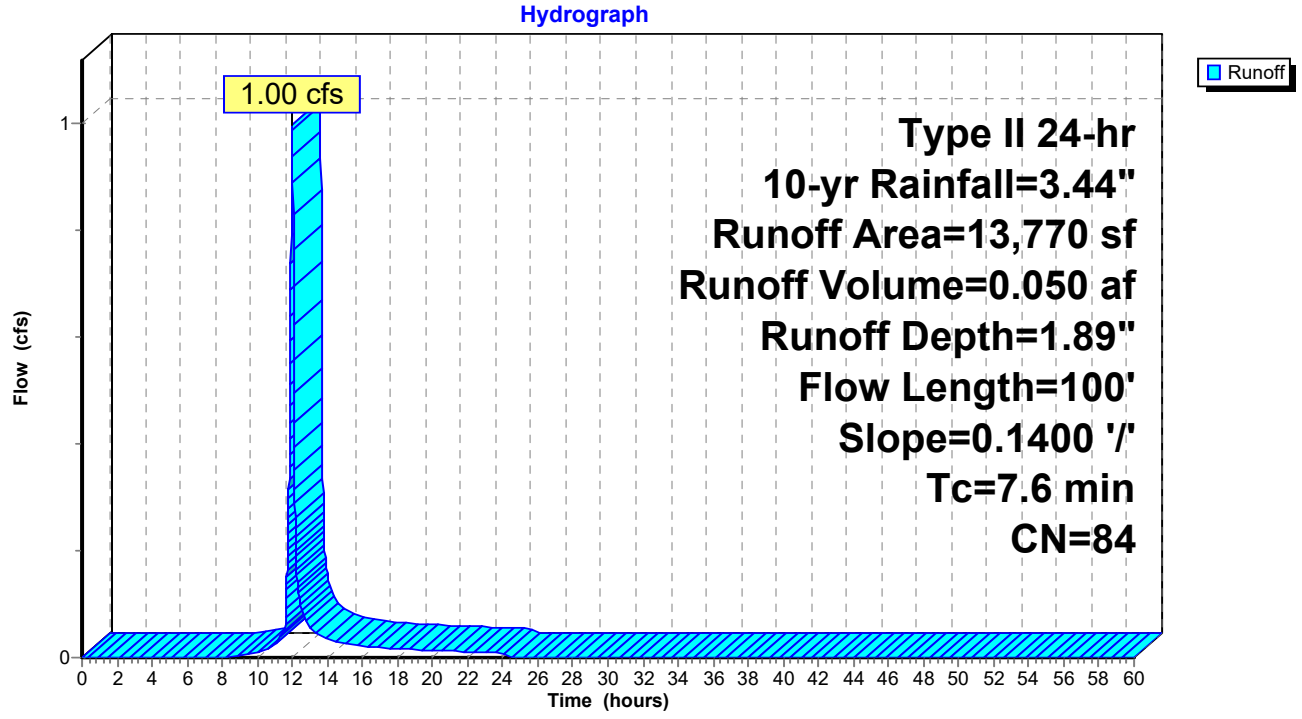
Runoff = 1.00 cfs @ 11.99 hrs, Volume= 0.050 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	2,260	98	Pavement, HSG D
	8,031	74	>75% Grass cover, Good, HSG C
	3,479	98	Roofs, HSG C
	13,770	84	Weighted Average
	8,031		58.32% Pervious Area
	5,739		41.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1400	0.22		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 5S: PRDA-1A Sub1e



Summary for Subcatchment 7S: PRDA-1A Sub1f

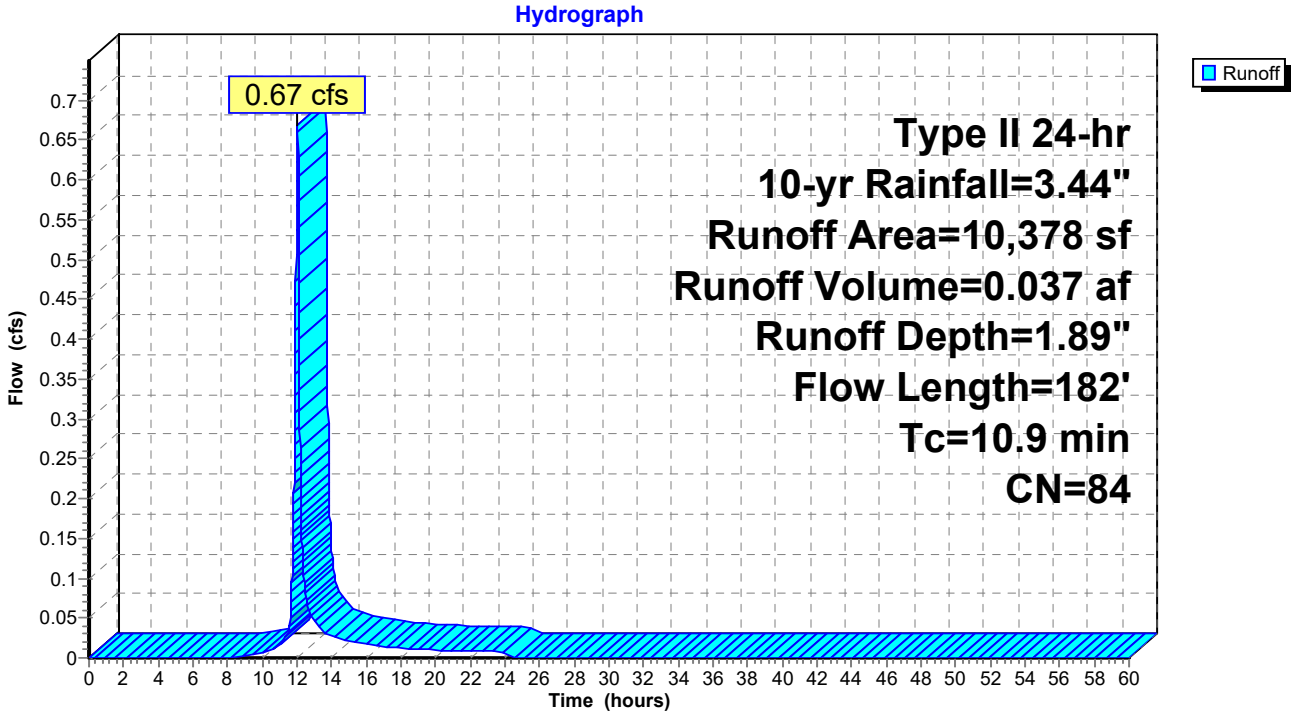
Runoff = 0.67 cfs @ 12.03 hrs, Volume= 0.037 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	4,306	98	Pavement, HSG C
	6,072	74	>75% Grass cover, Good, HSG C
	10,378	84	Weighted Average
	6,072		58.51% Pervious Area
	4,306		41.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0625	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.4	82	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.9	182	Total			

Subcatchment 7S: PRDA-1A Sub1f



Summary for Subcatchment 12S: PRDA-1A Sub1b

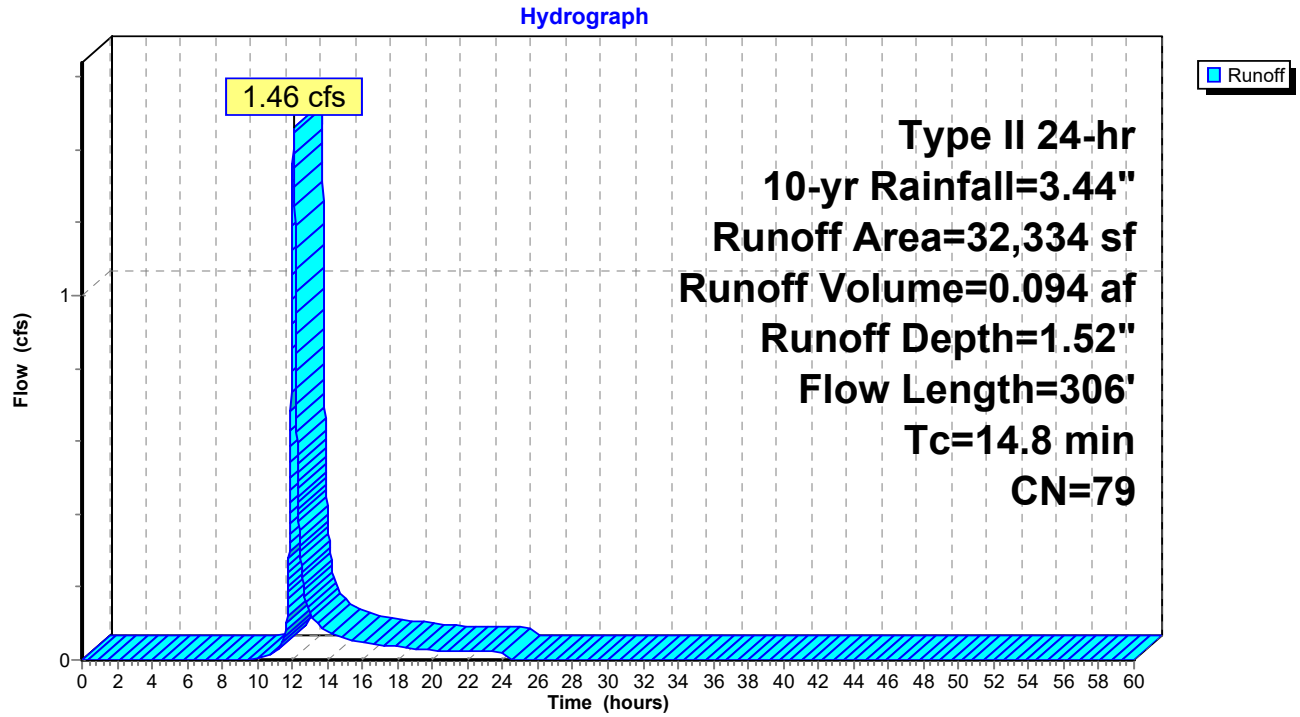
Runoff = 1.46 cfs @ 12.07 hrs, Volume= 0.094 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	7,320	98	Pavement, HSG C
	25,014	74	>75% Grass cover, Good, HSG C
	32,334	79	Weighted Average
	25,014		77.36% Pervious Area
	7,320		22.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0340	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
1.1	109	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	97	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.8	306	Total			

Subcatchment 12S: PRDA-1A Sub1b



Summary for Pond 6P: SI#12

Inflow Area = 1.345 ac, 25.14% Impervious, Inflow Depth = 1.58" for 10-yr event
Inflow = 2.91 cfs @ 12.02 hrs, Volume= 0.177 af
Outflow = 2.91 cfs @ 12.02 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min
Primary = 2.91 cfs @ 12.02 hrs, Volume= 0.177 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

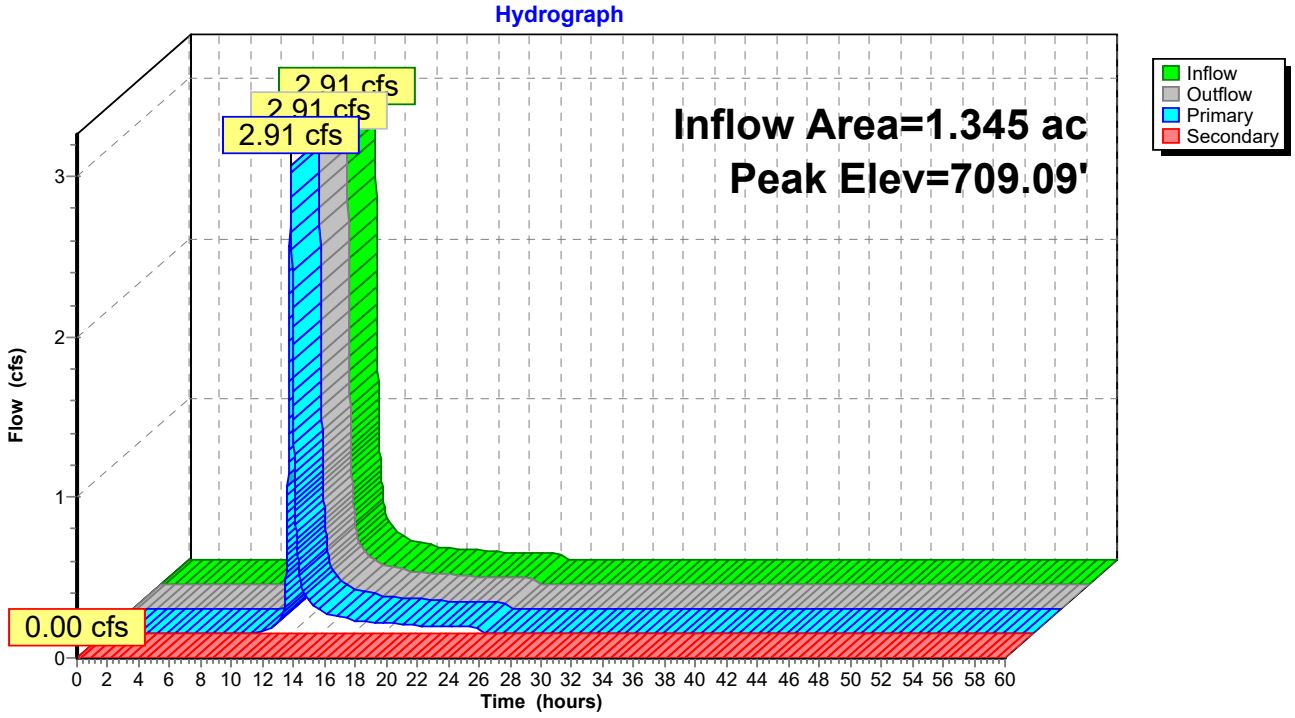
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 709.09' @ 12.02 hrs
Flood Elev= 711.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	708.00'	**12.0" Round Culvert** L= 237.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 708.00' / 693.75' S= 0.0601 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	711.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.91 cfs @ 12.02 hrs HW=709.09' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.91 cfs @ 3.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=708.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 6P: SI#12



Summary for Pond 7P: SI#13

Inflow Area = 0.742 ac, 22.64% Impervious, Inflow Depth = 1.52" for 10-yr event
Inflow = 1.46 cfs @ 12.07 hrs, Volume= 0.094 af
Outflow = 1.46 cfs @ 12.07 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min
Primary = 1.46 cfs @ 12.07 hrs, Volume= 0.094 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

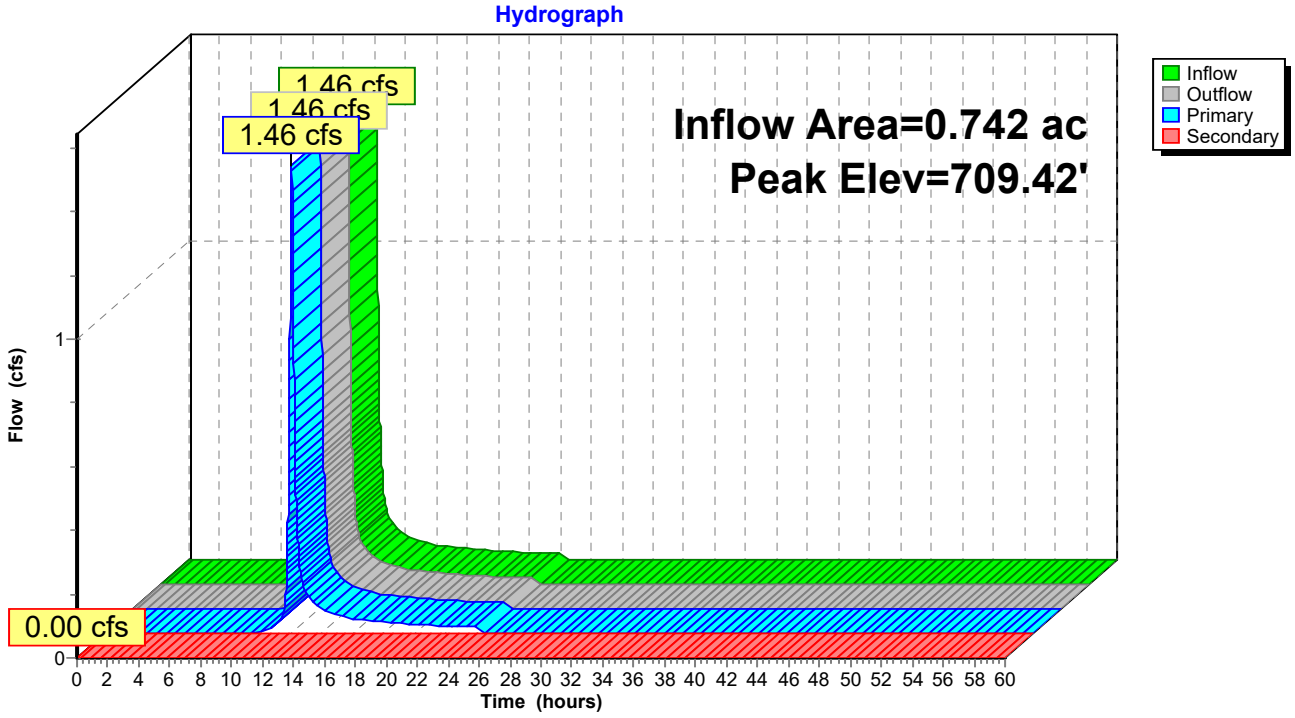
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 709.42' @ 12.07 hrs
Flood Elev= 711.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	708.50'	**10.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 708.50' / 708.25' S= 0.0096 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	711.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.46 cfs @ 12.07 hrs HW=709.42' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.46 cfs @ 3.02 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=708.50' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: SI#13



Summary for Pond 8P: SI #14

Inflow Area = 0.567 ac, 25.01% Impervious, Inflow Depth = 1.59" for 10-yr event
Inflow = 1.32 cfs @ 12.04 hrs, Volume= 0.075 af
Outflow = 1.32 cfs @ 12.04 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 1.32 cfs @ 12.04 hrs, Volume= 0.075 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

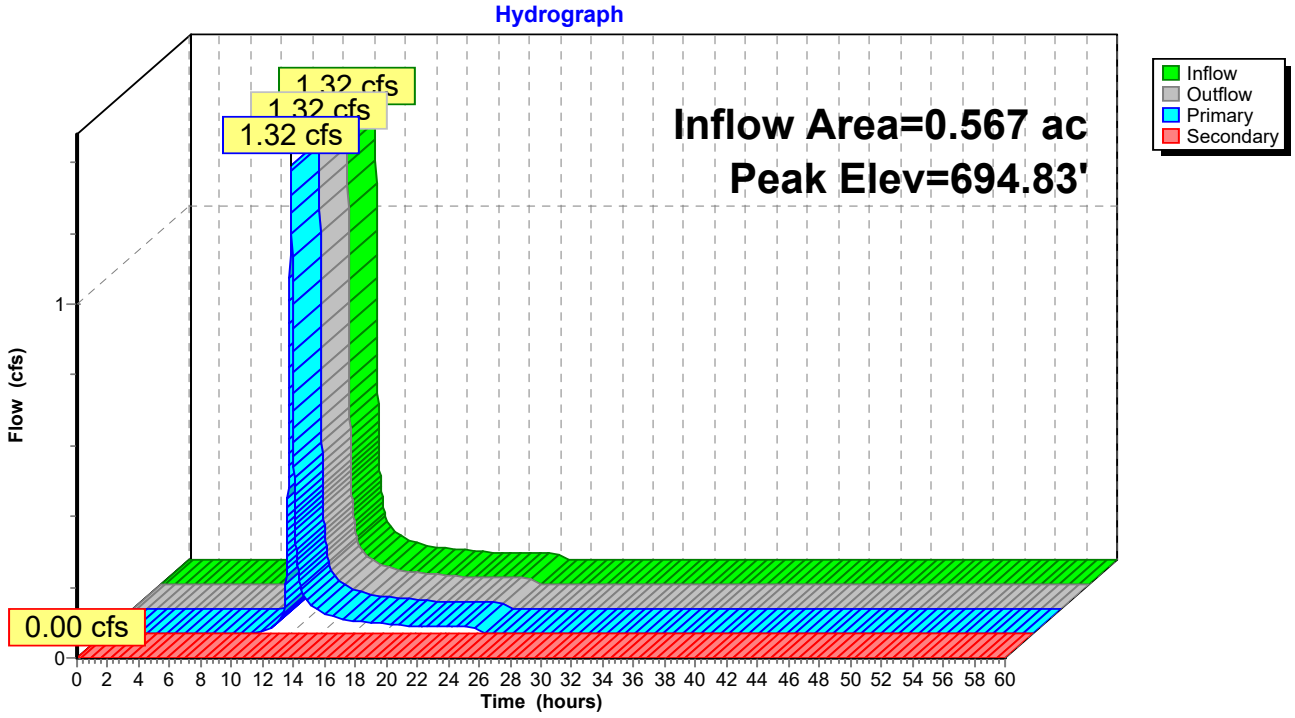
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 694.83' @ 12.04 hrs
Flood Elev= 696.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	693.90'	**10.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.90' / 693.75' S= 0.0060 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	696.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.32 cfs @ 12.04 hrs HW=694.82' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.32 cfs @ 2.72 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=693.90' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P: SI #14



Summary for Pond 9P: CB #4

Inflow Area = 2.293 ac, 24.43% Impervious, Inflow Depth = 1.57" for 10-yr event
Inflow = 5.15 cfs @ 12.02 hrs, Volume= 0.301 af
Outflow = 5.15 cfs @ 12.02 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min
Primary = 5.15 cfs @ 12.02 hrs, Volume= 0.301 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

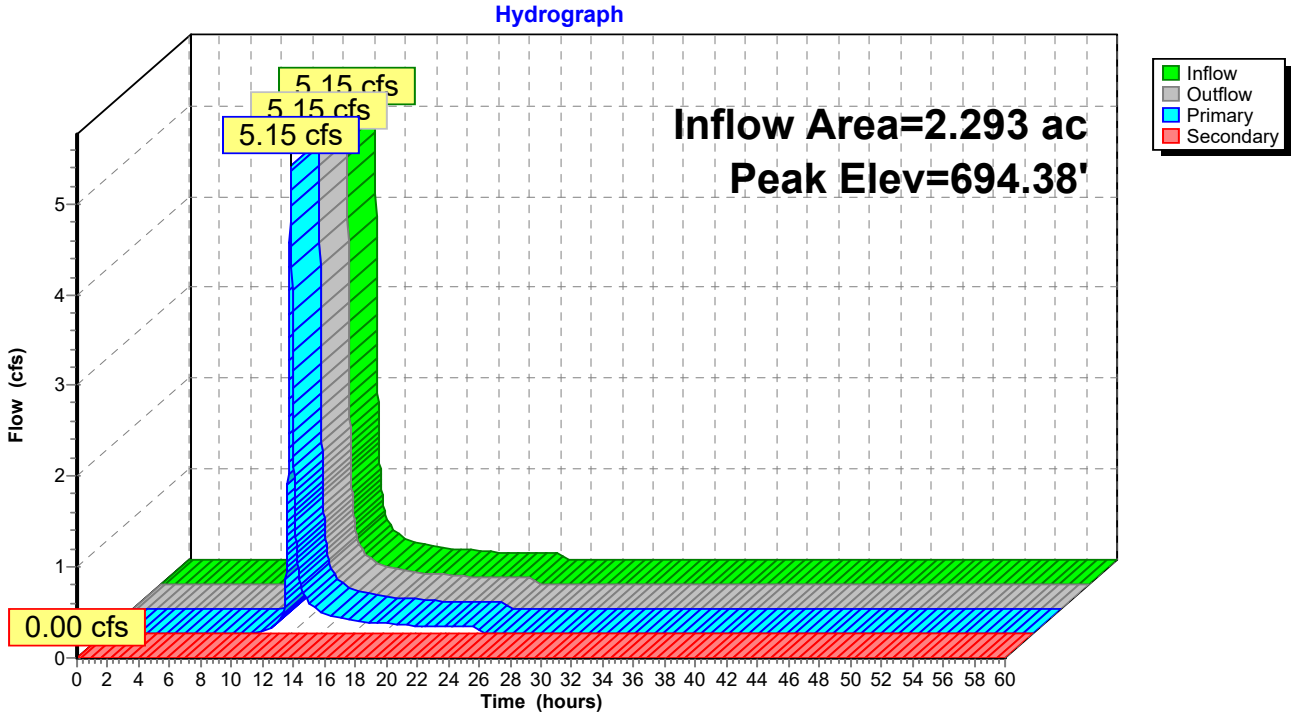
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 694.38' @ 12.02 hrs
Flood Elev= 696.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	693.25'	**18.0" Round Culvert** L= 179.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.25' / 685.50' S= 0.0433 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	696.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.15 cfs @ 12.02 hrs HW=694.38' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.15 cfs @ 3.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=693.25' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 9P: CB #4



Summary for Pond 10P: CB #5

Inflow Area = 2.848 ac, 27.77% Impervious, Inflow Depth = 1.63" for 10-yr event
Inflow = 6.76 cfs @ 12.01 hrs, Volume= 0.388 af
Outflow = 6.76 cfs @ 12.01 hrs, Volume= 0.388 af, Atten= 0%, Lag= 0.0 min
Primary = 6.76 cfs @ 12.01 hrs, Volume= 0.388 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

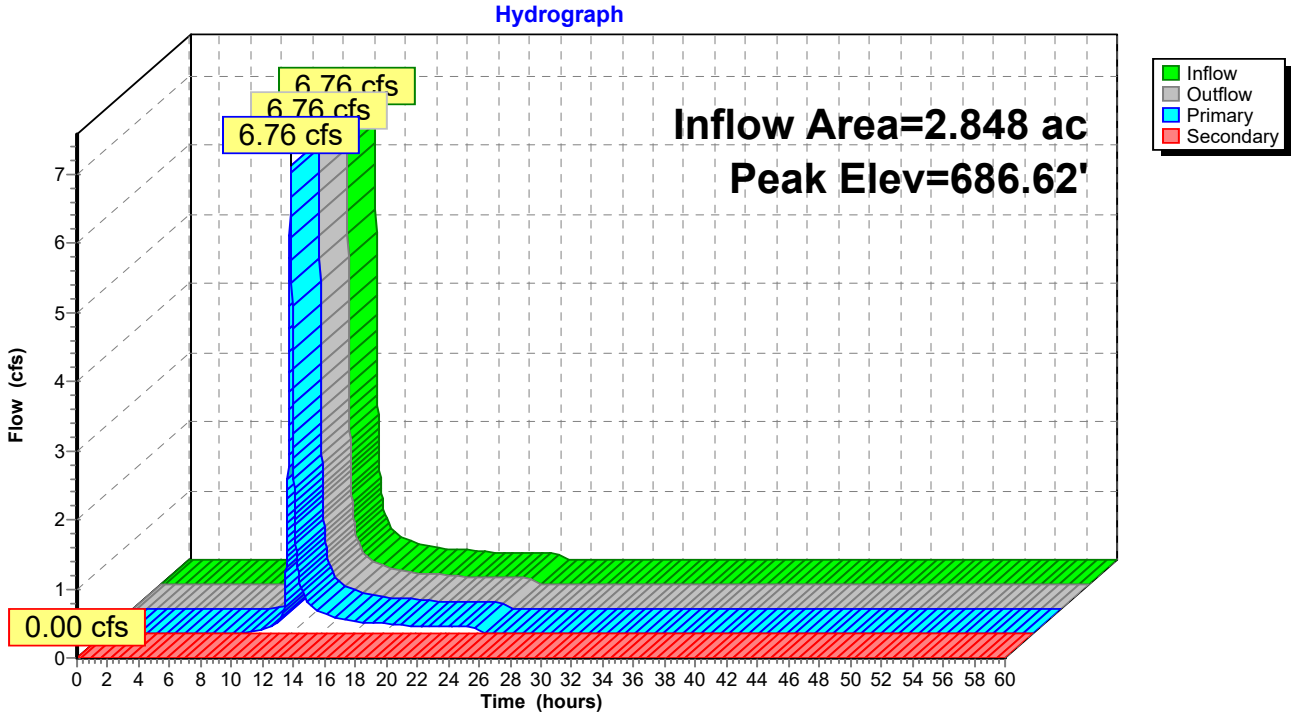
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 686.62' @ 12.01 hrs
Flood Elev= 689.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	685.25'	**24.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 685.25' / 685.00' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	691.42'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.75 cfs @ 12.01 hrs HW=686.62' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.75 cfs @ 4.15 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=685.25' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P: CB #5



Summary for Pond 11P: SI #11

Inflow Area = 0.316 ac, 41.68% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 1.00 cfs @ 11.99 hrs, Volume= 0.050 af
Outflow = 1.00 cfs @ 11.99 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 11.99 hrs, Volume= 0.050 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

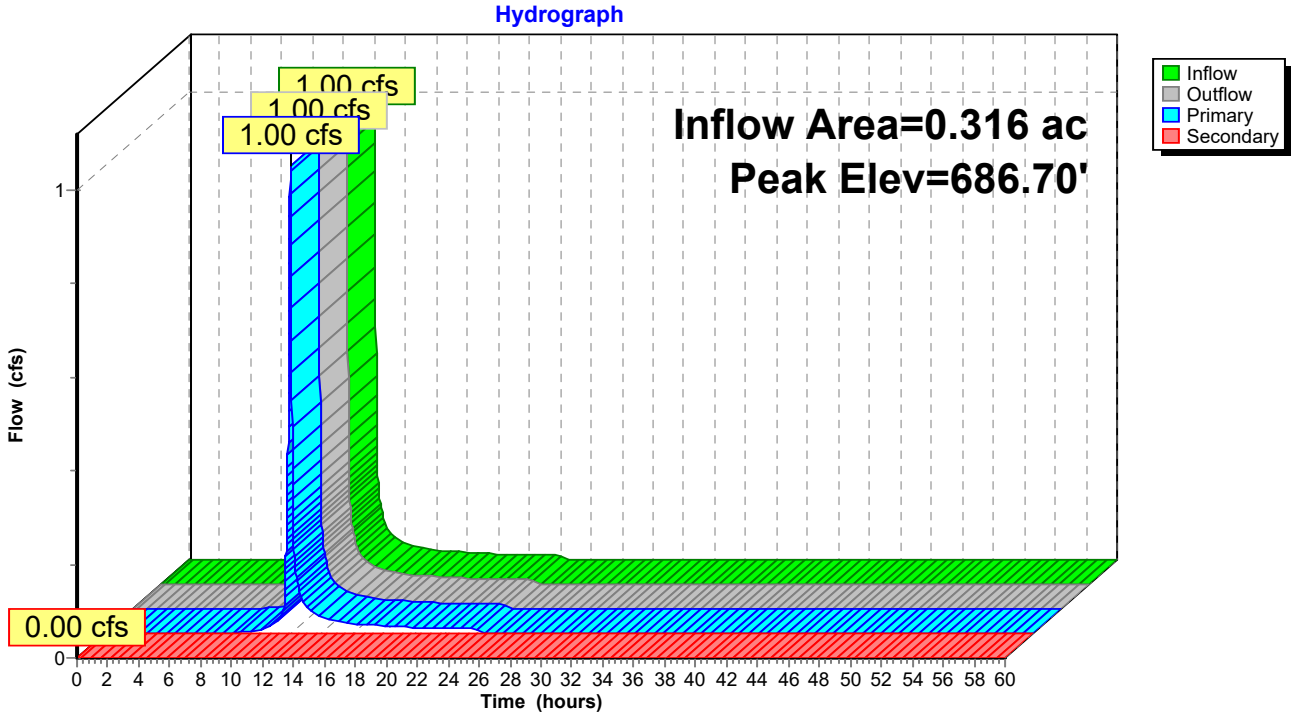
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 686.70' @ 11.99 hrs
Flood Elev= 689.68'

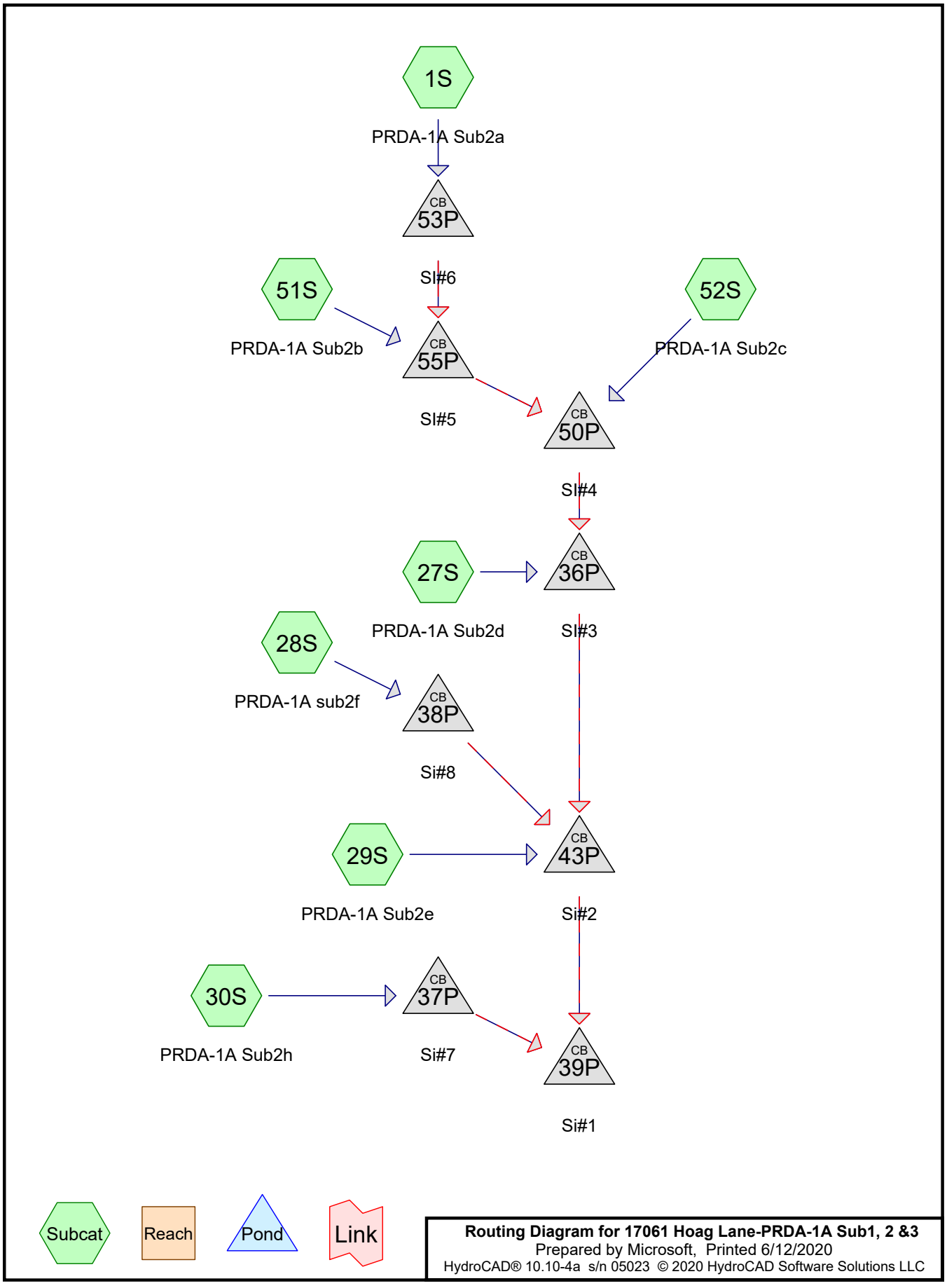
Device	Routing	Invert	Outlet Devices
#1	Primary	686.00'	**10.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 686.00' / 685.75' S= 0.0093 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	691.42'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.00 cfs @ 11.99 hrs HW=686.70' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.00 cfs @ 2.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=686.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 11P: SI #11





Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub1, 2 &3
Prepared by Microsoft, Printed 6/12/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: PRDA-1A Sub2a

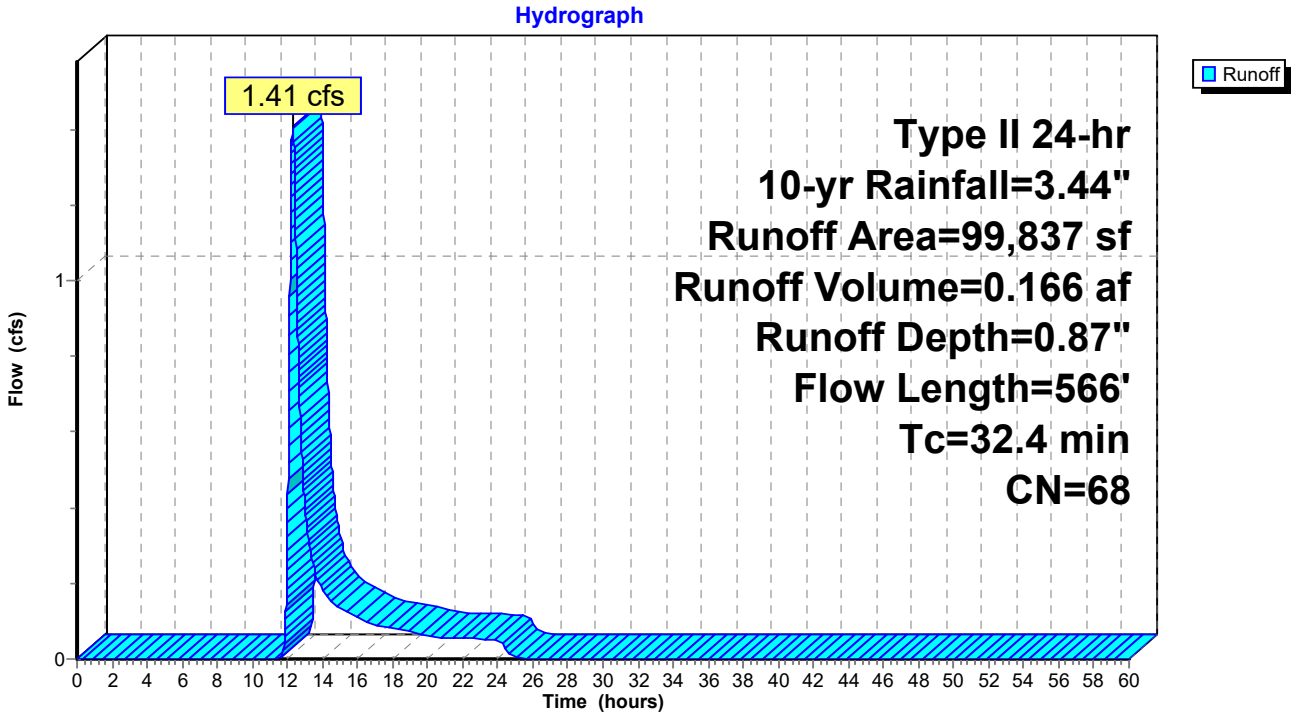
Runoff = 1.41 cfs @ 12.31 hrs, Volume= 0.166 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
32,390	74	>75% Grass cover, Good, HSG C
47,582	55	Woods, Good, HSG B
6,956	70	Woods, Good, HSG C
12,909	98	Paved parking, HSG C
99,837	68	Weighted Average
86,928		87.07% Pervious Area
12,909		12.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		**Sheet Flow, Sub1 Sheet** Woods: Dense underbrush n= 0.800 P2= 2.39"
3.3	311	0.0990	1.57		**Shallow Concentrated Flow, Sub1 Shallow** Woodland Kv= 5.0 fps
1.2	155	0.0980	2.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.4	566	Total			

Subcatchment 1S: PRDA-1A Sub2a



Summary for Subcatchment 27S: PRDA-1A Sub2d

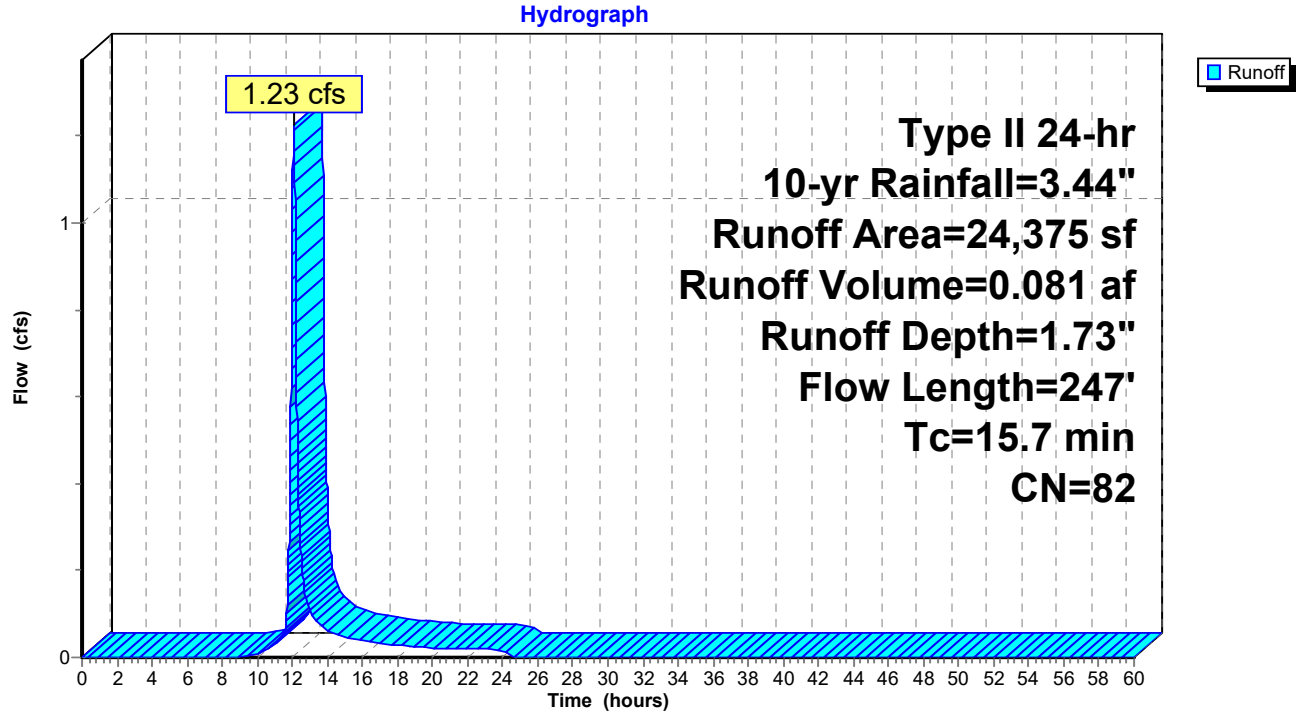
Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.081 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
15,892	74	>75% Grass cover, Good, HSG C
4,983	98	Paved parking, HSG C
3,500	98	Roofs, HSG C
24,375	82	Weighted Average
15,892		65.20% Pervious Area
8,483		34.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	100	0.0250	0.11		**Sheet Flow, Sub1 Sheet** Grass: Dense n= 0.240 P2= 2.39"
0.6	147	0.3500	4.14		**Shallow Concentrated Flow, Sub1 Shallow** Short Grass Pasture Kv= 7.0 fps
15.7	247	Total			

Subcatchment 27S: PRDA-1A Sub2d



Summary for Subcatchment 28S: PRDA-1A sub2f

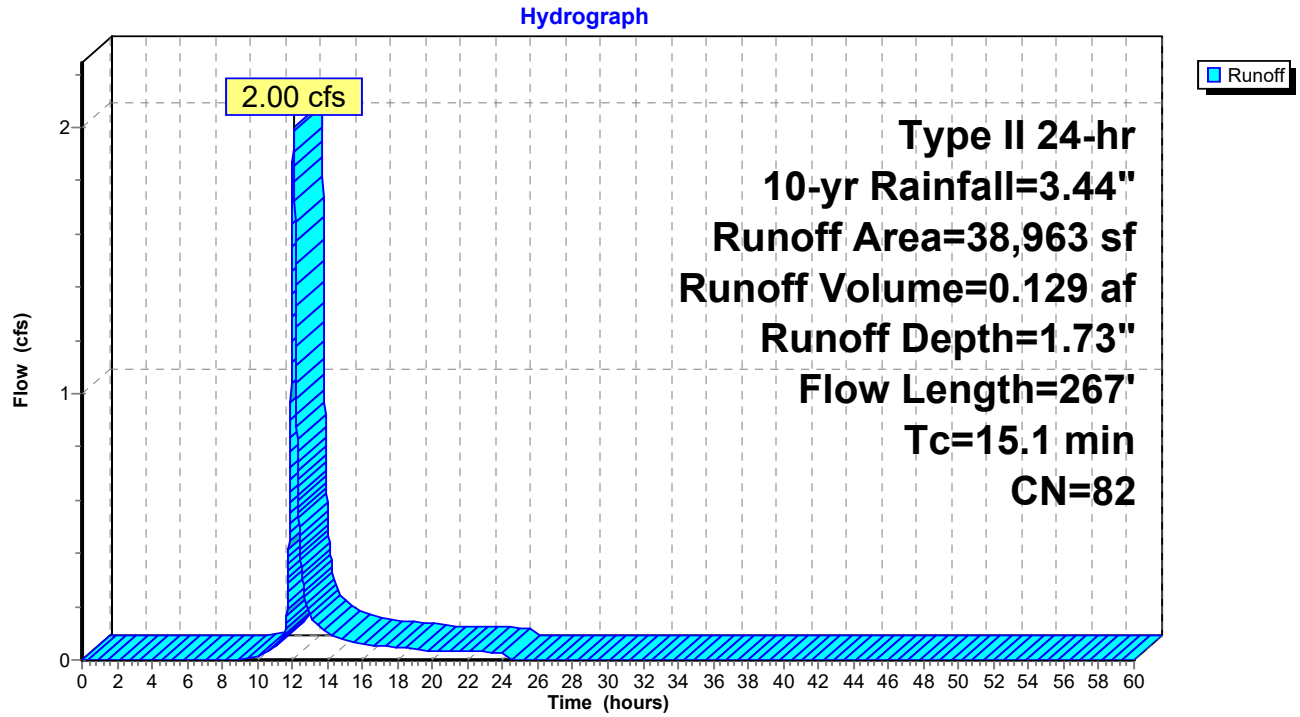
Runoff = 2.00 cfs @ 12.07 hrs, Volume= 0.129 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
26,277	74	>75% Grass cover, Good, HSG C
12,686	98	Paved parking, HSG C
38,963	82	Weighted Average
26,277		67.44% Pervious Area
12,686		32.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.7	60	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	107	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.1	267	Total			

Subcatchment 28S: PRDA-1A sub2f



Summary for Subcatchment 29S: PRDA-1A Sub2e

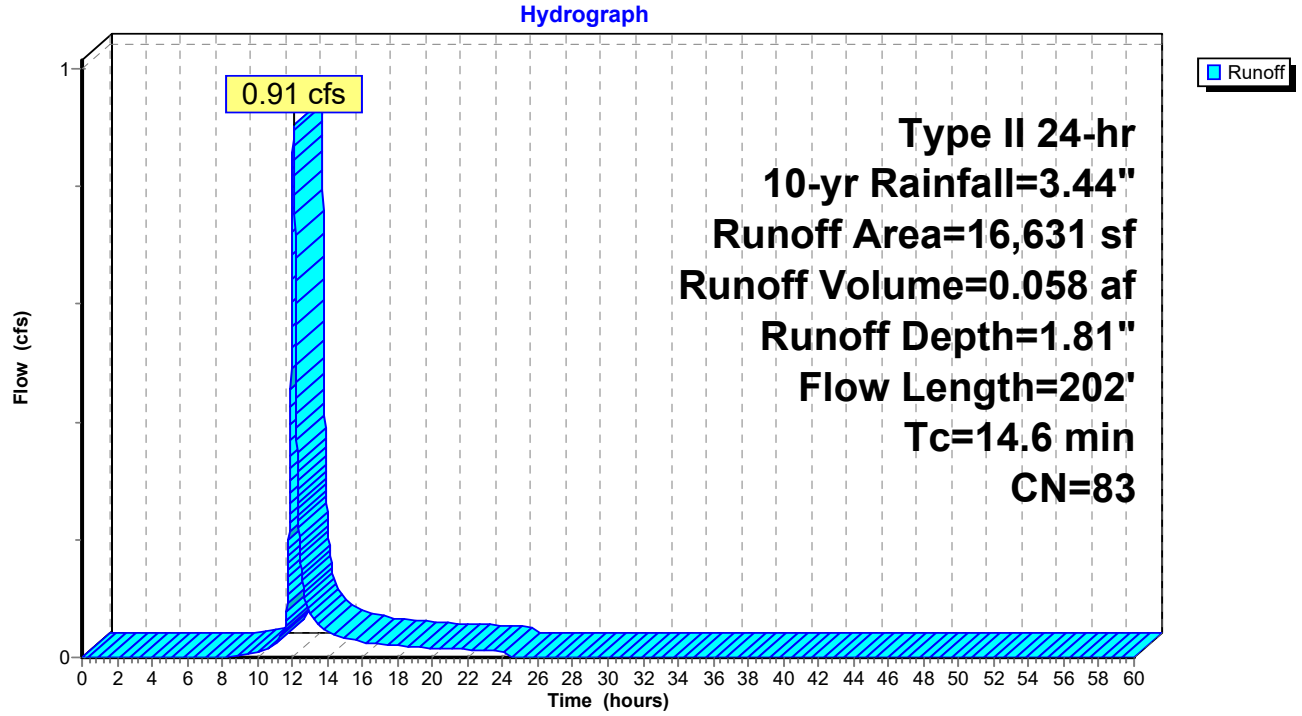
Runoff = 0.91 cfs @ 12.07 hrs, Volume= 0.058 af, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
10,673	74	>75% Grass cover, Good, HSG C
2,458	98	Paved parking, HSG C
3,500	98	Roofs, HSG C
16,631	83	Weighted Average
10,673		64.18% Pervious Area
5,958		35.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	82	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.5	120	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.6	202	Total			

Subcatchment 29S: PRDA-1A Sub2e



Summary for Subcatchment 30S: PRDA-1A Sub2h

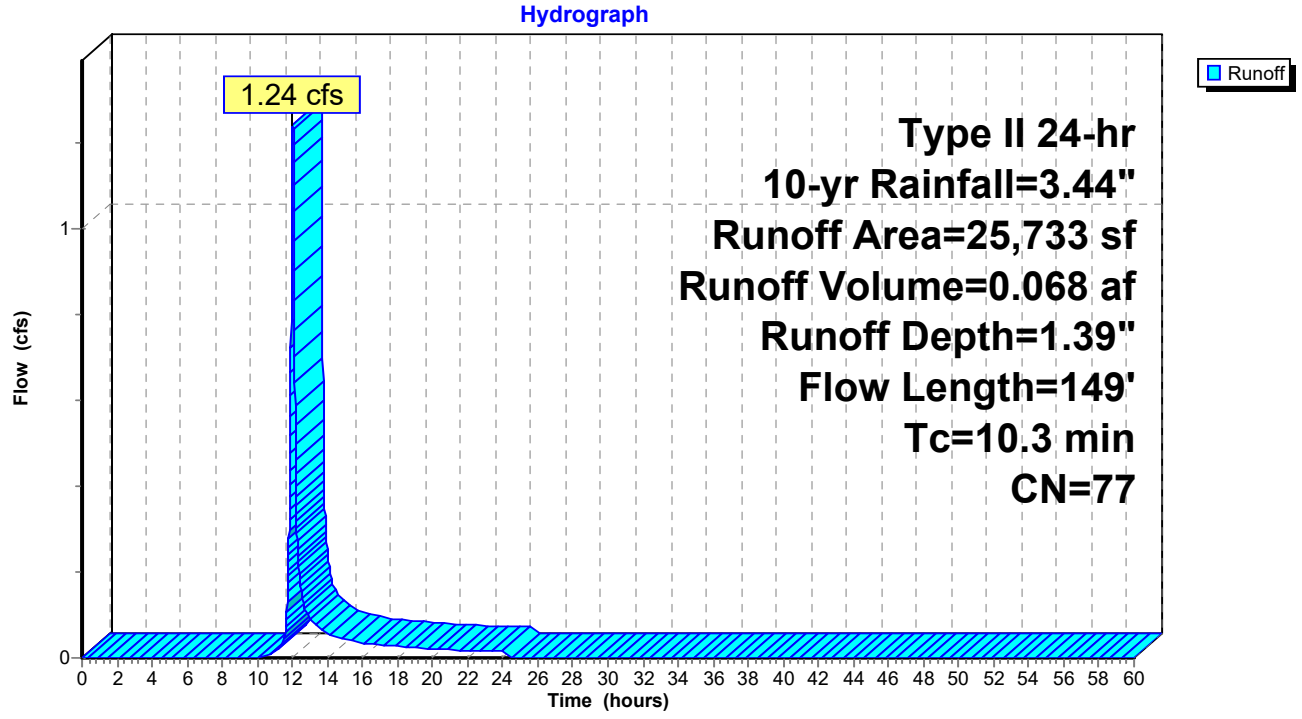
Runoff = 1.24 cfs @ 12.03 hrs, Volume= 0.068 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
22,325	74	>75% Grass cover, Good, HSG C
3,408	98	Paved parking, HSG C
25,733	77	Weighted Average
22,325		86.76% Pervious Area
3,408		13.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	76	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.3	73	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.3	149	Total			

Subcatchment 30S: PRDA-1A Sub2h



Summary for Subcatchment 51S: PRDA-1A Sub2b

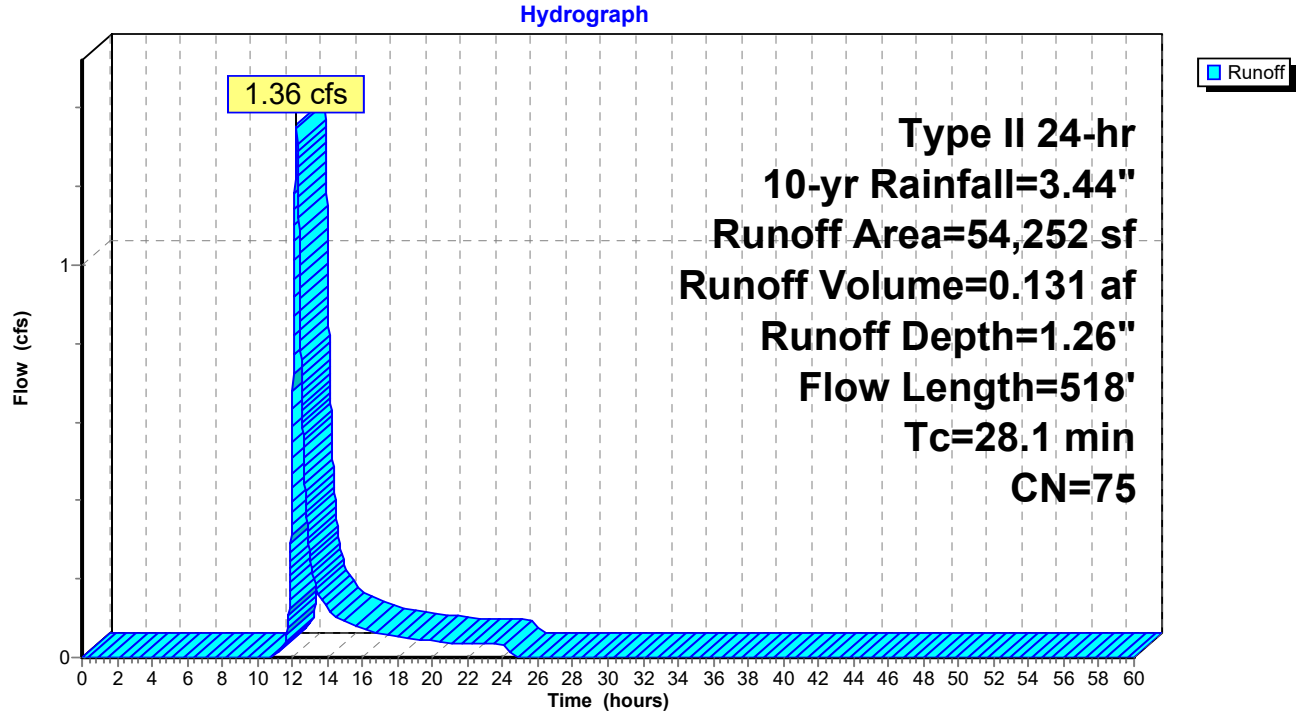
Runoff = 1.36 cfs @ 12.24 hrs, Volume= 0.131 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
27,099	74	>75% Grass cover, Good, HSG C
7,888	55	Woods, Good, HSG B
8,073	70	Woods, Good, HSG C
6,997	98	Paved parking, HSG C
4,195	96	Gravel surface, HSG C
54,252	75	Weighted Average
47,255		87.10% Pervious Area
6,997		12.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0800	0.07		**Sheet Flow, Sub1 Sheet** Woods: Dense underbrush n= 0.800 P2= 2.39"
1.2	144	0.1530	1.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.1	274	0.0985	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
28.1	518	Total			

Subcatchment 51S: PRDA-1A Sub2b



Summary for Subcatchment 52S: PRDA-1A Sub2c

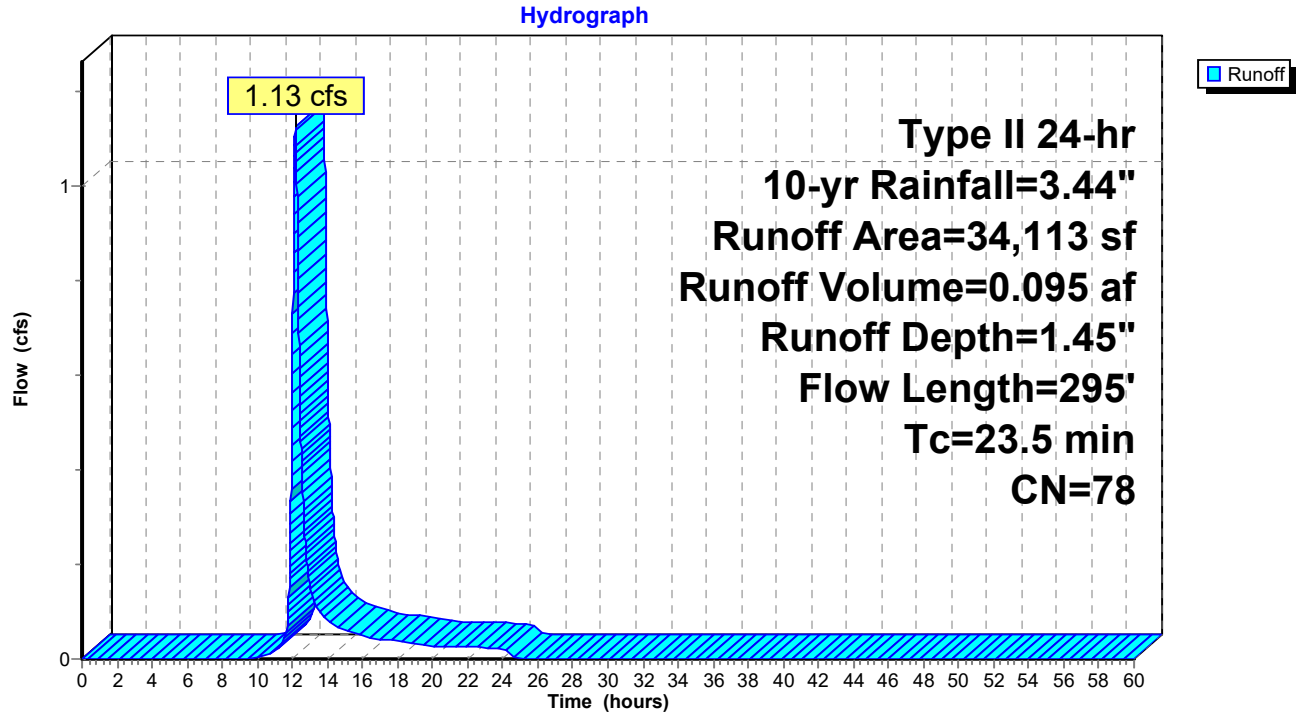
Runoff = 1.13 cfs @ 12.17 hrs, Volume= 0.095 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
25,970	74	>75% Grass cover, Good, HSG C
1,664	70	Woods, Good, HSG C
2,929	98	Paved parking, HSG C
3,550	96	Gravel surface, HSG C
34,113	78	Weighted Average
31,184		91.41% Pervious Area
2,929		8.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	58	0.0400	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
0.5	42	0.0429	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	195	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.5	295	Total			

Subcatchment 52S: PRDA-1A Sub2c



Summary for Pond 36P: SI#3

Inflow Area = 4.880 ac, 14.73% Impervious, Inflow Depth = 1.16" for 10-yr event
Inflow = 4.49 cfs @ 12.20 hrs, Volume= 0.472 af
Outflow = 4.49 cfs @ 12.20 hrs, Volume= 0.472 af, Atten= 0%, Lag= 0.0 min
Primary = 4.49 cfs @ 12.20 hrs, Volume= 0.472 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

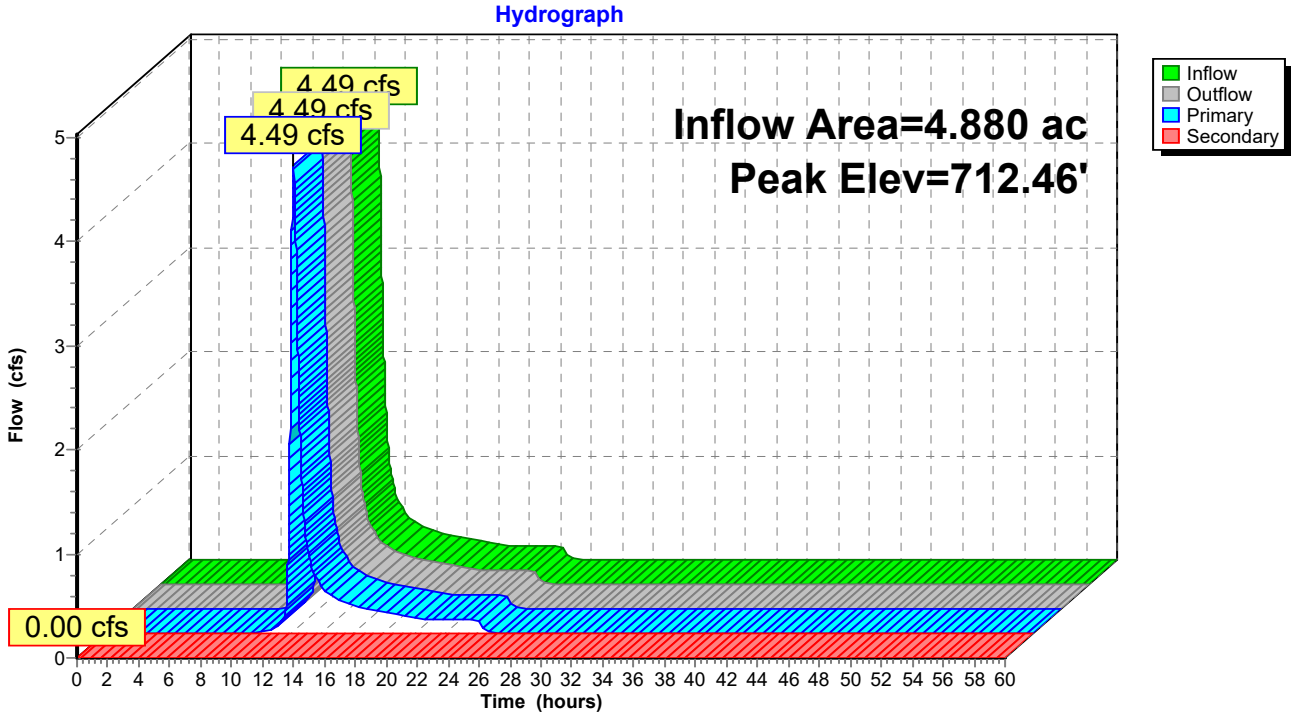
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 712.46' @ 12.20 hrs
Flood Elev= 715.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	711.25'	**18.0" Round Culvert** L= 155.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 711.25' / 707.25' S= 0.0258 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	715.90'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.49 cfs @ 12.20 hrs HW=712.46' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.49 cfs @ 2.95 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=711.25' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 36P: SI#3



Summary for Pond 37P: Si#7

Inflow Area = 0.591 ac, 13.24% Impervious, Inflow Depth = 1.39" for 10-yr event
Inflow = 1.24 cfs @ 12.03 hrs, Volume= 0.068 af
Outflow = 1.24 cfs @ 12.03 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min
Primary = 1.24 cfs @ 12.03 hrs, Volume= 0.068 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

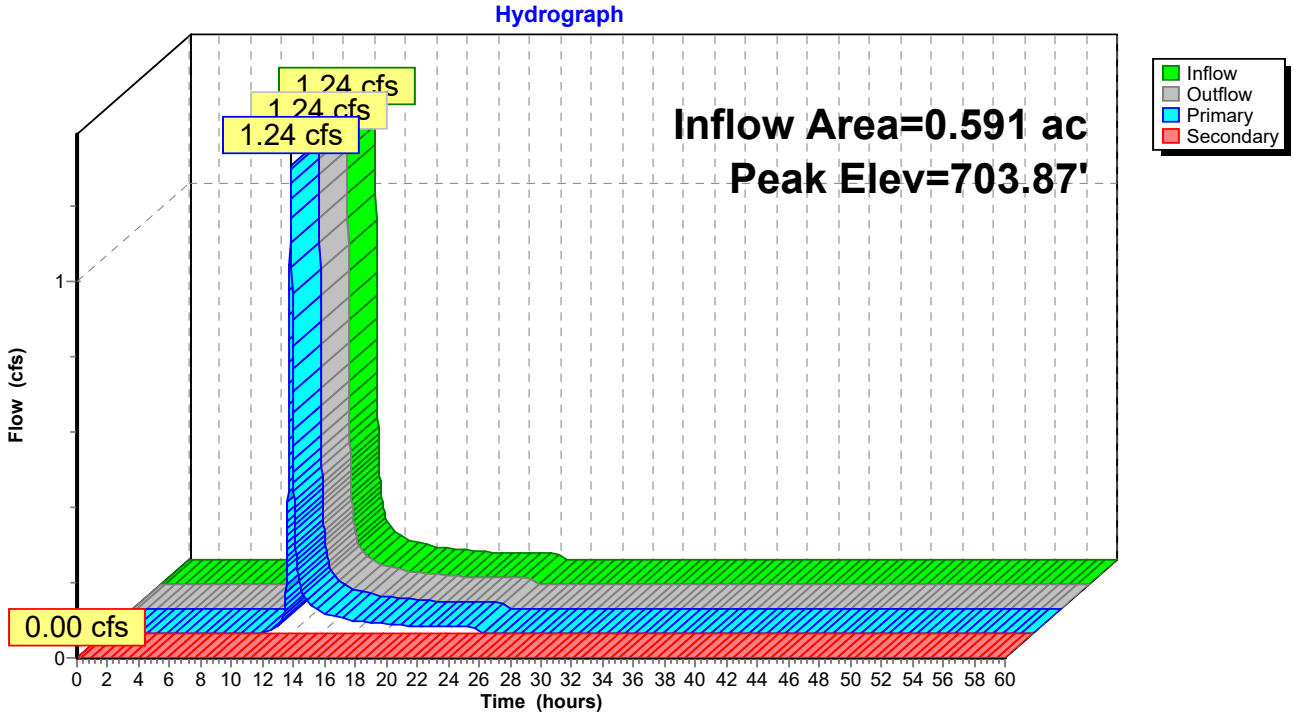
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 703.87' @ 12.03 hrs
Flood Elev= 709.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	703.10'	**10.0" Round Culvert** L= 37.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 703.10' / 702.10' S= 0.0270 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	709.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.25 cfs @ 12.03 hrs HW=703.87' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.25 cfs @ 2.36 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=703.10' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 37P: Si#7



Summary for Pond 38P: Si#8

Inflow Area = 0.894 ac, 32.56% Impervious, Inflow Depth = 1.73" for 10-yr event
Inflow = 2.00 cfs @ 12.07 hrs, Volume= 0.129 af
Outflow = 2.00 cfs @ 12.07 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min
Primary = 2.00 cfs @ 12.07 hrs, Volume= 0.129 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

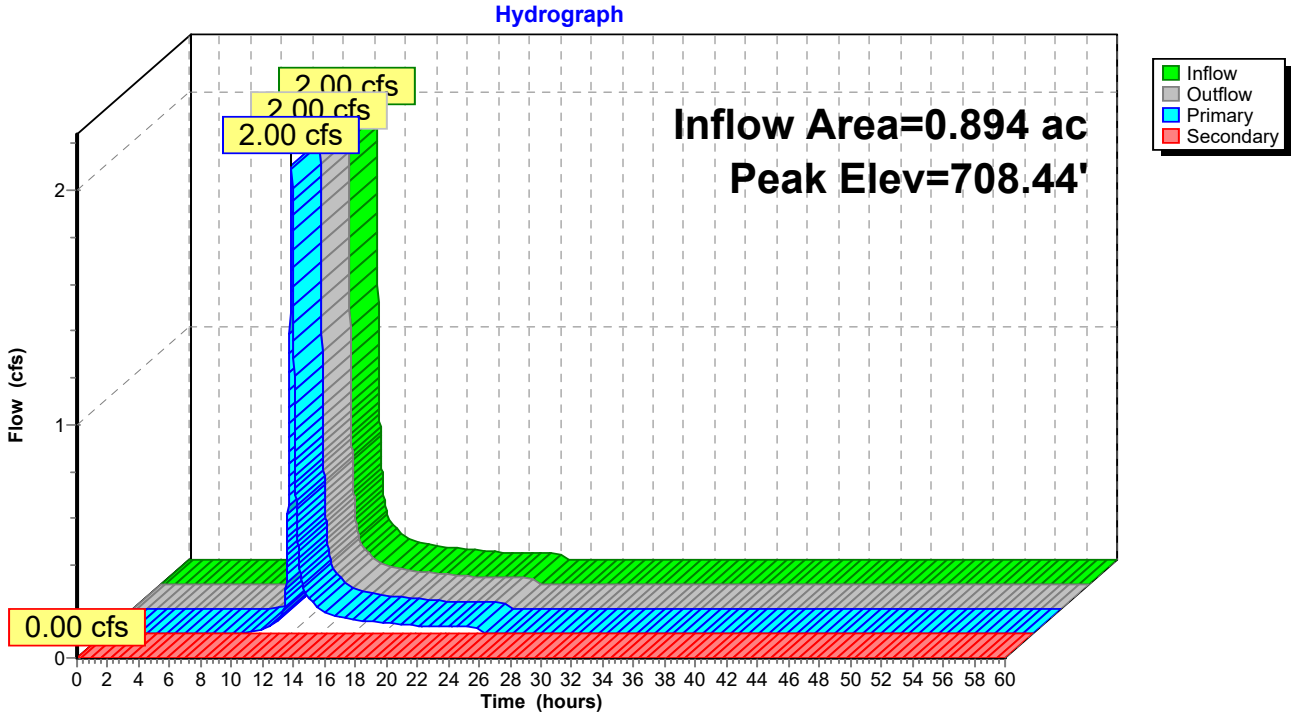
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 708.44' @ 12.07 hrs
Flood Elev= 710.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	707.50'	**12.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 707.50' / 706.75' S= 0.0288 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	710.55'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.00 cfs @ 12.07 hrs HW=708.44' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.00 cfs @ 2.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=707.50' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 38P: Si#8



Summary for Pond 39P: Si#1

Inflow Area = 6.747 ac, 18.16% Impervious, Inflow Depth = 1.29" for 10-yr event
Inflow = 7.73 cfs @ 12.09 hrs, Volume= 0.727 af
Outflow = 7.73 cfs @ 12.09 hrs, Volume= 0.727 af, Atten= 0%, Lag= 0.0 min
Primary = 7.73 cfs @ 12.09 hrs, Volume= 0.727 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

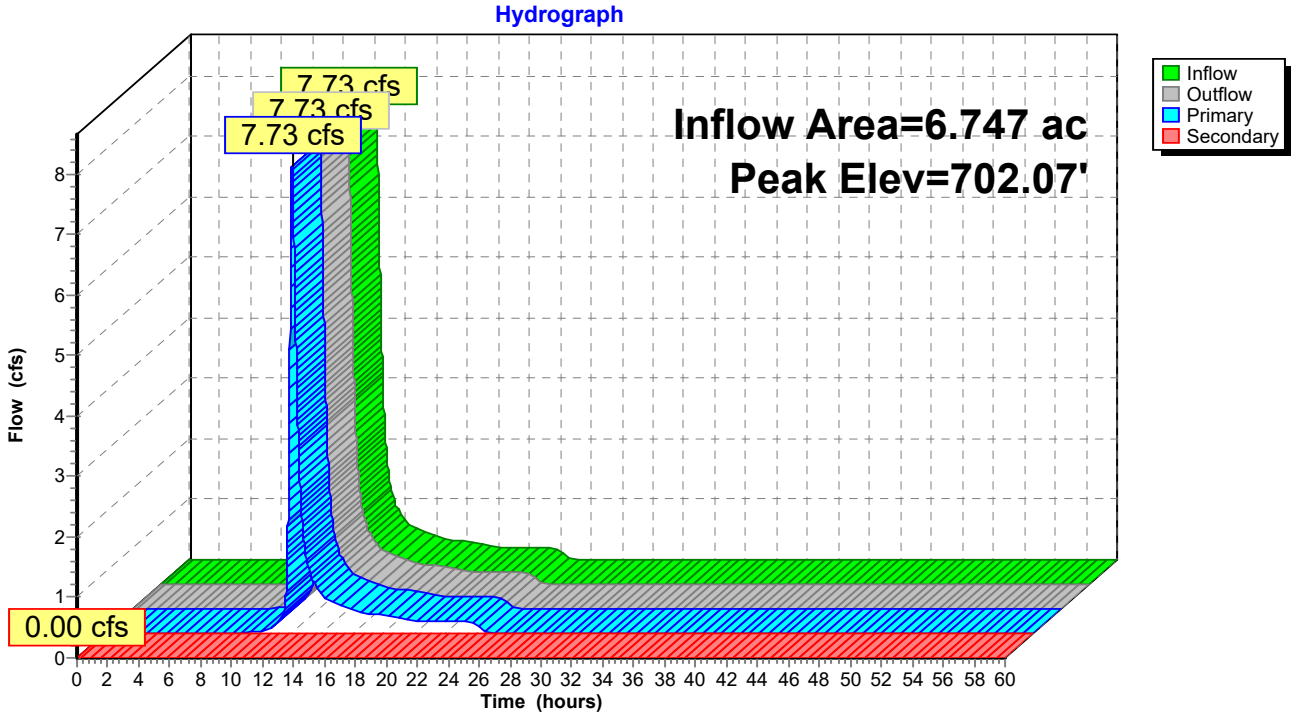
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 702.07' @ 12.09 hrs
Flood Elev= 707.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	700.00'	**18.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 700.00' / 694.00' S= 0.0408 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	707.75'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.72 cfs @ 12.09 hrs HW=702.07' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.72 cfs @ 4.37 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=700.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 39P: Si#1



Summary for Pond 43P: Si#2

Inflow Area = 6.156 ac, 18.63% Impervious, Inflow Depth = 1.28" for 10-yr event
Inflow = 6.87 cfs @ 12.12 hrs, Volume= 0.659 af
Outflow = 6.87 cfs @ 12.12 hrs, Volume= 0.659 af, Atten= 0%, Lag= 0.0 min
Primary = 6.87 cfs @ 12.12 hrs, Volume= 0.659 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

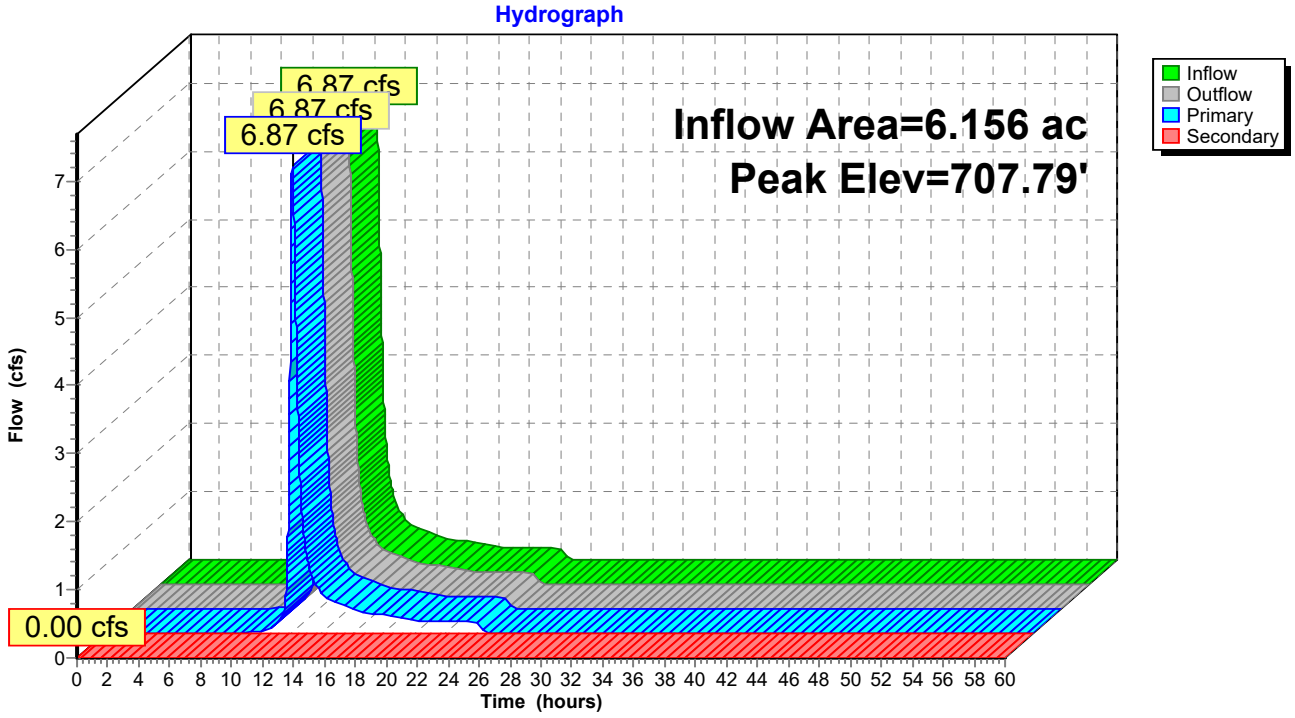
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 707.79' @ 12.12 hrs
Flood Elev= 710.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	706.00'	**18.0" Round Culvert** L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 706.00' / 702.10' S= 0.1625 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	710.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.87 cfs @ 12.12 hrs HW=707.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.87 cfs @ 3.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=706.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 43P: Si#2



Summary for Pond 50P: SI#4

Inflow Area = 4.321 ac, 12.13% Impervious, Inflow Depth = 1.09" for 10-yr event
Inflow = 3.74 cfs @ 12.24 hrs, Volume= 0.391 af
Outflow = 3.74 cfs @ 12.24 hrs, Volume= 0.391 af, Atten= 0%, Lag= 0.0 min
Primary = 3.74 cfs @ 12.24 hrs, Volume= 0.391 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

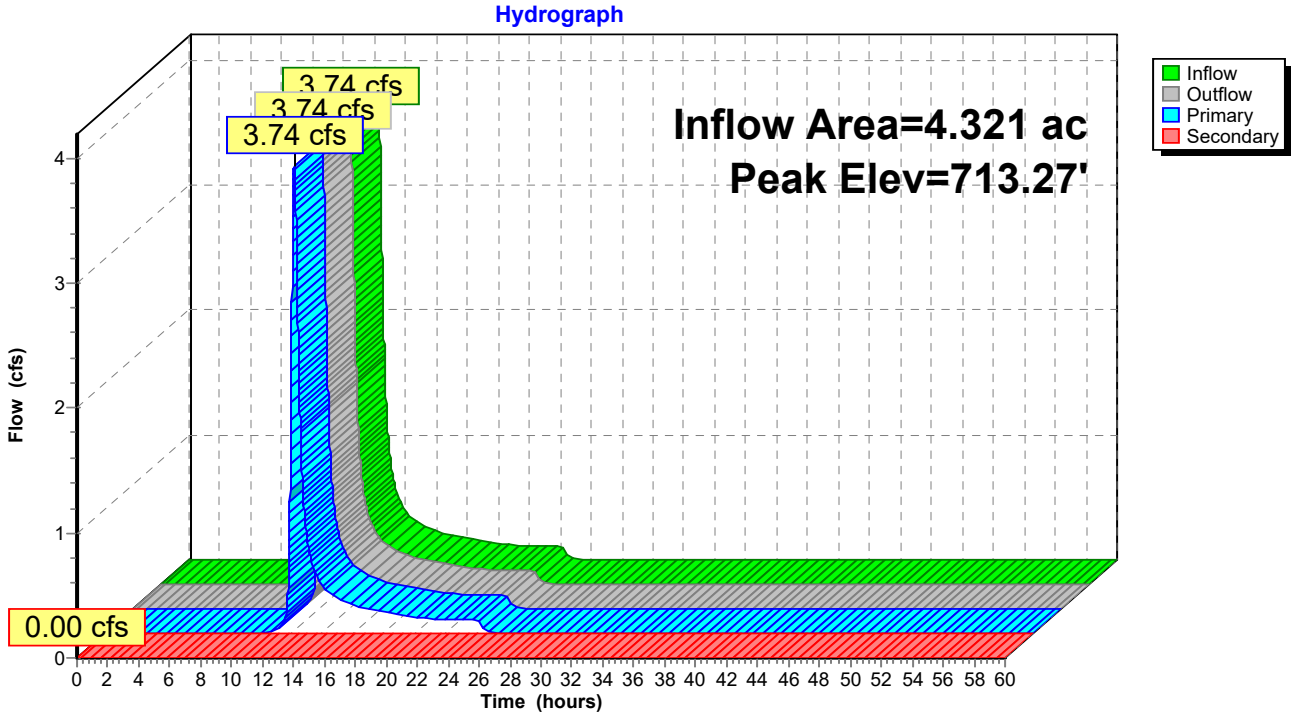
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 713.27' @ 12.24 hrs
Flood Elev= 716.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	712.00'	**15.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 712.00' / 711.50' S= 0.0192 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf
#2	Secondary	716.05'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.74 cfs @ 12.24 hrs HW=713.27' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.74 cfs @ 3.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 50P: SI#4



Summary for Pond 53P: SI#6

Inflow Area = 2.292 ac, 12.93% Impervious, Inflow Depth = 0.87" for 10-yr event
Inflow = 1.41 cfs @ 12.31 hrs, Volume= 0.166 af
Outflow = 1.41 cfs @ 12.31 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Primary = 1.41 cfs @ 12.31 hrs, Volume= 0.166 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

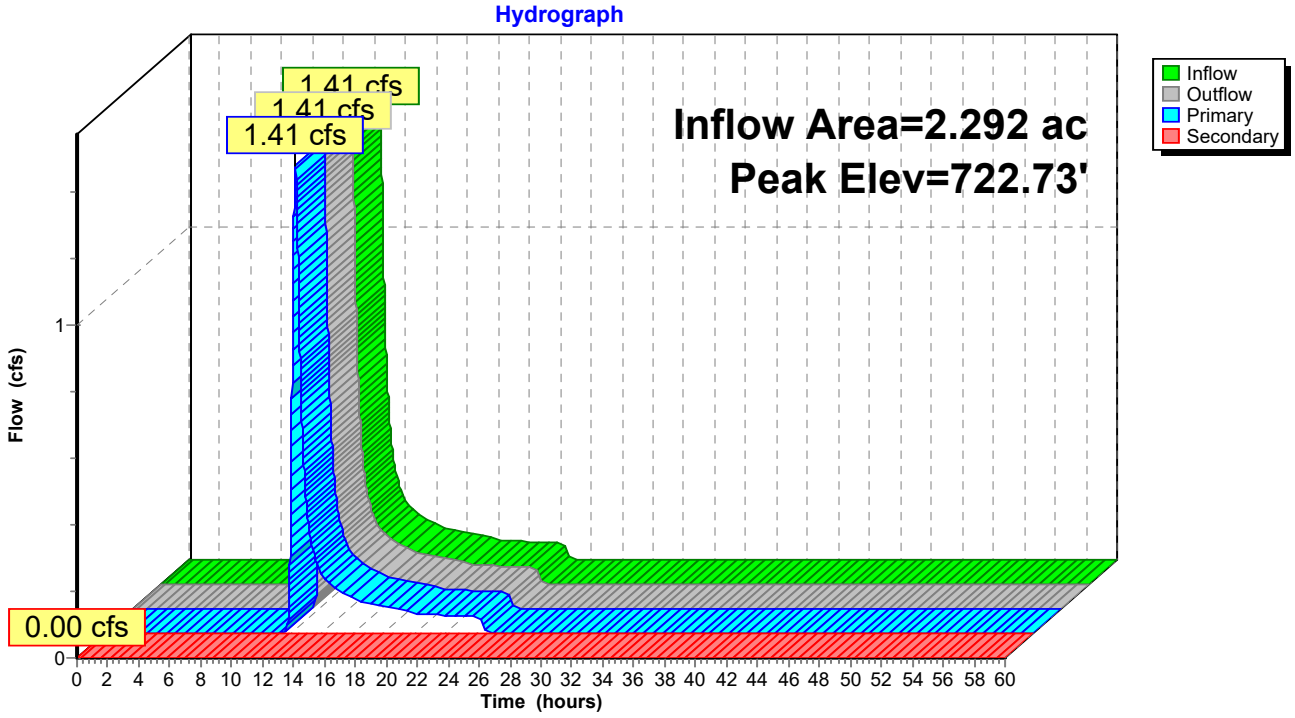
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 722.73' @ 12.31 hrs
Flood Elev= 725.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	722.00'	**12.0" Round Culvert** L= 124.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 722.00' / 718.50' S= 0.0282 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	725.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.41 cfs @ 12.31 hrs HW=722.73' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.41 cfs @ 2.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=722.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 53P: SI#6



Summary for Pond 55P: SI#5

Inflow Area = 3.537 ac, 12.92% Impervious, Inflow Depth = 1.00" for 10-yr event
Inflow = 2.73 cfs @ 12.27 hrs, Volume= 0.296 af
Outflow = 2.73 cfs @ 12.27 hrs, Volume= 0.296 af, Atten= 0%, Lag= 0.0 min
Primary = 2.73 cfs @ 12.27 hrs, Volume= 0.296 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

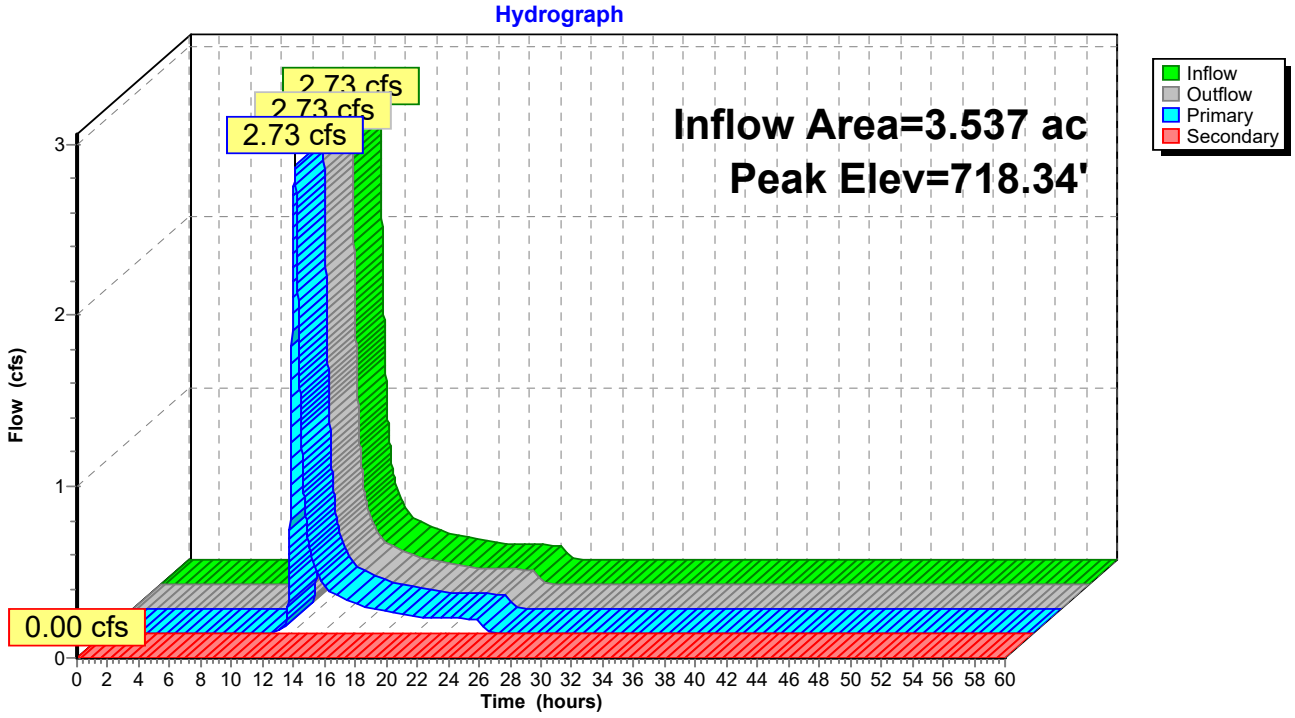
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 718.34' @ 12.27 hrs
Flood Elev= 721.50'

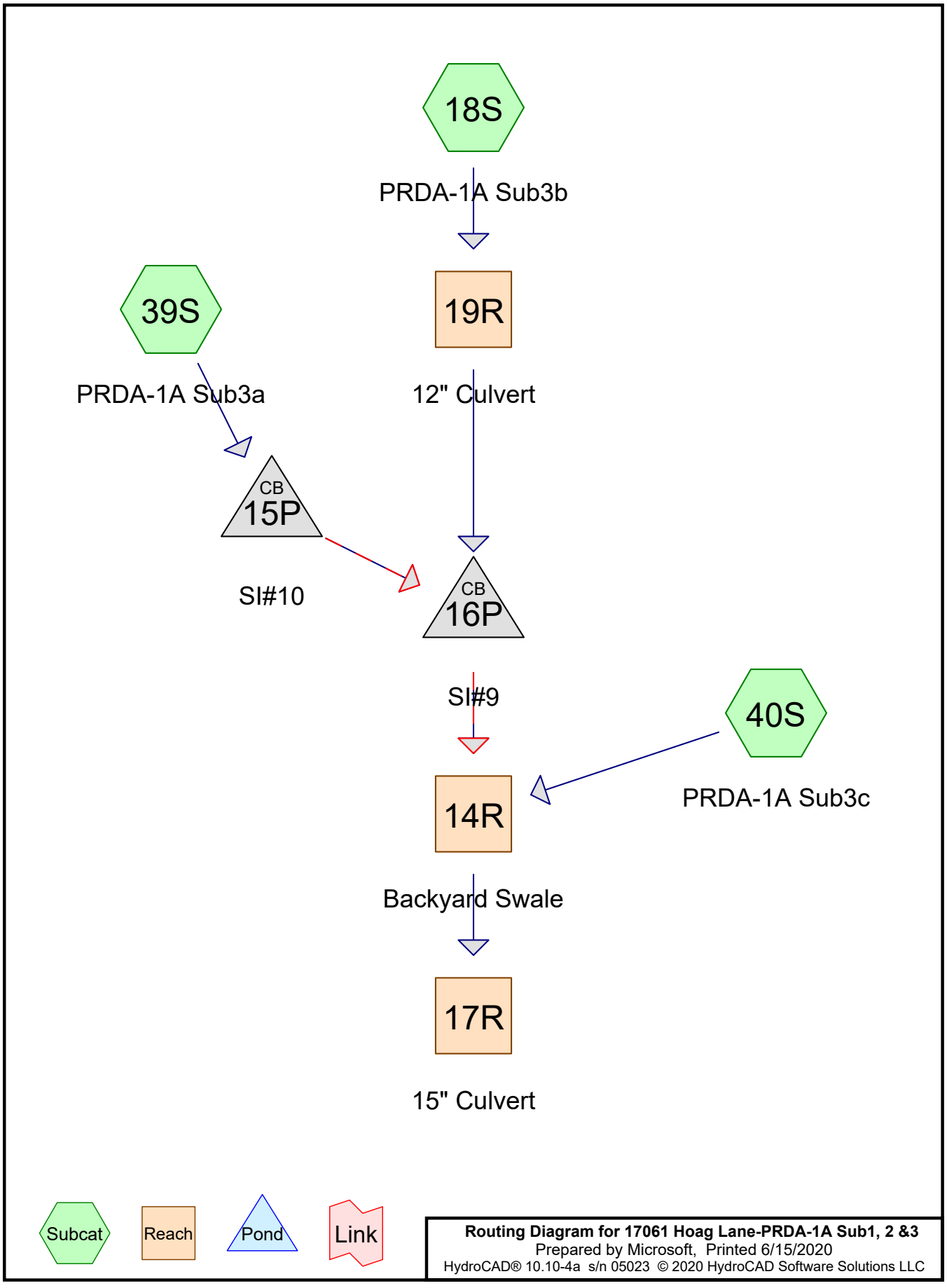
Device	Routing	Invert	Outlet Devices
#1	Primary	717.00'	**12.0" Round Culvert** L= 139.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 717.00' / 713.50' S= 0.0252 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	721.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.73 cfs @ 12.27 hrs HW=718.34' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.73 cfs @ 3.48 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=717.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 55P: SI#5





Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub1, 2 &3
Prepared by Microsoft, Printed 6/15/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 18S: PRDA-1A Sub3b

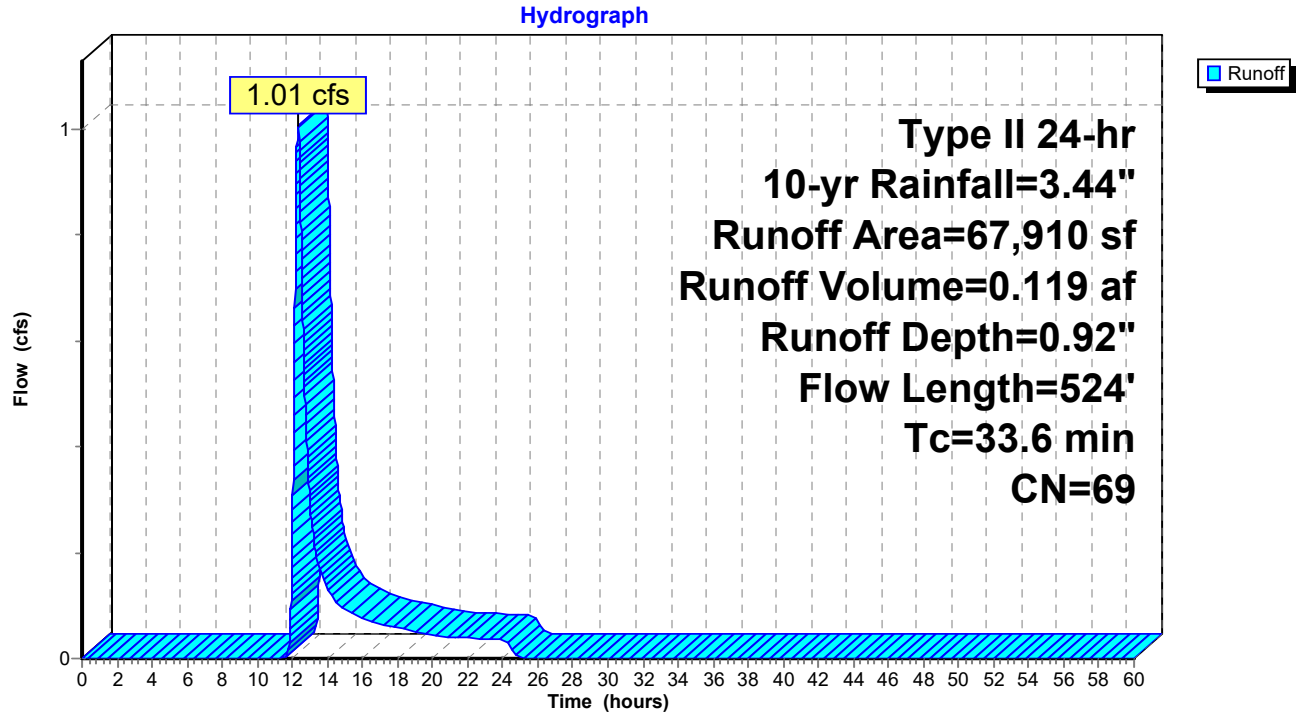
Runoff = 1.01 cfs @ 12.32 hrs, Volume= 0.119 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
26,033	74	>75% Grass cover, Good, HSG C
4,909	70	Woods, Good, HSG C
28,456	55	Woods, Good, HSG B
8,512	98	Paved parking, HSG C
67,910	69	Weighted Average
59,398		87.47% Pervious Area
8,512		12.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	100	0.0500	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
2.5	221	0.0860	1.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	151	0.1600	2.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	52	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.6	524	Total			

Subcatchment 18S: PRDA-1A Sub3b



Summary for Subcatchment 39S: PRDA-1A Sub3a

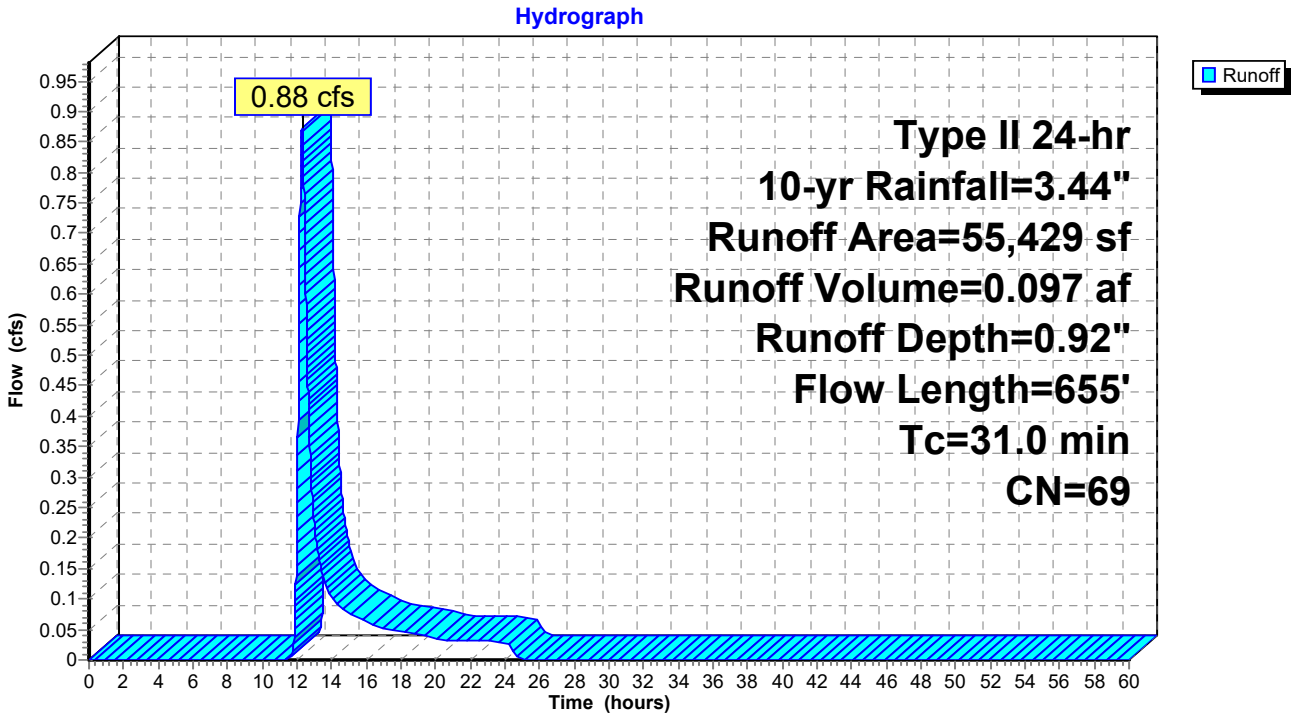
Runoff = 0.88 cfs @ 12.29 hrs, Volume= 0.097 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
37,048	74	>75% Grass cover, Good, HSG C
4,570	70	Woods, Good, HSG C
13,811	55	Woods, Good, HSG B
55,429	69	Weighted Average
55,429		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.2	100	0.0700	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
1.2	119	0.1090	1.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.6	436	0.0820	2.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
31.0	655	Total			

Subcatchment 39S: PRDA-1A Sub3a



Summary for Subcatchment 40S: PRDA-1A Sub3c

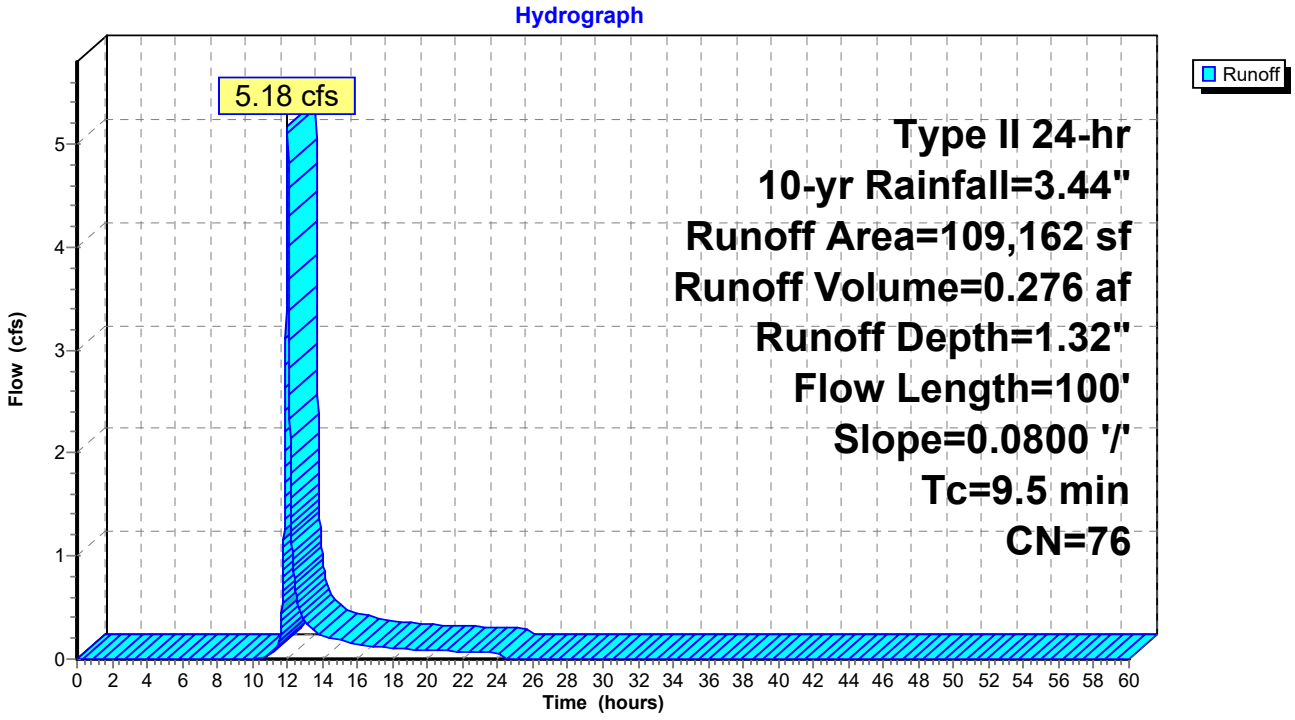
Runoff = 5.18 cfs @ 12.02 hrs, Volume= 0.276 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
102,162	74	>75% Grass cover, Good, HSG C
7,000	98	Roofs, HSG C
109,162	76	Weighted Average
102,162		93.59% Pervious Area
7,000		6.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0800	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 40S: PRDA-1A Sub3c



Summary for Reach 14R: Backyard Swale

Inflow Area = 5.337 ac, 6.67% Impervious, Inflow Depth = 1.11" for 10-yr event
Inflow = 5.73 cfs @ 12.02 hrs, Volume= 0.493 af
Outflow = 5.63 cfs @ 12.07 hrs, Volume= 0.493 af, Atten= 2%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.78 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.96 fps, Avg. Travel Time= 3.0 min

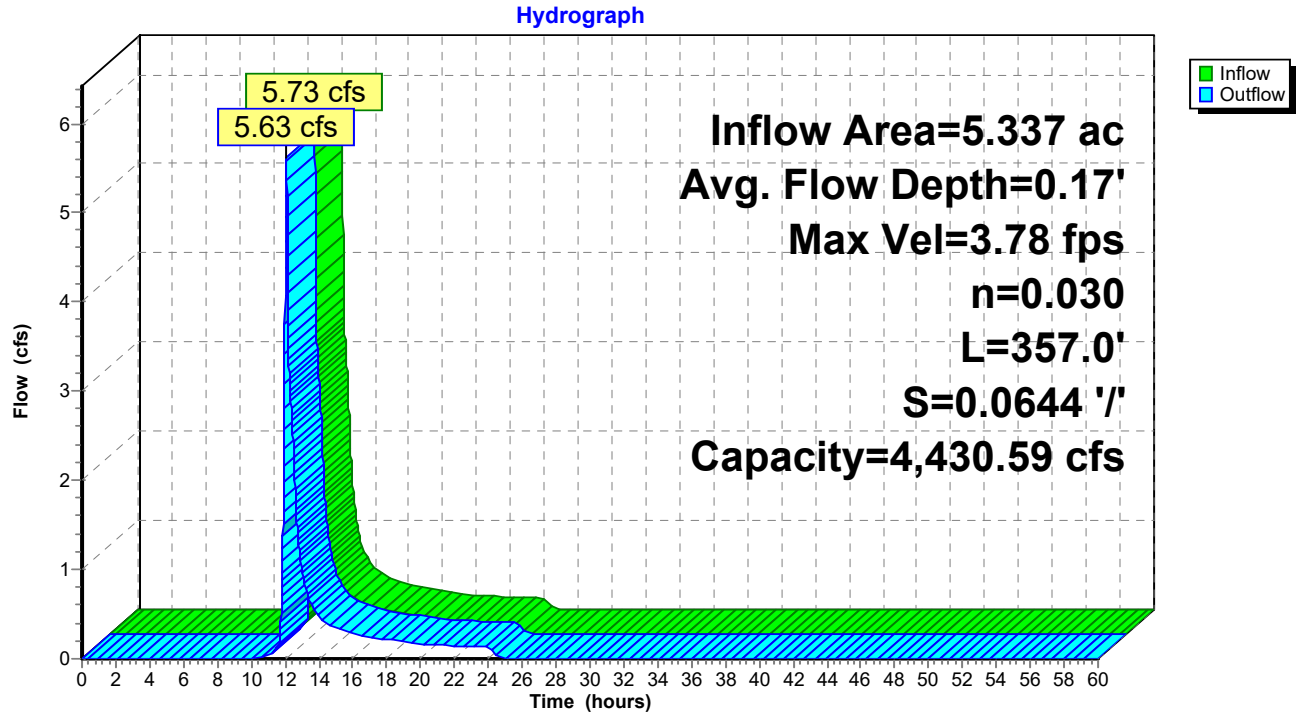
Peak Storage= 532 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 9.05'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 4,430.59 cfs

8.00' x 6.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 44.00'
Length= 357.0' Slope= 0.0644 '/'
Inlet Invert= 716.00', Outlet Invert= 693.00'



‡

Reach 14R: Backyard Swale



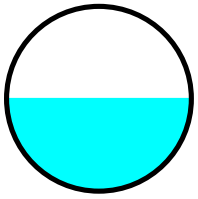
Summary for Reach 17R: 15" Culvert

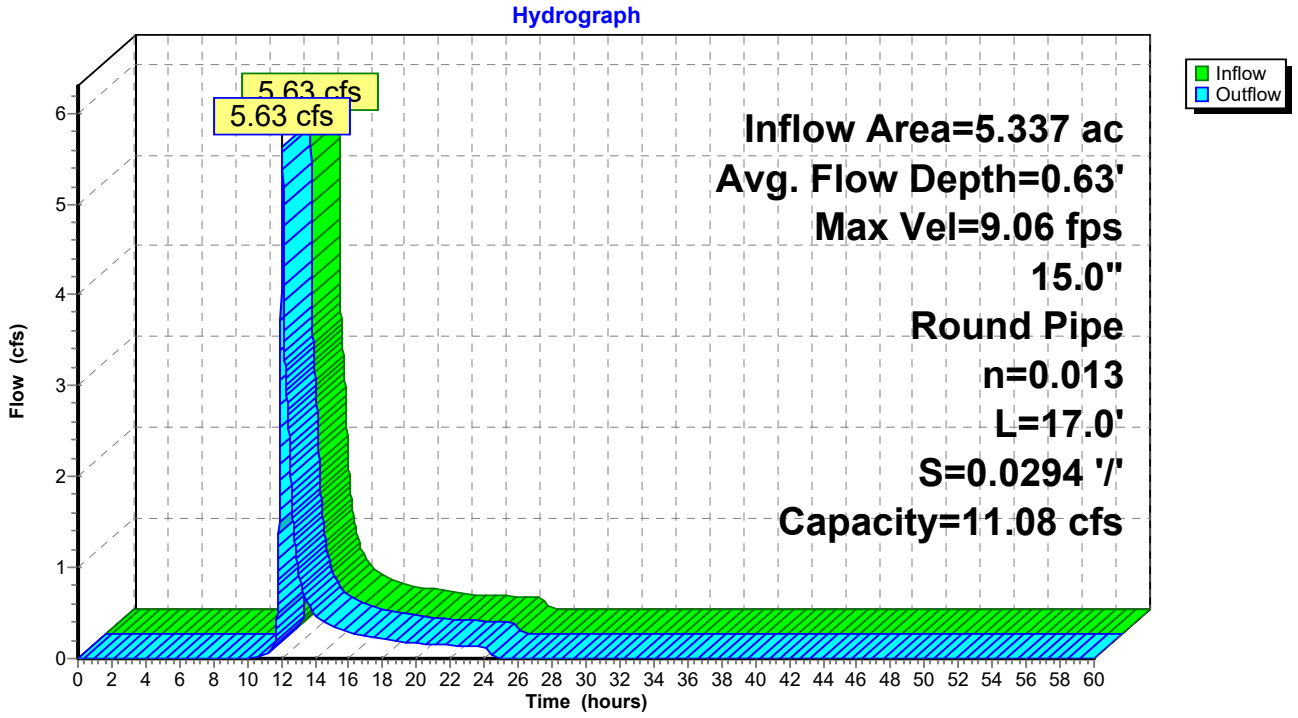
Inflow Area = 5.337 ac, 6.67% Impervious, Inflow Depth = 1.11" for 10-yr event
Inflow = 5.63 cfs @ 12.07 hrs, Volume= 0.493 af
Outflow = 5.63 cfs @ 12.07 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.06 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.52 fps, Avg. Travel Time= 0.1 min

Peak Storage= 11 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.63' , Surface Width= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 11.08 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 17.0' Slope= 0.0294 '/'
Inlet Invert= 689.00', Outlet Invert= 688.50'





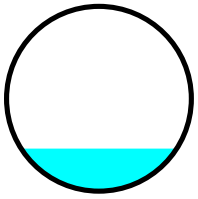
Summary for Reach 19R: 12" Culvert

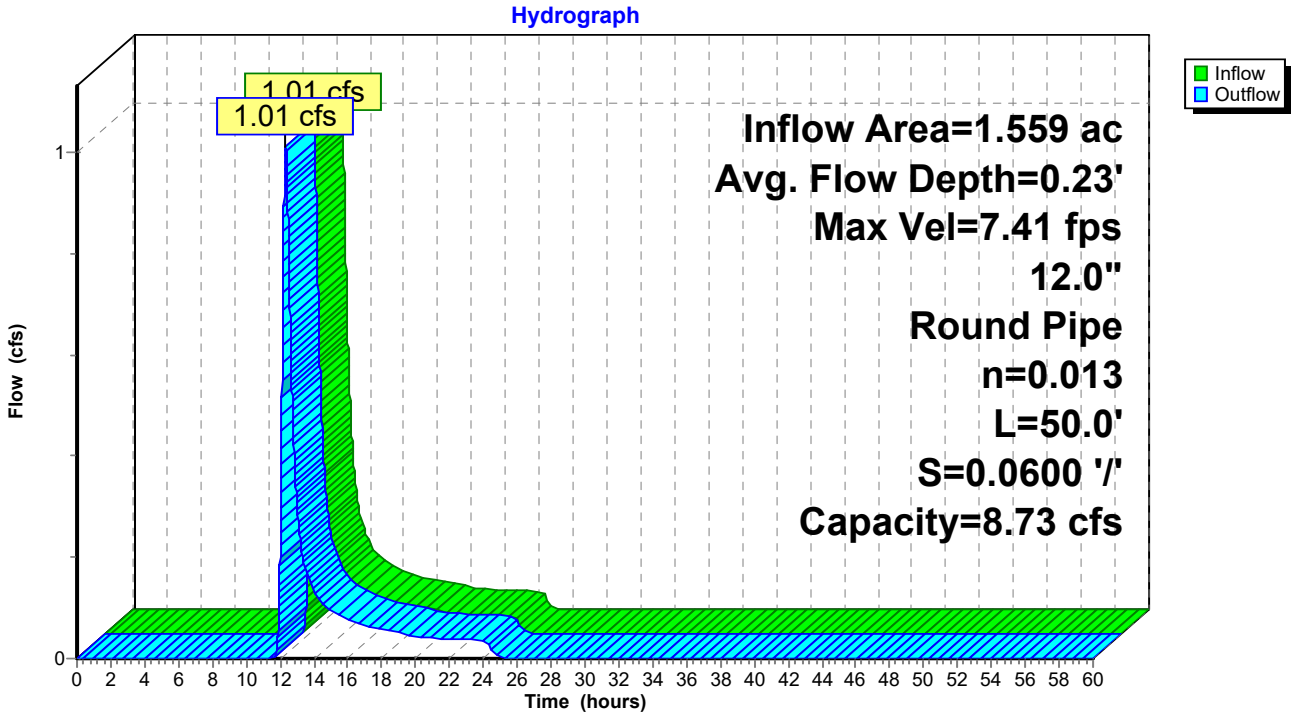
Inflow Area = 1.559 ac, 12.53% Impervious, Inflow Depth = 0.92" for 10-yr event
Inflow = 1.01 cfs @ 12.32 hrs, Volume= 0.119 af
Outflow = 1.01 cfs @ 12.33 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.41 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.25 fps, Avg. Travel Time= 0.3 min

Peak Storage= 7 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 0.84'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.73 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 50.0' Slope= 0.0600 '/'
Inlet Invert= 723.00', Outlet Invert= 720.00'





Summary for Pond 15P: SI#10

Inflow Area = 1.272 ac, 0.00% Impervious, Inflow Depth = 0.92" for 10-yr event
Inflow = 0.88 cfs @ 12.29 hrs, Volume= 0.097 af
Outflow = 0.88 cfs @ 12.29 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.29 hrs, Volume= 0.097 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

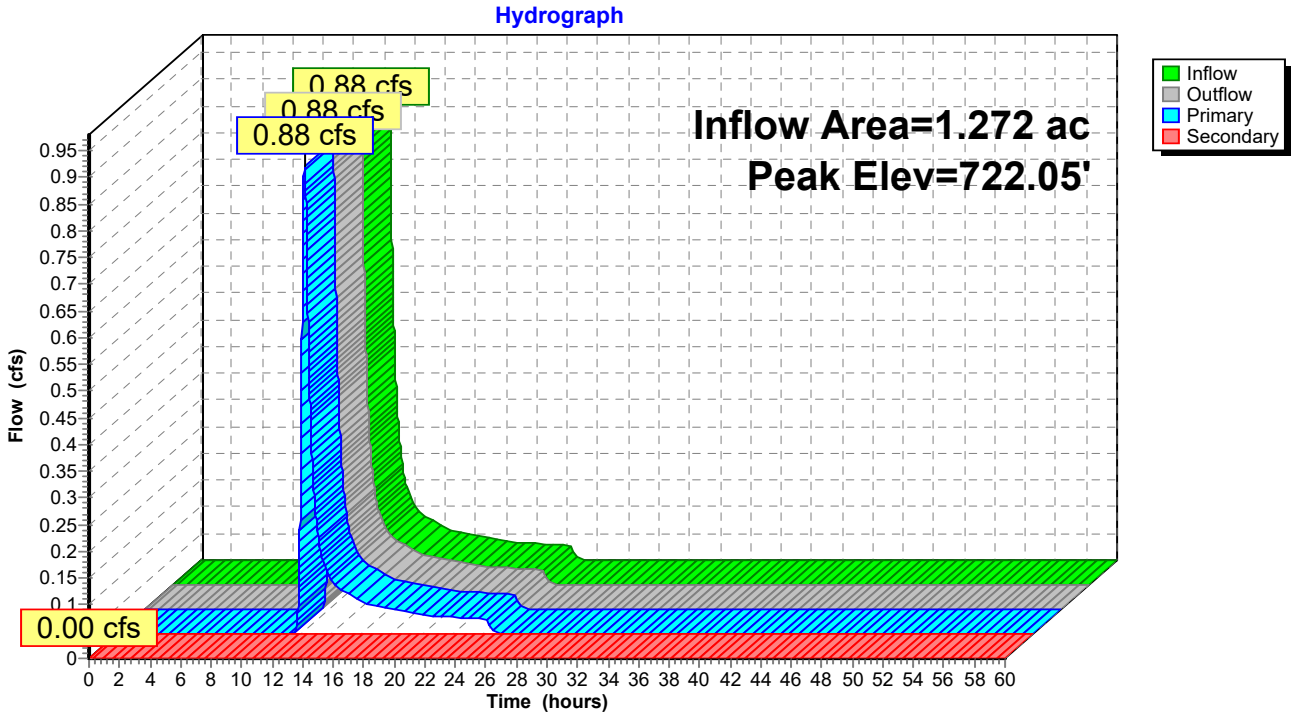
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 722.05' @ 12.29 hrs
Flood Elev= 724.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	721.50'	**12.0" Round Culvert** L= 81.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 721.50' / 720.00' S= 0.0185 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	724.65'	**24.0" Horiz. Rim** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.87 cfs @ 12.29 hrs HW=722.05' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.87 cfs @ 1.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=721.50' (Free Discharge)
└**2=Rim** (Controls 0.00 cfs)

Pond 15P: SI#10



Summary for Pond 16P: SI#9

Inflow Area = 2.831 ac, 6.90% Impervious, Inflow Depth = 0.92" for 10-yr event
Inflow = 1.88 cfs @ 12.30 hrs, Volume= 0.217 af
Outflow = 1.88 cfs @ 12.30 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min
Primary = 1.88 cfs @ 12.30 hrs, Volume= 0.217 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

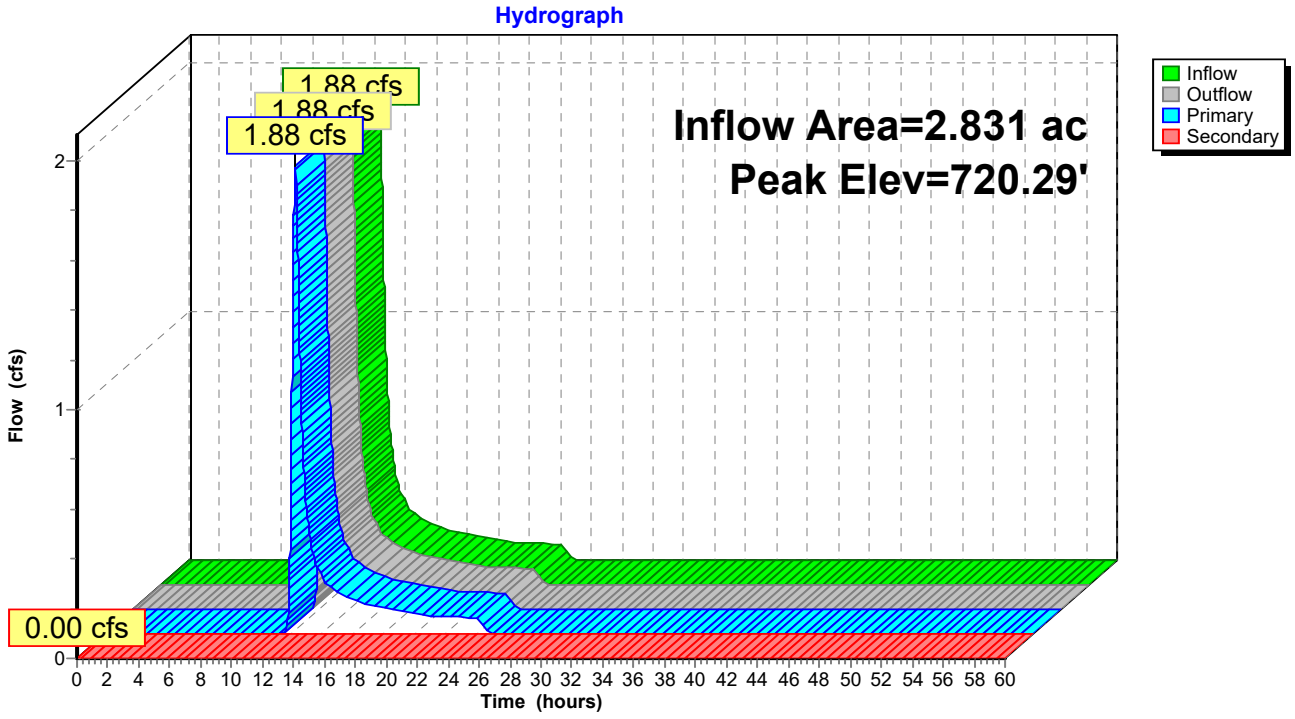
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 720.29' @ 12.30 hrs
Flood Elev= 726.10'

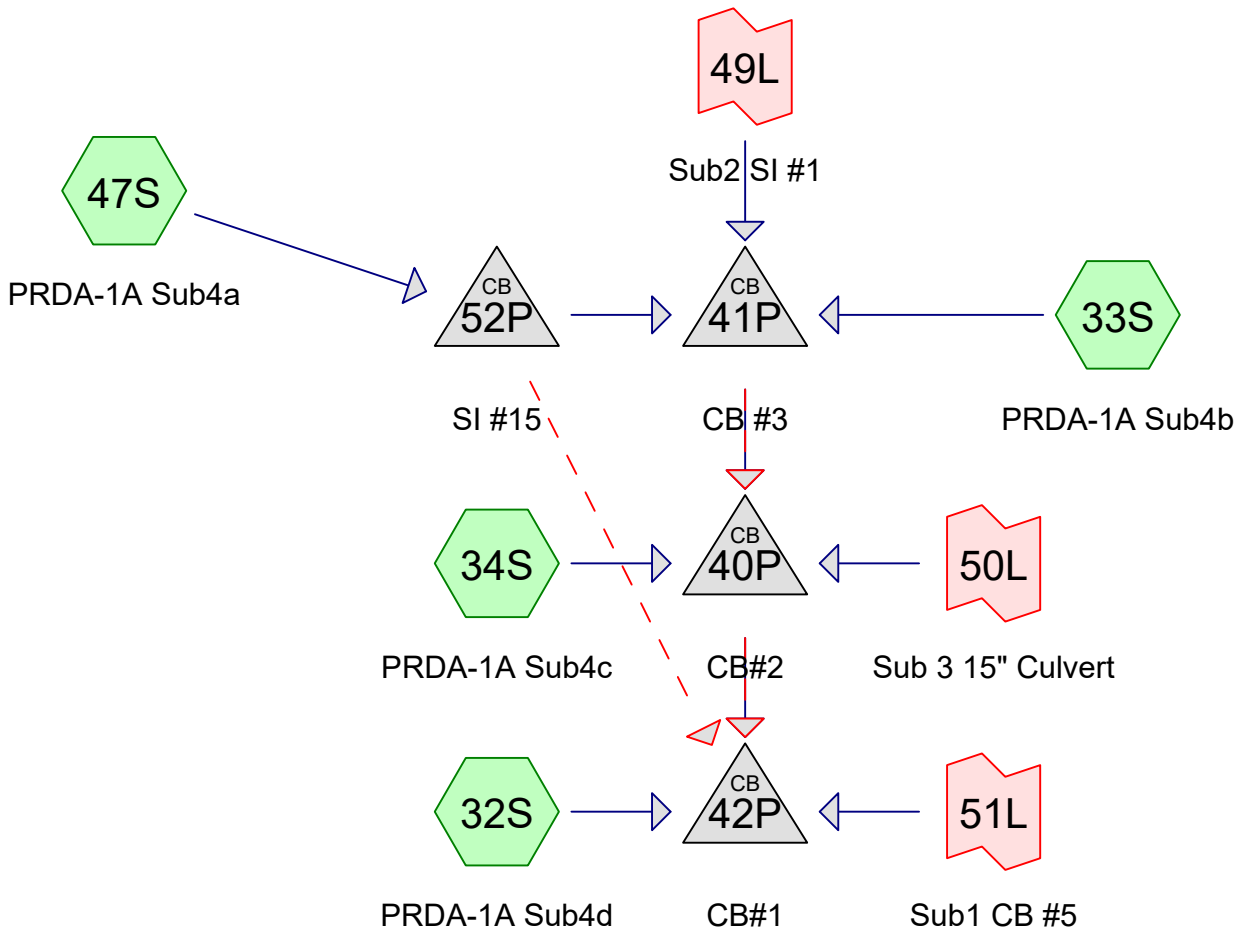
Device	Routing	Invert	Outlet Devices
#1	Primary	719.50'	**15.0" Round Culvert** L= 145.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 719.50' / 718.00' S= 0.0103 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf
#2	Secondary	726.10'	**24.0" Horiz. Rim** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.88 cfs @ 12.30 hrs HW=720.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.88 cfs @ 3.26 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=719.50' (Free Discharge)
└**2=Rim** (Controls 0.00 cfs)

Pond 16P: SI#9





Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub4
Prepared by Microsoft, Printed 6/15/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 32S: PRDA-1A Sub4d

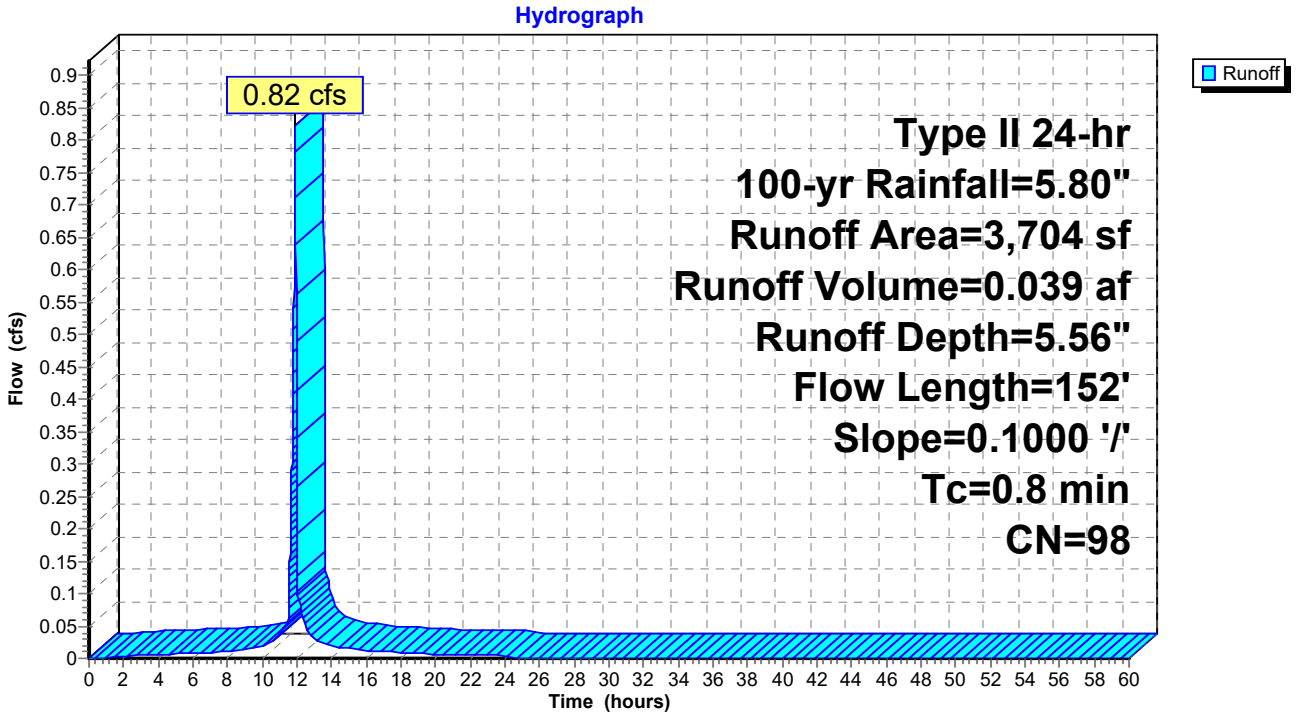
Runoff = 0.82 cfs @ 11.91 hrs, Volume= 0.039 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
3,704	98	Paved parking, HSG C
3,704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.1000	2.26		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.39"
0.1	52	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	152	Total			

Subcatchment 32S: PRDA-1A Sub4d



Summary for Subcatchment 33S: PRDA-1A Sub4b

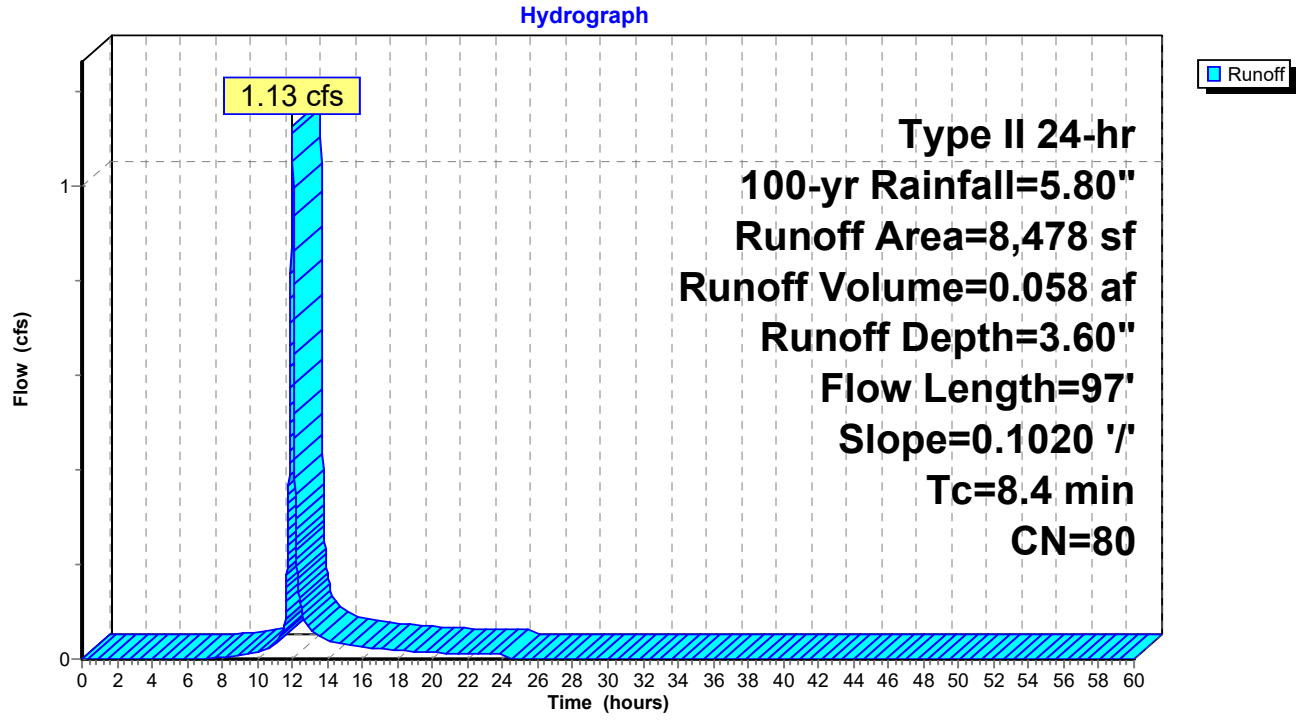
Runoff = 1.13 cfs @ 12.00 hrs, Volume= 0.058 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
1,968	98	Paved parking, HSG C
6,510	74	>75% Grass cover, Good, HSG C
8,478	80	Weighted Average
6,510		76.79% Pervious Area
1,968		23.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	97	0.1020	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 33S: PRDA-1A Sub4b



Summary for Subcatchment 34S: PRDA-1A Sub4c

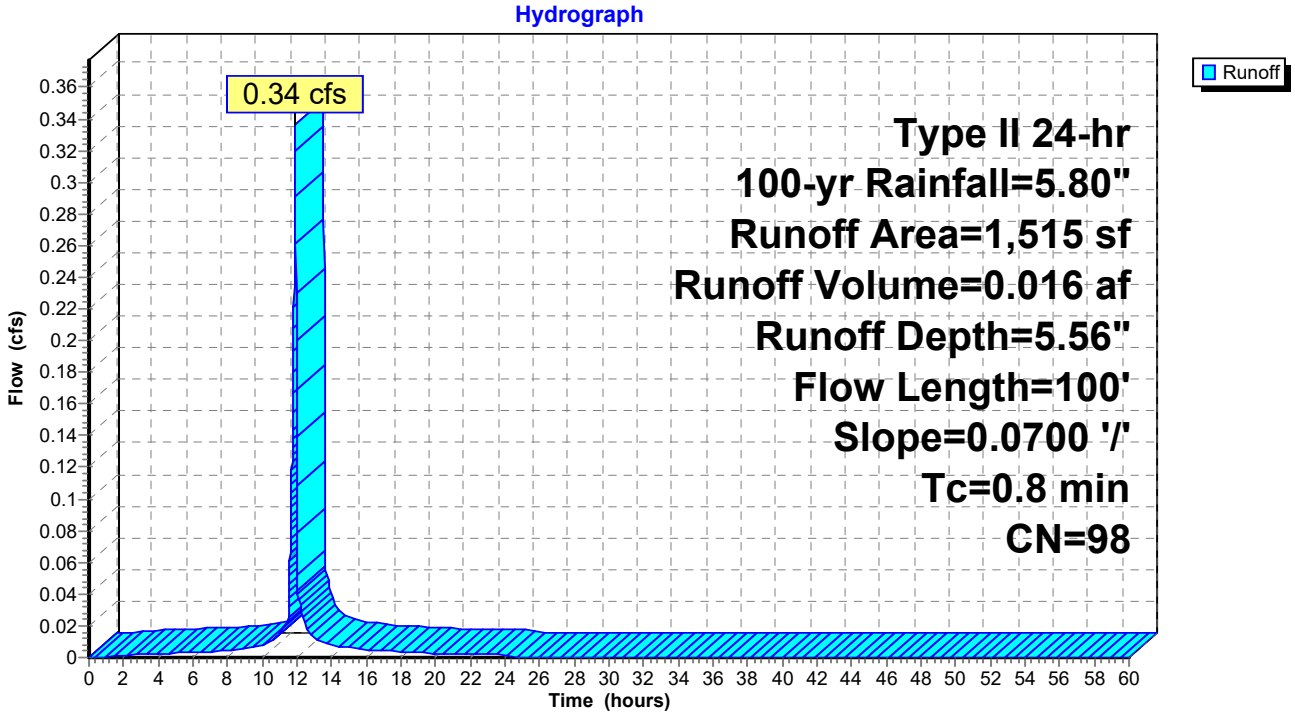
Runoff = 0.34 cfs @ 11.91 hrs, Volume= 0.016 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
1,515	98	Paved parking, HSG C
1,515		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0700	1.96		**Sheet Flow, Sub1 Sheet** Smooth surfaces n= 0.011 P2= 2.39"

Subcatchment 34S: PRDA-1A Sub4c



Summary for Subcatchment 47S: PRDA-1A Sub4a

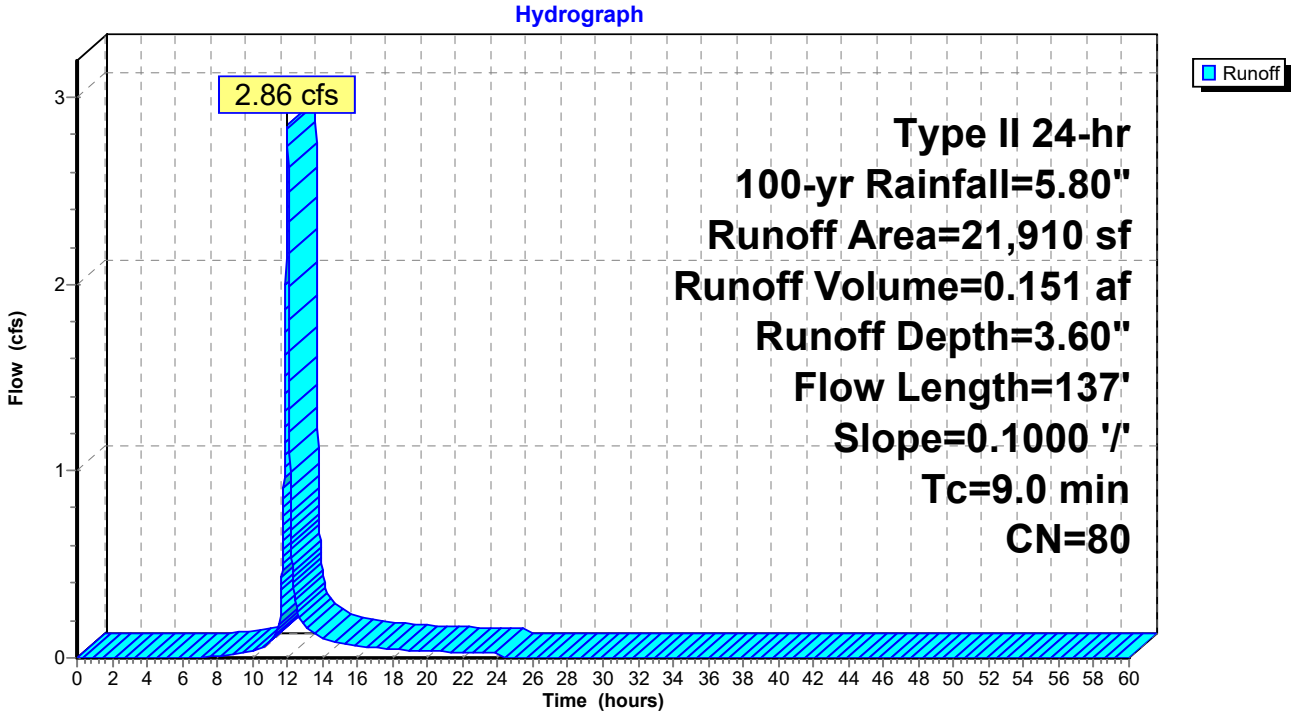
Runoff = 2.86 cfs @ 12.01 hrs, Volume= 0.151 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
5,483	98	Paved parking, HSG C
16,427	74	>75% Grass cover, Good, HSG C
21,910	80	Weighted Average
16,427		74.97% Pervious Area
5,483		25.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.1000	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.3	37	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.0	137	Total			

Subcatchment 47S: PRDA-1A Sub4a



Summary for Pond 40P: CB#2

Inflow Area = 12.495 ac, 14.30% Impervious, Inflow Depth = 3.05" for 100-yr event
Inflow = 31.34 cfs @ 12.06 hrs, Volume= 3.179 af
Outflow = 31.34 cfs @ 12.06 hrs, Volume= 3.179 af, Atten= 0%, Lag= 0.0 min
Primary = 20.56 cfs @ 12.34 hrs, Volume= 2.738 af
Secondary = 16.79 cfs @ 12.05 hrs, Volume= 0.442 af

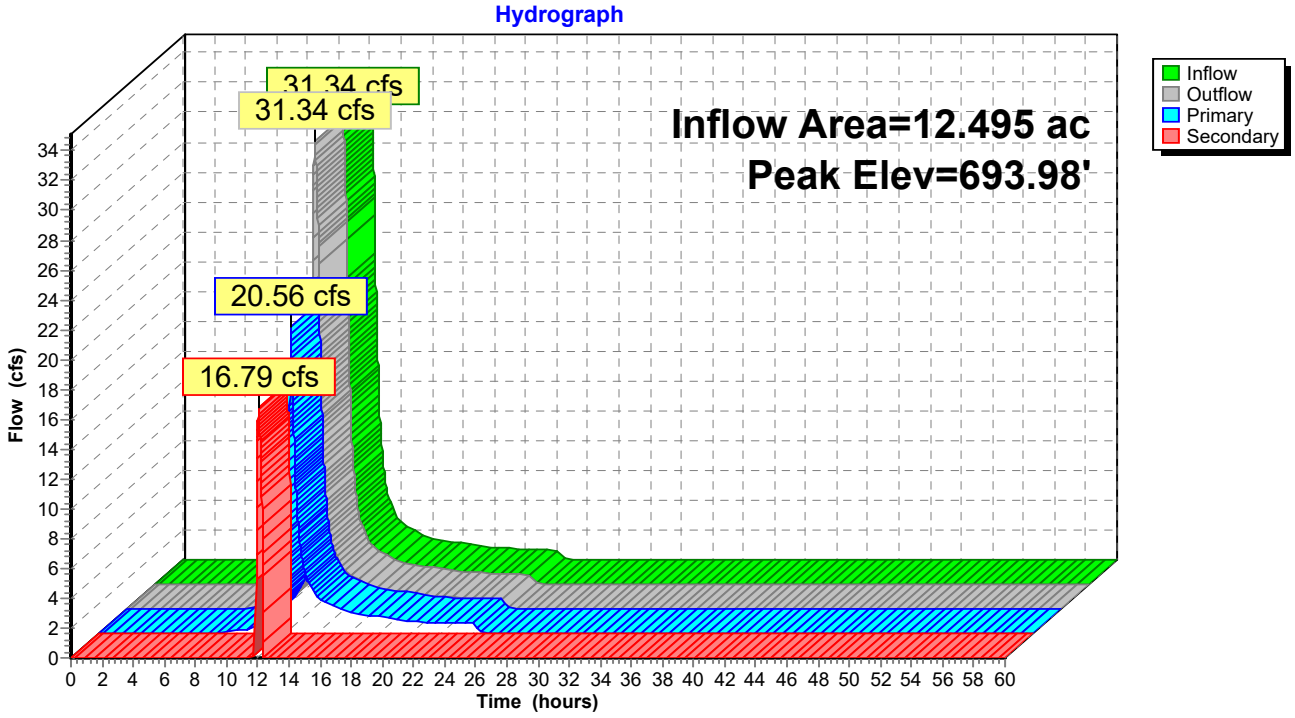
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 693.98' @ 12.05 hrs
Flood Elev= 692.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	687.50'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 687.50' / 684.50' S= 0.0600 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	692.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.32 cfs @ 12.34 hrs HW=692.28' TW=689.66' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 19.32 cfs @ 6.15 fps)

Secondary OutFlow Max=16.79 cfs @ 12.05 hrs HW=693.98' TW=692.52' (Dynamic Tailwater)
└**2=Orifice/Grate** (Orifice Controls 16.79 cfs @ 5.34 fps)

Pond 40P: CB#2



Summary for Pond 41P: CB #3

Inflow Area = 7.123 ac, 19.60% Impervious, Inflow Depth = 3.18" for 100-yr event
Inflow = 20.23 cfs @ 12.06 hrs, Volume= 1.889 af
Outflow = 20.23 cfs @ 12.06 hrs, Volume= 1.889 af, Atten= 0%, Lag= 0.0 min
Primary = 20.23 cfs @ 12.06 hrs, Volume= 1.889 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

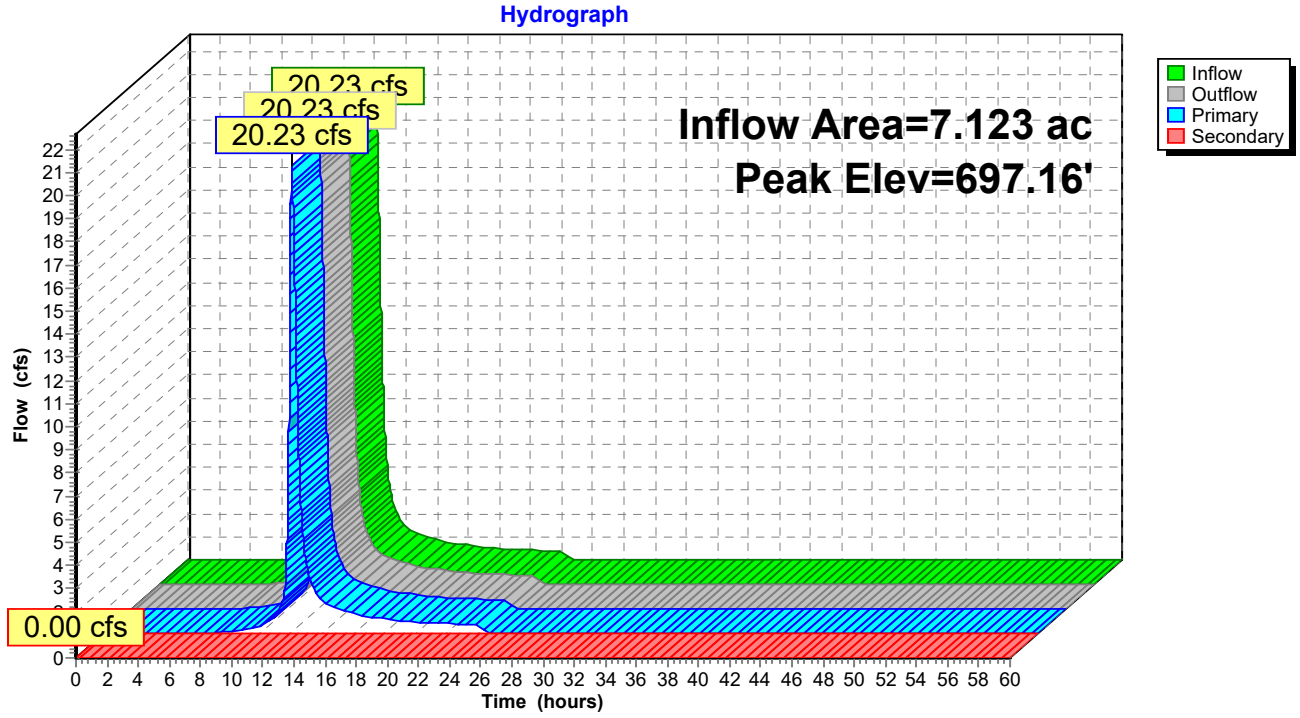
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 697.16' @ 12.06 hrs
Flood Elev= 698.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	690.80'	**24.0" Round Culvert** L= 102.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 690.80' / 688.75' S= 0.0201 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	697.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=20.30 cfs @ 12.06 hrs HW=697.15' TW=693.97' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 20.30 cfs @ 6.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=690.80' TW=687.50' (Dynamic Tailwater)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 41P: CB #3



Summary for Pond 42P: CB#1

Inflow Area = 15.428 ac, 17.26% Impervious, Inflow Depth = 3.18" for 100-yr event
Inflow = 45.51 cfs @ 12.03 hrs, Volume= 4.089 af
Outflow = 45.51 cfs @ 12.03 hrs, Volume= 4.089 af, Atten= 0%, Lag= 0.0 min
Primary = 31.71 cfs @ 12.03 hrs, Volume= 3.878 af
Secondary = 13.79 cfs @ 12.03 hrs, Volume= 0.211 af

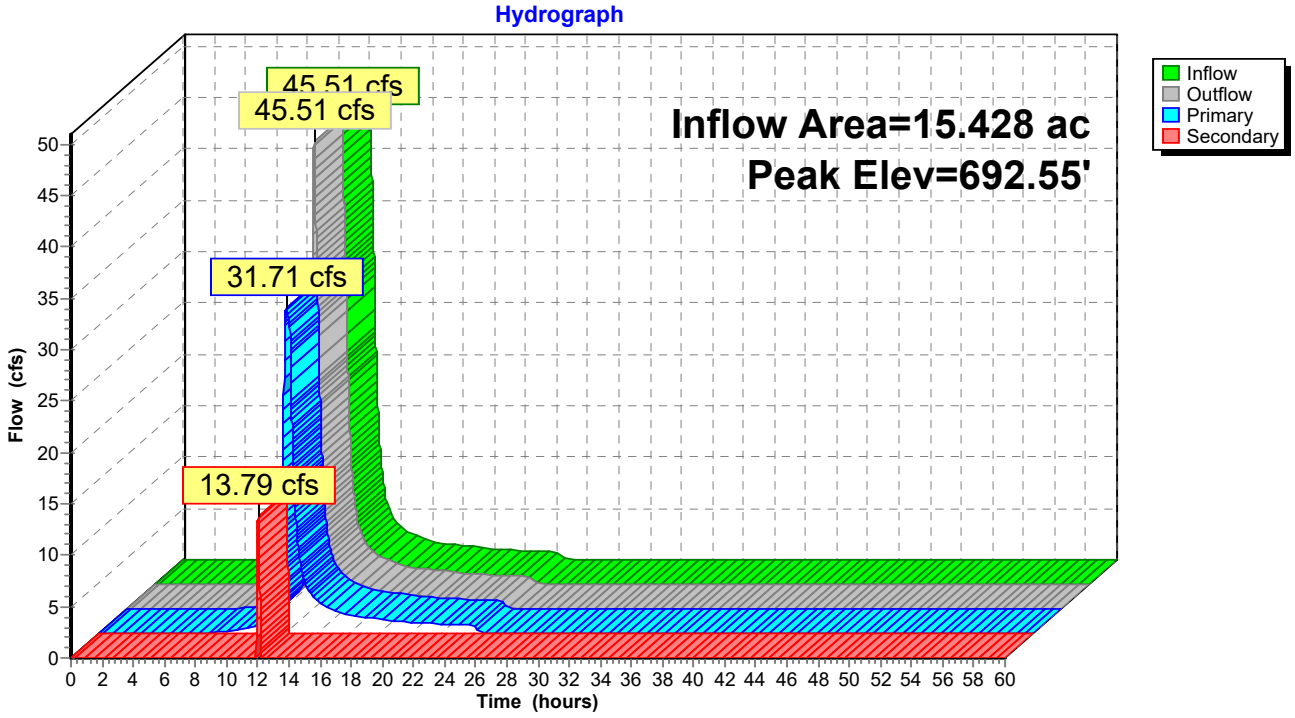
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 692.55' @ 12.03 hrs
Flood Elev= 691.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	684.50'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 684.50' / 678.00' S= 0.0813 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	691.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=31.71 cfs @ 12.03 hrs HW=692.55' (Free Discharge)
└**1=Culvert** (Inlet Controls 31.71 cfs @ 10.09 fps)

Secondary OutFlow Max=13.77 cfs @ 12.03 hrs HW=692.55' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 13.77 cfs @ 4.38 fps)

Pond 42P: CB#1



Summary for Pond 52P: SI #15

Inflow Area = 0.503 ac, 25.03% Impervious, Inflow Depth = 3.60" for 100-yr event
Inflow = 2.86 cfs @ 12.01 hrs, Volume= 0.151 af
Outflow = 2.86 cfs @ 12.01 hrs, Volume= 0.151 af, Atten= 0%, Lag= 0.0 min
Primary = 2.86 cfs @ 12.01 hrs, Volume= 0.151 af
Secondary = 0.14 cfs @ 12.05 hrs, Volume= 0.000 af

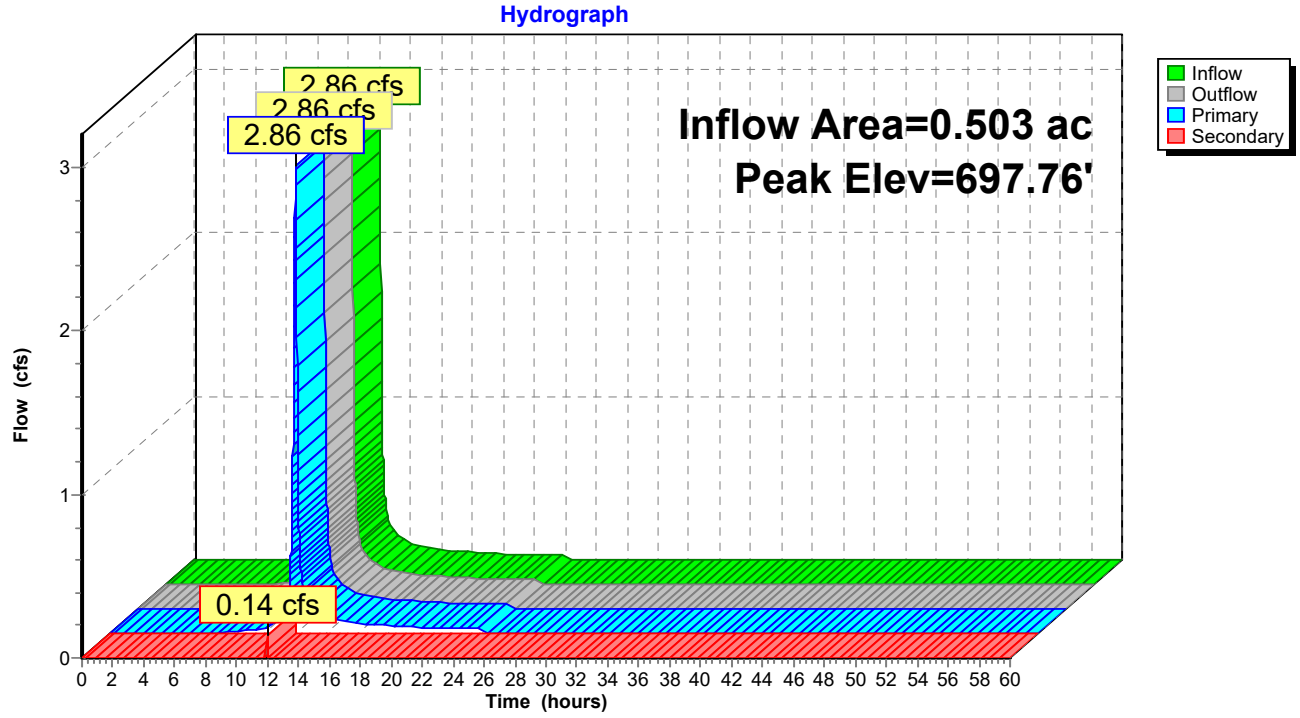
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 697.76' @ 12.05 hrs
Flood Elev= 698.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	691.00'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 691.00' / 690.90' S= 0.0040 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	697.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.77 cfs @ 12.01 hrs HW=697.24' TW=696.38' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.77 cfs @ 3.52 fps)

Secondary OutFlow Max=0.13 cfs @ 12.05 hrs HW=697.75' TW=692.53' (Dynamic Tailwater)
└**2=Orifice/Grate** (Weir Controls 0.13 cfs @ 0.61 fps)

Pond 52P: SI #15



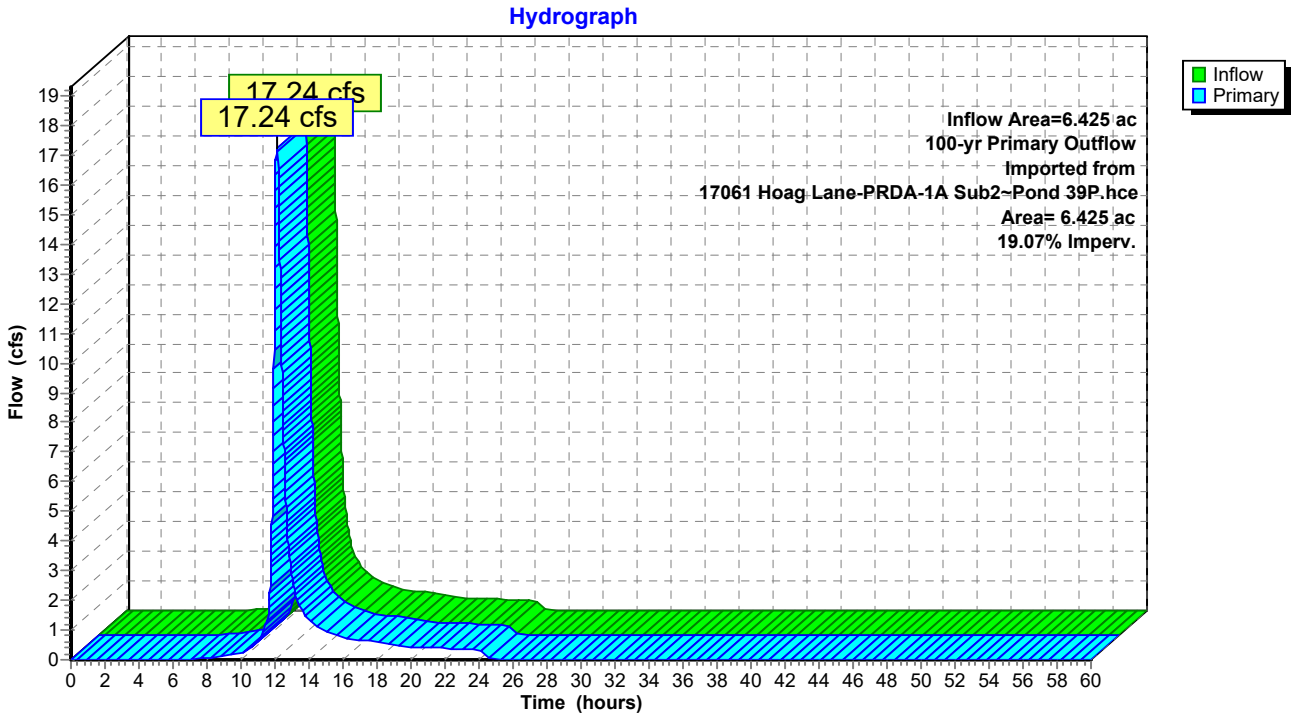
Summary for Link 49L: Sub2 SI #1

Inflow Area = 6.425 ac, 19.07% Impervious, Inflow Depth = 3.14" for 100-yr event
Inflow = 17.24 cfs @ 12.11 hrs, Volume= 1.680 af
Primary = 17.24 cfs @ 12.11 hrs, Volume= 1.680 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

100-yr Primary Outflow Imported from 17061 Hoag Lane-PRDA-1A Sub2~Pond 39P.hce

Link 49L: Sub2 SI #1



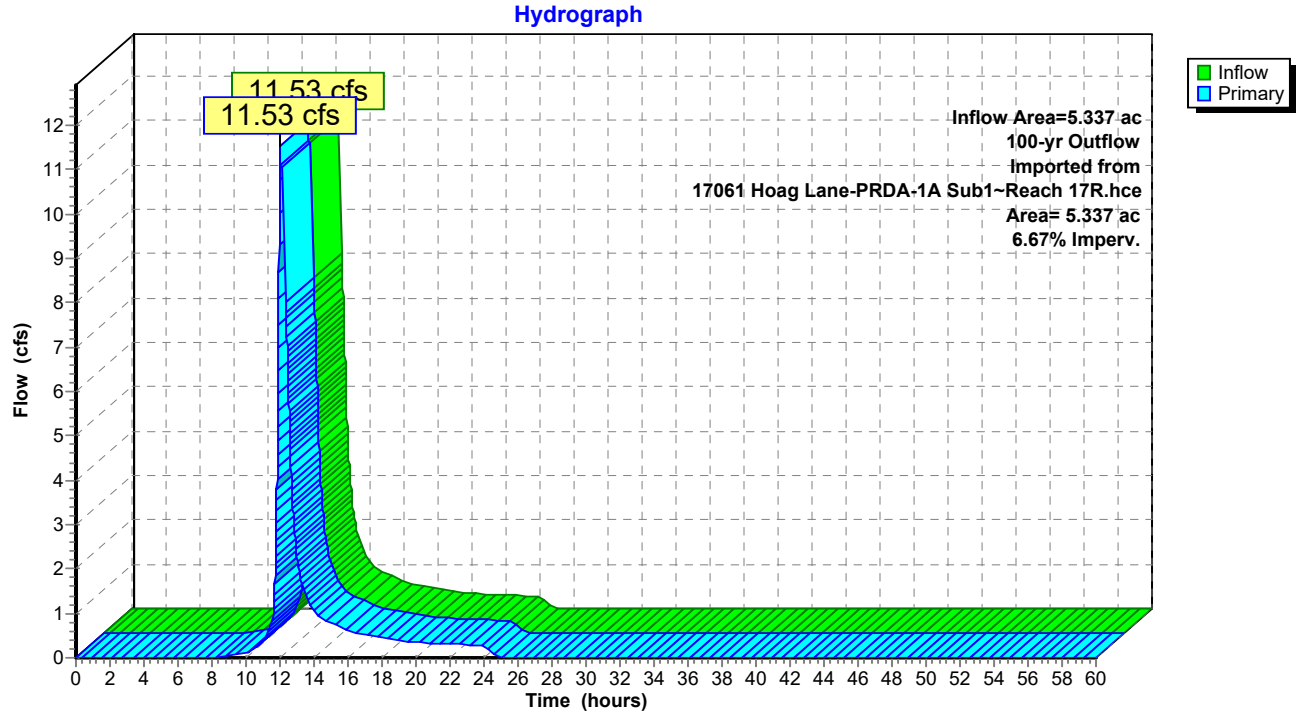
Summary for Link 50L: Sub 3 15" Culvert

Inflow Area = 5.337 ac, 6.67% Impervious, Inflow Depth = 2.86" for 100-yr event
Inflow = 11.53 cfs @ 11.98 hrs, Volume= 1.273 af
Primary = 11.53 cfs @ 11.98 hrs, Volume= 1.273 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

100-yr Outflow Imported from 17061 Hoag Lane-PRDA-1A Sub1~Reach 17R.hce

Link 50L: Sub 3 15" Culvert



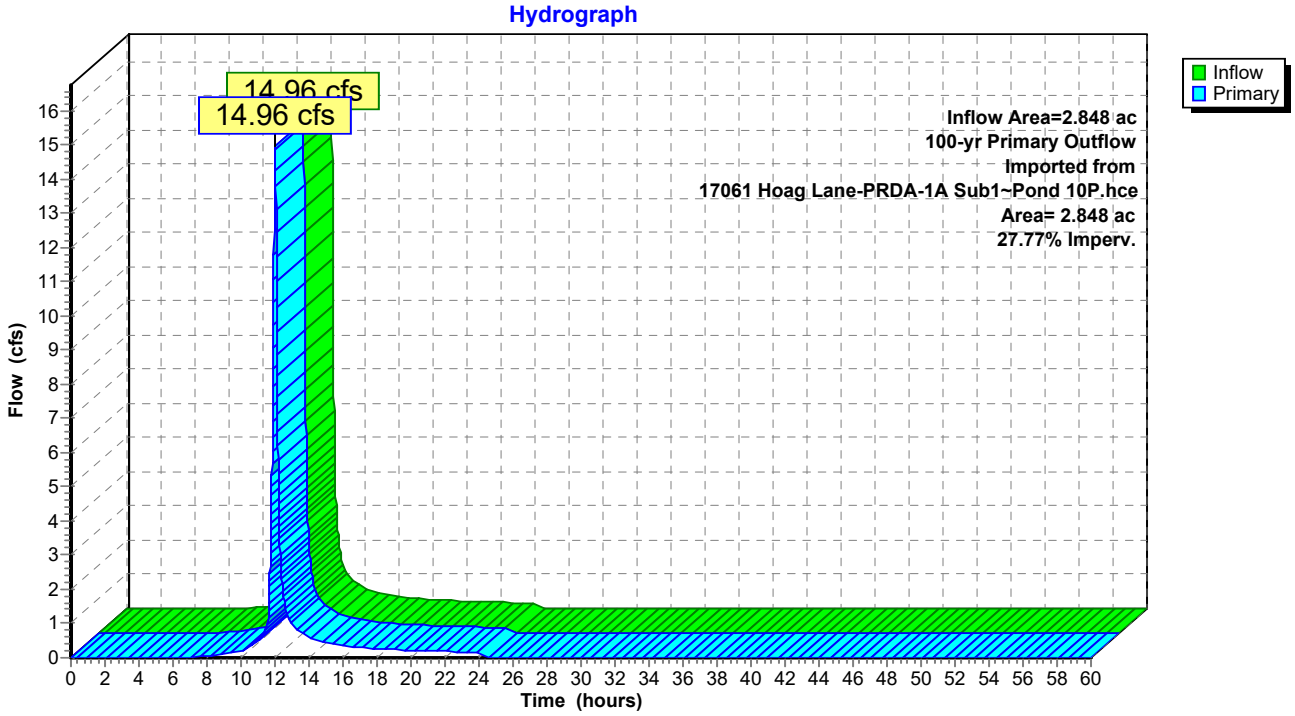
Summary for Link 51L: Sub1 CB #5

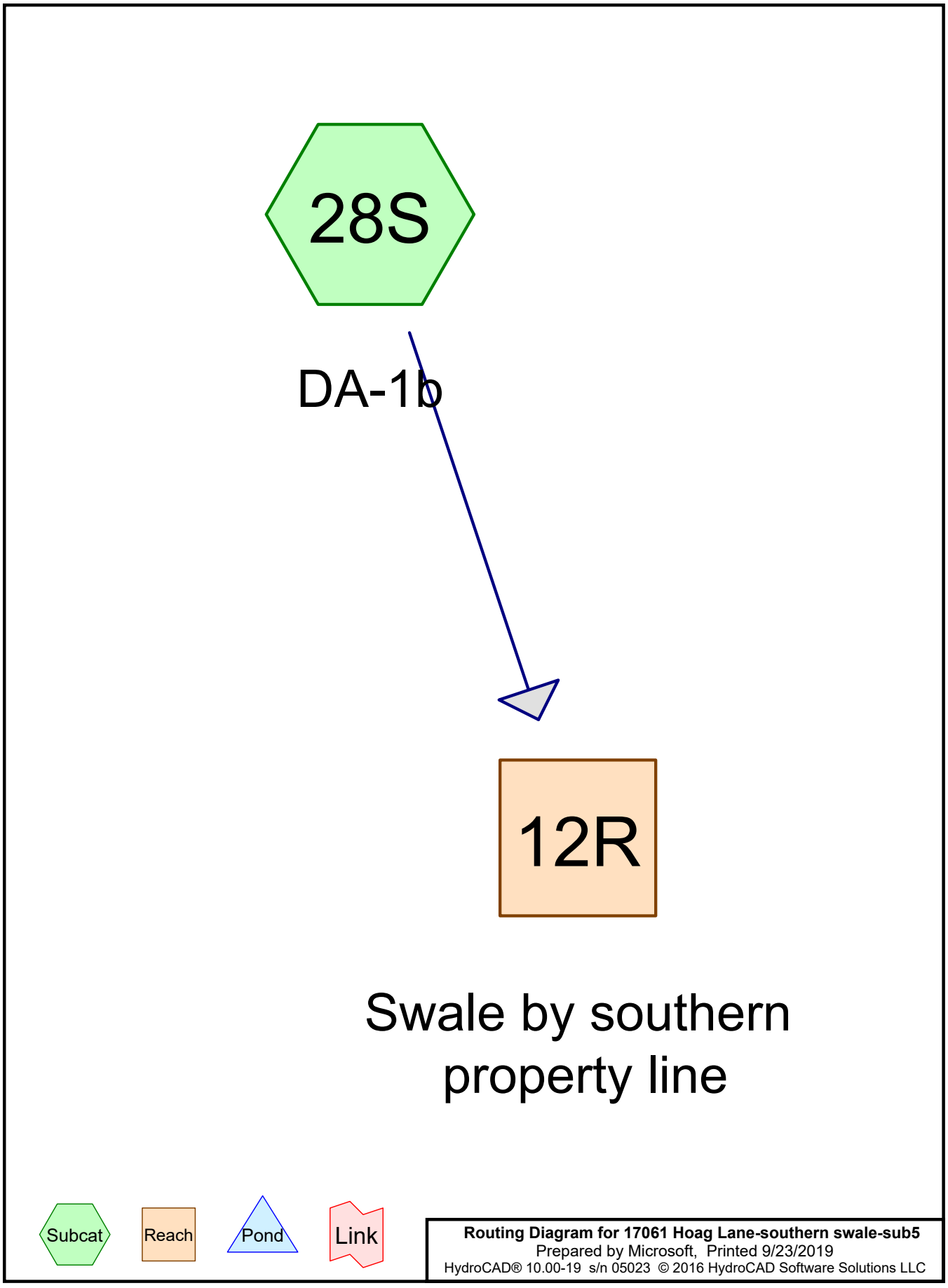
Inflow Area = 2.848 ac, 27.77% Impervious, Inflow Depth = 3.66" for 100-yr event
Inflow = 14.96 cfs @ 12.01 hrs, Volume= 0.869 af
Primary = 14.96 cfs @ 12.01 hrs, Volume= 0.869 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

100-yr Primary Outflow Imported from 17061 Hoag Lane-PRDA-1A Sub1~Pond 10P.hce

Link 51L: Sub1 CB #5





Routing Diagram for 17061 Hoag Lane-southern swale-sub5
Prepared by Microsoft, Printed 9/23/2019
HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment 28S: DA-1b

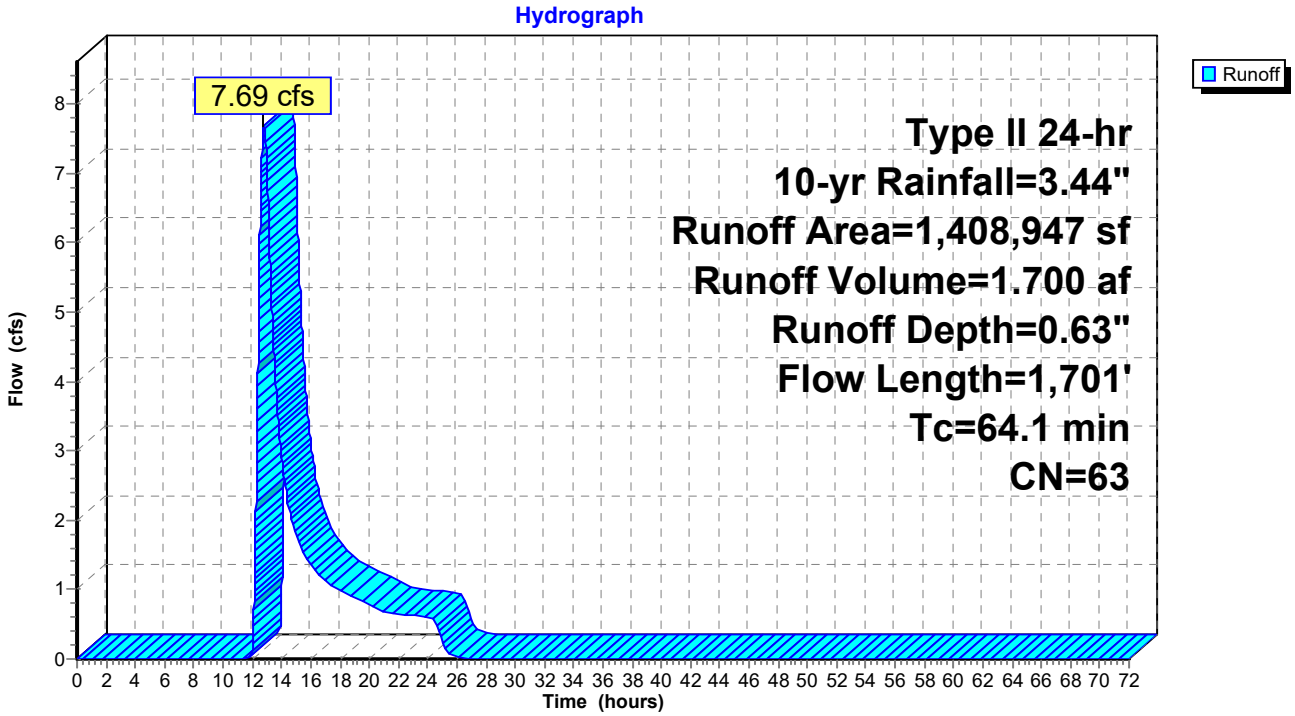
Runoff = 7.69 cfs @ 12.76 hrs, Volume= 1.700 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
122,055	79	1 acre lots, 20% imp, HSG C
463,478	65	2 acre lots, 12% imp, HSG B
536,833	55	Woods, Good, HSG B
286,581	70	Woods, Good, HSG C
1,408,947	63	Weighted Average
1,328,919		94.32% Pervious Area
80,028		5.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Subcatchment 28S: DA-1b



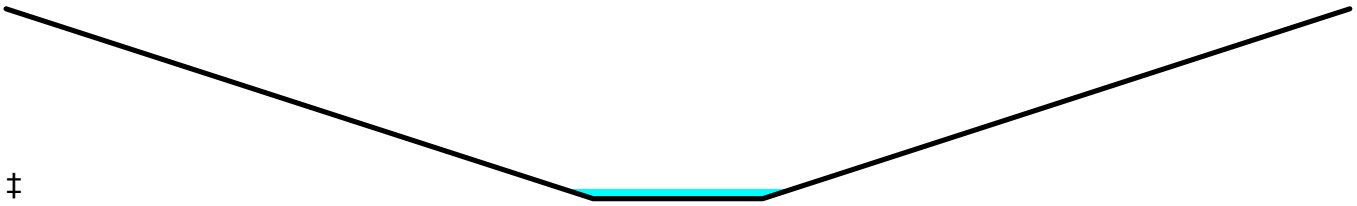
Summary for Reach 12R: Swale by southern property line

Inflow Area = 32.345 ac, 5.68% Impervious, Inflow Depth = 0.63" for 10-yr event
Inflow = 7.69 cfs @ 12.76 hrs, Volume= 1.700 af
Outflow = 7.68 cfs @ 12.87 hrs, Volume= 1.700 af, Atten= 0%, Lag= 6.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.31 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 2.67 fps, Avg. Travel Time= 5.2 min

Peak Storage= 1,215 cf @ 12.82 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 4.00' Flow Area= 107.2 sf, Capacity= 3,062.75 cfs

6.00' x 4.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 5.2 '/' Top Width= 47.60'
Length= 840.0' Slope= 0.0619 '/'
Inlet Invert= 728.00', Outlet Invert= 676.00'



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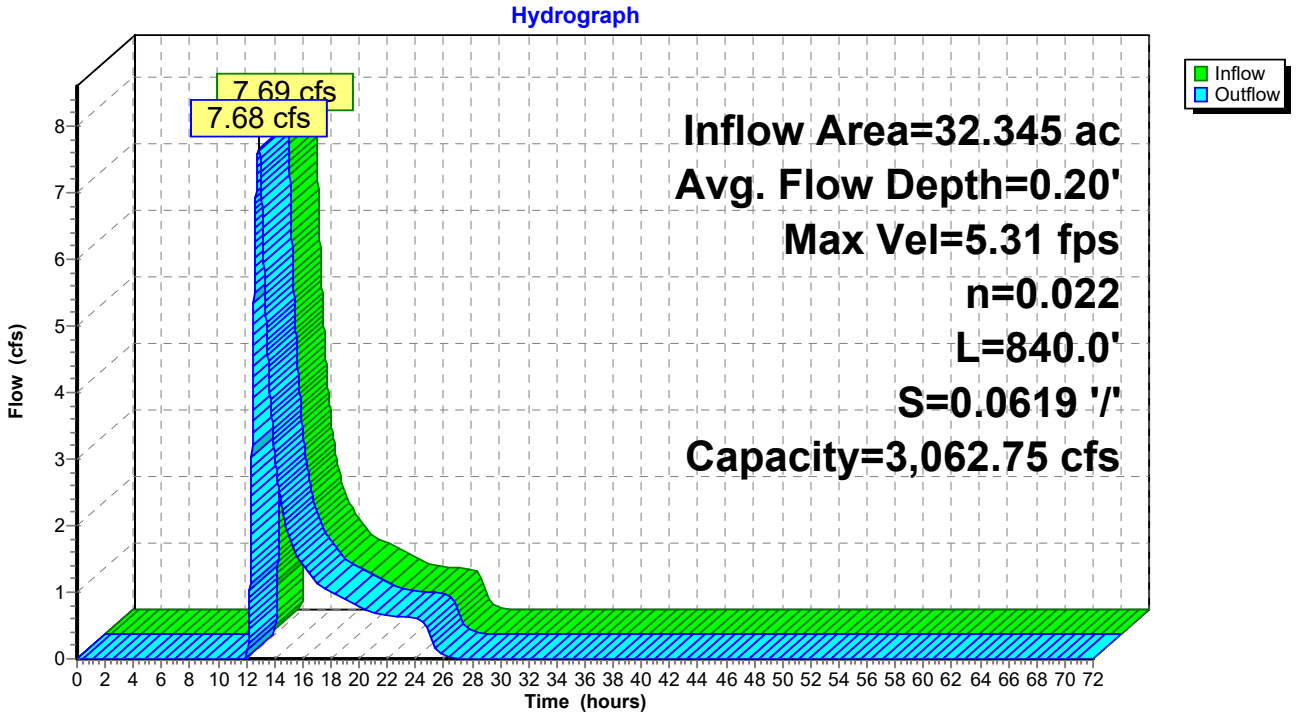
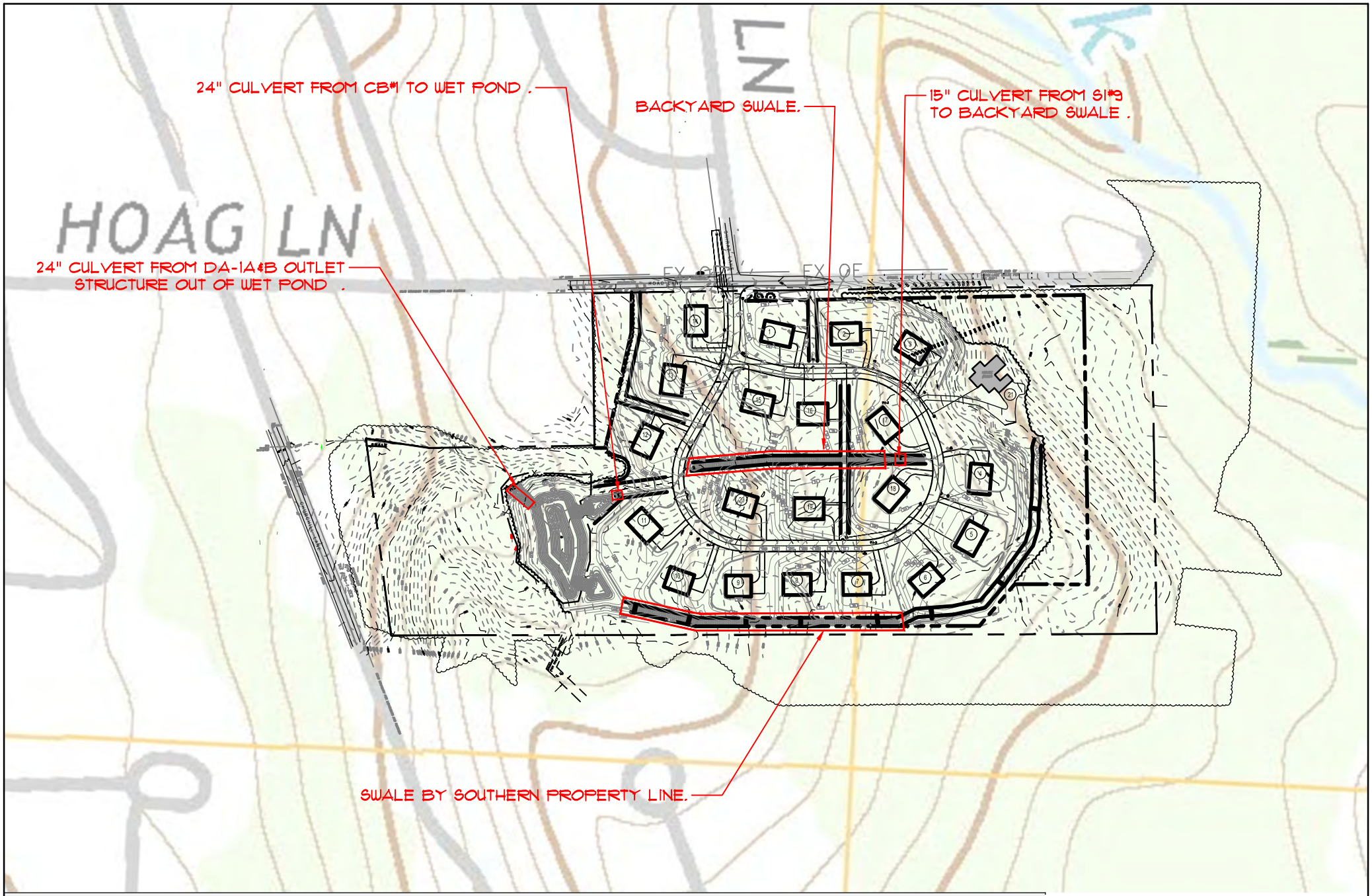
Reach 12R: Swale by southern property line





Hoag Lane Subdivision

Town of Manlius, Onondaga County, NY

Riprap Sizing

N

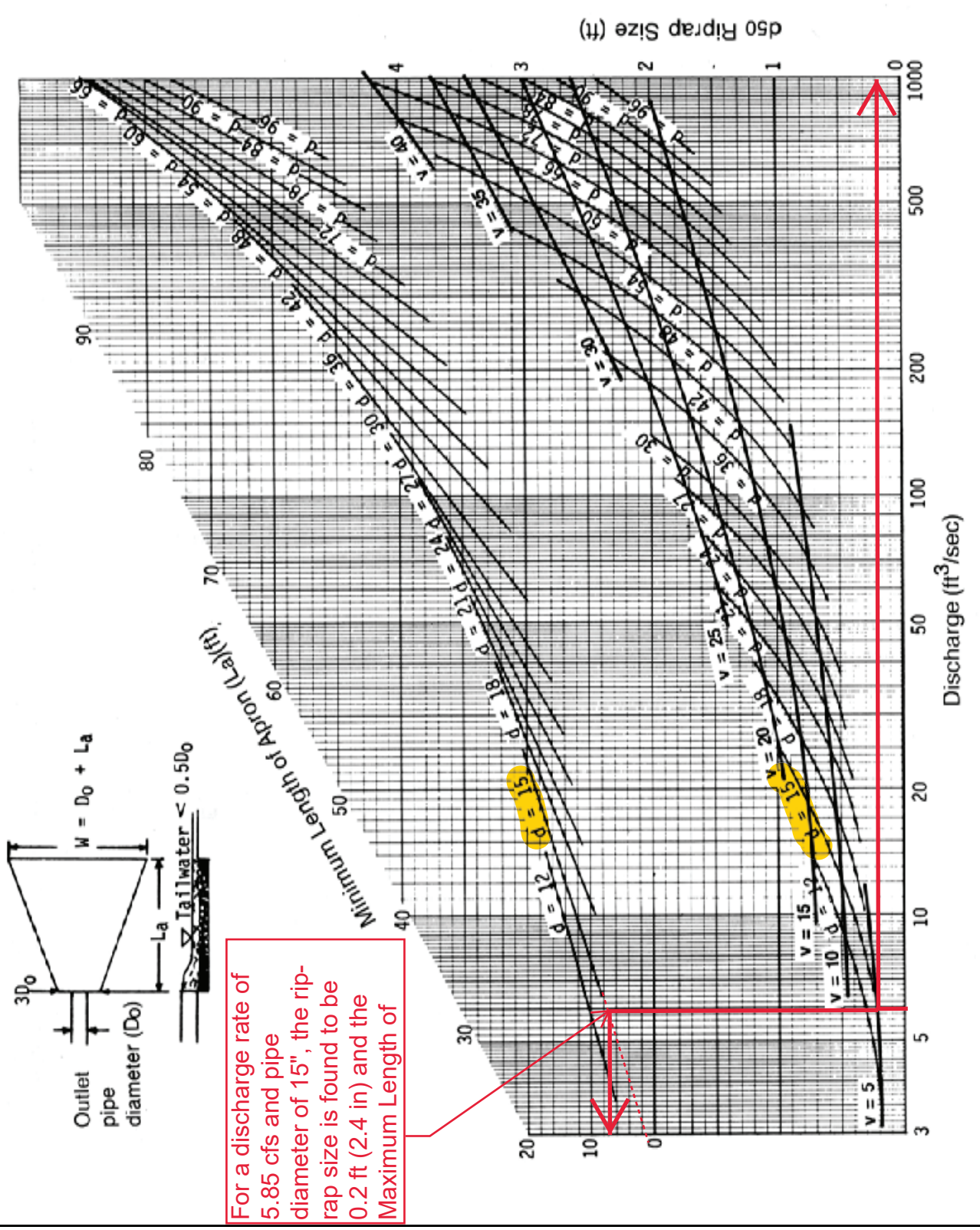
Appendix F- Riprap sizing

SCALE: 1:300

Updated: 06/01/18

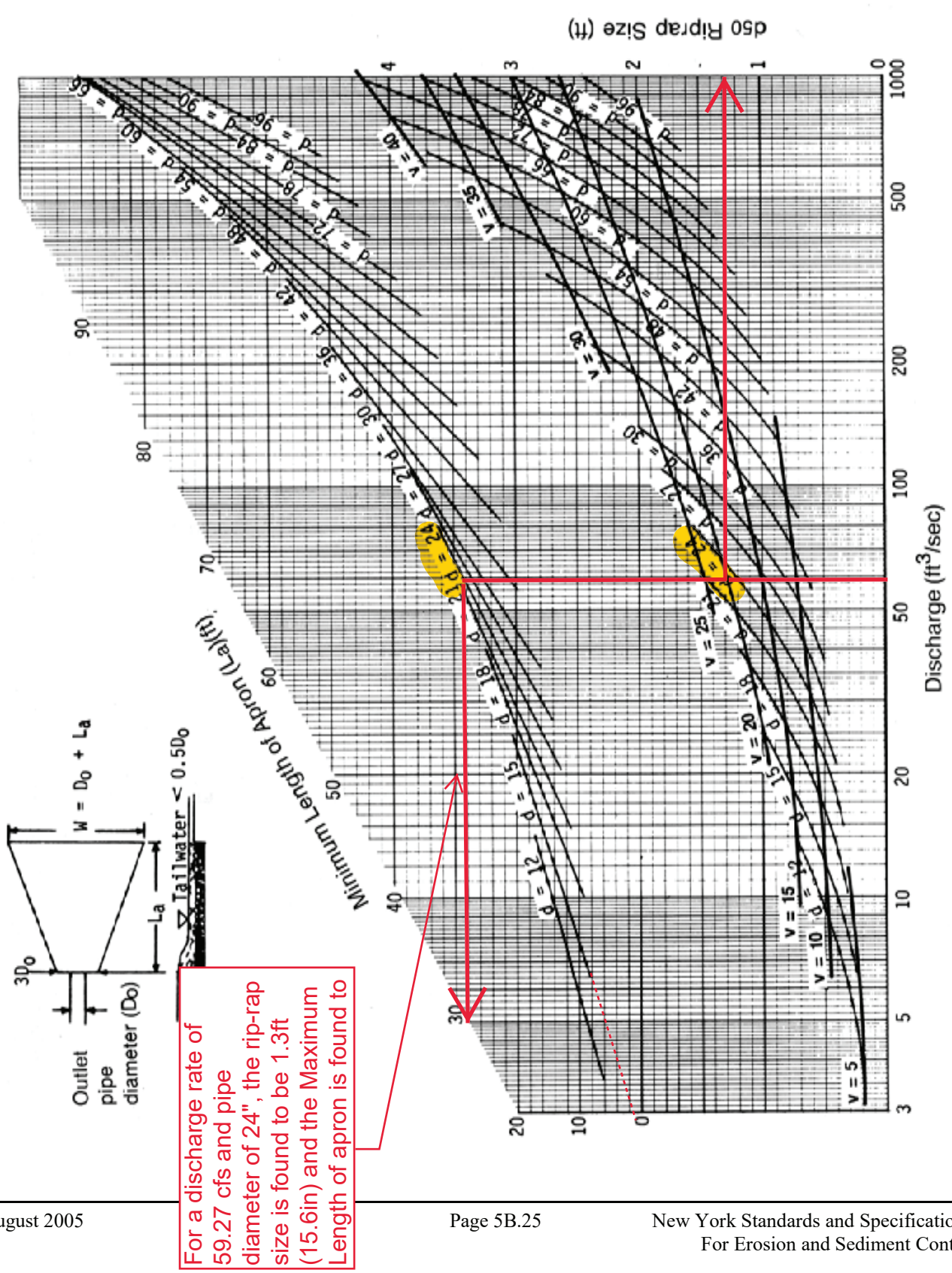
RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition
(Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



15" Culvert from SI#9 to Backyard Swale

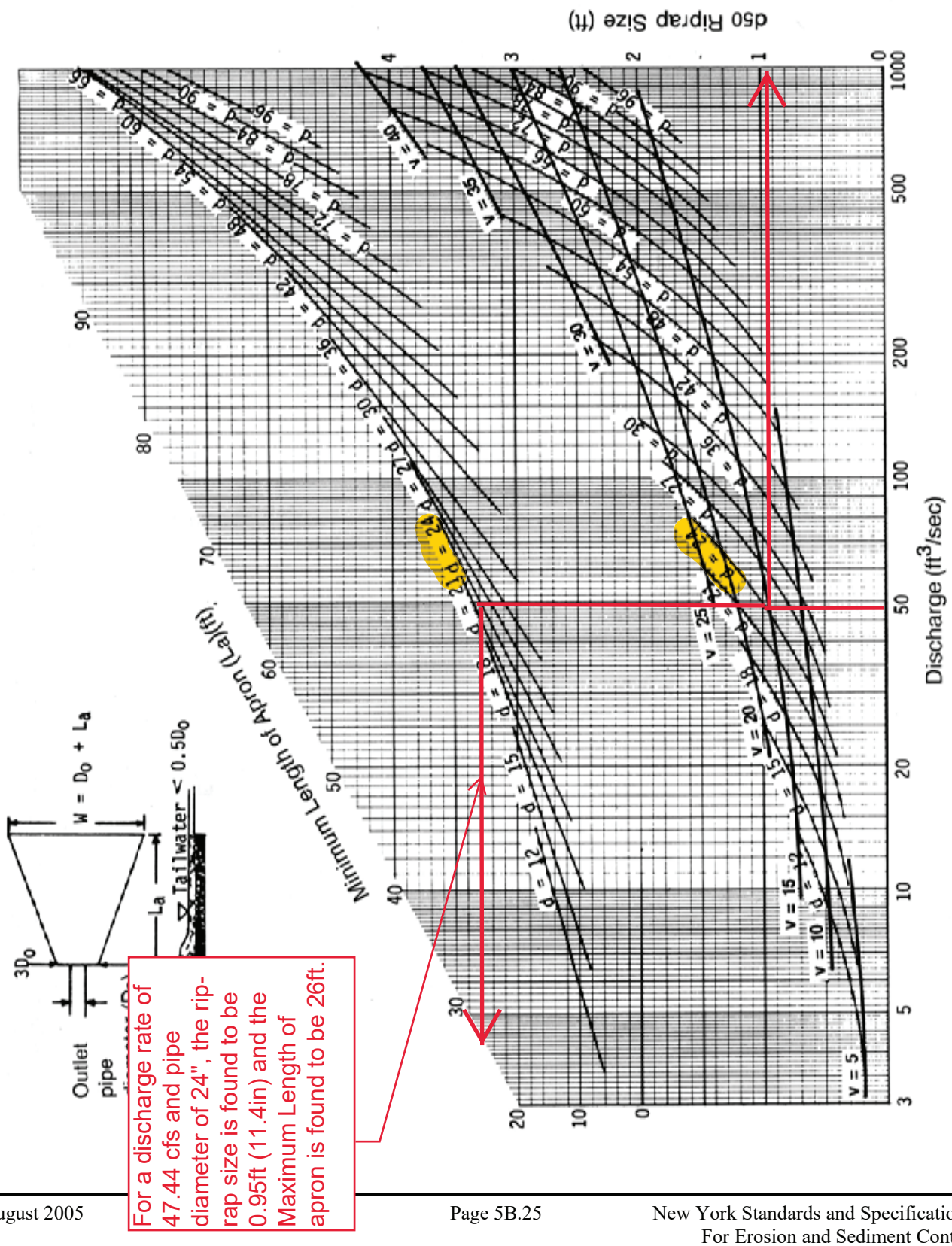
Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition
(Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



24" Culvert from DA-1A&1B Outlet Structure out of Wet-pond

For a discharge rate of 59.27 cfs and pipe diameter of 24", the rip-rap size is found to be 1.3ft (15.6in) and the Maximum Length of apron is found to

Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition
(Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



24" Culvert from CB#1 to Wet-Pond

For a discharge rate of 47.44 cfs and pipe diameter of 24", the rip-rap size is found to be 0.95ft (11.4in) and the Maximum Length of apron is found to be 26ft.



Swale by southern property line

Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane-southern swale-sub5
Prepared by Microsoft, Printed 11/26/2019
HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

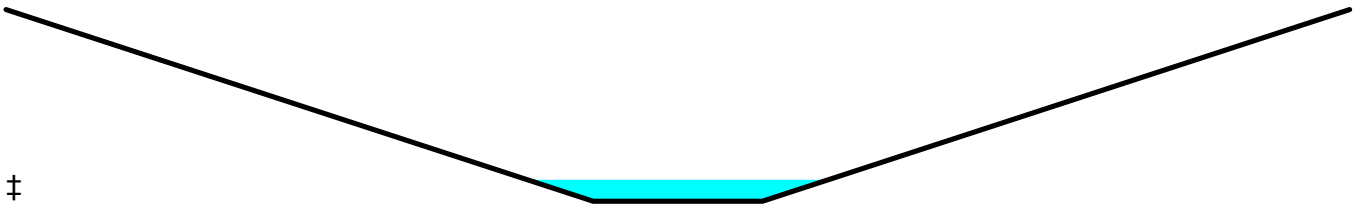
Summary for Reach 12R: Swale by southern property line

Inflow Area = 32.345 ac, 5.68% Impervious, Inflow Depth = 2.04" for 100-yr event
Inflow = 31.37 cfs @ 12.74 hrs, Volume= 5.493 af
Outflow = 31.33 cfs @ 12.78 hrs, Volume= 5.493 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.34 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 3.57 fps, Avg. Travel Time= 3.9 min

Peak Storage= 3,157 cf @ 12.75 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 4.00' Flow Area= 107.2 sf, Capacity= 3,062.75 cfs

6.00' x 4.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 5.2 '/' Top Width= 47.60'
Length= 840.0' Slope= 0.0619 '/'
Inlet Invert= 728.00', Outlet Invert= 676.00'



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Reach 12R: Swale by southern property line

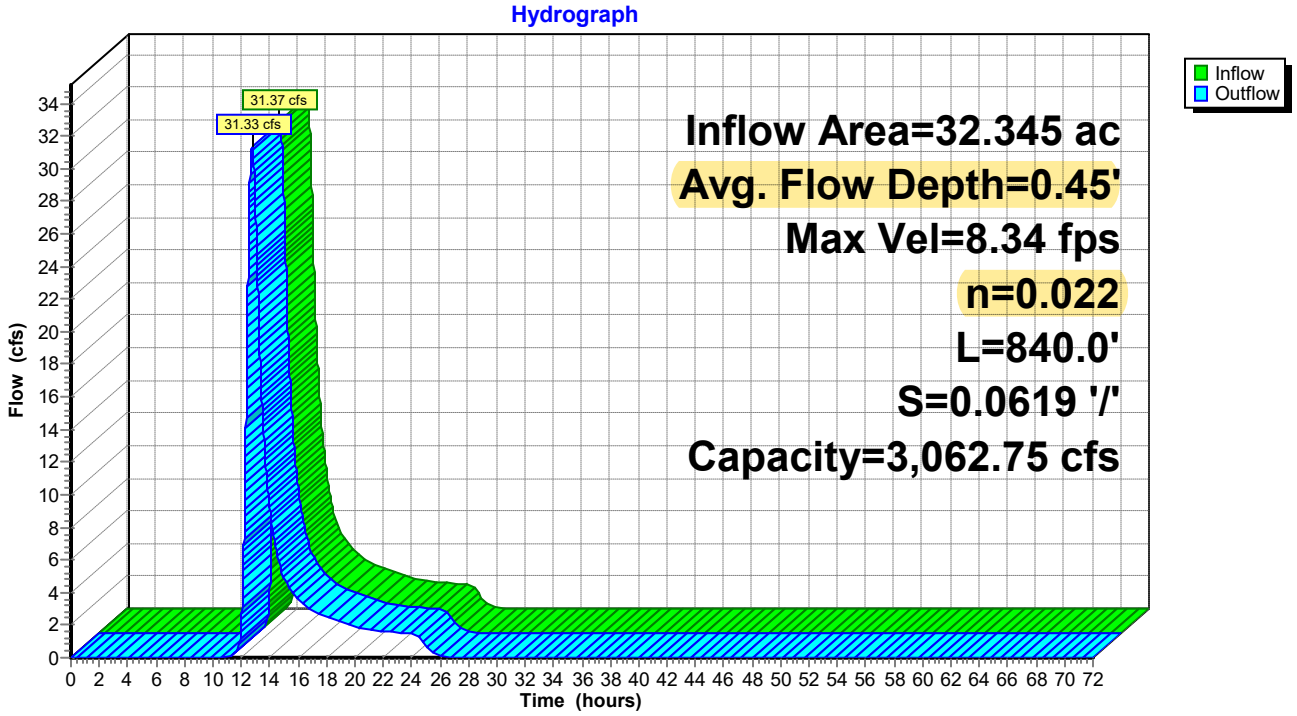
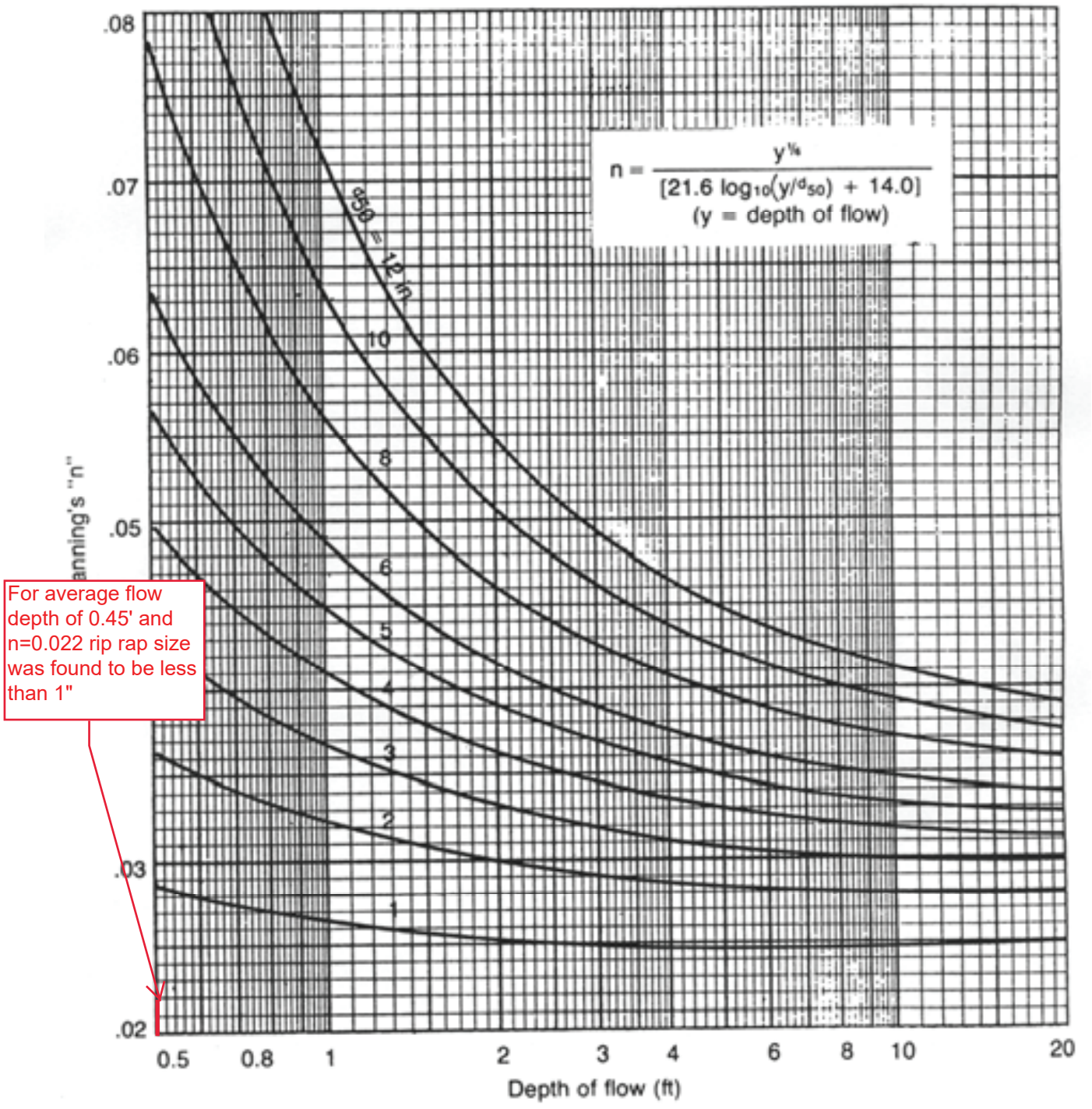
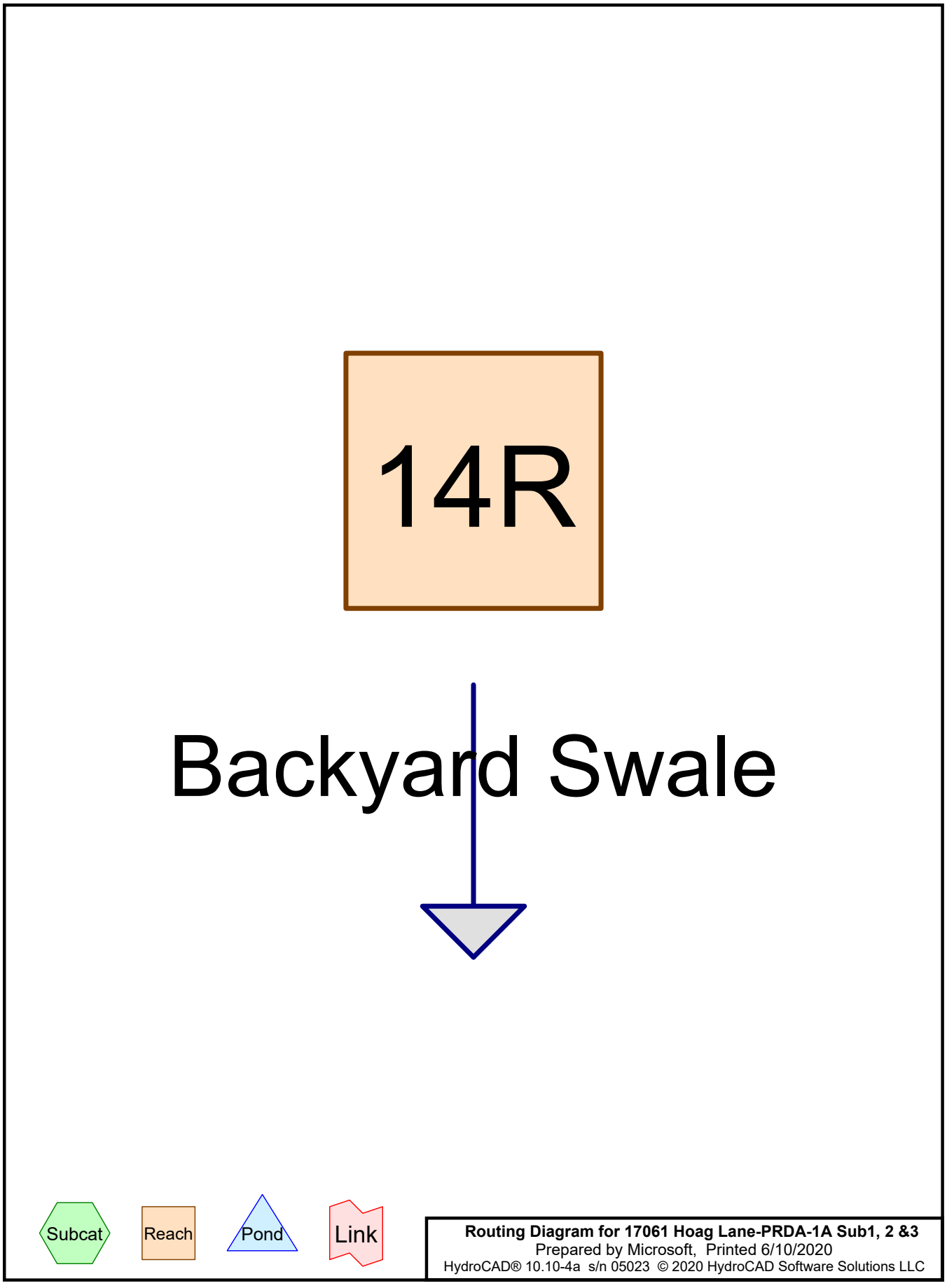


Figure 3.11
Determining "n" for Riprap Lined Channel using Depth of Flow Chart
(USDA - NRCS)





Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub1, 2 &3
Prepared by Microsoft, Printed 6/10/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Reach 14R: Backyard Swale

Inflow Area = 5.337 ac, 6.67% Impervious, Inflow Depth = 2.86" for 100-yr event
Inflow = 14.96 cfs @ 12.02 hrs, Volume= 1.273 af
Outflow = 14.85 cfs @ 12.05 hrs, Volume= 1.273 af, Atten= 1%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.37 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.06 fps, Avg. Travel Time= 2.9 min

Peak Storage= 988 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.31' , Surface Width= 9.86'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 4,430.59 cfs

8.00' x 6.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 44.00'
Length= 357.0' Slope= 0.0644 '/'
Inlet Invert= 716.00', Outlet Invert= 693.00'



‡

Reach 14R: Backyard Swale

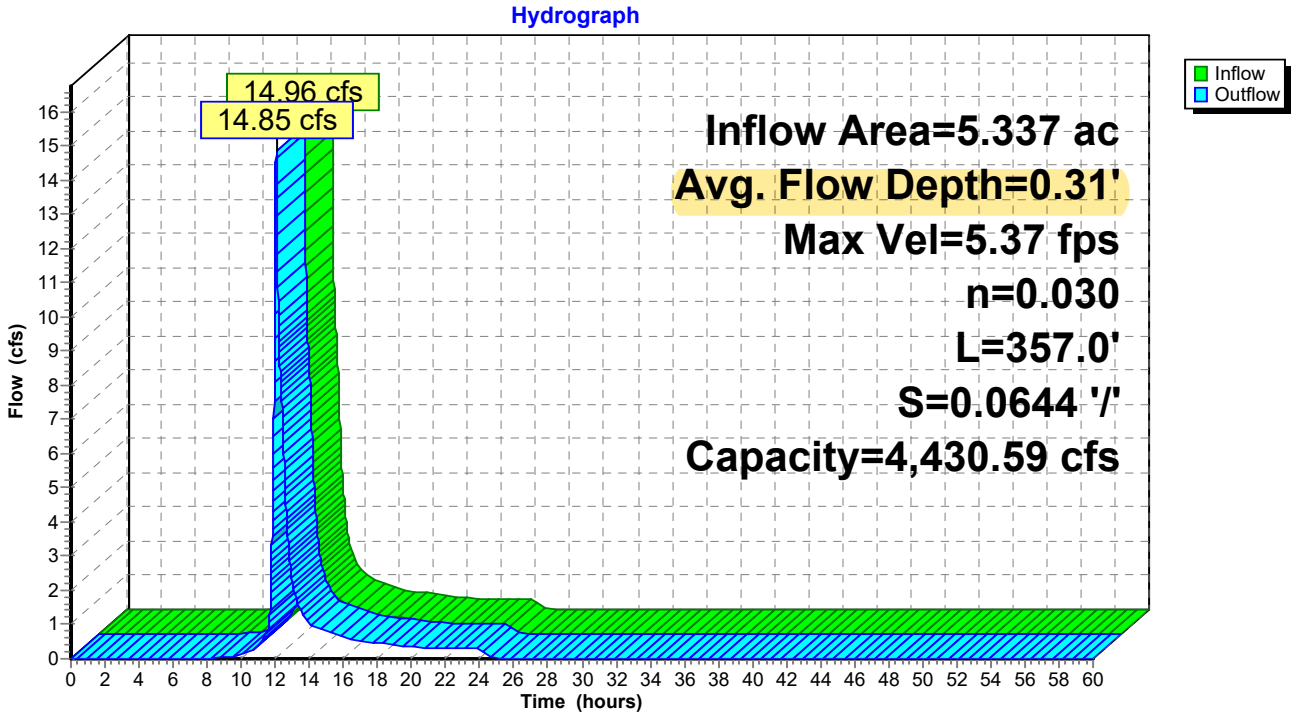
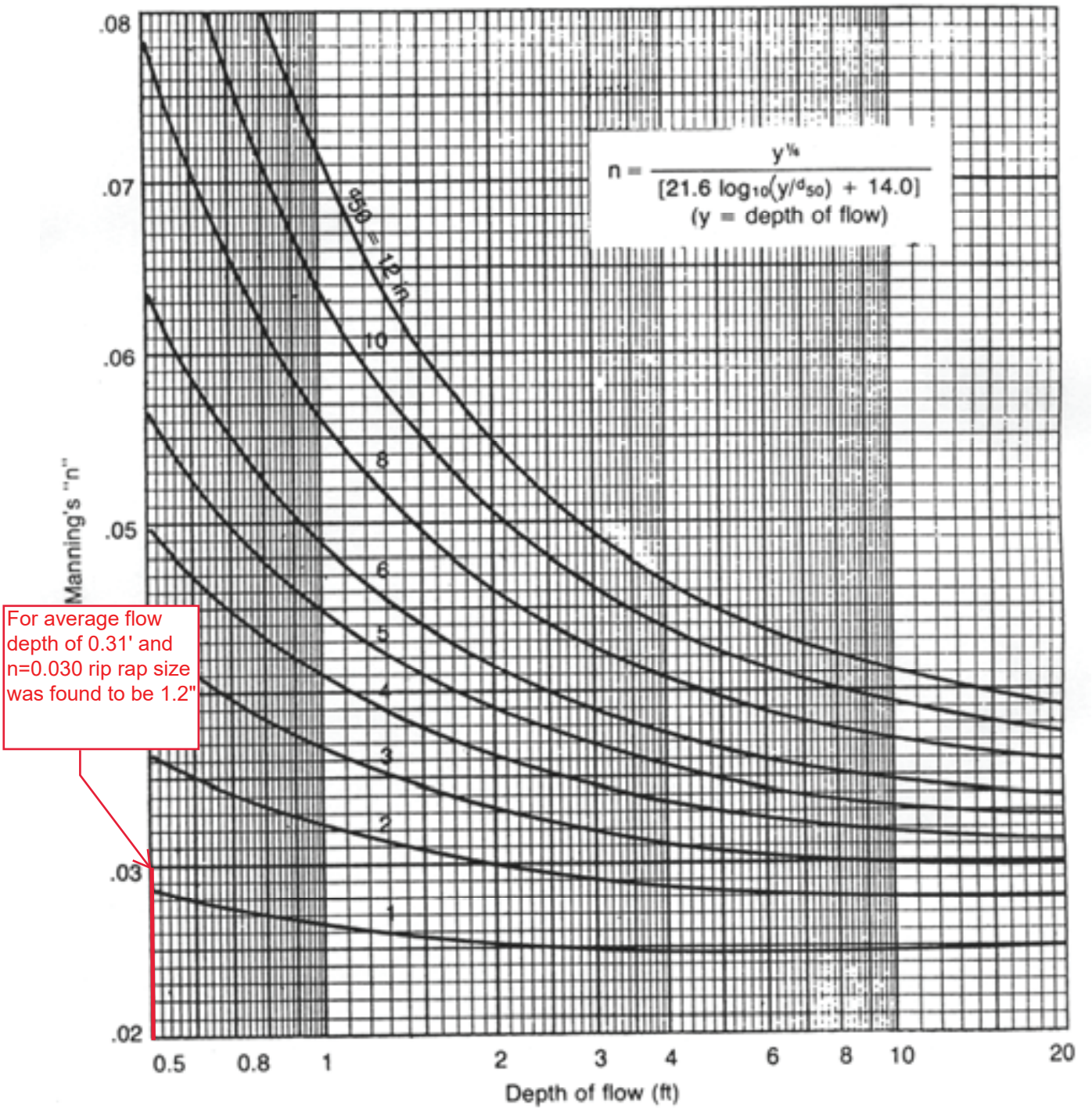


Figure 3.11
Determining "n" for Riprap Lined Channel using Depth of Flow Chart
(USDA - NRCS)



WATER & POLLUTION CONTROL FEDERATION

C-VALUES

storm, is common. The range of coefficients, classified with respect to the general character of the tributary area reported in use, is:

Description of Area	Runoff Coefficients
Business	
Downtown	0.70 to 0.95
Neighborhood	0.50 to 0.70
Residential	
Single-family	0.30 to 0.50
Multi-units, detached	0.40 to 0.60
Multi-units, attached	0.60 to 0.75
Residential (suburban)	0.25 to 0.40
Apartment	0.50 to 0.70
Industrial	
Light	0.50 to 0.80
Heavy	0.60 to 0.90
Parks, cemeteries	0.10 to 0.25
Playgrounds	0.20 to 0.35
Railroad yard	0.20 to 0.35
Unimproved	0.10 to 0.30

Downtown .95

Residential = 0.40

It often is desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area. This procedure often is applied to typical "sample" blocks as a guide to selection of reasonable values of the coefficient for an entire area. Coefficients with respect to surface type currently in use are:

Character of Surface	Runoff Coefficients
Pavement	
Asphaltic and Concrete	0.70 to 0.95
Brick	0.70 to 0.85
Roofs	0.75 to 0.95
Lawns, sandy soil	
Flat, 2 percent	0.05 to 0.10
Average, 2 to 7 percent	0.10 to 0.15
Steep, 7 percent	0.15 to 0.20
Lawns, heavy soil	
Flat, 2 percent	0.13 to 0.17
Average, 2 to 7 percent	0.18 to 0.22
Steep, 7 percent	0.25 to 0.35

The coefficients in these two tabulations are applicable for storms of 5- to 10-yr frequencies. Less frequent, higher intensity storms will require the use of higher coefficients because infiltration and other losses have a proportionally smaller effect on runoff. The coefficients are based on the assumption that the design storm does not occur when the ground surface is frozen.

(c) Coefficients Varying with Time.—Figure 11 shows the variation of the runoff coefficient with respect to length of time of prior wetting,

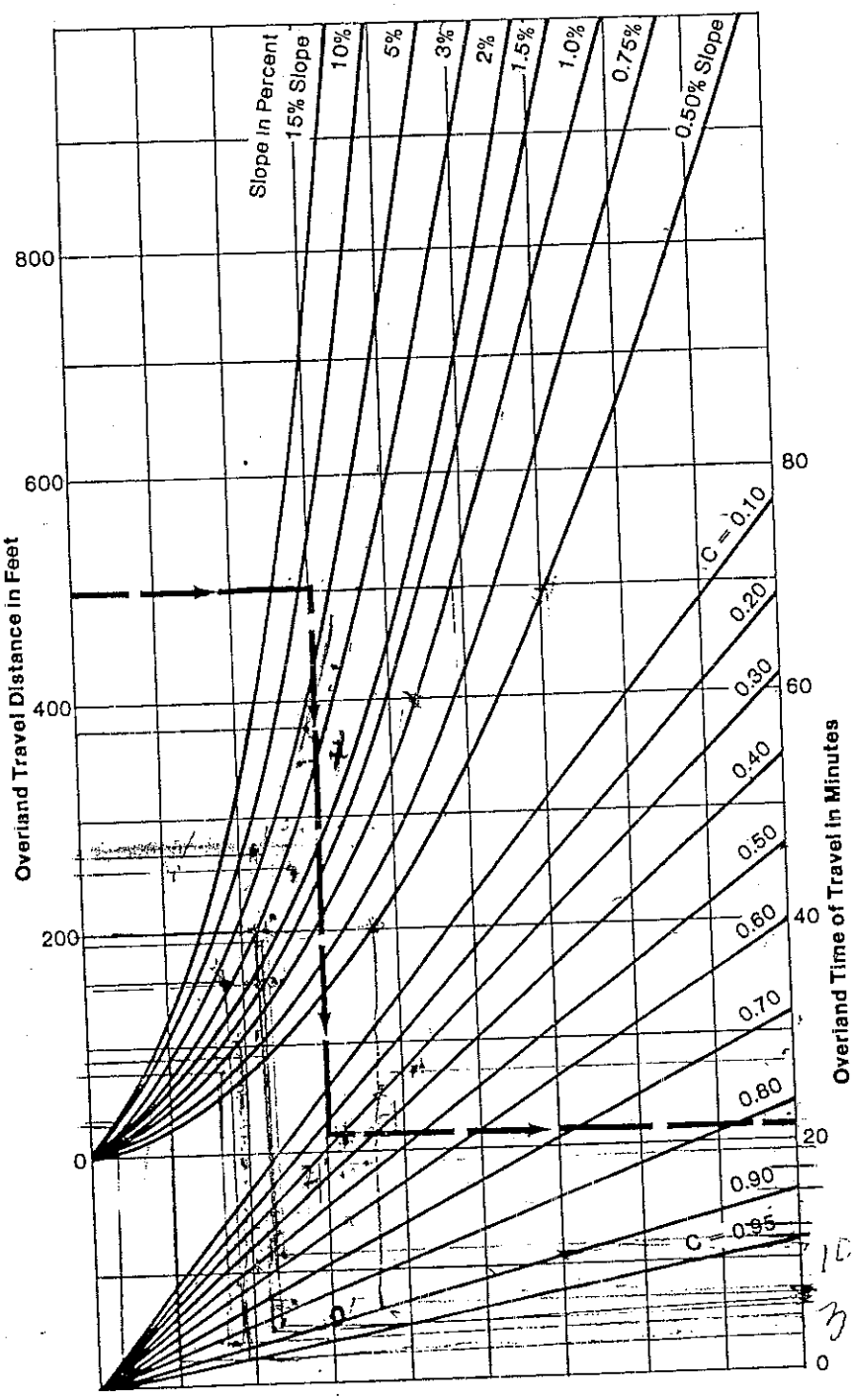
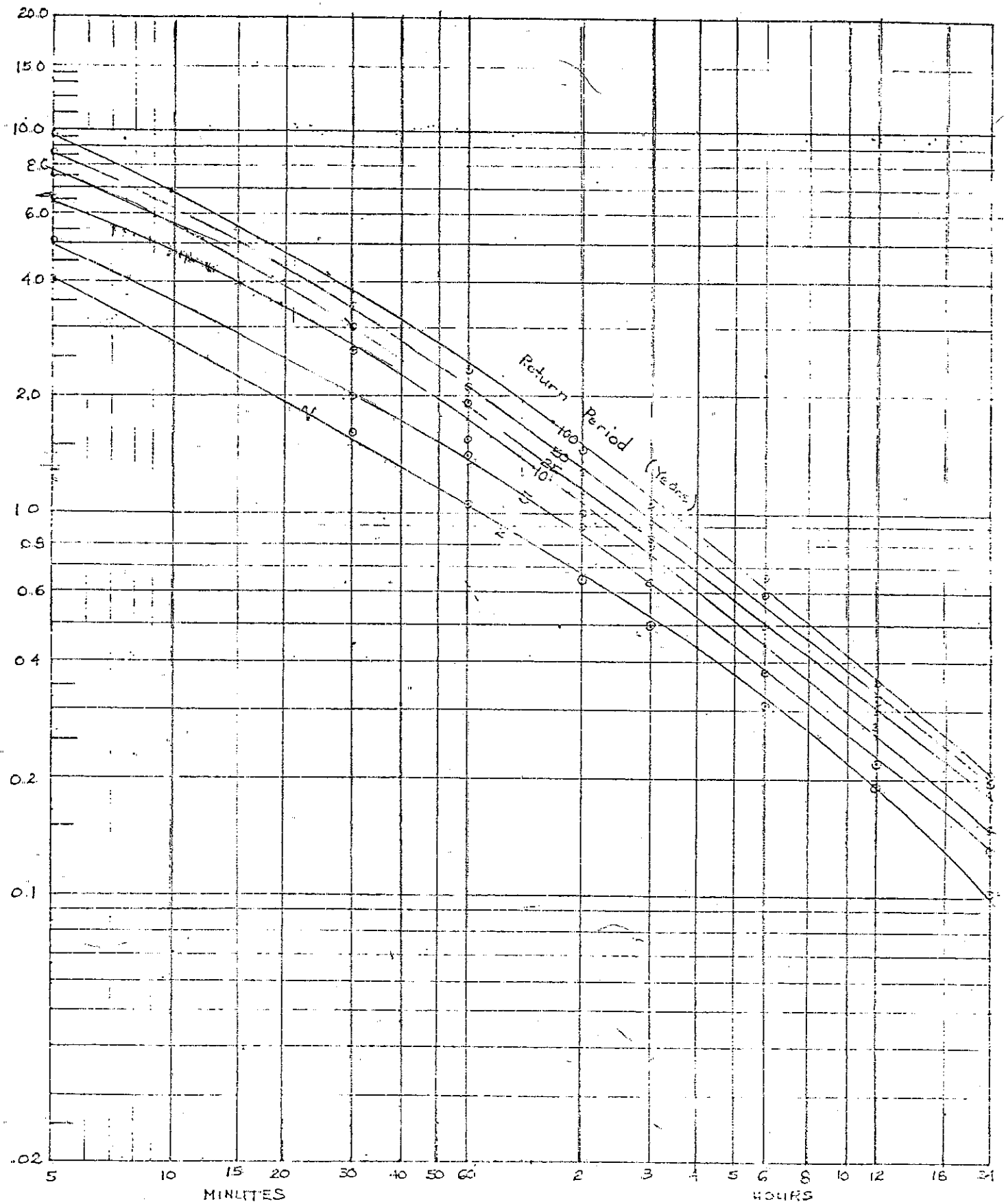


Figure 3-10 Overland time of flow graph

Syracuse, New York 1903-1970



APPENDIX G

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

Project: **Hoag Lane Subdivision** Date: **5/13/2020**

100% New Impervious

Water Quality Calculations

Owner: Project No.: **17061**

Location: **Hoag Lane**

Drawings: **Grading and Site Plans** Estimated By: **HJM** **DA-1a**

WQv = (P)(Rv)(A)/12

P= 90% Rainfall Number - Figure 4.1 = **1.00**

Rv= 0.05 + 0.009(I)

Where I = % New Impervious

100% New Impervious =	3.341	Acres
Total Site Area =	19.738	Acres
% Impervious=	0.169	

---->%Impervious= 100% New Impervious Area / Total Site Area

Therefore Rv =0.05 + 0.009(16.93 %)

Rv = **0.202**

A= Total Site Area = **19.738 Acres**

Therefore Water Quality Volume WQv =

WQv = [(P)(Rv)(A)]/12

= **0.333 acre feet**

or

= **14497.49 cubic feet**

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

Project: **Hoag Lane Subdivision** Date: **5/13/2020**

100% New Impervious

Water Quality Calculations

Owner: Project No.: **17061**

Location: **Hoag Lane**

Drawings: **Grading and Site Plans** Estimated By: **MJB** **PRDA-1b**

WQv = (P)(Rv)(A)/12

P= 90% Rainfall Number - Figure 4.1 = **1.00**

Rv= 0.05 + 0.009(I)

Where I = % New Impervious

100% New Impervious =	3.191	Acres
Total Site Area =	38.304	Acres
% Impervious=	0.083	

---->%Impervious= 100% New Impervious Area / Total Site Area

Therefore Rv =0.05 + 0.009(8.33 %)

Rv = **0.125**

A= Total Site Area = **38.304 Acres**

Therefore Water Quality Volume WQv =

WQv = [(P)(Rv)(A)]/12

= **0.399 acre feet**

or

= **17377.17 cubic feet**

Total WQv = DA-1a + DA-1b =

0.732 acre feet

or

31874.67 cubic feet

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

Project: **Hoag Lane Subdivision** Date: **11/6/2019**

Channel Protection Volume

Owner: Project No.: **17061**

Location: **Hoag Lane, Manlius, NY**

Drawings: **Grading and Site Plans** Estimated By: **HJM** **DA for CPv**

Calculate Unit Peak Discharge (qu) using TR-55 & Type II Rainfall Distribution

Curve Number (CN) from Hyrdocadd analysis	69
Initial Abstraction (Ia)	0.90
Rainfall (P) - 1 year storm	2.05
Ia/P	0.44
Tc from Hydrocadd analysis in hrs	1.35
Unit Peak Discharge (qu) from TR-55 Exhibit 4-II	190.00
Ratio of Outflow to Inflow (qo/qi) from qu and Figure 8.5)	0.090

Calculate Channel Protection Volume per Appendix B

$$V_s/V_r = 0.682 - 1.43*(q_o/qi) + 1.64*(qo/qi)^2 - 0.804*(qo/qi)^3$$

V_r = runoff volume 1 year post development(acre-feet) 1.136 acre-feet

V_s/V_r= 0.565998 (no units)

Therefore V_s = 0.642974 acre-feet

Cpv = **0.643 acre feet**

or

= **28007.93 cubic feet**

Calculate Runoff Rate for 24 hr. detention time

Channel Protection Volume =	0.643 acre feet
Time to release Vs =	24 hours
Projected release rate =	**0.32 cfs**



191106 DA pond inflow for CPv

Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 5/13/2020
HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment 15S: 191106 DA pond inflow for CPv

Runoff = 3.99 cfs @ 12.89 hrs, Volume= 1.136 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.05"

	Area (ac)	CN	Description
	1.883	68	1 acre lots, 20% imp, HSG B
	2.802	79	1 acre lots, 20% imp, HSG C
	8.616	65	2 acre lots, 12% imp, HSG B
	16.408	55	Woods, Good, HSG B
	8.821	70	Woods, Good, HSG C
	15.116	74	>75% Grass cover, Good, HSG C
*	4.096	98	Proposed Site Impervious
*	0.300	98	Permanent Pool of Wet Pond
	58.042	69	Weighted Average
	51.675		89.03% Pervious Area
	6.367		10.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Subcatchment 15S: 191106 DA pond inflow for CPv

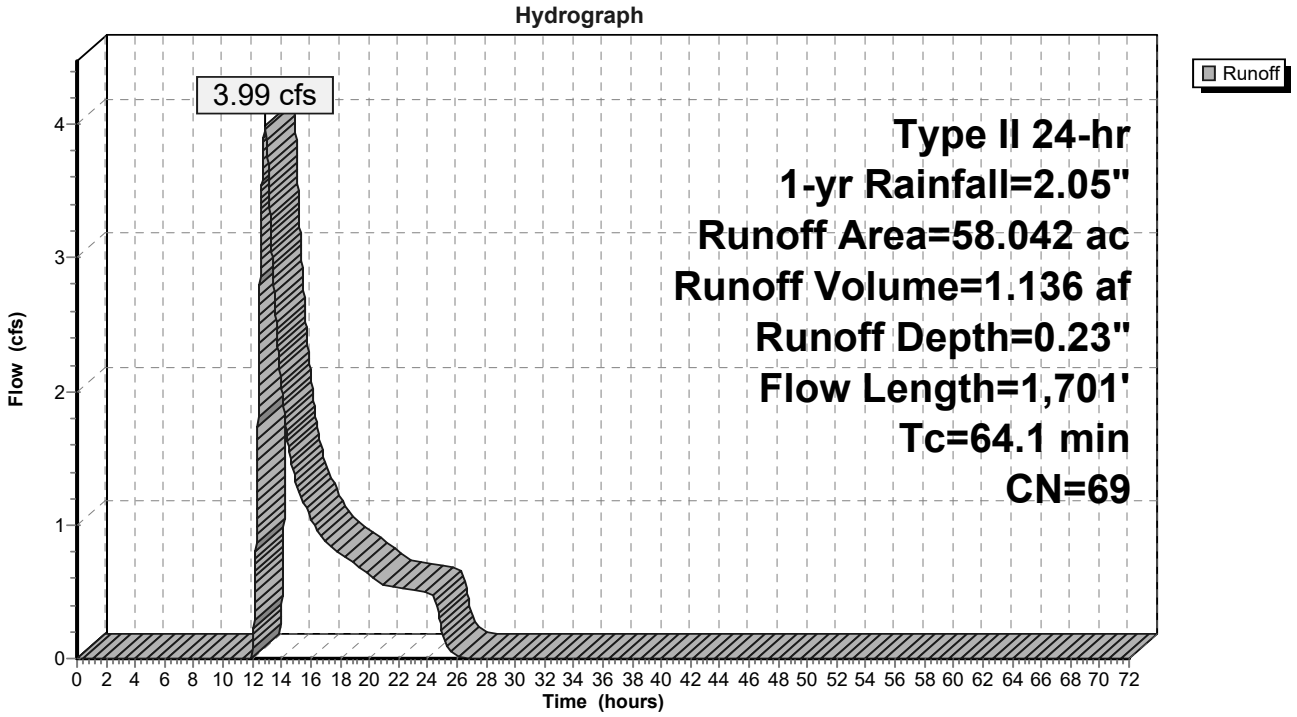
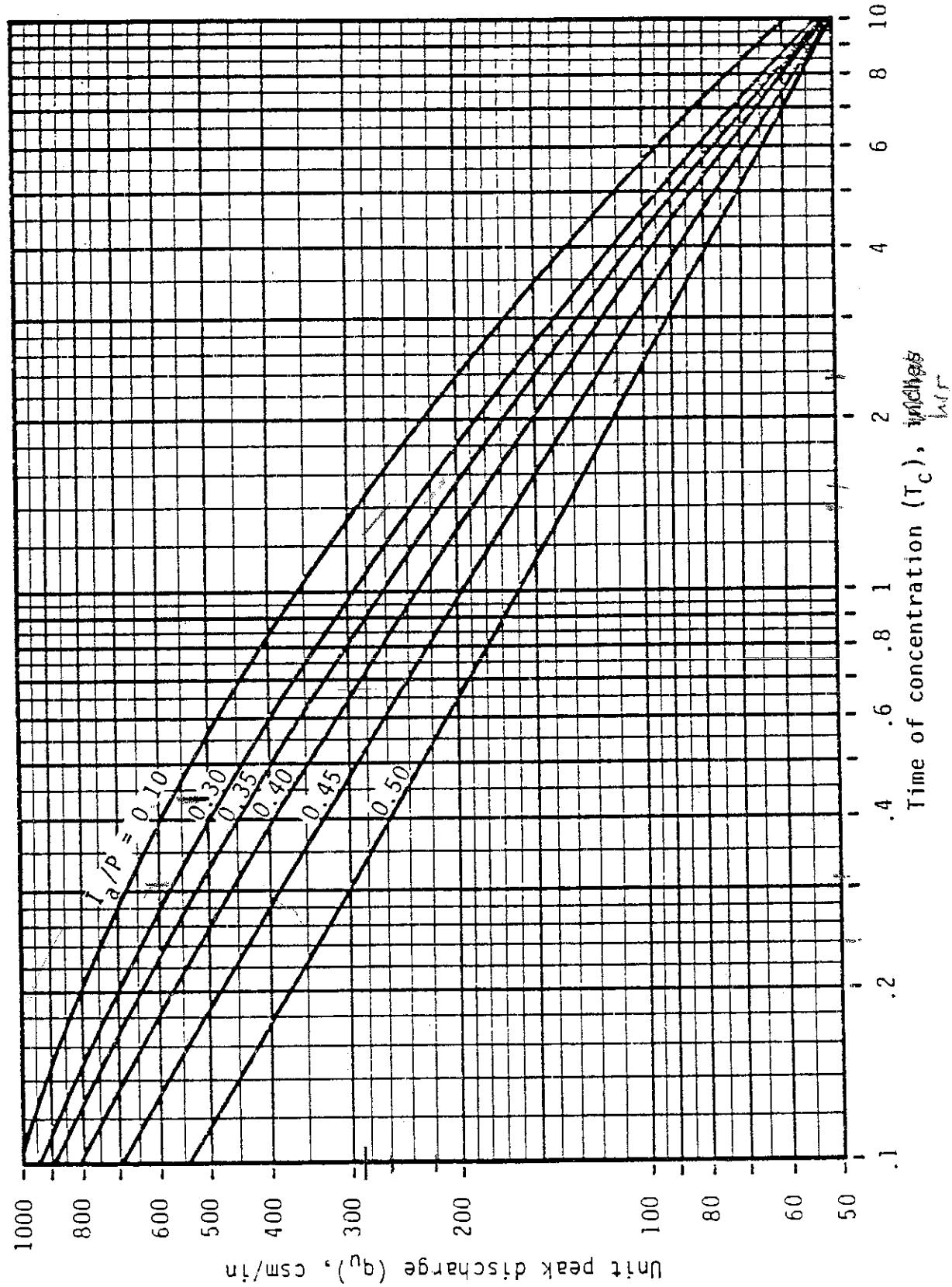


Exhibit 4-II: Unit peak discharge (q_u) for SCS type II rainfall distribution



Compute Stream Channel Protection Volume, (Cp_v) (see Section 4.3 and Appendix B)

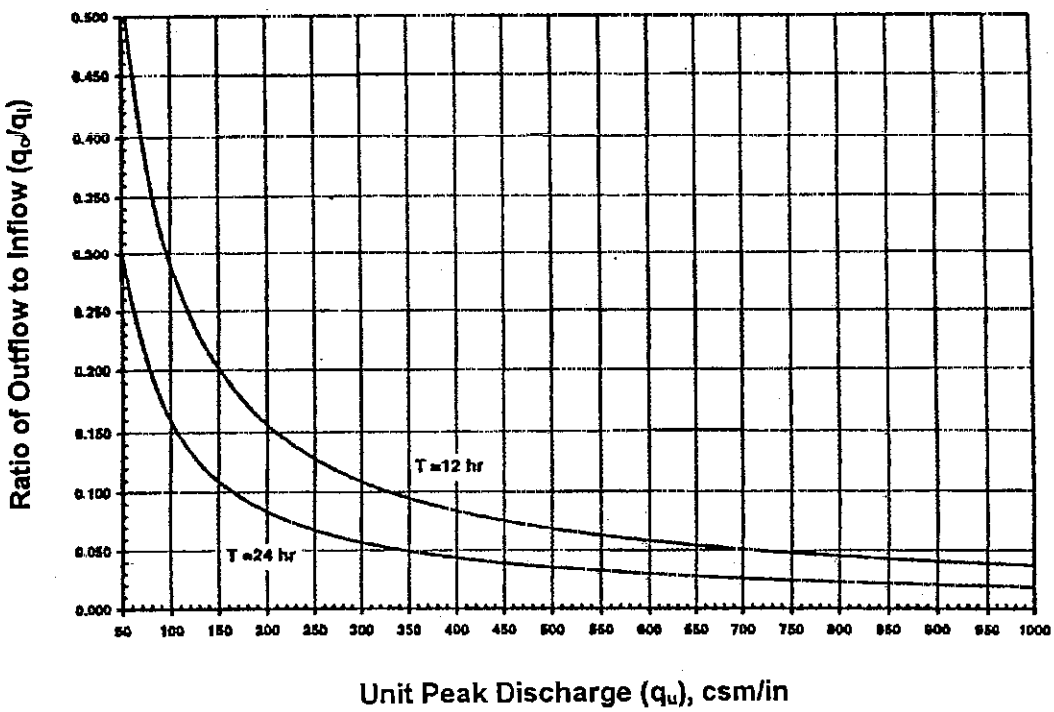
For stream channel protection, provide 24 hours of extended detention (T) for the one-year event.

Compute Channel Protection Storage Volume

First, determine the value of the unit peak discharge (q_u) using TR-55 and Type II Rainfall Distribution

- Initial abstraction (Ia) for CN of 78 is 0.564: [Ia = (200/CN - 2)]
- Ia/P = (0.564)/ 2.3 inches = 0.245
- T_c = 0.35 hours
- Using the above data and Exhibit 4-II from TR-55 (NRCS, 1986), q_u = 570 csm/in (cubic feet per second per square mile per year)

Figure 8.5 Detention Time vs. Discharge Ratios (Source: MDE, 2000)



APPENDIX H

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE
OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Hoag Road Properties LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Allen

Owner/Operator Contact Person First Name
Thomas

Owner/Operator Mailing Address
201 Solar Street

City
Syracuse

State
NY

Zip
13204 -

Phone (Owner/Operator)
___ - ___ - ____

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)
thomasallenhomes@yahoo.com

FED TAX ID
__ - _____ (not required for individuals)

Project Site Information

Project/Site Name
Hoag Lane Subdivision

Street Address (NOT P.O. BOX)
5290-5320 Hoag Lane

Side of Street
○ **North** ● **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Manlius

State: NY
Zip: 13066-
County: Onondaga
DEC Region: 7

Name of Nearest Cross Street
Churchill Lane

Distance to Nearest Cross Street (Feet)
1400

Project In Relation to Cross Street
○ **North** ○ **South** ● **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel
104.-01-39.2

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-74198 78
Ex. -73.749

Y Coordinates (Northing)
4763212
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ● SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ● SINGLE FAMILY SUBDIVISION — Number of Lots: 24
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
30.4	23.2	0.3	3.9

5. Do you plan to disturb more than 5 acres of soil at any one time? ● **Yes** ○ **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	54%	46%

7. Is this a phased project? ● **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date	End Date
/ /	/ /

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Limestone Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ● Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

.

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ◉ **Yes** ○ **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Town of Manlius

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ◉ **No** ○ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ **Yes** ◉ **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ◉ **No**

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ **Yes** ◉ **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ◉ **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ◉ **Yes** ○ **No**
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ◉ **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
RZ Engineering, PLLC

Contact Name (Last, Space, First)
Zona Rudy

Mailing Address
6320 Fly Road Suite 109

City
East Syracuse

State NY Zip 13057-

Phone 315-432-1089 Fax --

Email
rzona@rzengineering.com

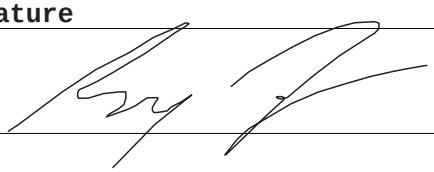
SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name Rudy **MI** L

Last Name Zona

Signature



Date 06/15/2020

25. Has a construction sequence schedule for the planned management practices been prepared? ○ Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ● Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ● Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ● Grassed Waterway
- ● Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ● Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ● Diversion
- ○ Grade Stabilization Structure
- ● Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ● Retaining Wall
- ○ Riprap Slope Protection
- ● Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ● **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

		0	.	7	3	2	**acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)	
RR Techniques (Area Reduction)				
● Conservation of Natural Areas (RR-1)	6.54	and/or		
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or		
● Tree Planting/Tree Pit (RR-3)	0.096	and/or	0.096	
● Disconnection of Rooftop Runoff (RR-4)		and/or	1.61	
RR Techniques (Volume Reduction)				
○ Vegetated Swale (RR-5)				
○ Rain Garden (RR-6)				
○ Stormwater Planter (RR-7)				
○ Rain Barrel/Cistern (RR-8)				
○ Porous Pavement (RR-9)				
○ Green Roof (RR-10)				
Standard SMPs with RRv Capacity				
○ Infiltration Trench (I-1)				
○ Infiltration Basin (I-2)				
○ Dry Well (I-3)				
○ Underground Infiltration System (I-4)				
○ Bioretention (F-5)				
○ Dry Swale (O-1)				
Standard SMPs				
○ Micropool Extended Detention (P-1)				
● Wet Pond (P-2)			4.83	
○ Wet Extended Detention (P-3)				
○ Multiple Pond System (P-4)				
○ Pocket Pond (P-5)				
○ Surface Sand Filter (F-1)				
○ Underground Sand Filter (F-2)				
○ Perimeter Sand Filter (F-3)				
○ Organic Filter (F-4)				
○ Shallow Wetland (W-1)				
○ Extended Detention Wetland (W-2)				
○ Pond/Wetland System (W-3)				
○ Pocket Wetland (W-4)				
○ Wet Swale (O-2)				

Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other**	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.156 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.155 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

0.927 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).

1.083

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.643 **acre-feet**

CPv Provided

0.927 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

33.84 **CFS**

Post-development

26.58 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

97.89 **CFS**

Post-development

78.22 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Homeowner's Association

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

The wet pond was designed to accommodate runoff and treatment from the entire contributing watershed.

Groundwater tables at the depths of the proposed wet pond elevations prohibited the use of onsite infiltration techniques.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

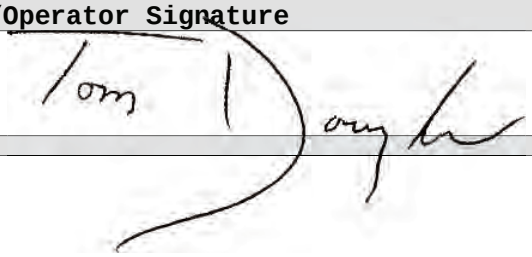
I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: Tom

MI: A

Print Last Name: Douglas

Owner/Operator Signature



Date: 06/15/2020

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Hoag Lane Subdivision

Owner/Operator Information

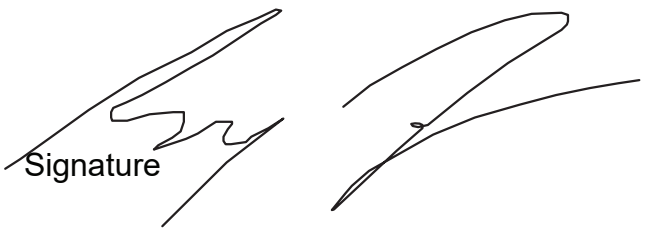
Owner/Operator (Company Name/Private Owner/Municipality Name)

Hoag Road Properties LLC

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Rudy	L	Zona
First name	MI	Last Name



Signature

6/12/2020

Date

Revised: January 2020

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Hoag Road Properties LLC
2. Contact Person:	Thomas Allen
3. Street Address:	201 Solar Street
4. City/State/Zip:	Syracuse, NY 13204
II. Project Site Information	
5. Project/Site Name:	Hoag Lane Subdivision
6. Street Address:	5290-5320 Hoag Lane
7. City/State/Zip:	Manlius, NY 13066
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

SITE PLAN/SKETCH

Inspector (print name)	**Date of Inspection**
Qualified Professional (print name)	**Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam
Yes No NA
[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles
Yes No NA
[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation
Yes No NA
[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence
Yes No NA
[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

ATTACHMENT 1

Construction Stormwater Compliance Inspection Report

Project Name and Location:	Date:	Page 1 of 2
	Permit # (if any): **NYR**	
Municipality: County:	Entry Time:	Exit Time:
On-site Representative(s) and contact information:	Weather Conditions:	
Name and Address of SPDES Permittee/Title/Phone/Fax Numbers: Contacted: Yes ☐ No ☐		

INSPECTION CHECKLIST

SPDES Authority

	Yes	No	N/A		Law, rule or permit citation
1.	☐	☐	☐	Is a copy of the NOI posted at the construction site for public viewing?	
2.	☐	☐	☐	Is an up-to-date copy of the signed SWPPP retained at the construction site?	
3.	☐	☐	☐	Is a copy of the SPDES General Permit retained at the construction site?	

SWPPP Content

	Yes	No	N/A		Law, rule or permit citation
4.	☐	☐	☐	Does the SWPPP describe and identify the erosion & sediment control measures to be employed?	
5.	☐	☐	☐	Does the SWPPP provide a maintenance schedule for the erosion & sediment control measures?	
6.	☐	☐	☐	Does the SWPPP describe and identify the post-construction SW control measures to be employed?	
7.	☐	☐	☐	Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?	
8.	☐	☐	☐	Does the SWPPP include all the necessary 'CONTRACTOR CERTIFICATION' statements?	
9.	☐	☐	☐	Is the SWPPP signed/certified by the permittee?	

Recordkeeping

	Yes	No	N/A		Law, rule or permit citation
10.	☐	☐	☐	Are inspections performed as required by the permit (every 7 days and after ½" rain event)?	
11.	☐	☐	☐	Are the site inspections performed by a qualified professional?	
12.	☐	☐	☐	Are all required reports properly signed/certified?	
13.	☐	☐	☐	Does the SWPPP include copies of the monthly/quarterly written summaries of compliance status?	

Visual Observations

	Yes	No	N/A		Law, rule or permit citation
14.	☐	☐	☐	Are all erosion and sediment control measures installed/constructed?	
15.	☐	☐	☐	Are all erosion and sediment control measures maintained properly?	
16.	☐	☐	☐	Have all disturbances of 5 acres or more been approved prior to the disturbance?	
17.	☐	☐	☐	Are stabilization measures initiated in inactive areas?	
18.	☐	☐	☐	Are permanent stormwater control measures implemented?	
19.	☐	☐	☐	Was there a discharge into the receiving water on the day of inspection?	
20.	☐	☐	☐	Are receiving waters free of there evidence of turbidity, sedimentation, or oil ? (If no , complete Page 2)	

Overall Inspection Rating: ❑ Satisfactory ❑ Marginal ❑ Unsatisfactory	
Name/Agency of Lead Inspector:	**Signature of Lead Inspector:**
Names/Agencies of Other Inspectors:	

Water Quality Observations

Describe the discharge(s) [source(s), impact on receiving water(s), etc.] _____

_____

_____

_____

_____

Describe the quality of the receiving water(s) both upstream and downstream of the discharge_____

_____

_____

_____

_____

Describe any other water quality standards or permit violations _____

_____

_____

Additional Comments:_____

_____

_____

_____

_____

_____

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☐ Photographs attached

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP.
***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

☐ For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes ☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2010)

APPENDIX I

Erosion and Sedimentation Control Measures Maintenance Schedule

1. Temporary Construction Entrance: During Construction inspect periodically. Maintain entrance in a manner that will prevent tracking of sediment into public right of ways. Remove built up sediment deposits; and clean, repair, or replace temporary construction entrance as required.
2. Temporary Sediment Trap: During construction inspect weekly. Clean and restore traps to their original size when sediment has accumulated to one-half of the basin depth. Remove temporary sediment traps and stabilize areas when their contributory drainage area is stabilized.
3. Temporary Silt Fence: During construction inspect weekly. Remove built up sediment deposits; and clean, repair, or replace silt fence as required. Remove temporary silt fence when contributory drainage areas are stabilized.
4. Grass-Lined Drainage Channels: During construction inspect weekly to insure their stability and to locate points of scour, rodent-holes, breaches, and deposition of sediment or other obstructions. Clean, repair, and re-seed drainage channels as required. After construction inspect semi-annually and after every heavy rainfall.
5. Culvert: During construction inspect weekly to insure structural integrity, detect vandalism and damage, and for cleaning. Clean, repair, or replace culvert as required. After construction inspect semi-annually and after every heavy rainfall.
6. Stone Erosion Protection Aprons: During construction inspect weekly to insure structural integrity and to verify that stone is not by-passed, or developing excessive scour at the stone base or sediment build-up. Remove sediment accumulated within the riprap stone aprons at inlets and outlets of culverts and grassed waterways, or replace stone, as required, to allow the stormwater to drain through the stone to reduce erosive velocities and prevent large flows from carrying sediment over their tops. After construction inspect semi-annually and after every heavy rainfall.
7. Disturbed Soil Areas: Seed and mulch upon final grading of topsoil. During construction inspect weekly and repair and re-seed areas, as required. After construction inspect and maintain on regular basis permanent lawns and grassed areas consistent with favorable plant growth, soil, and climatic conditions to insure soil protection and structural integrity of the site's plant cover. Maintenance involves regular seasonal work for mowing, fertilizing, liming, watering, pruning, fire controls, weed and pest control, re-seeding, and timely repairs, as required. Maintenance of vegetative areas shall also include removal of debris and protection from unintended uses or traffic.

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION ROAD STABILIZATION



Definition & Scope

The stabilization of temporary construction access routes, on-site vehicle transportation routes, and construction parking areas to control erosion on temporary construction routes and parking areas.

Conditions Where Practice Applies

All traffic routes and parking areas for temporary use by construction traffic.

Design Criteria

Construction roads should be located to reduce erosion potential, minimize impact on existing site resources, and maintain operations in a safe manner. Highly erosive soils, wet or rocky areas, and steep slopes should be avoided. Roads should be routed where seasonal water tables are deeper than 18 inches. Surface runoff and control should be in accordance with other standards.

Road Grade – A maximum grade of 12% is recommended, although grades up to 15% are possible for short distances.

Road Width – 12 foot minimum for one-way traffic or 24 foot minimum for two-way traffic.

Side Slope of Road Embankment – 2:1 or flatter.

Ditch Capacity – On-site roadside ditch and culvert capacities shall be the 10 yr. peak runoff.

Composition – Use a 6-inch layer of NYS DOT sub-base Types 1,2,3, 4 or equivalent as specified in NYSDOT Standard Specifications.

Construction Specifications

1. Clear and strip roadbed and parking areas of all vegetation, roots, and other objectionable material.

2. Locate parking areas on naturally flat areas as available. Keep grades sufficient for drainage, but not more than 2 to 3 percent.

3. Provide surface drainage and divert excess runoff to stabilized areas.

4. Maintain cut and fill slopes to 2:1 or flatter and stabilized with vegetation as soon as grading is accomplished.

5. Spread 6-inch layer of sub-base material evenly over the full width of the road and smooth to avoid depressions.

6. Provide appropriate sediment control measures to prevent offsite sedimentation.

Maintenance

Inspect construction roads and parking areas periodically for condition of surface. Top dress with new gravel as needed. Check ditches for erosion and sedimentation after rainfall events. Maintain vegetation in a healthy, vigorous condition. Areas producing sediment should be treated immediately.

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT



Definition & Scope

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

Capacity: The washout facility should be sized to contain solids, wash water, and rainfall and sized to allow for the evaporation of the wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the side slopes shall be 2 horizontal to 1 vertical.

Location: Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.

Liner: All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

STANDARD AND SPECIFICATIONS FOR DUST CONTROL



Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. **Non-driving Areas** – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. **Driving Areas** – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR PROTECTING VEGETATION DURING CONSTRUCTION



Definition & Scope

The protection of trees, shrubs, ground cover and other vegetation from damage by construction equipment. In order to preserve existing vegetation determined to be important for soil erosion control, water quality protection, shade, screening, buffers, wildlife habitat, wetland protection, and other values.

Conditions Where Practices Applies

On planned construction sites where valued vegetation exists and needs to be preserved.

Design Criteria

1. Planning Considerations

   A. Inventory:

      1) Property boundaries, topography, vegetation and soils information should be gathered. Identify potentially high erosion areas, areas with tree windthrow potential, etc. A vegetative cover type map should be made on a copy of a topographic map which shows other natural and manmade features. Vegetation that is desirable to preserve because of its value for screening, shade, critical erosion control, endangered species, aesthetics, etc., should be identified and marked on the map.

      2) Based upon this data, general statements should be prepared about the present condition, potential problem areas, and unique features of the property.

   B. Planning:

      1) After engineering plans (plot maps) are prepared, another field review should take place and recommendations made for the vegetation to be saved. Minor adjustments in location of roads, dwellings, and utilities may be needed. Construction on steep slopes, erodible soils, wetlands, and streams should be avoided. Clearing limits should be delineated (See "Determine Limits of Clearing and Grading" on page 2.2).

      2) Areas to be seeded and planted should be identified. Remaining vegetation should blend with their surroundings and/or provide special function such as a filter strip, buffer zone, or screen.

      3) Trees and shrubs of special seasonal interest, such as flowering dogwood, red maple, striped maple, serviceberry, or shadbush, and valuable potential shade trees should be identified and marked for special protective treatment as appropriate.

      4) Trees to be cut should be marked on the plans. If timber can be removed for salable products, a forester should be consulted for marketing advice.

      5) Trees that may become a hazard to people, personal property, or utilities should be removed. These include trees that are weak-wooded, disease-prone, subject to windthrow, or those that have severely damaged root systems.

      6) The vigor of remaining trees may be improved by a selective thinning. A forester should be consulted for implementing this practice.

2. Measures to Protect Vegetation

   A. Limit soil placement over existing tree and shrub roots to a maximum of 3 inches. Soils with loamy texture and good structure should be used.

   B. Use retaining walls and terraces to protect roots of trees and shrubs when grades are lowered. Lowered grades should start no closer than the dripline of the tree. For narrow-canopied trees and shrubs, the stem diameter in inches is converted to feet and doubled, such that a 10 inch tree should be protected to 20 feet.

   C. Trenching across tree root systems should be the same minimum distance from the trunk, as in "B". Tunnels under root systems for underground utilities should start 18 inches or deeper below the normal ground surface. Tree roots which must be severed should be cut clean. Backfill material that will be in contact with the roots should be topsoil or a prepared planting soil mixture.

   D. Construct sturdy fences, or barriers, of wood, steel, or other protective material around valuable

vegetation for protection from construction equipment. Place barriers far enough away from trees, but not less than the specifications in "B", so that tall equipment such as backhoes and dump trucks do not contact tree branches.

E. Construction limits should be identified and clearly marked to exclude equipment.

F. Avoid spills of oil/gas and other contaminants.

G. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged. The 3 or 4 cut method should be used on all branches larger than two inches at the cut. First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

H. Penalties for damage to valuable trees, shrubs, and herbaceous plants should be clearly spelled out in the contract.

PROTECTING TREES IN HEAVY USE AREAS

The compaction of soil over the roots of trees and shrubs by the trampling of recreationists, vehicular traffic, etc., reduces oxygen, water, and nutrient uptake by feeder roots. This weakens and may eventually kill the plants. Table 2.6 rates the “Susceptibility of Tree Species to Compaction.”

Where heavy compaction is anticipated, apply and maintain a 3 to 4 inch layer of undecayed wood chips or 2 inches of No. 2 washed, crushed gravel. In addition, use of a wooden or plastic mat may be used to lessen compaction, if applicable.

Table 2.6
Susceptibility of Tree Species to Compaction[1]

Resistant:

Box elder……	*Acer negundo*	Willows……	*Salix spp.*
Green ash……..	*Fraxinus pennsylvanica*	Honey locust……	*Gleditsia triacanthos*
Red elm……..	*Ulmus rubra*	Eastern cottonwood…….	*Populus deltoides*
Hawthornes……	*Crataegus spp.*	Swamp white oak…….	*Quercus bicolor*
Bur oak……..	*Quercus macrocarpa*	Hophornbeam……	*Ostrya virginiana*
Northern white cedar….	*Thuja occidentalis*		

Intermediate:

Red maple…….	*Acer rubrum*	Sweetgum…….	*Liquidambar styraciflua*
Silver maple……..	*Acer saccharinum*	Norway maple…….	*Acer platanoides*
Hackberry…….	*Celtis occidentalis*	Shagbark hickory…….	*Carya ovata*
Black gum……	*Nyssa sylvatica*	London plane……..	*Platanus x hybrida*
Red oak……	*Quercus rubra*	Pin oak…….	*Quercus palustris*
Basswood…….	*Tilia americana*		

Susceptible:

Sugar maple…….	*Acer saccharum*	Austrian Pine……	*Pinus nigra*
White pine……	*Pinus strobus*	White ash…….	*Fraxinus americana*
Blue spruce……..	*Picea pungens*	Paper birch……..	*Betula papyrifera*
White oak……	*Quercus alba*	Moutain ash…….	*Sorbus aucuparia*
Red pine……..	*Pinus resinosa*	Japanese maple……	*Acer palmatum*

[1] If a tree species does not appear on the list, insufficient information is available to rate it for this purpose.

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS



Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

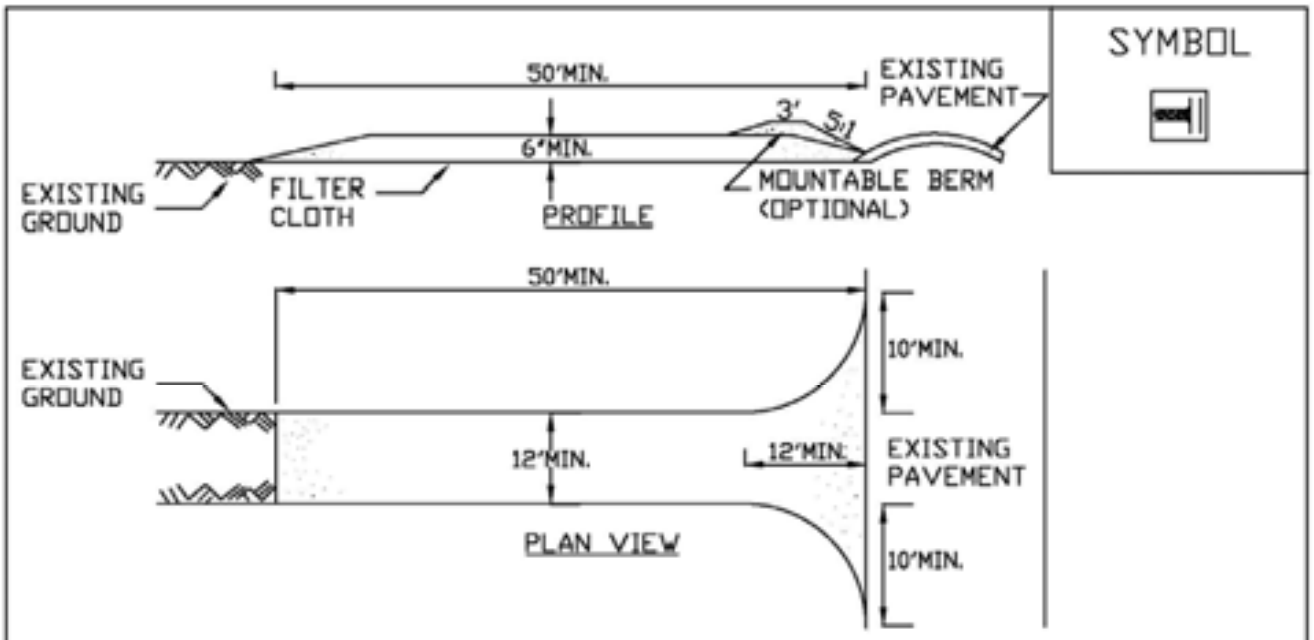
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 2.1
Stabilized Construction Access



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STABILIZED CONSTRUCTION ACCESS

STANDARD AND SPECIFICATIONS FOR CHECK DAM



Definition & Scope

Small barriers or dams constructed of stone, bagged sand or gravel, or other durable materials across a drainageway to reduce erosion in a drainage channel by reducing the velocity of flow in the channel.

Conditions Where Practice Applies

This practice is used as a **temporary** and, in some cases, a **permanent** measure to limit erosion by reducing velocities in open channels that are degrading or subject to erosion or where permanent stabilization is impractical due to short period of usefulness and time constraints of construction.

Design Criteria

Drainage Area: Maximum drainage area above the check dam shall not exceed two (2) acres.

Height: Not greater than 2 feet. Center shall be maintained 9 inches lower than abutments at natural ground elevation.

Side Slopes: Shall be 2:1 or flatter.

Spacing: The check dams shall be spaced as necessary in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

Therefore: $$S = \frac{h}{s}$$

Where: S = spacing interval (ft.)
h = height of check dam (ft.)
s = channel slope (ft./ft.)

Example:

For a channel with a 4% slope and 2 ft. high stone check dams, they are spaced as follows:

$$S = \frac{2\ \text{ft}}{0.04\ \frac{\text{ft}}{\text{ft}}} = 50\ \text{ft}$$

For stone check dams: Use a well graded stone matrix 2 to 9 inches in size (NYS – DOT Light Stone Fill meets these requirements).

The overflow of the check dams will be stabilized to resist erosion that might be caused by the check dam. See Figure 3.1 on page 3.3 for details.

Check dams should be anchored in the channel by a cutoff trench 1.5 ft. wide and 0.5 ft. deep and lined with filter fabric to prevent soil migration.

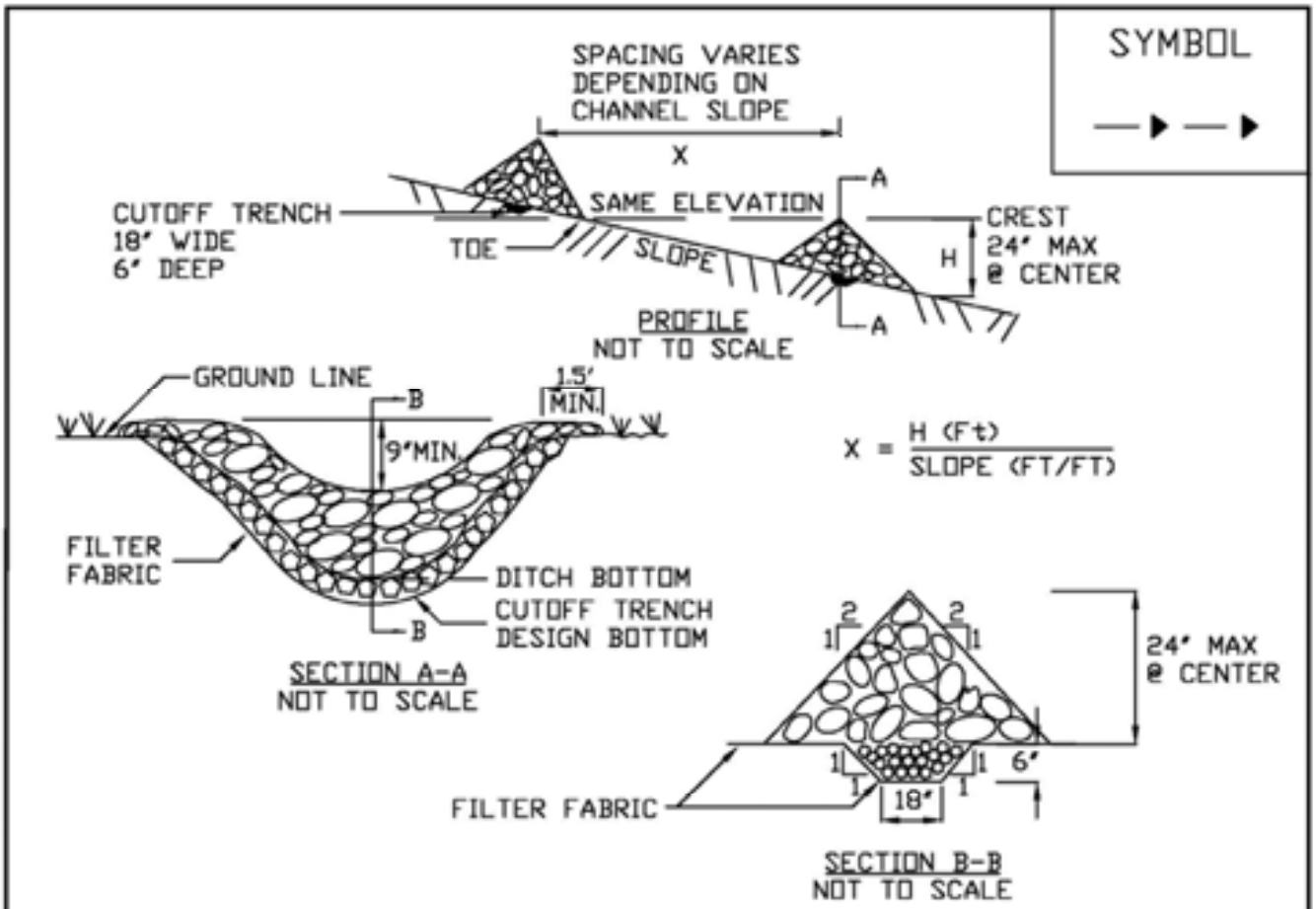
For filter sock or fiber roll check dams: The check dams will be anchored by staking the dam to the earth contact surface. The dam will extend to the top of the bank. The check dam will have a splash apron of NYS DOT #2 crushed stone extending a minimum 3 feet downstream from the dam and 1 foot up the sides of the channel. The compost and materials for a filter sock check dam shall meet the requirements shown in the standard for Compost Filter Sock on page 5.7.

Maintenance

The check dams should be inspected after each runoff event. Correct all damage immediately. If significant erosion has occurred between structures, a liner of stone or other suitable material should be installed in that portion of the channel or additional check dams added.

Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam.

Figure 3.1
Stone Check Dam Detail



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE CHECK DAM

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION DITCH



Definition & Scope

A **temporary** excavated drainage way to intercept sediment laden water and divert it to a sediment trapping device or to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet.

Conditions Where Practice Applies

Construction ditches are constructed:

1. to divert flows from entering a disturbed area.
2. intermittently across disturbed areas to shorten overland flow distances.
3. to direct sediment laden water along the base of slopes to a trapping device.
4. to transport offsite flows across disturbed areas such as rights-of-way.

Ditches collecting runoff from disturbed areas shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 3.2 on page 3.6 for details.

General

	Ditch A	Ditch B
Drainage Area	<5 Ac	5-10 Ac
Bottom Width of Flow Channel	4 ft.	6 ft.
Depth of Flow Channel	1 ft.	1 ft.
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 10% Max.	0.5% Min. 10% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specification for Grassed Waterways on page 3.23 and 3.24.

Stabilization

Stabilization of the ditch shall be completed within 2 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year. The flow channel shall be stabilized as per the following criteria:

The seeding for vegetative stabilization shall be in accordance with the standard on Page 4.78. The seeded area will be mulched in accordance with the standard on Page 4.39.

Type of Treatment	Channel Grade[1]	Flow Channel	
		A (<5 Ac.)	B (5-10 Ac.)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP[2], Sod, or lined with plastic or 2" stone
3	5.1-8.0%	Seed and cover with RECP[2], Sod, or line with plastic or 2 in. stone	Line with 4-8 in. rip-rap or, geotextile
4	8.1-10%	Line with 4-8 in. rip-rap or geotextile	Site Specific Design

1 In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.
2 Rolled Erosion Control Product.

Outlet

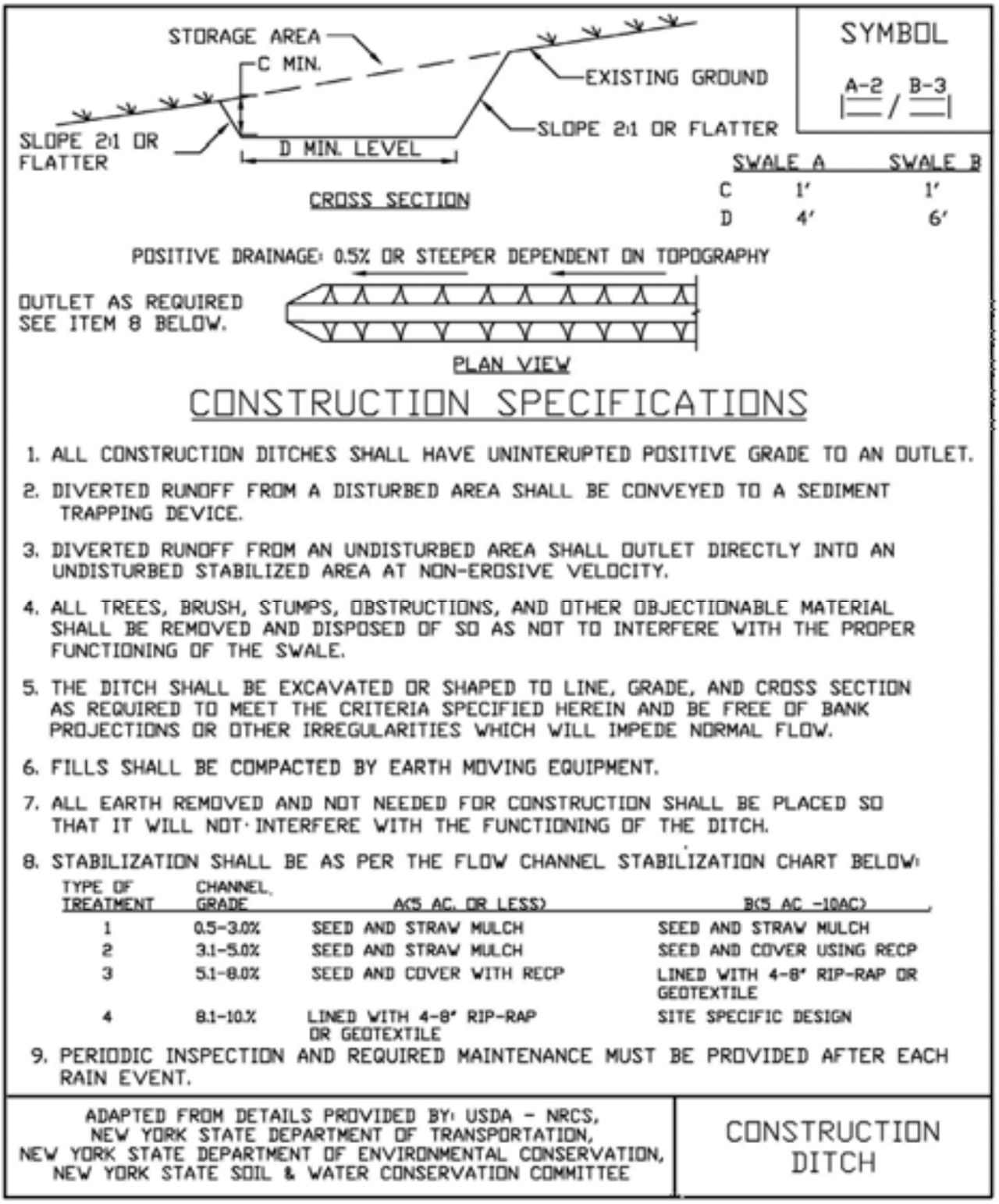
Ditch shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin until the drainage area above the ditch is adequately stabilized.

The on-site location may need to be adusted to meet field conditions in order to utilize the most suitable outlet condition.

If a ditch is used to divert clean water flows from entering a disturbed area, a sediment trapping device may not be needed.

Figure 3.2
Construction Ditch Detail



CONSTRUCTION SPECIFICATIONS

1. ALL CONSTRUCTION DITCHES SHALL HAVE UNINTERUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE DITCH SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DITCH.
8. STABILIZATION SHALL BE AS PER THE FLOW CHANNEL STABILIZATION CHART BELOW:

TYPE OF TREATMENT	CHANNEL GRADE	A(5 AC. OR LESS)	B(5 AC -10AC)
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED AND COVER USING RECP
3	5.1-8.0%	SEED AND COVER WITH RECP	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE
4	8.1-10.%	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE	SITE SPECIFIC DESIGN

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

CONSTRUCTION DITCH

STANDARD AND SPECIFICATIONS FOR DEWATERING SUMP PIT



Discharge of turbid water pumped from the standpipe should be to a sediment trap, sediment basin, filter bag or stabilized area, such as a filter strip. If water from the sump pit will be pumped directly to a storm drain system, filter cloth with an equivalent sieve size between 40-80 should be wrapped around the standpipe to ensure clean water discharge. It is recommended that ¼ to ½ inch hardware cloth be wrapped around and secured to the standpipe prior to attaching the filter cloth. This will increase the rate of water seepage into the standpipe.

Definition & Scope

A **temporary** pit which is constructed using pipe and stone for pumping excessive water from excavations to a suitable discharge area.



Conditions Where Practice Applies

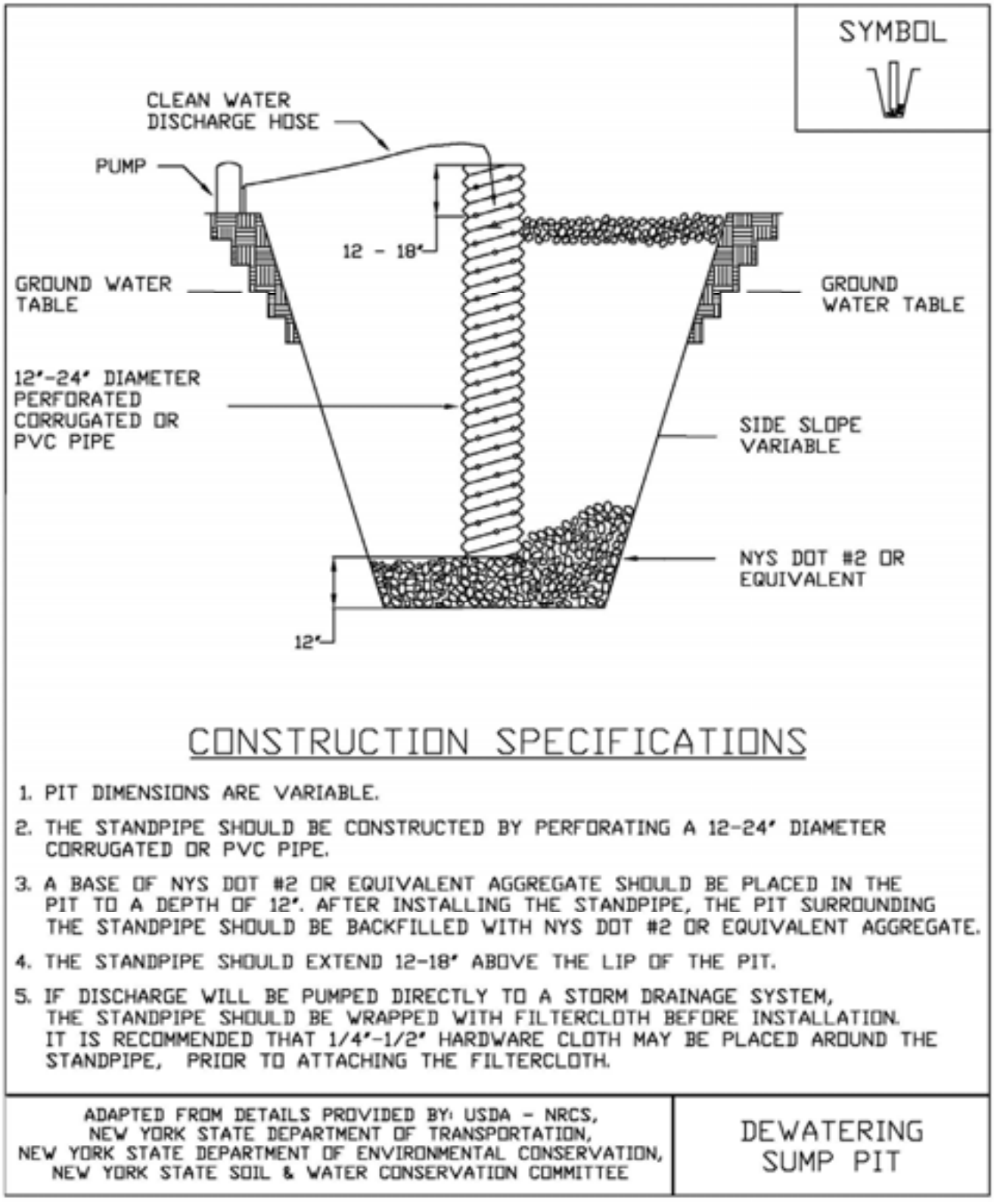
Sump pits are constructed when water collects during the excavation phase of construction. This practice is particularly useful in urban areas during excavation for building foundations. It may also be necessary during construction activities that encounter high ground water tables in floodplain locations.

Design Criteria

The number of sump pits and their locations shall be determined by the contractor/engineer. A design is not required, but construction should conform to the general criteria outlined on Figure 3.3 on page 3.8.

A perforated vertical standpipe is placed in the center of the pit and surrounded with a stone screening material to collect filtered water. Water is then pumped from the center of the pipe to a suitable discharge area.

Figure 3.3
Dewatering Sump Pit Detail



STANDARD AND SPECIFICATIONS FOR GRASSED WATERWAY



Definition & Scope

A natural or **permanent** man-made channel of parabolic or trapezoidal cross-section that is below adjacent ground level and is stabilized by suitable vegetation. The flow channel is normally wide and shallow and conveys the runoff down the slope without causing damage by erosion.

Conditions Where Practice Applies

Grass waterways are used where added vegetative protection is needed to control erosion resulting from concentrated runoff.

Design Criteria

Capacity

The minimum capacity shall be that required to confine the peak rate of runoff expected from a 10-year 24 hour frequency rainfall event or a higher frequency corresponding to the hazard involved. This requirement for confinement may be waived on slopes of less than one (1) percent where out-of-bank flow will not cause erosion or property damage.

Peak rates of runoff values used in determining the capacity requirements shall be computed by appropriate methods. Where there is base flow, it shall be handled by a stone center, subsurface drain, or other suitable means since sustained wetness usually prevents adequate vegetative cover. The cross-sectional area of the stone center or subsurface drain size to be provided shall be determined by using a flow rate of 0.1 cfs/acre or by actual measurement of the maximum base flow.

Velocity

Please see Table 3.1, Diversion Maximum Permissible Design Velocities on page 3.10, for seed, soil, and velocity variables.

Cross Section

The design water surface elevation of a grassed waterway receiving water from diversions or other tributary channels shall be equal to or less than the design water surface elevation in the diversion or other tributary channels.

The top width of parabolic waterways shall not exceed 30 feet and the bottom width of trapezoidal waterways shall not exceed 15 feet unless multiple or divided waterways, stone center, or other means are provided to control meandering of low flows.

Structural Measures

In cases where grade or erosion problems exist, special control measures may be needed such as lined waterways (see page 3.27), or grade stabilization measures (see page 3.21). Where needed, these measures will be supported by adequate design computations. For typical cross sections of waterways with riprap sections or stone centers, refer to Figure 3.8 on page 3.24.

The design procedures for parabolic and trapezoidal channels are available in the NRCS Engineering Field Handbook. Figure 3.9 on page 3.25 also provides a design chart for parabolic waterway.

Outlets

Each waterway shall have a stable outlet. The outlet may be another waterway, a stabilized open channel, grade stabilization structure, etc. In all cases, the outlet must discharge in such a manner as not to cause erosion. Outlets shall be constructed and stabilized prior to the operation of the waterway.

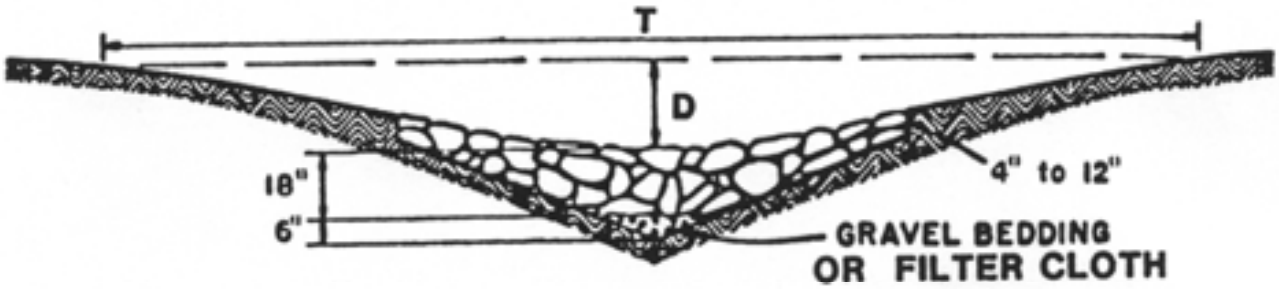
Stabilization

Waterways shall be stabilized in accordance with the appropriate vegetative stabilization standard and specifications, and will be dependent on such factors as slope, soil class, etc. See standard for Vegetating Waterways on Page 4.78.

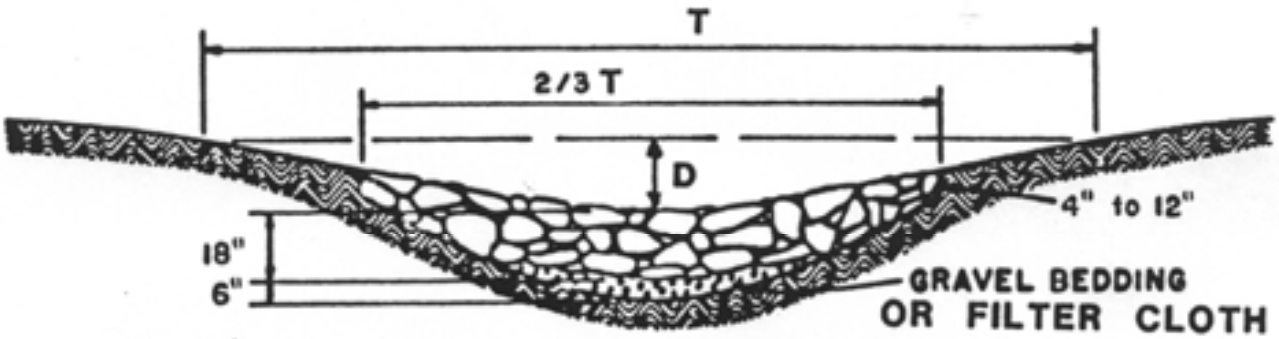
Construction Specifications

See Figure 3.10 on page 3.26 for details.

Figure 3.8
Typical Waterway Cross Sections Details



Waterway with stone center drain. "V" section shaped by motor grader.



Waterway with stone center drain.
Rounded section shaped by bulldozer.

Figure 3.9
Parabolic Waterway Design Chart (USDA - NRCS)

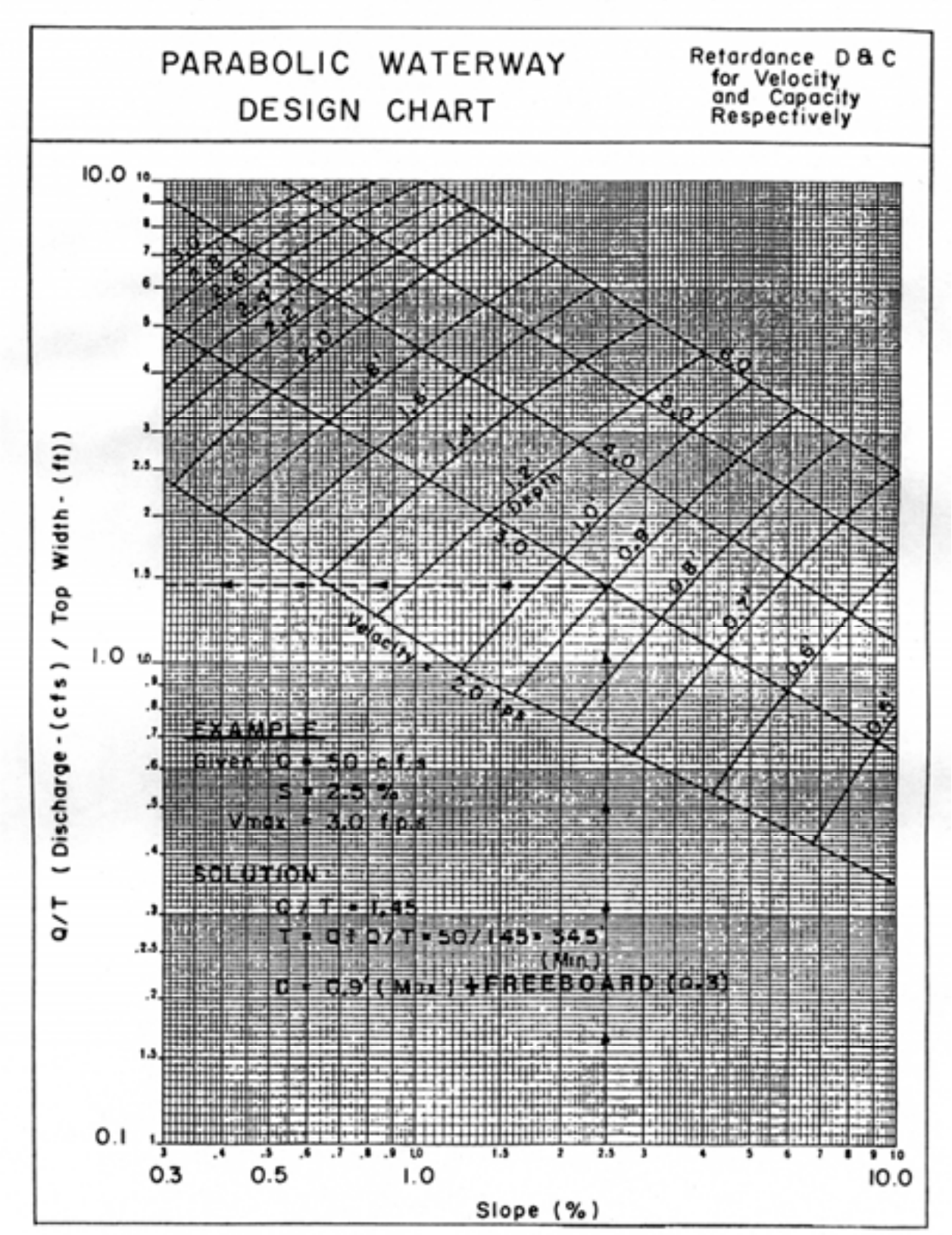
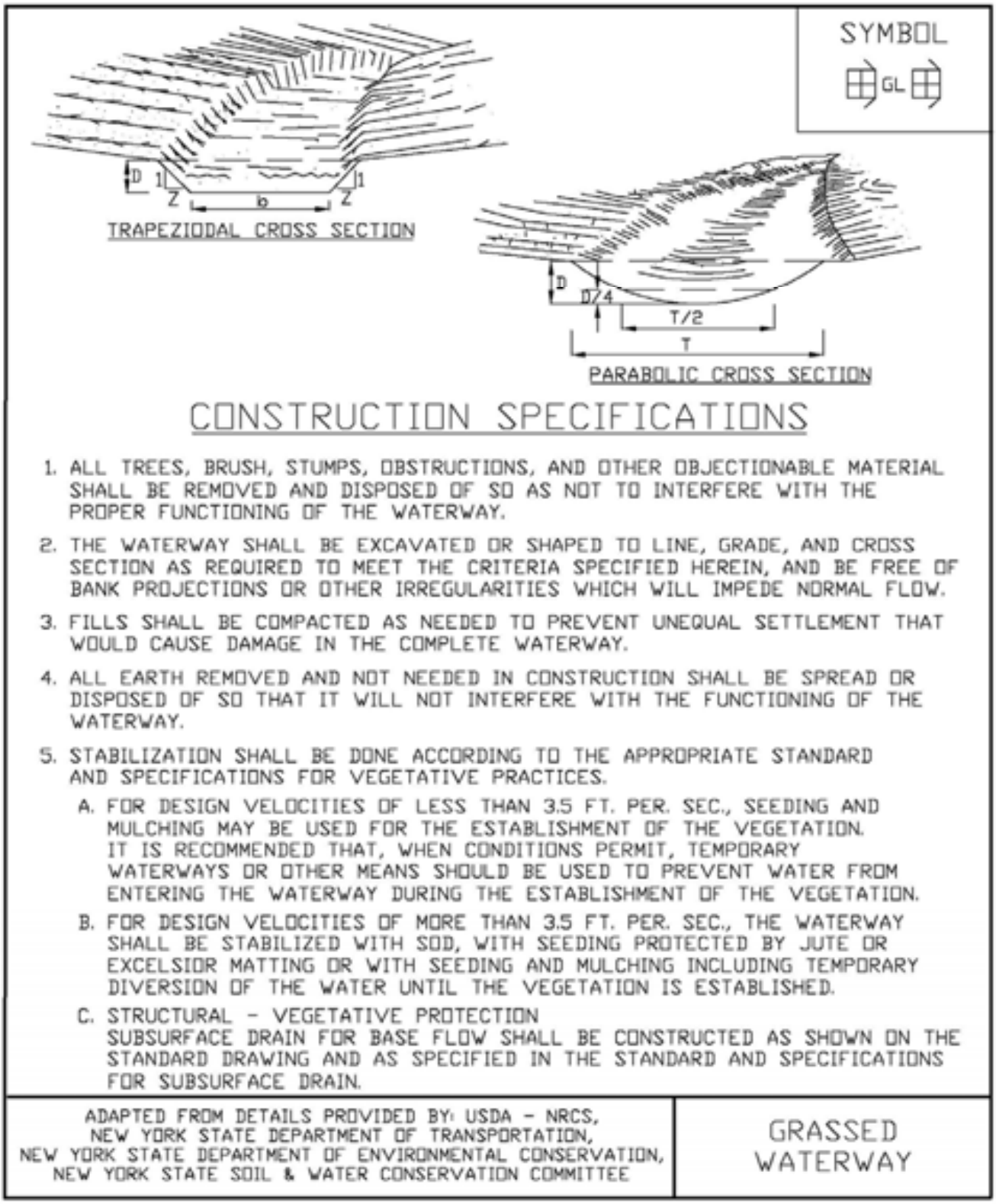


Figure 3.10
Grassed Waterway Detail



CONSTRUCTION SPECIFICATIONS

1. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE WATERWAY.
2. THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN, AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
3. FILLS SHALL BE COMPACTED AS NEEDED TO PREVENT UNEQUAL SETTLEMENT THAT WOULD CAUSE DAMAGE IN THE COMPLETE WATERWAY.
4. ALL EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE WATERWAY.
5. STABILIZATION SHALL BE DONE ACCORDING TO THE APPROPRIATE STANDARD AND SPECIFICATIONS FOR VEGETATIVE PRACTICES.
   A. FOR DESIGN VELOCITIES OF LESS THAN 3.5 FT. PER. SEC., SEEDING AND MULCHING MAY BE USED FOR THE ESTABLISHMENT OF THE VEGETATION. IT IS RECOMMENDED THAT, WHEN CONDITIONS PERMIT, TEMPORARY WATERWAYS OR OTHER MEANS SHOULD BE USED TO PREVENT WATER FROM ENTERING THE WATERWAY DURING THE ESTABLISHMENT OF THE VEGETATION.
   B. FOR DESIGN VELOCITIES OF MORE THAN 3.5 FT. PER. SEC., THE WATERWAY SHALL BE STABILIZED WITH SOD, WITH SEEDING PROTECTED BY JUTE OR EXCELSIOR MATTING OR WITH SEEDING AND MULCHING INCLUDING TEMPORARY DIVERSION OF THE WATER UNTIL THE VEGETATION IS ESTABLISHED.
   C. STRUCTURAL - VEGETATIVE PROTECTION
   SUBSURFACE DRAIN FOR BASE FLOW SHALL BE CONSTRUCTED AS SHOWN ON THE STANDARD DRAWING AND AS SPECIFIED IN THE STANDARD AND SPECIFICATIONS FOR SUBSURFACE DRAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

GRASSED WATERWAY

STANDARD AND SPECIFICATIONS FOR LINED WATERWAY



Definition & Scope

A **permanent** waterway or outlet with a lining of concrete, stone, or other durable, hardened material. The lined section extends up the side slopes to the designed depth. The earth above the permanent lining may be vegetated or otherwise protected.

The lined waterway is constructed to provide for the disposal of concentrated runoff without damage from erosion or flooding, where grassed waterways would be inadequate due to high velocities.

Conditions Where Practice Applies

This standard applies to waterways or outlets with linings of cast-in-place concrete, flagstone mortared in place, rock riprap, gabions, or similar permanent linings. It does not apply to irrigation ditch or canal linings, grassed waterways with stone centers or small lined sections that carry prolonged low flows, or to reinforced concrete channels. Lined waterways should not be used if they are directly discharging to C(T) or higher streams unless thermal impacts are mitigated by biotechnical practices (Section 4). The maximum capacity of the waterway flowing at design depth shall not exceed 100 cubic feet per second.

This practice applies where the following or similar conditions exist:

1. Concentrated runoff is such that a lining is required to control erosion.
2. Steep grades, wetness, prolonged base flow, seepage, or piping that would cause erosion.
3. The location is such that damage from use by people or animals precludes use of vegetated waterways or outlets.
4. Soils are highly erosive or other soil and climate conditions preclude using vegetation.
5. High value property or adjacent facilities warrant the extra cost to contain design runoff in a limited space.

Design Criteria

Capacity

1. The minimum capacity shall be adequate to carry the peak rate of runoff from a 10-year, 24-hour storm. Velocity shall be computed using Manning's equation with a coefficient of roughness "n" as follows:

Lined Material	"n"
Concrete (Type):	
Trowel Finish	0.015
Float Finish	0.019
Gunite	0.019
Flagstone	0.022
Riprap	Determine from Figure 3.11 on page 3.30
Gabion	0.030

2. Riprap gradation and filter (bedding) are generally designed in accordance with criteria set forth in the National Cooperative Highway Research Program Report 108, available from the University Microfilm International, 300 N. Zeeb Road, Ann Arbor, Michigan 48106, Publication No. PB-00839; or the Hydraulic Engineering Circular No. 11, prepared by the U.S. Bureau of Public Roads, available from Federal Highway Administration, 400 7th Street, S.W., Washington, D.C. 20590, HNG-31, or the procedure in the USDA-NRCS's Engineering Field Manual, Chapter 16.

Velocity

1. Maximum design velocity shall be as shown below. Except for short transition sections, flow with a channel gradient within the range of 0.7 to 1.3 of this flow's critical slope must be avoided unless the channel is straight. Velocities exceeding critical will be restricted to straight reaches.

Design Flow Depth (ft.)	Maximum Velocity (ft./sec.)
0.0 - 0.5	25
0.5 - 1.0	15
Greater than 1.0	10

2. Waterways or outlets with velocities exceeding critical shall discharge into an energy dissipater to reduce velocity to less than critical, or to a velocity the downstream soil and vegetative conditions will allow.

Cross Section

The cross section shall be triangular, parabolic, or trapezoidal. Monolithic concrete or gabions may be rectangular.

Freeboard

The minimum freeboard for lined waterways or outlets shall be 0.25 feet above design high water in areas where erosion resistant vegetation cannot be grown adjacent to the paved side slopes. No freeboard is required where good vegetation can be grown and is maintained.

Side Slope

Steepest permissible side slopes, horizontal to vertical will be as follows:

1. Non-Reinforced Concrete
   Hand-placed, formed concrete
   Height of lining, 1.5 ft or less ..... Vertical
   Hand placed screened concrete or mortared
   In-place flagstone
   Height of lining, less than 2 ft ..... 1 to 1
   Height of lining, more than 2 ft ..... 2 to 1
2. Slip form concrete:
   Height of lining, less than 3 ft ..... 1 to 1
3. Rock Riprap ..... 2 to 1
4. Gabions ..... Vertical
5. Pre-cast Concrete Sections ..... Vertical

Lining Thickness

Minimum lining thickness shall be as follows:

1. Concrete ..... 4 in. (In most problem areas, shall be 5 in. with welded wire fabric reinforcing)

2. Rock Riprap ..... 1.5 x maximum stone size plus thickness of filter or bedding.

3. Flagstone ..... 4 in. including mortar bed.

Related Structures

Side inlets, drop structures, and energy dissipaters shall meet the hydraulic and structural requirements of the site.

Filters or Bedding

Filters or bedding to prevent piping, reduce uplift pressure, and collect water will be used as required and will be designed in accordance with sound engineering principles. Weep holes and drains should be provided as needed.

Concrete

Concrete used for lining shall be so proportioned that it is plastic enough for thorough consolidation and stiff enough to stay in place on side slopes. A dense product will be required. A mix that can be certified as suitable to produce a minimum strength of at least 3,000 pounds per square inch will be required. Cement used shall be Portland Cement, Type I, II, IV, or V. Aggregate used shall have a maximum diameter of 1 ½ inches.

Weep holes should be provided in concrete footings and retaining walls to allow free drainage of water. Pipe used for weep holes shall be non-corrosive.

Mortar

Mortar used for mortared in-place flagstone shall consist of a mix of cement, sand, and water. Follow directions on the bag of mortar for proper mixing of mortar and water.

Contraction Joints

Contraction joints in concrete linings, where required, shall be formed transversely to a depth of about one third the thickness of the lining at a uniform spacing in the range of 10 to 15 feet.

Rock Riprap or Flagstone

Stone used for riprap or gabions shall be dense and hard enough to withstand exposure to air, water, freezing, and thawing. Flagstone shall be flat for ease of placement and have the strength to resist exposure and breaking. Rock riprap maximum size shall be as follows:

Velocity (f.p.s.)	d_{max} (in.)
5.0	6
8.5	12
10	18
12	24
15	36

A complete listing riprap gradations is provided in Table 4.1, page 4.9.

Cutoff Walls

Cutoff walls shall be used at the beginning and ending of concrete lining. For rock riprap lining, cutoff walls shall be keyed into the channel bottom and at both ends of the lining.

Construction Specifications

1. The foundation area shall be cleared of trees, stumps, roots, sod, loose rock, or other objectionable material.

2. The cross-section shall be excavated to the neat lines and grades as shown on the plans. Over-excavated areas shall be backfilled with moist soil compacted to the density of the surrounding material.

3. No abrupt deviations from design grade or horizontal alignment shall be permitted.

4. Concrete linings shall be placed to the thickness shown on the plans and trowel finished. Adequate precautions shall be taken to protect freshly placed concrete from extreme (hot or cold) temperatures, to ensure proper curing.

5. Filter bedding and rock riprap shall be placed to line and grade in the manner specified.

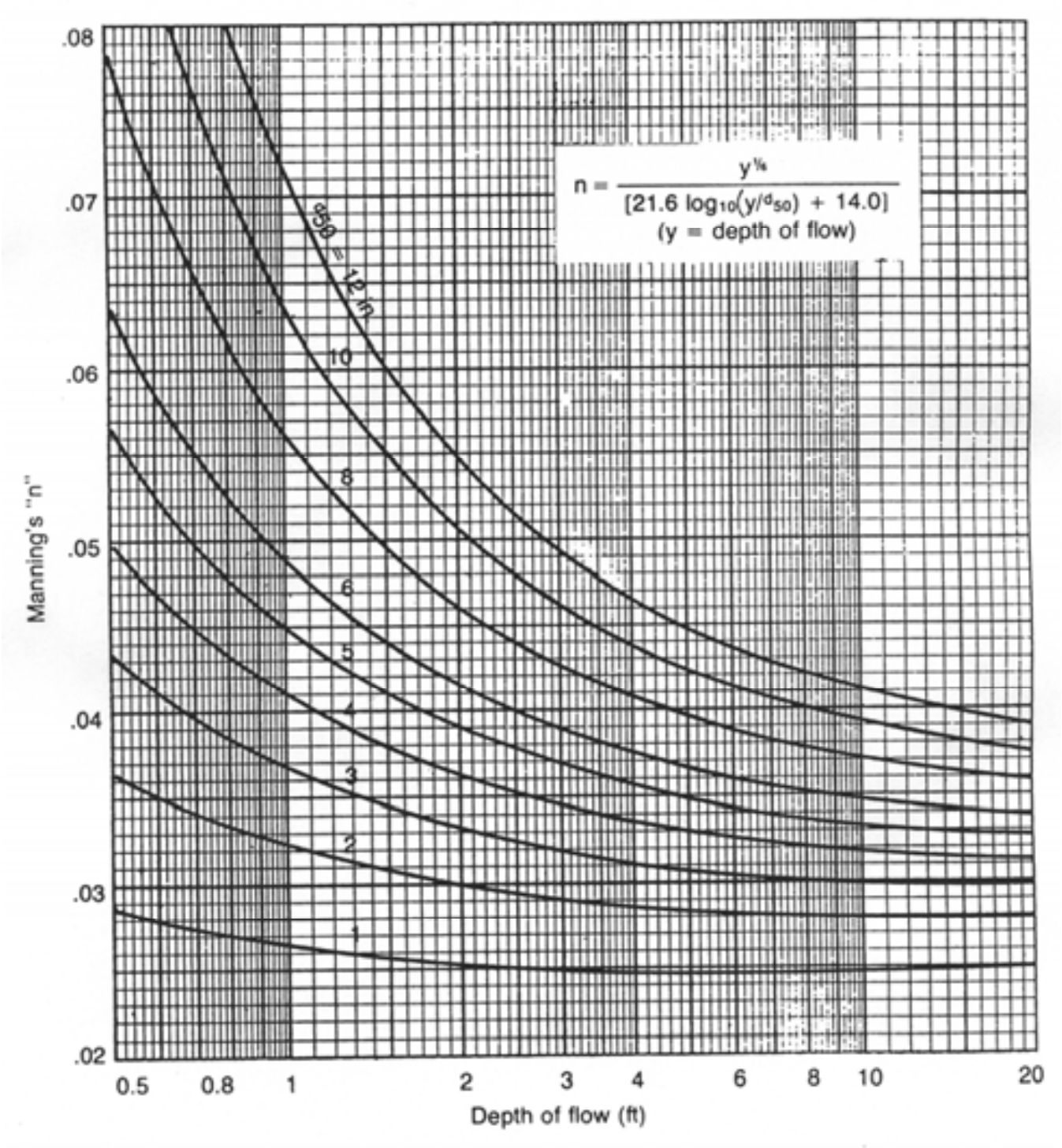
6. Construction operation shall be done in such a manner that erosion, air pollution, and water pollution will be minimized and held within legal limits. The completed job shall meet all design requirements for the appropriate finish. All disturbed areas shall be vegetated or otherwise protected against soil erosion.

Maintenance

Pavement or lining should be maintained as built to prevent undermining and deterioration. Existing trees next to pavements should be removed, as roots can cause uplift damage.

Vegetation next to pavement should be maintained in good condition to prevent scouring if the pavement is overtopped. See Standard and Specifications for Permanent Construction Area Planting on page 4.42.

Figure 3.11
Determining "n" for Riprap Lined Channel using Depth of Flow Chart
(USDA - NRCS)



STANDARD AND SPECIFICATIONS FOR ROCK OUTLET PROTECTION



Definition & Scope

A **permanent** section of rock protection placed at the outlet end of the culverts, conduits, or channels to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach.

Conditions Where Practice Applies

This practice applies where discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This applies to:

1. Culvert outlets of all types.
2. Pipe conduits from all sediment basins, dry storm water ponds, and permanent type ponds.
3. New channels constructed as outlets for culverts and conduits.

Design Criteria

The design of rock outlet protection depends entirely on the location. Pipe outlet at the top of cuts or on slopes steeper than 10 percent, cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron.

Many counties and state agencies have regulations and design procedures already established for dimensions, type and size of materials, and locations where outlet protection is required. Where these requirements exist, they shall be followed.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet must be determined for the design capacity of the pipe. If the tailwater depth is less than half the diameter of the outlet pipe, and the receiving stream is wide enough to accept divergence of the flow, it shall be classified as a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example. If the tailwater depth is greater than half the pipe diameter and the receiving stream will continue to confine the flow, it shall be classified as a Maximum Tailwater Condition; see Figure 3.17 on page 3.43 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example.

Apron Size

The apron length and width shall be determined from the curves according to the tailwater conditions:

Minimum Tailwater – Use Figure 3.16 on page 3.42
Maximum Tailwater – Use Figure 3.17 on page 3.43

If the pipe discharges directly into a well defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank, whichever is less.

The upstream end of the apron, adjacent to the pipe, shall have a width two (2) times the diameter of the outlet pipe, or conform to pipe end section if used.

Bottom Grade

The outlet protection apron shall be constructed with no slope along its length. There shall be no overfall at the end of the apron. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

Alignment

The outlet protection apron shall be located so that there are no bends in the horizontal alignment.

Materials

The outlet protection may be done using rock riprap, grouted riprap, or gabions. Outlets constructed on the bank of a stream or wetland shall not use grouted rip-rap, gabions or concrete.

Riprap shall be composed of a well-graded mixture of rock size so that 50 percent of the pieces, by weight, shall be larger than the d_{50} size determined by using the charts. A

well-graded mixture, as used herein, is defined as a mixture composed primarily of larger rock sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the rocks. The diameter of the largest rock size in such a mixture shall be 1.5 times the d_{50} size.

Thickness

The minimum thickness of the riprap layer shall be 1.5 times the maximum rock diameter for d_{50} of 15 inches or less; and 1.2 times the maximum rock size for d_{50} greater than 15 inches. The following chart lists some examples:

D_{50} (inches)	d_{max} (inches)	Minimum Blanket Thickness (inches)
4	6	9
6	9	14
9	14	20
12	18	27
15	22	32
18	27	32
21	32	38
24	36	43

Rock Quality

Rock for riprap shall consist of field rock or rough unhewn quarry rock. The rock shall be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual rocks shall be at least 2.5.

Filter

A filter is a layer of material placed between the riprap and the underlying soil surface to prevent soil movement into and through the riprap. Riprap shall have a filter placed under it in all cases.

A filter can be of two general forms: a gravel layer or a plastic filter cloth. The plastic filter cloth can be woven or non-woven monofilament yarns, and shall meet these base requirements: thickness 20-60 mils, grab strength 90-120 lbs; and shall conform to ASTM D-1777 and ASTM D-1682.

Gravel filter blanket, when used, shall be designed by comparing particle sizes of the overlying material and the base material. Design criteria are available in Standard and Specification for Anchored Slope and Channel Stabilization on page 4.7.

Gabions

Gabions shall be made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum linear dimension of the mesh opening shall not exceed 4 ½ inches and the area of the mesh opening shall not exceed 10 square inches.

Gabions shall be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes. Gabions shall be of single unit construction and shall be installed according to manufacturer's recommendations.

The area on which the gabion is to be installed shall be graded as shown on the drawings. Foundation conditions shall be the same as for placing rock riprap, and filter cloth shall be placed under all gabions. Where necessary, key, or tie, the structure into the bank to prevent undermining of the main gabion structure.

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap or for dislodged rocks. Repairs should be made immediately.

Design Procedure

1. Investigate the downstream channel to assure that nonerosive velocities can be maintained.

2. Determine the tailwater condition at the outlet to establish which curve to use.

3. Use the appropriate chart with the design discharge to determine the riprap size and apron length required. It is noted that references to pipe diameters in the charts are based on full flow. For other than full pipe flow, the parameters of depth of flow and velocity must be used to adjust the design discharges.

4. Calculate apron width at the downstream end if a flare section is to be employed.

Design Examples are demonstrated in Appendix B.

Construction Specifications

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grad-

ing limits when installed respectively in the riprap or filter.

3. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps, whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.

4. Rock for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The rock for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller rocks and spalls filling the voids between the larger rocks. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

Figure 3.16
Outlet Protection Design—Minimum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)

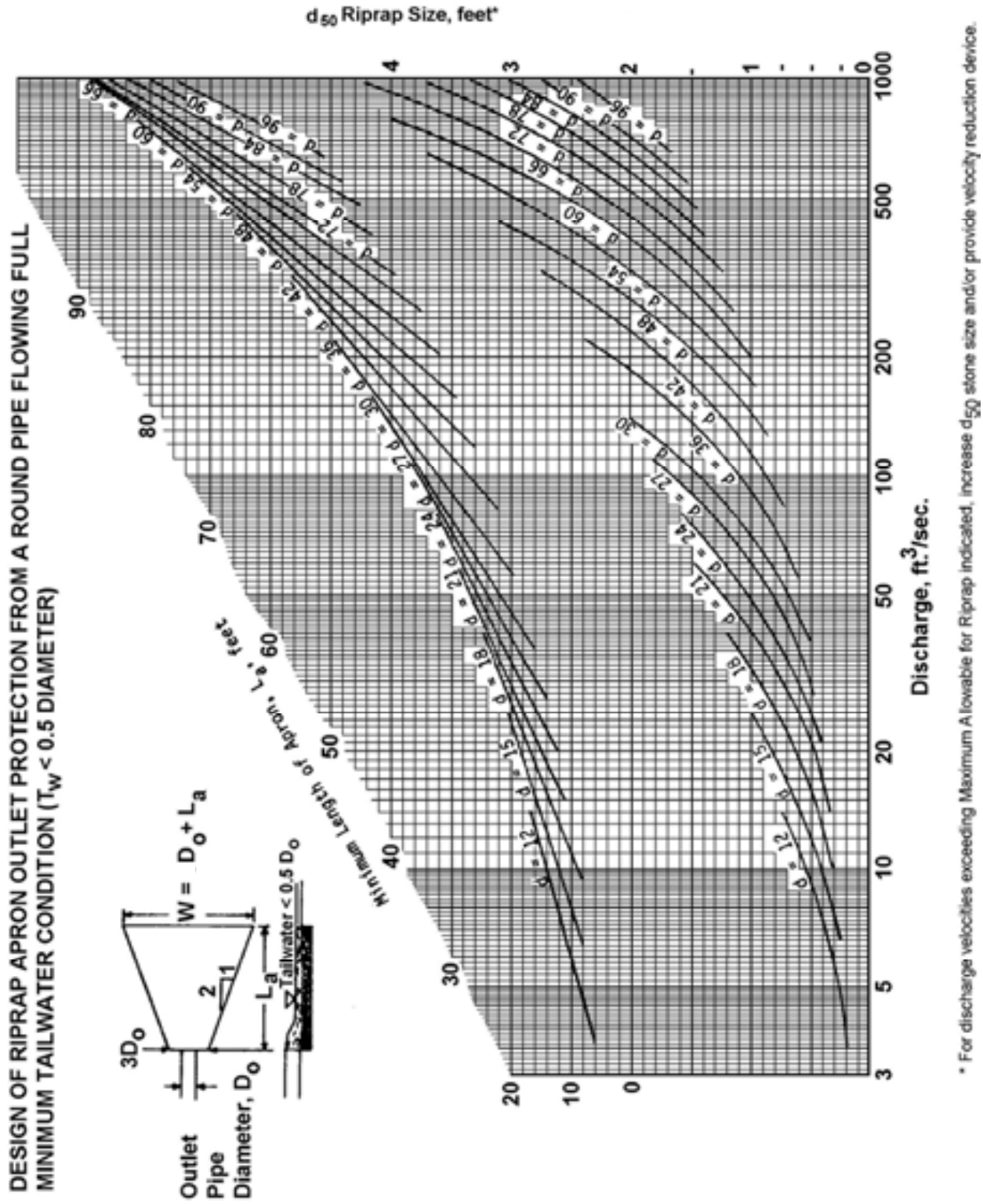


Figure 3.17
Outlet Protection Design—Maximum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Maximum Tailwater Condition: $T_w \geq 0.5D_o$) (USDA - NRCS)

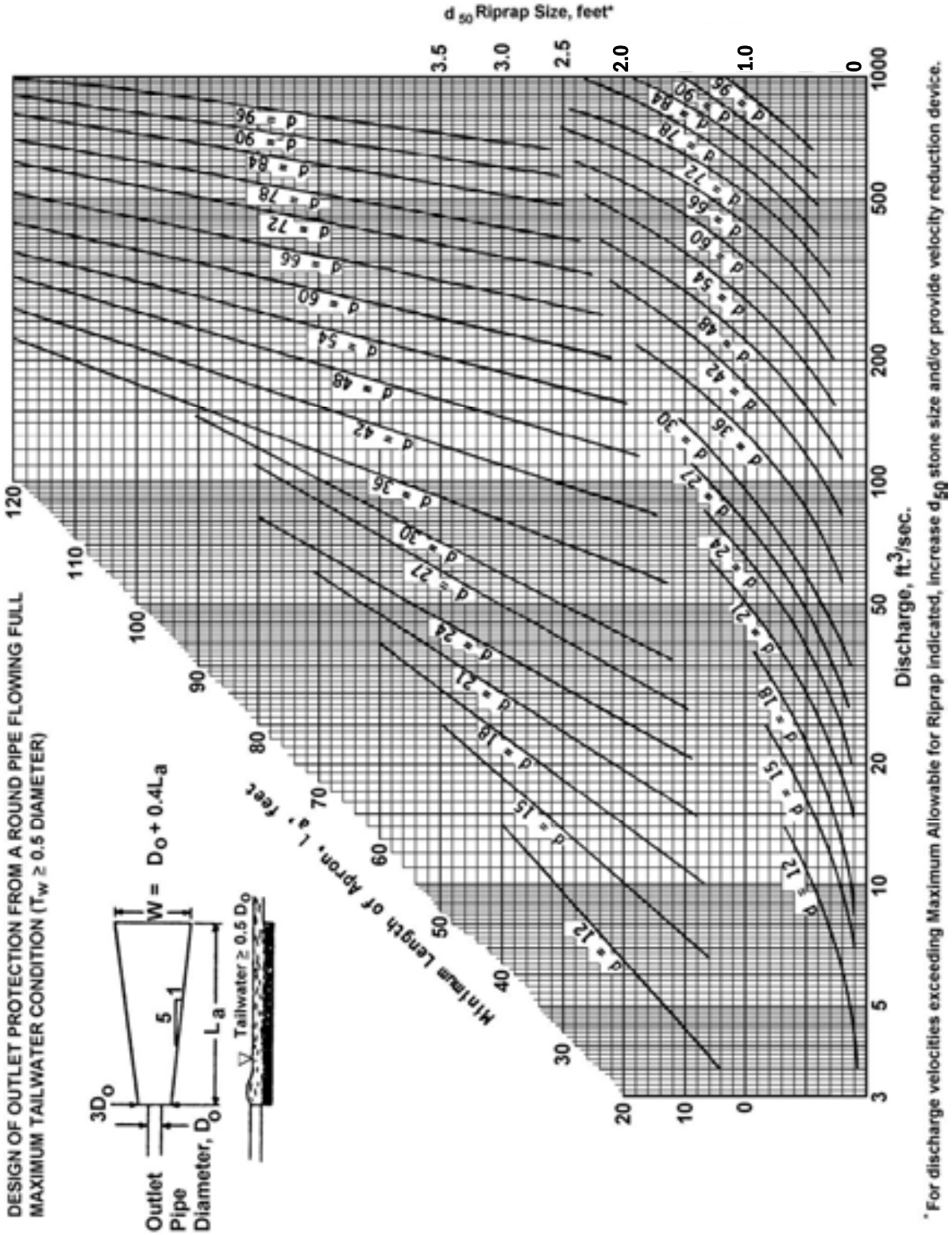


Figure 3.18
Riprap Outlet Protection Detail (1)

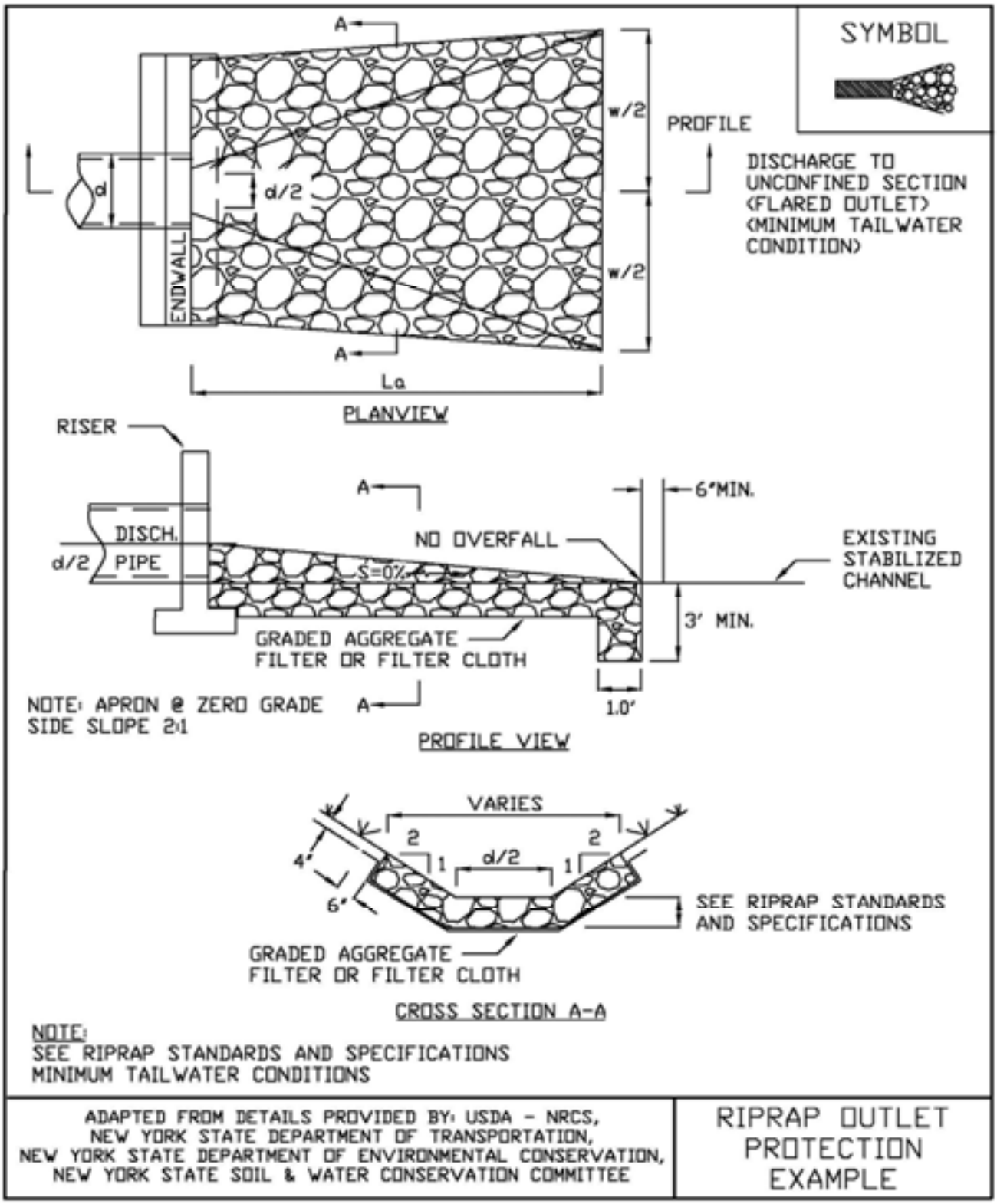


Figure 3.19
Riprap Outlet Protection Detail (2)

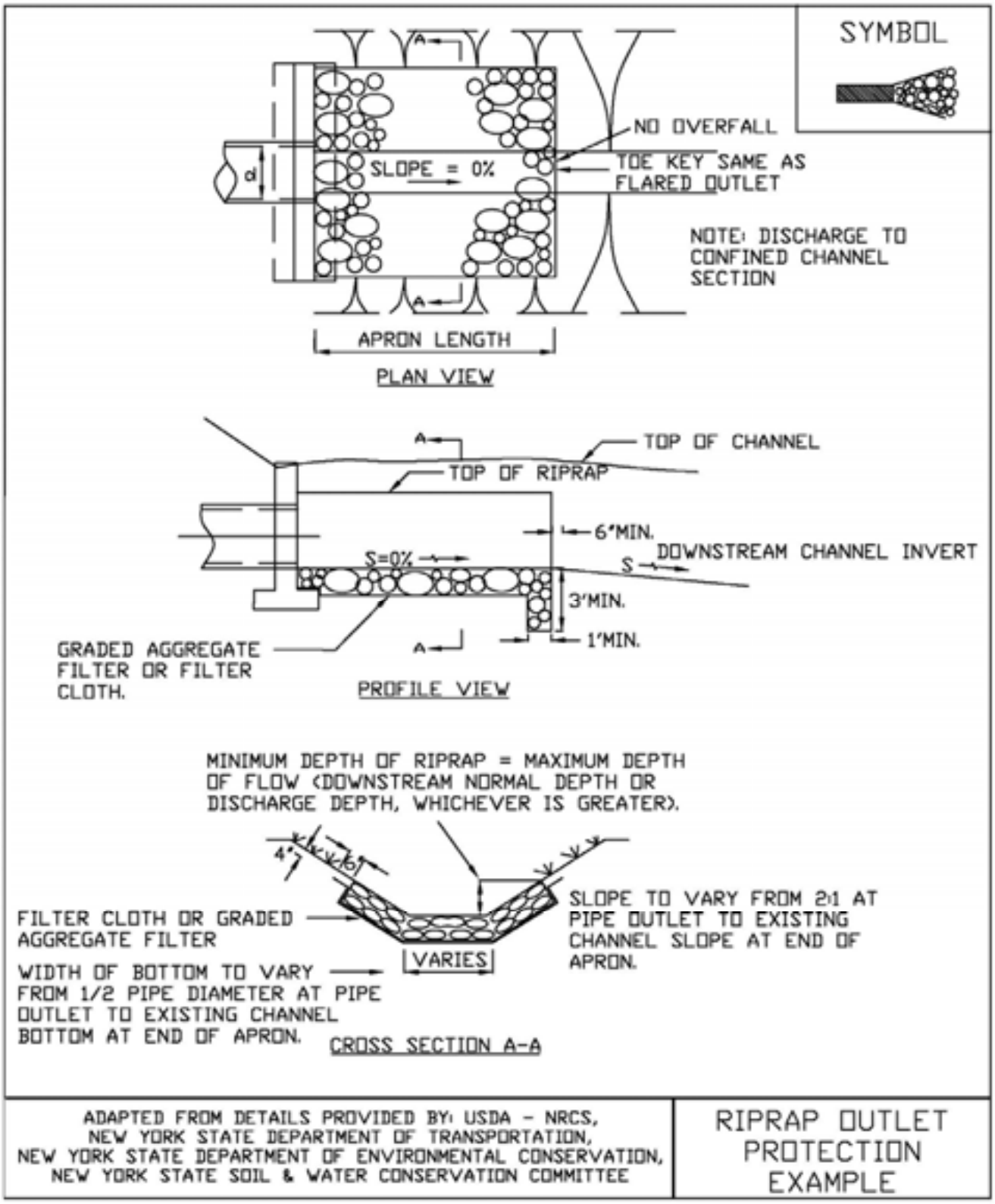
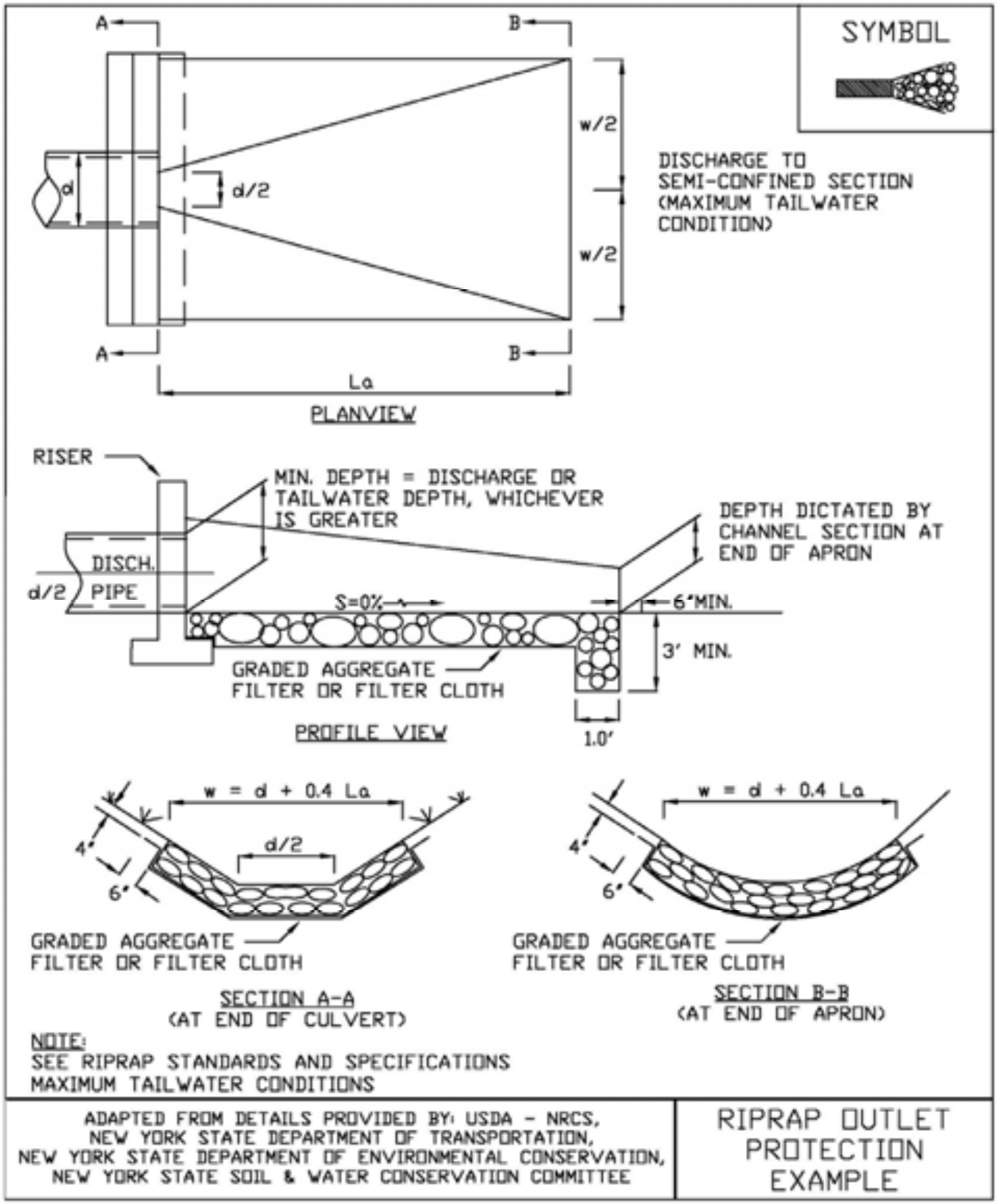


Figure 3.20
Riprap Outlet Protection Detail (3)



STANDARD AND SPECIFICATIONS FOR MULCHING



Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/ acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.



Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/ yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4’ x 112.5’ or 8’ x 112.5’.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR SOIL RESTORATION



Definition & Scope

The decompaction of areas of a development site or construction project where soils have been disturbed to recover the original properties and porosity of the soil; thus providing a sustainable growth medium for vegetation, reduction of runoff and filtering of pollutants from stormwater runoff.

Conditions Where Practice Applies

Soil restoration is to be applied to areas whose heavy construction traffic is done and final stabilization is to begin. This is generally applied in the cleanup, site restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate ground cover to maintain the soil structure. Soil restoration measures should be applied over and adjacent to any runoff reduction practices to achieve design performance.



Design Criteria

1. Soil restoration areas will be designated on the plan views of areas to be disturbed.
2. Soil restoration will be completed in accordance with Table 4.6 on page 4.53.

Specification for Full Soil Restoration

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil. The compost shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table, except for "Particle Size" 100% will pass the 1/2" sieve. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content.**



2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor mounted disc, or tiller, to mix and circulate air and compost into the subsoil.
3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.
4. Apply topsoil to a depth of 6 inches.
5. Vegetate as required by the seeding plan. Use appropriate ground cover with deep roots to maintain the soil structure.
6. Topsoil may be manufactured as a mixture or a mineral component and organic material such as compost.

At the end of the project an inspector should be able to push a 3/8" metal bar 12 inches into the soil just with body weight. This should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Maintenance

Keep the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths.

Table 4.6
Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A&B	HSG C&D	Protect area from any ongoing construction activities.
	Apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A&B	HSG C&D	
	Aerate* and apply 6 inches of topsoil	Apply full Soil Restoration**	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (decompaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per "Deep Ripping and De-compaction, DEC 2008".

STANDARD AND SPECIFICATIONS FOR STABILIZATION WITH SOD



Definition & Scope

Stabilizing restored, exposed soil surfaces by establishing long term stands of grass with sod to reduce damage from sediment and runoff to downstream areas and enhance natural beauty.

Conditions Where Practice Applies

On exposed soils that have a potential for causing off site environmental damage where a quick vegetative cover is desired. Moisture, either applied or natural, is essential to success.

Design Criteria

1. Sod shall be bluegrass or a bluegrass/red fescue mixture or a perennial ryegrass for average sites. (CAUTION: Perennial ryegrass has limited cold tolerance and may winter kill.) Use turf type cultivars of tall fescue for shady, droughty, or otherwise more critical areas. For variety selection, contact Cornell Cooperative Extension Turf Specialist.

2. Sod shall be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch. Measurement for thickness shall exclude top growth and thatch.

3. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.

4. Sod shall be free of weeds and undesirable coarse weedy grasses. Wild native or pasture grass sod shall not be used unless specified.

5. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

6. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be inspected and approved by the contracting officer or his designated representative prior to its installation.

Site Preparation

Fertilizer and lime application rates shall be determined by soil tests. Under unusual circumstances where there is insufficient time for a complete soil test and the contracting officer agrees, fertilizer and lime materials may be applied in amounts shown in subsection 2 below. Slope land such as to provide good surface water drainage. Avoid depressions or pockets.

1. Prior to sodding, the surface shall be smoothed and cleared of all trash, debris, and of all roots, brush, wire, grade stakes and other objects that would interfere with planting, fertilizing or maintenance operations.

2. **The soil should be tested to determine the amounts of amendments needed.** Where the soil is acid or composed of heavy clays, ground limestone shall be spread to raise the pH to 6.5. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 20 lbs. of 5-5-10 (or equivalent) and mix into the top 3 inches of soil with the required lime for every 1,000 square feet. Soil should be moist prior to sodding. Arrange for temporary storage of sod to keep it shaded and cool.

Sod Installation

1. For the operation of laying, tamping, and irrigating for any areas, sod shall be completed within eight hours. During periods of excessively high temperature, the soil shall be lightly moistened immediately prior to laying the sod.

2. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to, and tightly wedged against, each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots. On sloping areas where erosion may be a problem, sod shall be laid with the long edges parallel to the contour and with

staggered joints.

3. Secure the sod by tamping and pegging, or other approved methods. As sodding is completed in any one section, the entire area shall be rolled or tamped to ensure solid contact of roots with the soil surface.

4. Sod shall be watered immediately after rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Keep sod moist for at least two weeks.

Sod Maintenance

1. In the absence of adequate rainfall, watering shall be performed daily, or as often as deemed necessary by the inspector, during the first week and in sufficient quantities to maintain moist soil to a depth of 4 inches. Watering should be done in the morning. Avoid excessive watering during applications.

2. After the first week, sod shall be watered as necessary to maintain adequate moisture and ensure establishment.

3. The first mowing should not be attempted until sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2 and 3 inches unless otherwise specified. Avoid heavy mowing equipment for several weeks to prevent rutting.

4. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply fertilizer three to four weeks after sodding, at a rate of 1 pound nitrogen/1,000 sq.ft. Use a complete fertilizer with a 2-1-1 ratio.

5. Weed Control: Target herbicides for weeds present. Consult current Cornell Pest Control Recommendations for Commercial Turfgrass Management or consult the local office of Cornell Cooperative Extension.

6. Disease Control: Consult the local office of the Cornell Cooperative Extension.

Additional References

1. Home Lawns, Establishment and Maintenance, CCE Information Bulletin 185, Revised November 1994. Cornell University, Ithaca, NY.

2. Installing a Sod Lawn. CCE Suffolk County, NY. Thomas Kowalsick February 1994, Revised January 1999. www.cce.cornell.edu/counties/suffolk/grownet

STANDARD AND SPECIFICATIONS FOR TOPSOILING



Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.

3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

STANDARD AND SPECIFICATIONS FOR VEGETATING WATERWAYS



Definition & Scope

Waterways are a **permanently** constructed conveyance channel, shaped or graded. They are vegetated for the safe transport of excess surface water from construction sites and urban areas without damage from erosion.

Conditions Where Practice Applies

This standard applies to vegetating waterways and similar water carrying structures.

Supplemental measures may be required with this practice. These may include: subsurface drainage to permit the growth of suitable vegetation and to eliminate wet spots; a section stabilized with asphalt, stone, or other suitable means; or additional storm drains to handle snowmelt or storm runoff.

Retardance factors for determining waterway dimensions are shown in Table 3.1 on page 3.10 and "Maximum Permissible Velocities for Selected Grass and Legume Mixtures" (See Table 4.10 on page 4.79).

Design Criteria

Waterways or outlets shall be protected against erosion by vegetative means as soon after construction as practical. Vegetation must be well established before diversions or other channels are outletted into them. Consideration should be given to the use of turf reinforcement mats, excelsior matting, other rolled erosion control products, or sodding of channels to provide erosion protection as soon after construction as possible. It is strongly recommended that the center line of the waterway be protected with one of the above materials to avoid center gullies and to protect seedlings from erosion before establishment.

1. Liming, fertilizing, and seedbed preparation.

   A. Lime to pH 6.5.

   B. **The soil should be tested to determine the amounts of amendments needed.** If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 1.0 lbs/1,000 sq. ft. of N, P_2O_5, and K_2O.

   C. Lime and fertilizer shall be mixed thoroughly into the seedbed during preparation.

   D. Channels, except for paved section, shall have at least 4 inches of topsoil.

   E. Remove stones and other obstructions that will hinder maintenance.

2. Timing of Seeding.

   A. Early spring and late August are best.

   B. Temporary cover to protect from erosion is recommended during periods when seedings may fail.

3. Seed Mixtures:

Mixtures	Rate per Acre (lbs)	Rate per 1,000 sq. ft. (lbs)
A. White clover or ladino clover[1]	8	0.20
Smooth bromegrass	20	0.45
Creeping red fescue[2]	2	0.05
Total	30	0.70
OR		
B. Smooth bromegass[3]	25	0.60
Creeping red fescue	20	0.50
Perennial ryegrass	10	0.20
Total	55	1.30

[1] Inoculate with appropriate inoculum immediately prior to seeding. Ladino or birdsfoot trefoil may be substituted for common white clover and seeded at the same rate.

[2] Perennial ryegrass may be substituted for the creeping red fescue but increase seeding rate to 5 lbs/acre (0.1 lb/1,000 sq. ft).

[3] Use this mixture in areas which are mowed frequently. Common white clover may be added if desired and seeded at 8 lbs/acre (0.2 lb/1,000 sq. ft.)

4. Seeding

Select the appropriate seed mixture and apply uniformly over the area. Rolling or cultipacking across the waterway is desirable.

Waterway centers or crucial areas may be sodded. Refer to the standard and specification for Stabilization with Sod. Be sure sod is securely anchored using staples or stakes.

5. Mulching

All seeded areas will be mulched. Channels more than 300 feet long, and/or where the slope is 5 percent or more, must have the mulch securely anchored. Refer to the standard and specifications for Mulching for details.

6. Maintenance

Fertilize, lime, and mow as needed to maintain dense protective vegetative cover.

Waterways shall not be used for roadways.

If rills develop in the centerline of a waterway, prompt attention is required to avoid the formation of gullies. Either stone and/or compacted soil fill with excelsior or filter fabric as necessary may be used during the establishment phase. See Figure 4.25, Rill Maintenance Measures. Spacing between rill maintenance barriers shall not exceed 100 feet.

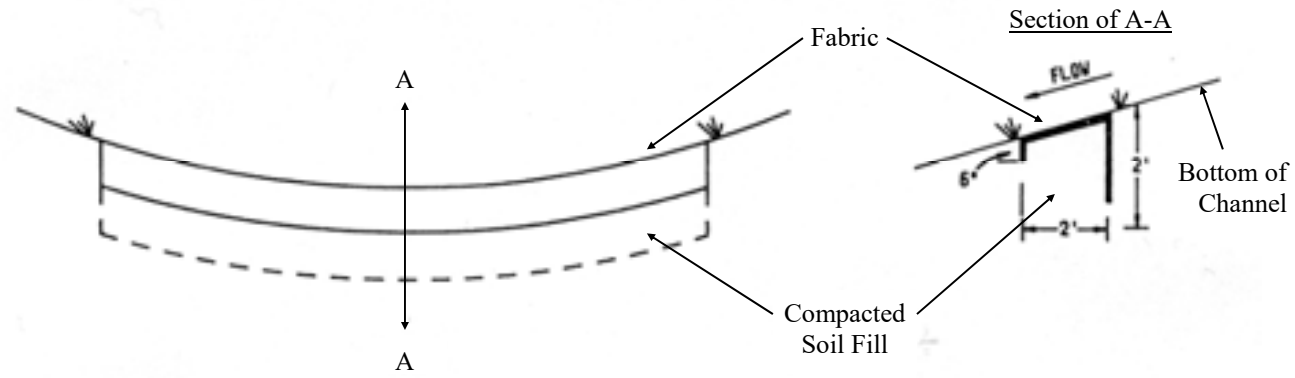
Table 4.10
Maximum Permissible Velocities for Selected Seed Mixtures

Cover	Slope Range [2] (%)	Permissible Velocity [1]	
		Erosion-resistant Soils (ft. per sec.) K=0.10 - 0.35 [3]	Easily Eroded Soils (ft. per sec.) K=0.36 - 0.80
Smooth Bromegrass Hard Fescue	0-5 5-10 Over 10	7 6 5	5 4 3
Grass Mixtures	[2] 0-5 5-10	5 4	4 3
White/Red Clover Alfalfa Red Fescue	[4] 0-5	3.5	2.5

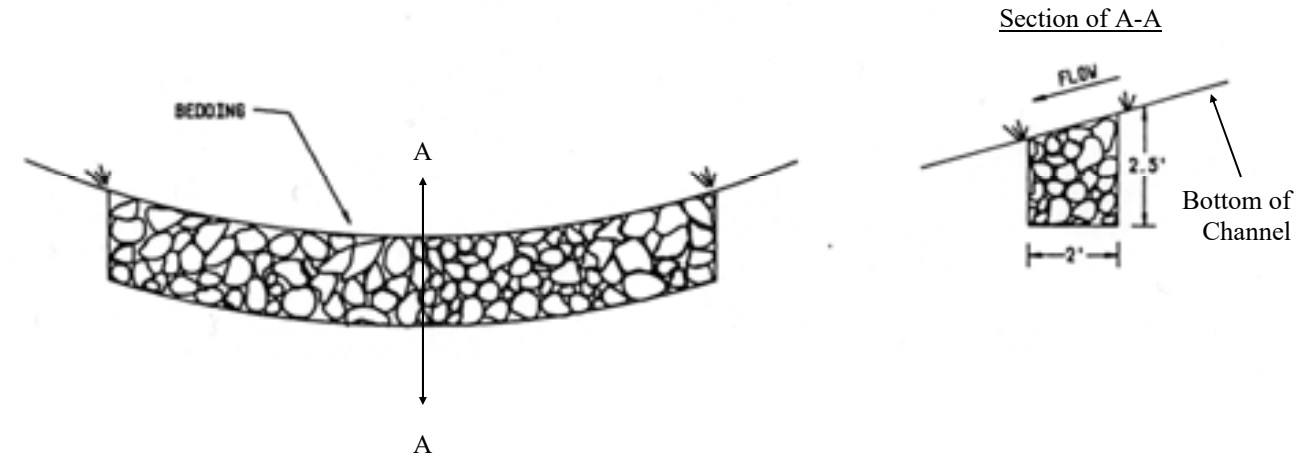
[1] Use velocities exceeding 5 feet per second only where good covers and proper maintenance can be obtained.
[2] Do not use on slopes steeper than 10 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section.
[3] K is the soil erodibility factor used in the Revised Universal Soil Loss Equation. Visit Appendix A or consult the appropriate USDA-NRCS technical guide for K values for New York State soils.
[4] Do not use on slopes steeper than 5 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section.
[5] Annuals - use on mild slopes or as temporary protection until permanent covers are established.
[6] Use on slopes steeper than 5 percent is not recommended.

Figure 4.25
Rill Maintenance Measures

Filter Fabric



Stone



STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK



Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

1. Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.

2. Diameters designed for use shall be 12" – 32" except that 8" diameter socks may be used for residential lots to control areas less than 0.25 acres.

3. The flat dimension of the sock shall be at least 1.5 times the nominal diameter.

4. The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	**5**	**10**	**20**	**25**	**33**	**50**
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50
* Length in feet							



5. The compost infill shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**

6. The compost filter sock fabric material shall meet the

7. Compost filter socks shall be anchored in earth with 2" x 2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock.

8. All specific construction details and material specifications shall appear on the erosion and sediment control constructions drawings when compost filter socks are included in the plan.

Maintenance

1. Traffic shall not be permitted to cross filter socks.

2. Accumulated sediment shall be removed when it reaches half the above ground height of the sock and disposed of in accordance with the plan.

3. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired in the manner required by the manufacturer or replaced within 24 hours of inspection notification.

4. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.

5. Upon stabilization of the area contributory to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed in accordance with the stabilization plan. For removal the mesh can be cut and the compost spread as an additional mulch to act as a soil supplement.

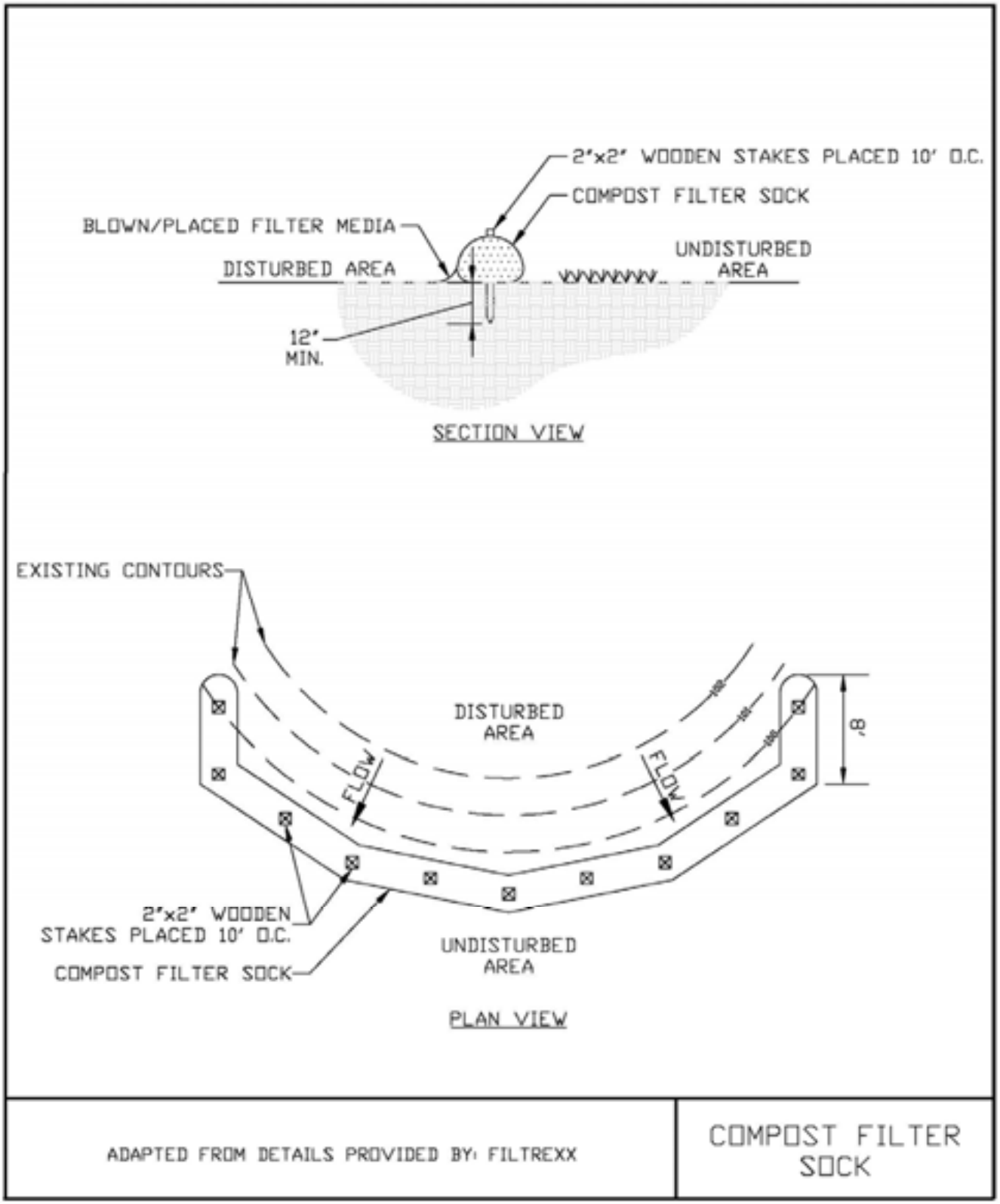
Table 5.1 - Compost Sock Fabric Minimum Specifications Table

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Table 5.2 - Compost Standards Table

Organic matter content	25% - 100% (dry weight)
Organic portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture content	30% - 60%
Particle size	100% passing a 1" screen and 10 - 50% passing a 3/8" screen
Soluble salt concentration	5.0 dS/m (mmhos/cm) maximum

Figure 5.2
Compost Filter Sock



STANDARD AND SPECIFICATIONS FOR DEWATERING DEVICE



Definition & Scope

An appurtenance to a sediment trapping structure such as a basin or trap that allows sediment laden water to pond allowing sediment to settle out while removing relatively clean water to a suitable, stable outlet.

Condition Where Practice Applies

Dewatering devices are appropriate where the discharge from a trap or basin will be by gravity flow through a riser and pipe outlet system. The skimmer dewatering device is the preferred option. A fixed pipe dewatering device, configured as a perforated vertical riser surrounded by filter fabric and stone material is an alternate option for small structures.

Design Criteria

Skimmer Device

1. Skimmers must be designed so as to float just beneath the water surface to remove the least sediment laden water effectively.
2. Skimmer shall be constructed with a 4 foot long flexible pipe elbow to allow for vertical movement of the skimmer for its designated range of operation.
3. The designer will provide a table that shows all required dimensions for the skimmer. An example of this table is shown in Figure 5.4 on page 5.12. See design example in Appendix B.
4. The skimmer will be provided with vertical travel guides and a resting stone pad set at the appropriate design elevation.
5. The orifice plate will be at the "T" intersection of the perforated skimmer section with the non-perforated extension arm.

Riser-Pipe Device

1. The riser-pipe device is constructed as a fixed rigid structure with a larger diameter pipe as the vertical riser connected to a smaller diameter horizontal pipe barrel.
2. The joint of these two conduits will be anchored by means of a concrete block or welded steel plate to prevent flotation.
3. The riser will be perforated above the bottom of the dewatering zone elevation and wrapped with a geotextile filter fabric to filter out sediment.
4. The filter fabric shall be covered with stone graded as NYSDOT #1, #2, or a blend of both, to protect the fabric from deterioration.
5. An orifice plate shall be placed in the riser at the bottom of the dewatering zone elevation to control the dewatering rate.

Dewatering Drawdown

As a minimum, sediment traps and basins should have their temporary storage dewatered over a 48 hour period to maximize sediment retention. If the soils disturbed within the drainage area will have 60% - 80% fines the settling time should be increased to 4 days. Soils containing greater than 80% fines will need longer settling times but in no case longer than 7 days to maintain the hydraulic performance of the basin for recurring runoff events.

1. Skimmer orifices may be sized by using the design chart shown in Figure 5.3 on page 5.11.
2. Riser-pipe orifice sizes may be approximated by the following formula:

$$A_0 = \frac{A_s \times 2h^{0.5}}{T \times C_d \times 20{,}428}$$

Where:

A_0 = Areas of the dewatering orifice (ft^2)

As = Surface area of the basin/trap (ft^2)

h = head of water above the orifice (ft)

C_d = 0.6 (contraction coefficient of an orifice)

T = Detention time needed to dewater basin (48 hours minimum)

Therefore, the minimum A_o formula for 48 hrs. reduces to:

$$A_o = \frac{A_s \times 2h^{0.5}}{588{,}326}$$

Material Specifications

1. Skimmer Devices - These devices shall be constructed with Schedule 40 PVC pipe with diameters of 4 to 6 inches. The flexible arm shall be equal diameter of non -perforated, corrugated, plastic tubing.

2. Riser-pipe Devices - These devices shall be constructed of Schedule 40 PVC if plastic pipe is used or galvanized corrugated steel or aluminum pipe. The minimum diameter shall be 6 inches if the device is used in conjunction with another permanent riser. All perforations will be at the interior of the corrugations.

Maintenance

1. Dewatering devices shall be inspected weekly and after each runoff event.

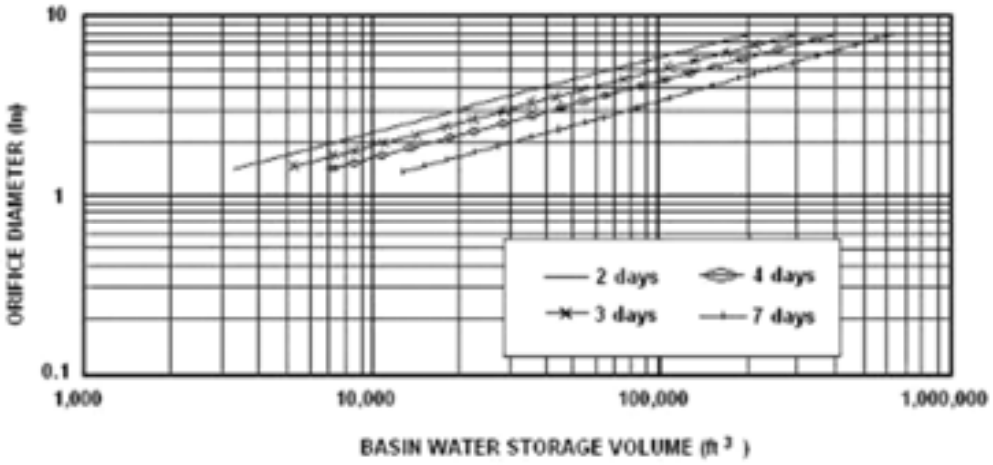
2. Filter fabric or media will be replaced as needed.

3. Any malfunctioning skimmer or its components shall be repaired or replaced within 24 hours of inspection notification.

4. Sediment shall be removed from the system when it reaches the level marked in a sediment cleanout stake or the top of the skimmer landing area.

5. The structure shall only be removed when the tributary area has been properly stabilized.

Figure 5.3 - Skimmer Orifice Design Chart



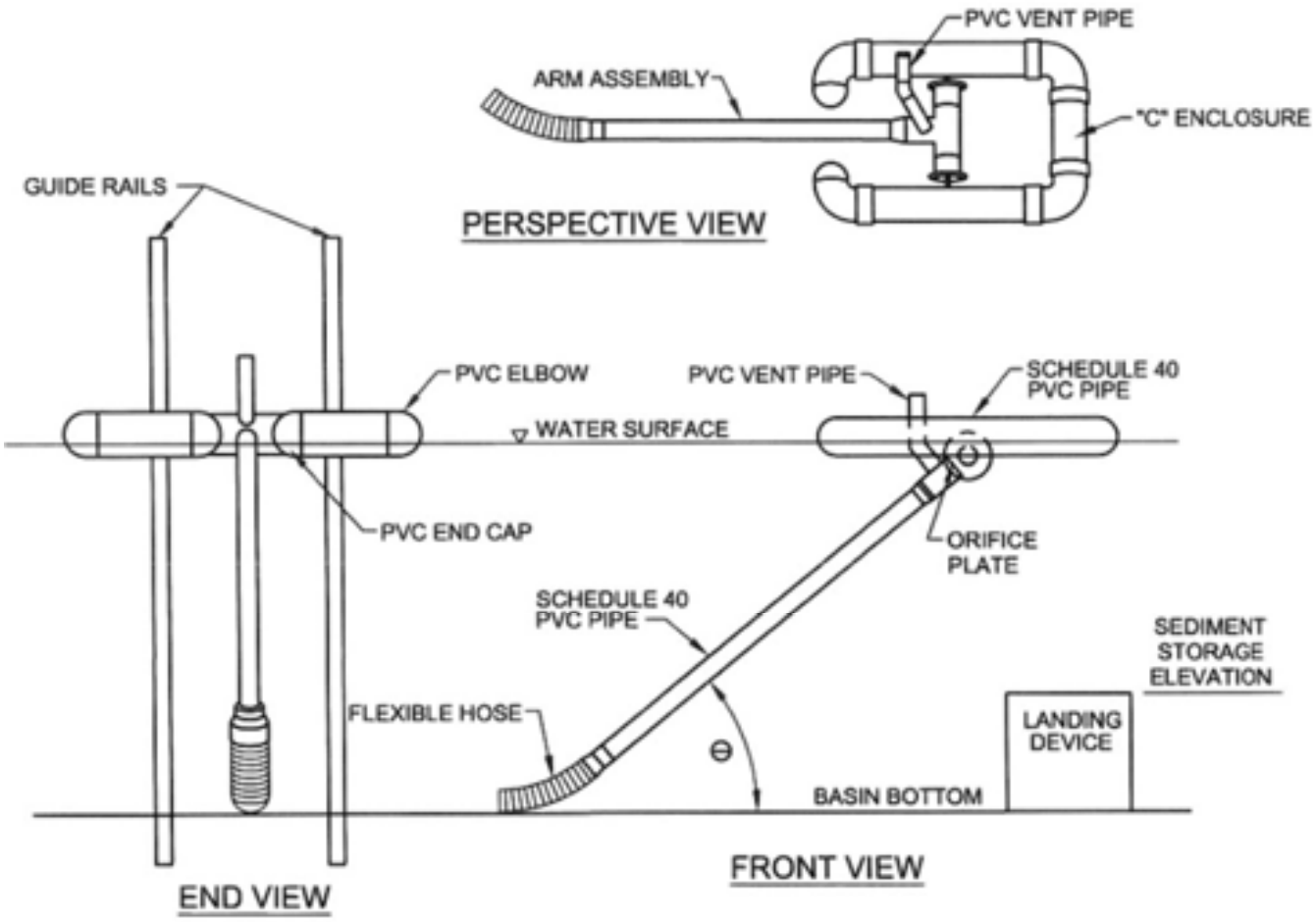
* Figure adapted from Penn State Agricultural and Biological Fact Sheet F-253

Notes:

1. Figure 5.3 is for use in designing the orifice plate for the skimmer shown in Figure 5.4. It assumes 3" to 5" head (depending upon the size of the skimmer). The required head for use of Figure 5.3 varies as follows: For a skimmer with a dewatering tube ≤ 2 1/2" diameter, use a 2" head. For a 3" diameter tube, use a 2.5" head; 4" tube, use 3.3" head, 5" tube use 4" head, and 6" diameter tube use 5" head.

2. Find the vertical line representing the basin's dewatering zone volume. At the intersection of the vertical line with the desired dewatering time, read horizontally to the left to find the required skimmer orifice diameter.

Figure 5.4
Skimmer Dewatering Device



* Figure adapted from Penn State Agricultural and Biological Fact Sheet F-253

Basin No.	Water Surface Elevation (ft.)	Arm Length* (ft.)	Arm Dia. (in.)	Orifice Size** (in.)	Top of Landing Device Elevation (ft.)	Flexible Hose Length (in.)	Flexible Hose Attachment Elevation (ft.)

* Minimum Arm length = Full design storage depth x 1.414 (for 45 degree angle)
** Must be equal to or less than arm diameter

Skimmer Construction Notes

1. Pipe flotation section shall be solvent welded to ensure an airtight assembly. The contractor is required to conduct a test to check for leaks prior to installation.

2. Skimmer section shall have 12 rows of 1/2" diameter holes, 1 1/4" on center. If additional filtration is necessary, the filtering media shall consist of a Type GD-II geotextile fabric wrapped around the perforated portion of the skimmer and attached with plastic snap ties, bands, etc.

3. Flexible pipe shall be inserted into solid pipe and fastened with 2 #8 wood screws.

4. At a minimum, the structure shall be inspected after each rain and repairs made as needed. If vandalism is a problem, more frequent inspection may be necessary.

5. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.

6. The structure shall only be removed when the contributing drainage area has been properly stabilized.

Materials

(Note: materials for a 4" diameter arm assembly)

1. Solid Pipe - 4" Schedule 40 PVC

2. Perforated Pipe - 4" Schedule 40 PVC

3. 90º Tee (1 each) - 4" Schedule 40 PVC

4. 90º Elbow (4 each) - 4" Schedule 40 PVC

5. Cap (2 each) - 4" Schedule 40 PVC, solid

6. Flexible pipe - 4" Corrugated Plastic Tubing (non-perforated)

Figure 5.5
Riser Pipe Dewatering Device

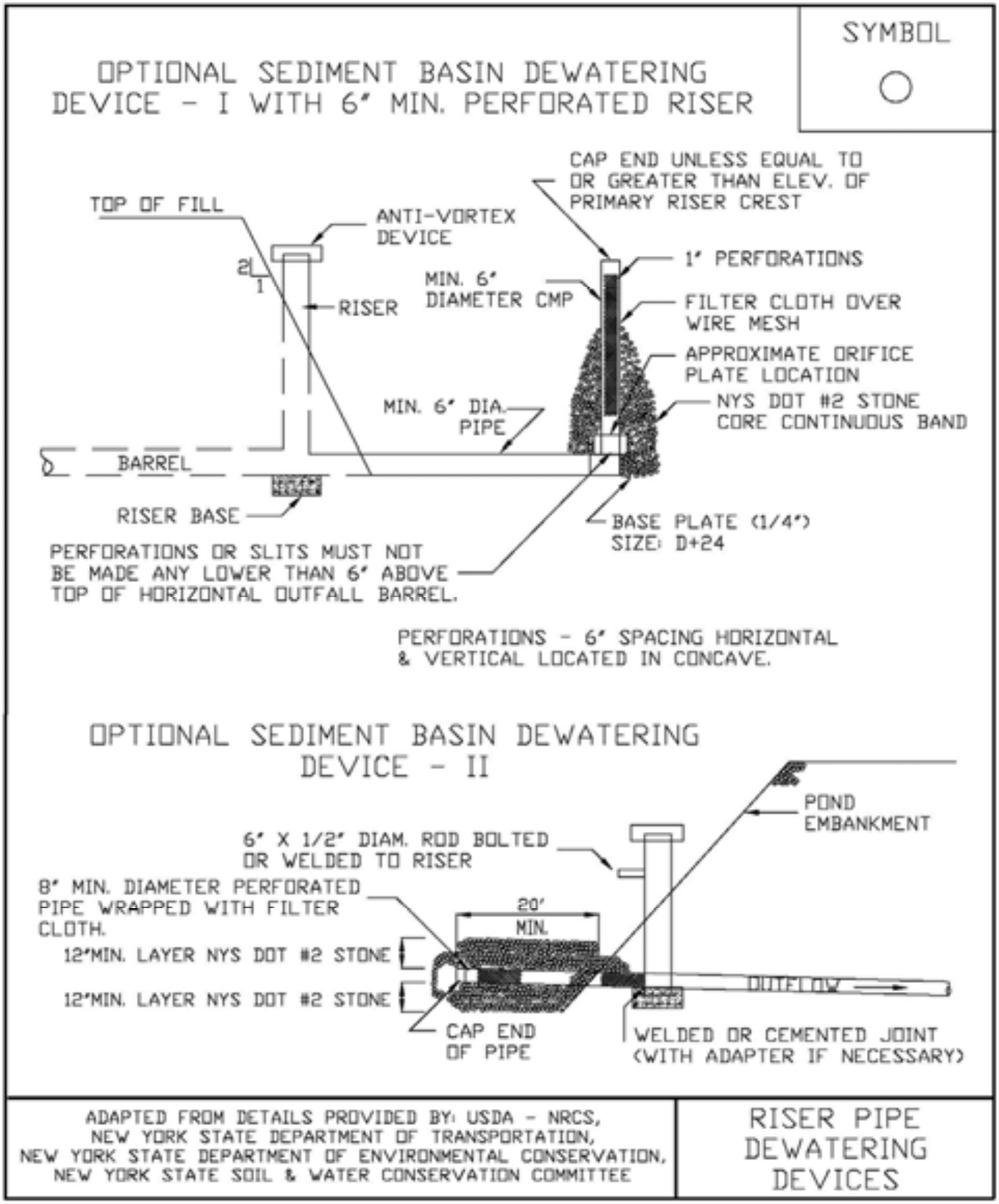


Figure 5.6
Riser Pipe Dewatering Device Construction Notes

Riser Pipe Construction Notes

1. Standpipe and connector pipe shall be a minimum of 6 inches diameter.

2. Metal pipe may be galvanized steel or aluminum; plastic pipe may be Schedule 40 PVC or HDPP.

3. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.

4. The structure shall only be removed when the contributing drainage area has been properly stabilized.

5. All pipe connections shall be watertight. The lower portion of the standpipe, at a point above the barrel connection, shall be fitted with an internal orifice plate sized to release the volume of the basin no sooner than 48 hours.

6. The top 2/3 of the standpipe shall be perforated with 1 inch diameter hole or slit spaced 6 inches vertically and horizontally and placed in the concave portion of the pipe. No holes will be allowed within 6 inches inches of the horizontal connector pipe.

7. The riser shall be wrapped with a Type GD-II geotextile fabric. The fabric shall extend 6inches above the highest hole and 6" below the lowest hole. Where ends of fabric come together, they shall be overlapped, folded and stapled to prevent bypass.

8. Straps or connecting bands shall be used to hold the fabric and wire mesh (as needed) in place. They shall be placed at the top and bottom of the cloth.

9. The standpipe shall be anchored with either concrete base or steel plate base to prevent flotation. Concrete bases shall be 12 inches thick with the standpipe embedded nine inches. Steel plate bases will be 1/4 inch minimum thickness attached to the standpipe by a continuous weld around the bottom to form a watertight connection. The plate shall have 2.5 feet of stone, gravel or tampered earth placed on it.

10. The perforated standpipe shall be surrounded by NYSDOT #1 or #2 stone or a blend of both to protect the filter fabric.

STANDARD AND SPECIFICATIONS FOR SILT FENCE



Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

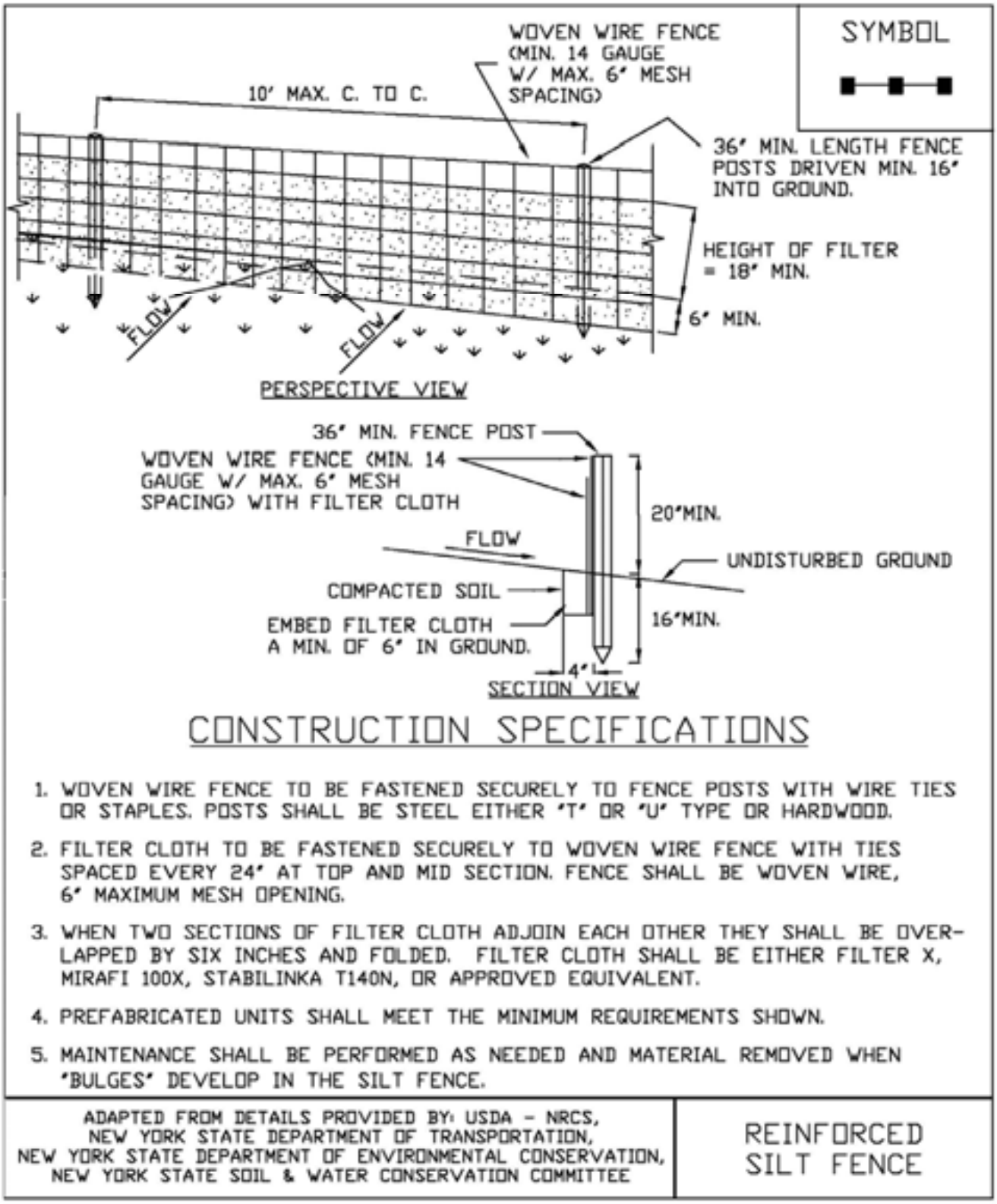
Super Silt Fence



Reinforced Silt Fence



Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION



Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Paved Surface Inlet Protection
V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection



This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet ("doughnut"). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection



This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.



The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection



The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

Figure 5.31
Excavated Drop Inlet Protection

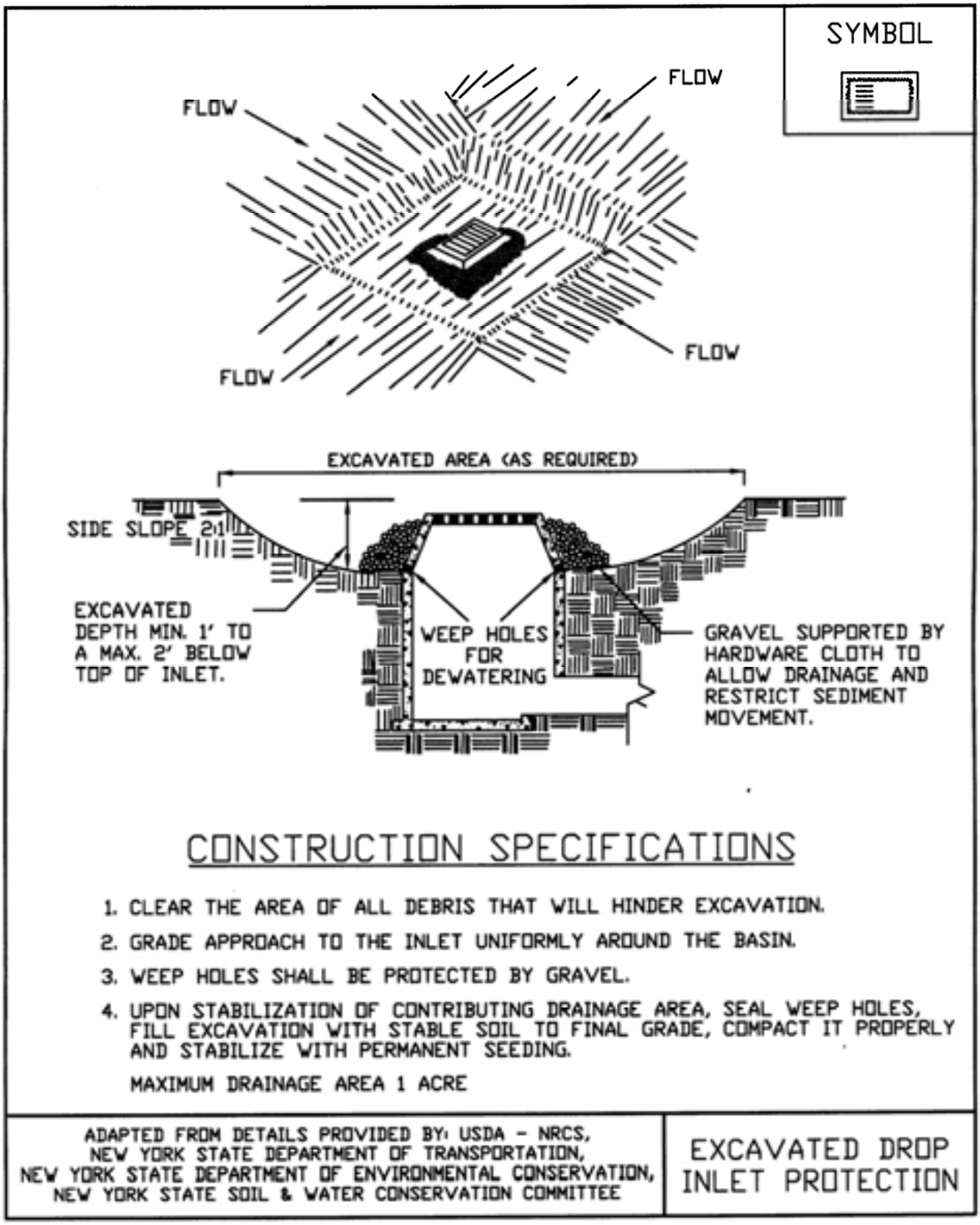


Figure 5.32
Fabric Drop Inlet Protection

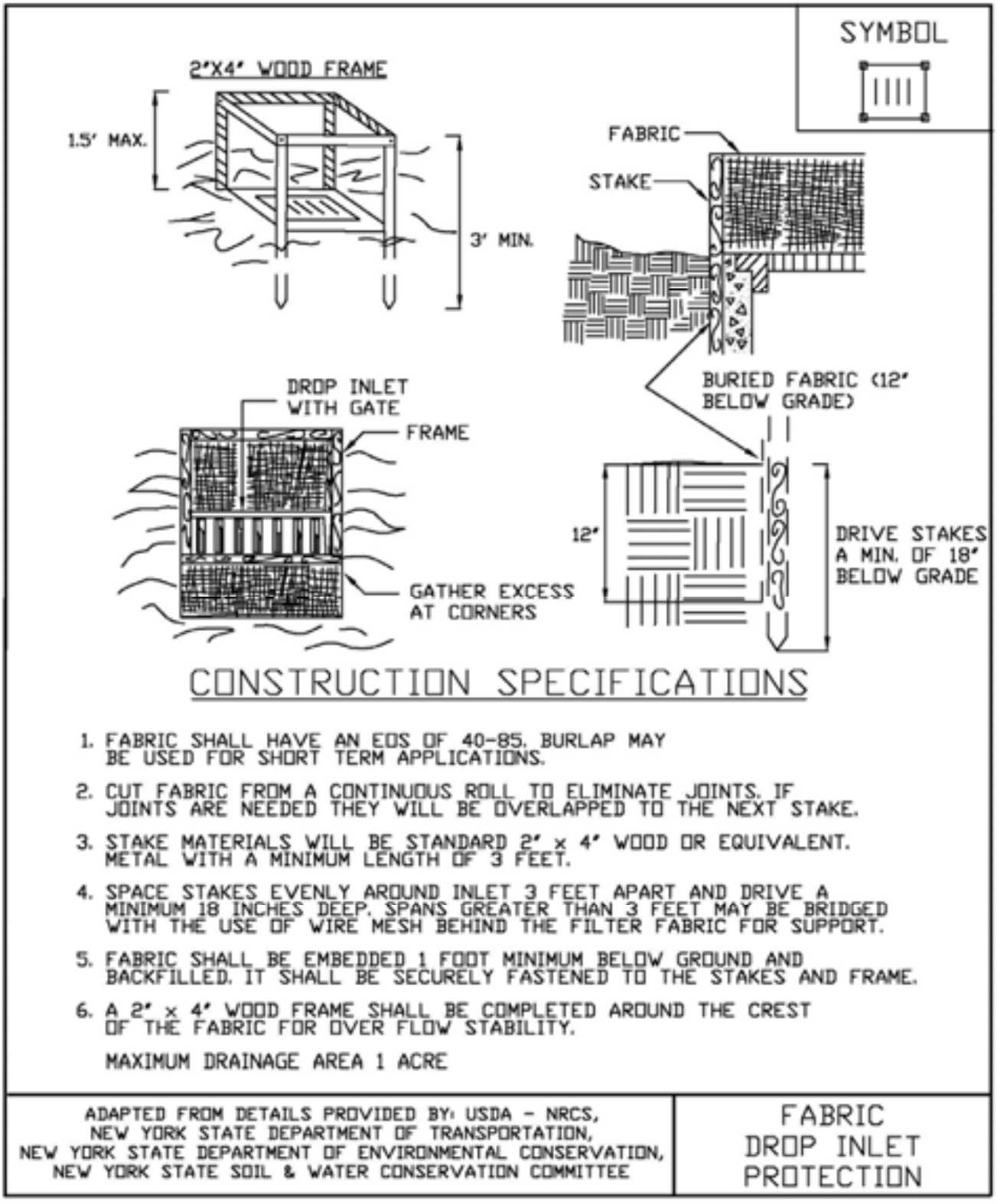
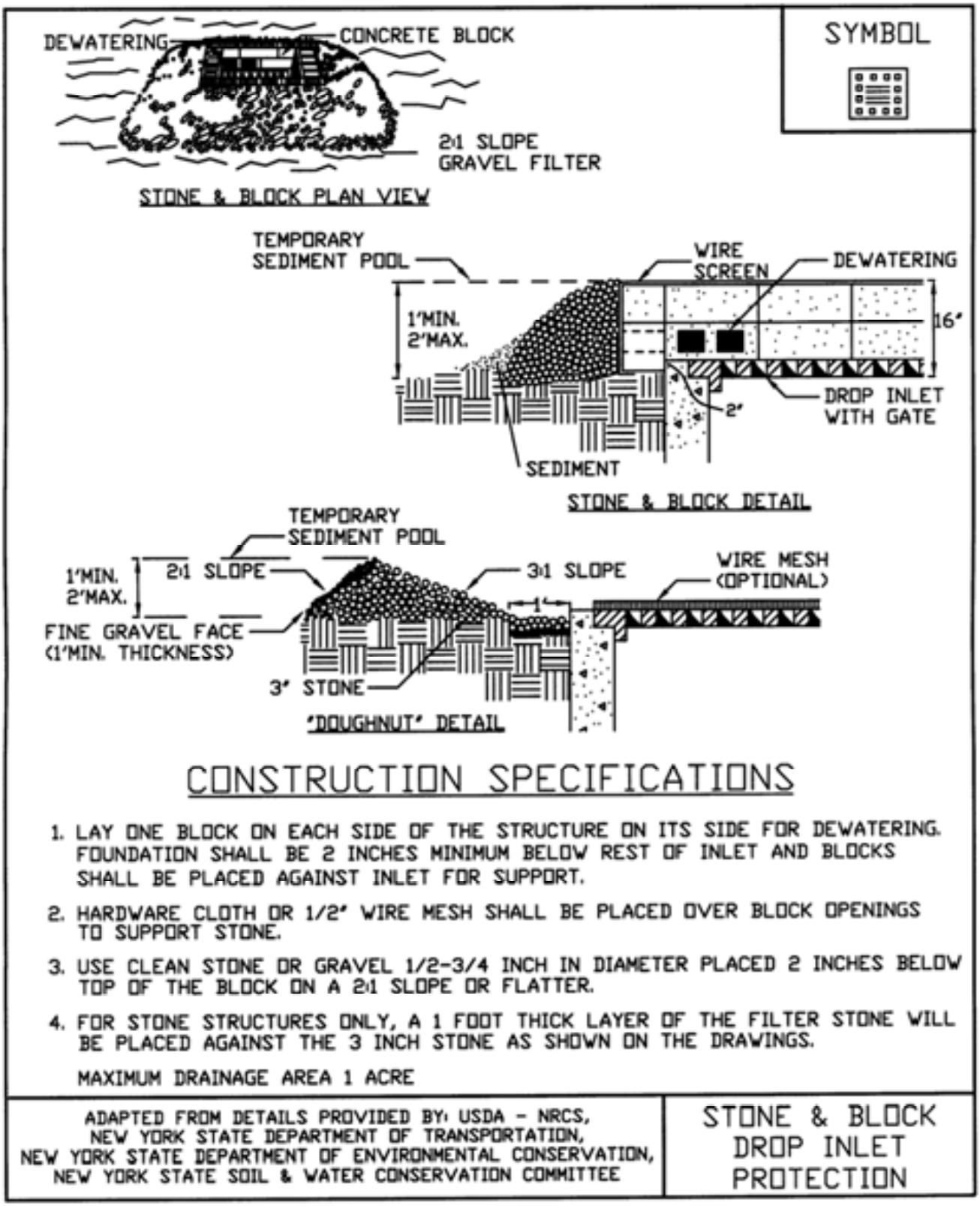


Figure 5.33
Stone & Block Drop Inlet Protection



CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE & BLOCK DROP INLET PROTECTION

Helen Caster

From: Vincent Ryan <vr@Keplingerfreeman.com>
Sent: Sunday, June 7, 2020 1:22 PM
To: 'Helen Caster (hcaster@rzengineering.com)'
Subject: FW: Compost requirements for subdivision development in Town of Manlius

Below is email from DEC regarding soil restoration

From: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov>
Sent: Wednesday, March 11, 2020 8:36 AM
To: Vincent Ryan <vr@Keplingerfreeman.com>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov>; Scott Freeman <sf@Keplingerfreeman.com>; 'Rudy Zona (rzona@rzengineering.com)' <rzona@rzengineering.com>
Subject: RE: Compost requirements for subdivision development in Town of Manlius

Hi Vincent,

Yes per table 4.6, cut and fill areas in type C soils only require deep ripping and de-compaction. Compost only needs to be added in areas where impervious cover is being turned into green space or in high traffic areas. The way the standard is written is confusing, the description of full restoration on page 4.52 seems to indicate that compost is needed. However, the footnote in table 4.6 is meant to clarify that compost is not needed for cut and fill areas.

Let me know if you have any questions.

Matt

From: Vincent Ryan <vr@Keplingerfreeman.com<mailto:vr@Keplingerfreeman.com>>
Sent: Tuesday, March 10, 2020 1:44 PM
To: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov<mailto:matthew.kazmierski@dec.ny.gov>>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov<mailto:david.gasper@dec.ny.gov>>; Scott Freeman <sf@Keplingerfreeman.com<mailto:sf@Keplingerfreeman.com>>; 'Rudy Zona (rzona@rzengineering.com<mailto:rzona@rzengineering.com>)' <rzona@rzengineering.com<mailto:rzona@rzengineering.com>>
Subject: Compost requirements for subdivision development in Town of Manlius

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.
Dear Matt,

Thank you for taking the time to answer our questions regarding the compost requirements as per the soil restoration standards and specifications. I have attached a grading plan of the proposed project for your review. Per our conversation it is safe to assume, based on our Geotech investigation that found a majority of soils to be HSG C, that we would follow Table 4.6 of the Soil Restoration requirements stating

we apply full restoration per "deep Ripping and De-compaction, DEC 2008" and not be required to provide compost enhancements as described in the specification for full soil restoration on page 4.52. Please let us know if you have any other comments or questions regarding this project.

Thank you.

Vincent E. Ryan
Landscape Designer
Keplinger Freeman Asssociates
vr@keplingerfreeman.com<mailto:vr@keplingerfreeman.com>
(p) 315 -445-7980 x 110

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New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water

Deep-Ripping and Decompaction

April 2008

New York State
Department of Environmental Conservation

Document Prepared by:

John E. Lacey,
Land Resource Consultant and Environmental Compliance Monitor
(Formerly with the Division of Agricultural Protection and Development Services,
NYS Dept. of Agriculture & Markets)

Alternative Stormwater Management
Deep-Ripping and Decompaction

Description

The two-phase practice of 1) “Deep Ripping;” and 2) “Decompaction” (deep subsoiling), of the soil material as a step in the cleanup and restoration/landscaping of a construction site, helps mitigate the physically induced impacts of soil compression; i.e.: soil compaction or the substantial increase in the bulk density of the soil material.

Deep Ripping and Decompaction are key factors which help in restoring soil pore space and permeability for water infiltration. Conversely, the physical actions of cut-and-fill work, land grading, the ongoing movement of construction equipment and the transport of building materials throughout a site alter the architecture and structure of the soil, resulting in: the mixing of layers (horizons) of soil materials, compression of those materials and diminished soil porosity which, if left unchecked, severely impairs the soil’s water holding capacity and vertical drainage (rainfall infiltration), from the surface downward.

In a humid climate region, compaction damage on a site is virtually guaranteed over the duration of a project. Soil in very moist to wet condition when compacted, will have severely reduced permeability. Figure 1 displays the early stage of the deep-ripping phase (Note that all topsoil was stripped prior to construction access, and it remains stockpiled until the next phase – decompaction – is complete). A heavy-duty tractor is pulling a three-shank ripper on the first of several series of incrementally deepening passes through the construction access corridor's densely compressed subsoil material. Figure 2 illustrates the approximate volumetric composition of a loam surface soil when conditions are good for plant growth, with adequate natural pore space for fluctuating moisture conditions.



Fig. 1. A typical deep ripping phase of this practice, during the first in a series of progressively deeper “rips” through severely compressed subsoil.

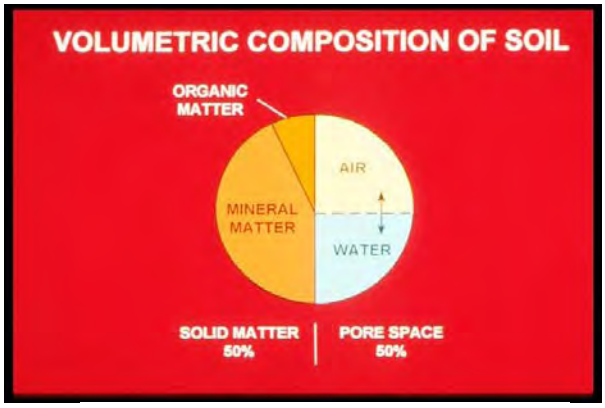

Fig. 2. About 50% of the volume of undisturbed loam surface soil is pore space, when soil is in good condition for plant growth. Brady, 2002.

Recommended Application of Practice

The objective of Deep Ripping and Decompaction is to effectively fracture (vertically and laterallly) through the thickness of the physically compressed subsoil material (see Figure 3), restoring soil porosity and permeability and aiding infiltration to help reduce runoff. Together with topsoil stripping, the "two-phase" practice of Deep Ripping and Decompaction first became established as a "best management practice" through ongoing success on commercial farmlands affected by heavy utility construction right-of-way projects (transmission pipelines and large power lines).



Fig. 3. Construction site with significant compaction of the deep basal till subsoil extends 24 inches below this exposed cut-and-fill work surface.

Soil permeability, soil drainage and cropland productivity were restored. For broader construction application, the two-phase practice of Deep Ripping and Decompaction is best adapted to areas impacted with significant soil compaction, on contiguous open portions of large construction sites and inside long, open construction corridors used as temporary access over the duration of construction. Each mitigation area should have minimal above-and-below-ground obstructions for the easy avoidance and maneuvering of a large tractor and ripping/decompacting implements. Conversely, the complete two-phase practice is not recommended in congested or obstructed areas due to the limitations on tractor and implement movement.

Benefits

Aggressive "deep ripping" through the compressed thickness of exposed subsoil before the replacement/respreading of the topsoil layer, followed by "decompaction," i.e.: "sub-soiling," through the restored topsoil layer down into the subsoil, offers the following benefits:

- Increases the project (larger size) area's direct surface infiltration of rainfall by providing the open site's mitigated soil condition and lowers the demand on concentrated runoff control structures

- Enhances direct groundwater recharge through greater dispersion across and through a broader surface than afforded by some runoff-control structural measures

- Decreases runoff volume generated and provides hydrologic source control

- May be planned for application in feasible open locations either alone or in

conjunction with plans for structural practices (e.g., subsurface drain line or infiltration basin) serving the same or contiguous areas

- Promotes successful long-term revegetation by restoring soil permeability, drainage and water holding capacity for healthy (rather than restricted) root-system development of trees, shrubs and deep rooted ground cover, minimizing plant drowning during wet periods and burnout during dry periods.

Feasibility / Limitations

The effectiveness of Deep Ripping and Decompaction is governed mostly by site factors such as: the original (undisturbed) soil's hydrologic characteristics; the general slope; local weather/timing (soil moisture) for implementation; the space-related freedom of equipment/implement maneuverability (noted above in **Recommended Application of Practice**), and by the proper selection and operation of tractor and implements (explained below in **Design Guidance**). The more notable site-related factors include:

Soil

In the undisturbed condition, each identified soil type comprising a site is grouped into one of four categories of soil hydrology, Hydrologic Soil Group A, B, C or D, determined primarily by a range of characteristics including soil texture, drainage capability when thoroughly wet, and depth to water table. The natural rates of infiltration and transmission of soil-water through the undisturbed soil layers for Group A is "high" with a low runoff potential while soils in Group B are moderate in infiltration and the transmission of soil-water with a moderate runoff potential, depending somewhat on slope. Soils in Group C have slow rates of infiltration and transmission of soil-water and a moderately high runoff potential influenced by soil texture and slope; while soils in Group D have exceptionally slow rates of infiltration and transmission of soil-water, and high runoff potential.

In Figure 4, the profile displays the undisturbed horizons of a soil in Hydrologic Soil Group C and the naturally slow rate of infiltration through the subsoil. The slow rate of infiltration begins immediately below the topsoil horizon (30 cm), due to the limited amount of macro pores, e.g.: natural subsoil fractures, worm holes and root channels. Infiltration after the construction-induced mixing and compression of such subsoil material is virtually absent; but can be restored back to this natural level with the two-phase practice of deep ripping and decompaction, followed by the permanent establishment of an appropriate, deep taproot

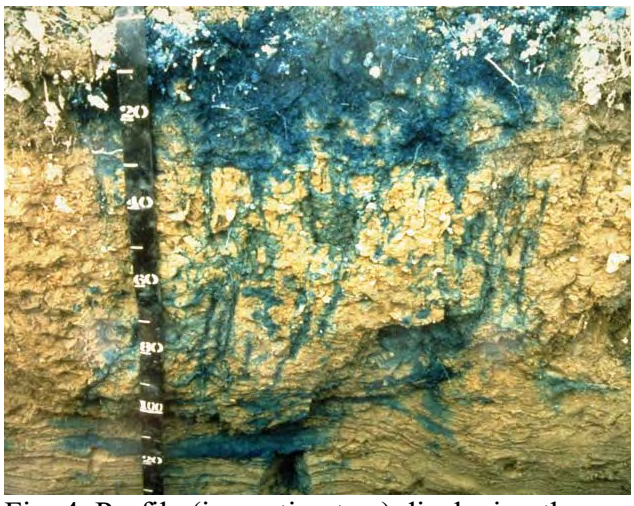

Fig. 4. Profile (in centimeters) displaying the infiltration test result of the natural undisturbed horizons of a soil in Hydrologic Soil Group C.

lawn/ground cover to help maintain the restored subsoil structure. Infiltration after construction-induced mixing and compression of such subsoil material can be notably rehabilitated with the Deep Ripping and Decompaction practice, which prepares the site for the appropriate long-term lawn/ground cover mix including deep taproot plants such as clover, fescue or trefoil, etc. needed for all rehabilitated soils.

Generally, soils in Hydrologic Soil Groups A and B, which respectively may include deep, well-drained, sandy-gravelly materials or deep, moderately well-drained basal till materials, are among the easier ones to restore permeability and infiltration, by deep ripping and decompaction. Among the many different soils in Hydrologic Soil Group C are those unique glacial tills having a natural fragipan zone, beginning about 12 to 18 inches (30 – 45cm), below surface. Although soils in Hydrologic Soil Group C do require a somewhat more carefully applied level of the Deep Ripping and Decompaction practice, it can greatly benefit such affected areas by reducing the runoff and fostering infiltration to a level equal to that of pre-disturbance.

Soils in Hydrologic Soil Group D typically have a permanent high water table close to the surface, influenced by a clay or other highly impervious layer of material. In many locations with clay subsoil material, the bulk density is so naturally high that heavy trafficking has little or no added impact on infiltration; and structural runoff control practices rather than Deep Ripping and Decompaction should be considered.

The information about Hydrologic Soil Groups is merely a general guideline. Site-specific data such as limited depths of cut-and-fill grading with minimal removal or translocation of the inherent subsoil materials (as analyzed in the county soil survey) or, conversely, the excavation and translocation of deeper, unconsolidated substratum or consolidated bedrock materials (unlike the analyzed subsoil horizons' materials referred to in the county soil survey) should always be taken into account.

Sites made up with significant quantities of large rocks, or having a very shallow depth to bedrock, are not conducive to deep ripping and decompation (subsoiling); and other measures may be more practical.

Slope

The two-phase application of 1) deep ripping and 2) decompaction (deep subsoiling), is most practical on flat, gentle and moderate slopes. In some situations, such as but not limited to temporary construction access corridors, inclusion areas that are moderately steep along a project's otherwise gentle or moderate slope may also be deep ripped and decompacted. For limited instances of moderate steepness on other projects, however, the post-construction land use and the relative alignment of the potential ripping and decompaction work in relation to the lay of the slope should be reviewed for safety and practicality. In broad construction areas predominated by moderately steep or steep slopes, the practice is generally not used.

Local Weather/Timing/Soil Moisture

Effective fracturing of compressed subsoil material from the exposed work surface, laterally and vertically down through the affected zone is achieved only when the soil material is moderately dry to moderately moist. Neither one of the two-phases, deep ripping nor decompaction (deep

subsoiling), can be effectively conducted when the soil material (subsoil or replaced topsoil) is in either a "plastic" or "liquid" state of soil consistency. Pulling the respective implements legs through the soil when it is overly moist only results in the "slicing and smearing" of the material or added "squeezing and compression" instead of the necessary fracturing. Ample drying time is needed for a "rippable" soil condition not merely in the material close to the surface, but throughout the material located down to the bottom of the physically compressed zone of the subsoil.

The "poor man's Atterberg field test" for soil plasticity is a simple "hand-roll" method used for quick, on-site determination of whether or not the moisture level of the affected soil material is low enough for: effective deep ripping of subsoil; respreading of topsoil in a friable state; and final decompaction (deep subsoiling). Using a sample of soil material obtained from the planned bottom depth of ripping, e.g.: 20 - 24 inches below exposed subsoil surface, the sample is hand rolled between the palms down to a 1/8-inch diameter thread. (Use the same test for stored topsoil material before respreading on the site.) If the respective soil sample crumbles apart in segments no greater than 3/8 of an inch long, by the time it is rolled down to 1/8 inch diameter, it is low enough in moisture for deep ripping (or topsoil replacement), and decompaction. Conversely, as shown in Figure 5, if the rolled sample stretches out in increments greater than 3/8 of an inch long before crumbling, it is in a "plastic" state of soil consistency and is too wet for subsoil ripping (as well as topsoil replacement) and final decompaction.



Fig. 5. Augered from a depth of 19 inches below the surface of the replaced topsoil, this subsoil sample was hand rolled to a 1/8-inch diameter. The test shows the soil at this site stretches out too far without crumbling; it indicates the material is in a plastic state of consistence, too wet for final decompaction (deep subsoiling) at this time.

Design Guidance

Beyond the above-noted site factors, a vital requirement for the effective Deep Ripping and Decompaction (deep subsoiling), is implementing the practice in its distinct, two-phase process:

1) Deep rip the affected thickness of exposed subsoil material (see Figure 10 and 11), aggressively fracturing it before the protected topsoil is reapplied on the site (see Figure 12); and

2) Decompact (deep subsoil), simultaneously through the restored topsoil layer and the upper half of the affected subsoil (Figure 13). The second phase, "decompaction," mitigates the partial recompaction which occurs during the heavy process of topsoil spreading/grading. Prior to deep ripping and decompacting the site, all construction activity, including construction equipment and material storage, site cleanup and trafficking (Figure 14), should be finished; and the site closed off to further disturbance. Likewise, once the practice is underway and the area's soil permeability and

rainfall infiltration are being restored, a policy limiting all further traffic to permanent travel lanes is maintained.

The other critical elements, outlined below, are: using the proper implements (deep, heavy-duty rippers and subsoilers), and ample pulling-power equipment (tractors); and conducting the practice at the appropriate speed, depth and pattern(s) of movement.

Note that an appropriate plan for the separate practice of establishing a healthy perennial ground cover, with deep rooting to help maintain the restored soil structure, should be developed in advance. This may require the assistance of an agronomist or landscape horticulturist.

Implements

Avoid the use of all undersize implements. The small-to-medium, light-duty tool will, at best, only "scarify" the uppermost surface portion of the mass of compacted subsoil material. The term "chisel plow" is commonly but incorrectly applied to a broad range of implements. While a few may be adapted for the moderate subsoiling of non-impacted soils, the majority are less durable and used for only lighter land-fitting (see Figure 6).



Fig. 6. A light duty chisel implement, not adequate for either the deep ripping or decompaction (deep subsoiling) phase.



Fig. 7. One of several variations of an agricultural ripper. This unit has long, rugged shanks mounted on a steel V-frame for deep, aggressive fracturing through Phase 1.

Use a "heavy duty" agricultural-grade, deep ripper (see Figures 7,9,10 and 11) for the first phase: the lateral and vertical fracturing of the mass of exposed and compressed subsoil, down and through, to the bottom of impact, prior to the replacement of the topsoil layer. (Any oversize rocks which are uplifted to the subsoil surface during the deep ripping phase are picked and removed.) Like the heavy-duty class of implement for the first phase, the decompaction (deep subsoiling) of Phase 2 is conducted with the heavy-duty version of the deep subsoiler. More preferable is the angled-leg variety of deep subsoiler (shown in Figures 8 and 13). It minimizes the inversion of the subsoil and topsoil layers while laterally and vertically fracturing the upper half of the previously ripped subsoil layer and all of the topsoil layer by delivering a momentary, wave-like "lifting and shattering" action up through the soil layers as it is pulled.

Pulling-Power of Equipment

Use the following rule of thumb for tractor horsepower (hp) whenever deep ripping and decompacting a significantly impacted site: For both types of implement, have at least 40 hp of tractor pull available for each mounted shank/ leg.

Using the examples of a 3-shank and a 5-shank implement, the respective tractors should have 120 and 200 hp available for fracturing down to the final depth of 20-to-24 inches per phase. Final depth for the deep ripping in Phase 1 is achieved incrementally by a progressive series of passes (see Depth and Patterns of Movement, below); while for Phase 2, the full operating depth of the deep subsoiler is applied from the beginning.

The operating speed for pulling both types of implement should not exceed 2 to 3 mph. At this slow and managed rate of operating speed, maximum functional performance is sustained by the tractor and the implement performing the soil fracturing. Referring to Figure 8, the implement is the 6-leg version of the deep angled-leg subsoiler. Its two outside legs are "chained up" so that only four legs will be engaged (at the maximum depth), requiring no less than 160 hp, (rather than 240 hp) of pull. The 4-wheel drive, articulated-frame tractor in Figure 8 is 174 hp. It will be decompacting this unobstructed, former construction access area simultaneously through 11 inches of replaced topsoil and the upper 12 inches of the previously deep-ripped subsoil. In constricted areas of Phase 1) Deep Ripping, a medium-size tractor with adequate hp, such as the one in Figure 9 pulling a 3-shank deep ripper, may be more maneuverable.



Fig. 8. A deep, angled-leg subsoiler, ideal for Phase 2 decompaction of after the topsoil layer is graded on top of the ripped subsoil.



Fig. 9. This medium tractor is pulling a 3-shank deep ripper. The severely compacted construction access corridor is narrow, and the 120 hp tractor is more maneuverable for Phase 1 deep ripping (subsoil fracturing), here.

Some industrial-grade variations of ripping implements are attached to power graders and bulldozers. Although highly durable, they are generally not recommended. Typically, the shanks or "teeth" of these rippers are too short and stout; and they are mounted too far apart to achieve the well-distributed type of lateral and vertical fracturing of the soil materials necessary to restore soil permeability and infiltration. In addition, the power graders and bulldozers, as pullers, are far less maneuverable for turns and patterns than the tractor.

Depth and Patterns of Movement

As previously noted both Phase 1 Deep Ripping through significantly compressed, exposed subsoil and Phase 2 Decompaction (deep subsoiling) through the replaced topsoil and upper subsoil need to be performed at maximum capable depth of each implement. With an implement's guide wheels attached, some have a "normal" maximum operating depth of 18 inches, while others may go deeper. In many situations, however, the tractor/implement operator must first remove the guide wheels and other non essential elements from the implement. This adapts the ripper or the deep subsoiler for skillful pulling with its frame only a few inches above surface, while the shanks or legs, fracture the soil material 20-to-24 inches deep.

There may be construction sites where the depth of the exposed subsoil's compression is moderate, e.g.: 12 inches, rather than deep. This can be verified by using a ¾ inch cone penetrometer and a shovel to test the subsoil for its level of compaction, incrementally, every three inches of increasing depth. Once the full thickness of the subsoil's compacted zone is finally "pieced" and there is a significant drop in the psi measurements of the soil penetrometer, the depth/thickness of compaction is determined. This is repeated at several representative locations of the construction site. If the thickness of the site's subsoil compaction is verified as, for example, ten inches, then the Phase 1 Deep Ripping can be correspondingly reduced to the implement's minimum operable depth of 12 inches. However, the Phase 2 simultaneous Decompation (subsoiling) of an 11 inch thick layer of replaced topsoil and the upper subsoil should run at the subsoiling implements full operating depth.



Fig. 10. An early pass with a 3-shank deep ripper penetrating only 8 inches into this worksite's severely compressed subsoil.



Fig. 11. A repeat run of the 3-shank ripper along the same patterned pass area as Fig. 9; here, incrementally reaching 18 of the needed 22 inches of subsoil fracture.

Typically, three separate series (patterns) are used for both the Phase 1 Deep Ripping and the Phase 2 Decompaction on significantly compacted sites. For Phase 1, each series begins with a moderate depth of rip and, by repeat-pass, continues until full depth is reached. Phase 2 applies the full depth of Decompation (subsoiling), from the beginning.

Every separate series (pattern) consists of parallel, forward-and-return runs, with each progressive

pass of the implement's legs or shanks evenly staggered between those from the previous pass. This compensates for the shank or leg-spacing on the implement, e.g., with 24-to-30 inches between each shank or leg. The staggered return pass ensures lateral and vertical fracturing actuated every 12 to 15 inches across the densely compressed soil mass.

Large, Unobstructed Areas

For larger easy areas, use the standard patterns of movement:

- The first series (pattern) of passes is applied lengthwise, parallel with the longest spread of the site; gradually progressing across the site's width, with each successive pass.

- The second series runs obliquely, crossing the first series at an angle of about 45 degrees.

- The third series runs at right angle (or 90 degrees), to the first series to complete the fracturing and shattering on severely compacted sites, and avoid leaving large unbroken blocks of compressed soil material. (In certain instances, the third series may be optional, depending on how thoroughly the first two series loosen the material and eliminate large chunks/blocks of material as verified by tests with a ¾-inch cone penetrometer.)



Fig. 12. Moderately dry topsoil is being replaced on the affected site now that Phase 1 deep ripping of the compressed subsoil is complete.



Fig. 13. The same deep, angled-leg subsoiler shown in Fig. 7 is engaged at maximum depth for Phase 2, decompaction (deep soiling), of the replaced topsoil and the upper subsoil materials.

Corridors

In long corridors of limited width and less maneuverability than larger sites, e.g.: along compacted areas used as temporary construction access, a modified series of pattern passes are used.

- First, apply the same initial lengthwise, parallel series of passes described above.

● A second series of passes makes a broad “S” shaped pattern of rips, continually and gradually alternating the “S” curves between opposite edges inside the compacted corridor.

● The third and final series again uses the broad, alternating S pattern, but it is “flip-flopped” to continually cross the previous S pattern along the corridor’s centerline. This final series of the S pattern curves back along the edge areas skipped by the second series.

Maintenance and Cost

Once the two-phase practice of Deep Ripping and Decompation is completed, two items are essential for maintaining a site’s soil porosity and permeability for infiltration. They are: planting and maintaining the appropriate ground cover with deep roots to maintain the soil structure (see Figure 15); and keeping the site free of traffic or other weight loads.

Note that site-specific choice of an appropriate vegetative ground-cover seed mix, including the proper seeding ratio of one or more perennial species with a deep taproot system and the proper amount of lime and soil nutrients (fertilizer mix) adapted to the soil-needs, are basic to the final practice of landscaping, i.e: surface tillage, seeding/planting/fertilizing and culti-packing or mulching is applied. The "maintenance" of an effectively deep-ripped and decompacted area is generally limited to the successful perennial (long-term) landscape ground cover; as long as no weight-bearing force of soil compaction is applied.



Fig. 14. The severely compacted soil of a temporary construction yard used daily by heavy equipment for four months; shown before deep ripping, topsoil replacement, and decompaction.



Fig. 15. The same site as Fig. 14 after deep ripping of the exposed subsoil, topsoil replacement, decompaction through the topsoil and upper subsoil and final surface tillage and revegetation to maintain soil permeability and infiltration.

The Deep Ripping and Decompaction practice is, by necessity, more extensive than periodic subsoiling of farmland.The cost of deep ripping and decompacting (deep subsoiling), will vary according to the depth and severity of soil-material compression and the relative amount of tractor and implement time that is required. In some instances, depending on open maneuverability, two-to-three acres of compacted project area may be deep-ripped in one day. In other situations of more severe compaction and - or less maneuverability, as little as one acre may be fully ripped in a day. Generally, if the Phase 1) Deep Ripping is fully effective, the Phase 2) Decompaction should be completed in 2/3 to 3/4 of the time required for Phase 1.

Using the example of two acres of Phase 1) Deep Ripping in one day, at $1800 per day, the net cost is $900 per acre. If the Phase 2) Decompacting or deep subsoiling takes 3/4 the time as Phase 1, it costs $675 per acre for a combined total of $1575 per acre to complete the practice (these figures do not include the cost of the separate practice of topsoil stripping and replacement). Due to the many variables, it must be recognized that cost will be determined by the specific conditions or constraints of the site and the availability of proper equipment.

Resources

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- US Department of Agriculture in cooperation with Cornell University Agricultural Experiment Station. Various years. *Soil Survey of (various names) County, New York.* USDA.

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- Examples of implements:

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- Soils data of USDA Natural Resources Conservation Service. *NRCS Web Soil Survey.* http://websoilsurvey.nrcs.usda.gov/app/ and *USDA-NRCS Official Soil Series Descriptions; View by Name.* http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi . *Last visited Jan. 08.*

- Soil penetrometer information. Access by internet searches of: *Diagnosing Soil Compaction using a Penetrometer (soil compaction tester), PSU Extension;* as well as *Dickey-john Soil Compaction Tester*. http://www.dickey-johnproducts.com/pdf/SoilCompactionTest.pdf and http://cropsoil.psu.edu/Extension/Facts/uc178pdf Last visited Sept. 07

Helen Caster

From: Vincent Ryan <vr@Keplingerfreeman.com>
Sent: Sunday, June 7, 2020 1:22 PM
To: 'Helen Caster (hcaster@rzengineering.com)'
Subject: FW: Compost requirements for subdivision development in Town of Manlius

Below is email from DEC regarding soil restoration

From: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov>
Sent: Wednesday, March 11, 2020 8:36 AM
To: Vincent Ryan <vr@Keplingerfreeman.com>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov>; Scott Freeman <sf@Keplingerfreeman.com>; 'Rudy Zona (rzona@rzengineering.com)' <rzona@rzengineering.com>
Subject: RE: Compost requirements for subdivision development in Town of Manlius

Hi Vincent,

Yes per table 4.6, cut and fill areas in type C soils only require deep ripping and de-compaction. Compost only needs to be added in areas where impervious cover is being turned into green space or in high traffic areas. The way the standard is written is confusing, the description of full restoration on page 4.52 seems to indicate that compost is needed. However, the footnote in table 4.6 is meant to clarify that compost is not needed for cut and fill areas.

Let me know if you have any questions.

Matt

From: Vincent Ryan <vr@Keplingerfreeman.com<mailto:vr@Keplingerfreeman.com>>
Sent: Tuesday, March 10, 2020 1:44 PM
To: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov<mailto:matthew.kazmierski@dec.ny.gov>>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov<mailto:david.gasper@dec.ny.gov>>; Scott Freeman <sf@Keplingerfreeman.com<mailto:sf@Keplingerfreeman.com>>; 'Rudy Zona (rzona@rzengineering.com<mailto:rzona@rzengineering.com>)' <rzona@rzengineering.com<mailto:rzona@rzengineering.com>>
Subject: Compost requirements for subdivision development in Town of Manlius

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.
Dear Matt,

Thank you for taking the time to answer our questions regarding the compost requirements as per the soil restoration standards and specifications. I have attached a grading plan of the proposed project for your review. Per our conversation it is safe to assume, based on our Geotech investigation that found a majority of soils to be HSG C, that we would follow Table 4.6 of the Soil Restoration requirements stating

we apply full restoration per "deep Ripping and De-compaction, DEC 2008" and not be required to provide compost enhancements as described in the specification for full soil restoration on page 4.52. Please let us know if you have any other comments or questions regarding this project.

Thank you.

Vincent E. Ryan
Landscape Designer
Keplinger Freeman Asssociates
vr@keplingerfreeman.com<mailto:vr@keplingerfreeman.com>
(p) 315 -445-7980 x 110

[cid:image001.jpg@01D5F77A.46A6B960]

APPENDIX J

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharge*s.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

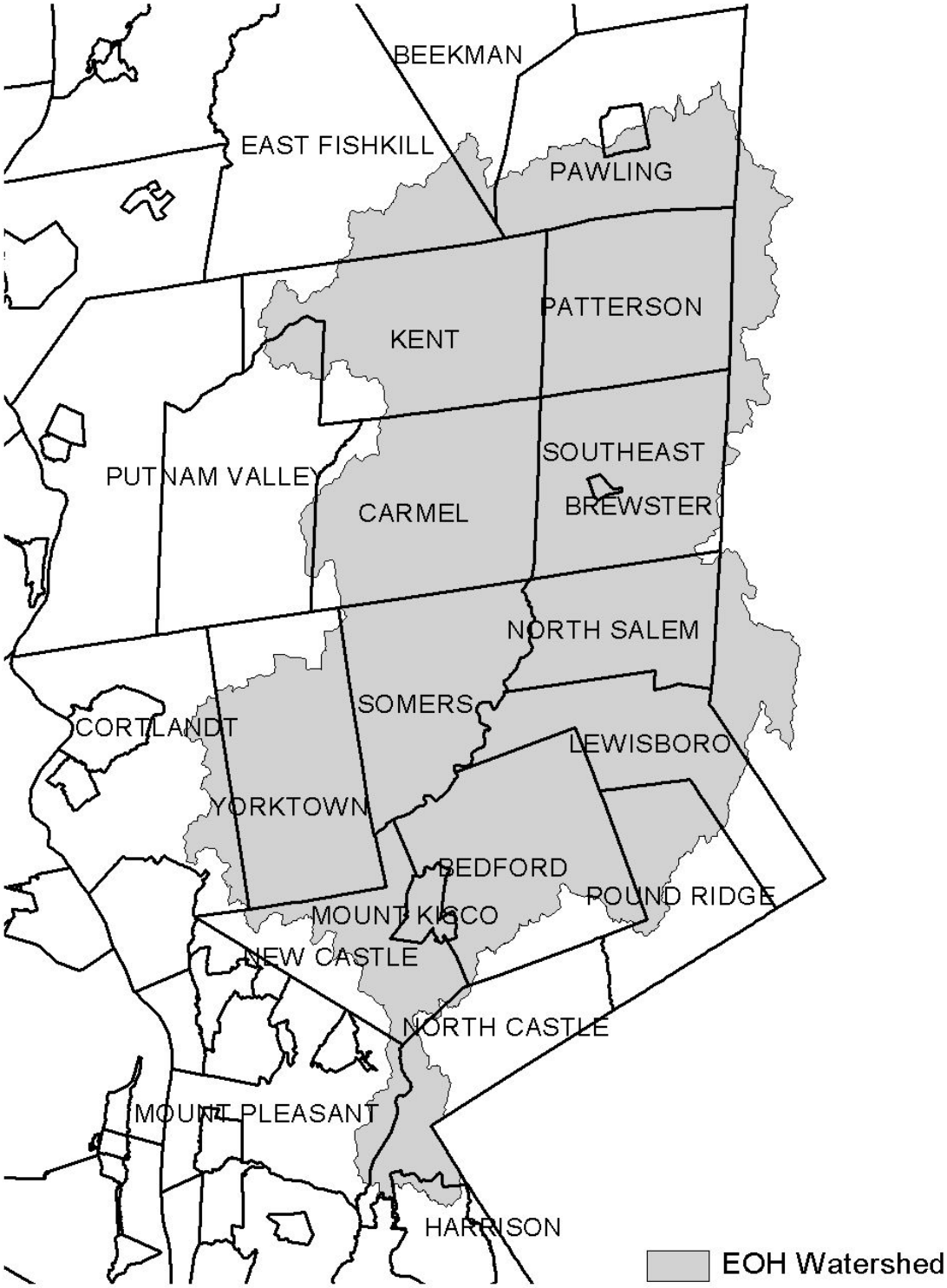


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

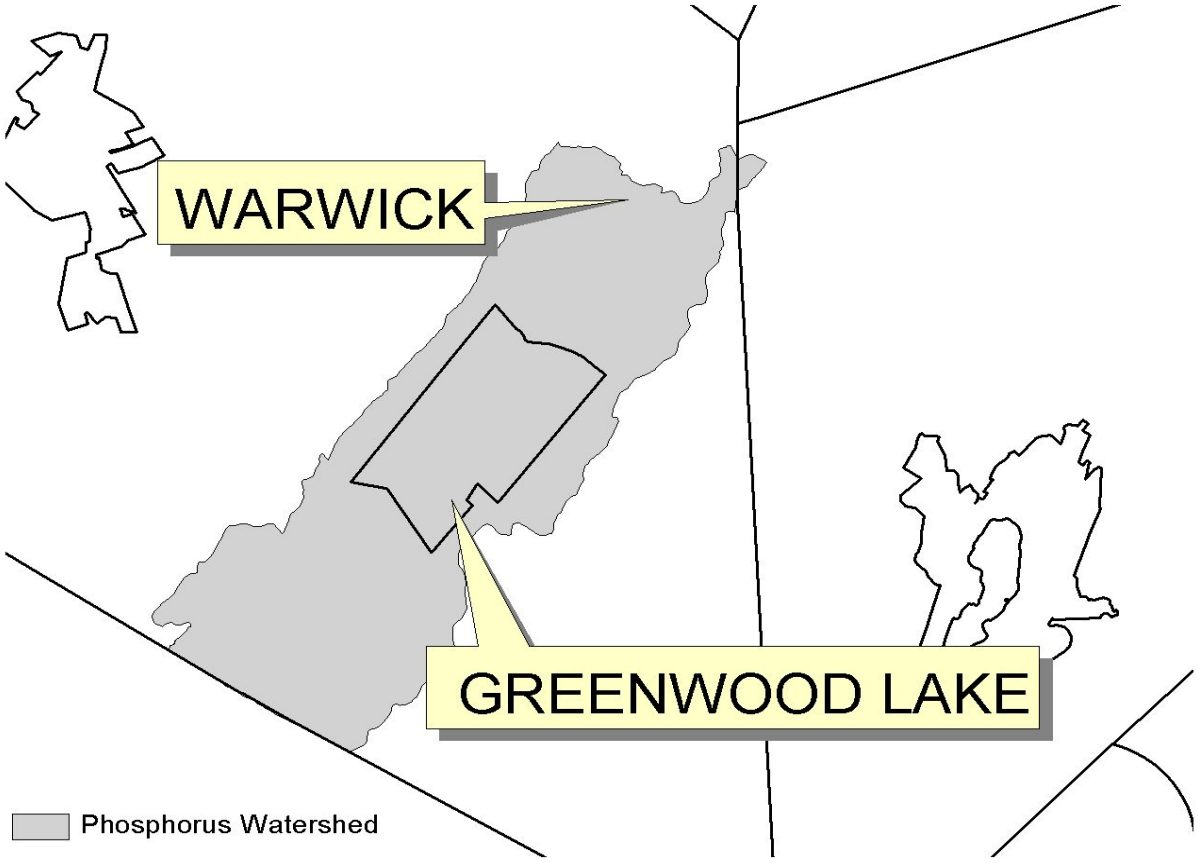


Figure 4 - Oscawana Lake Watershed

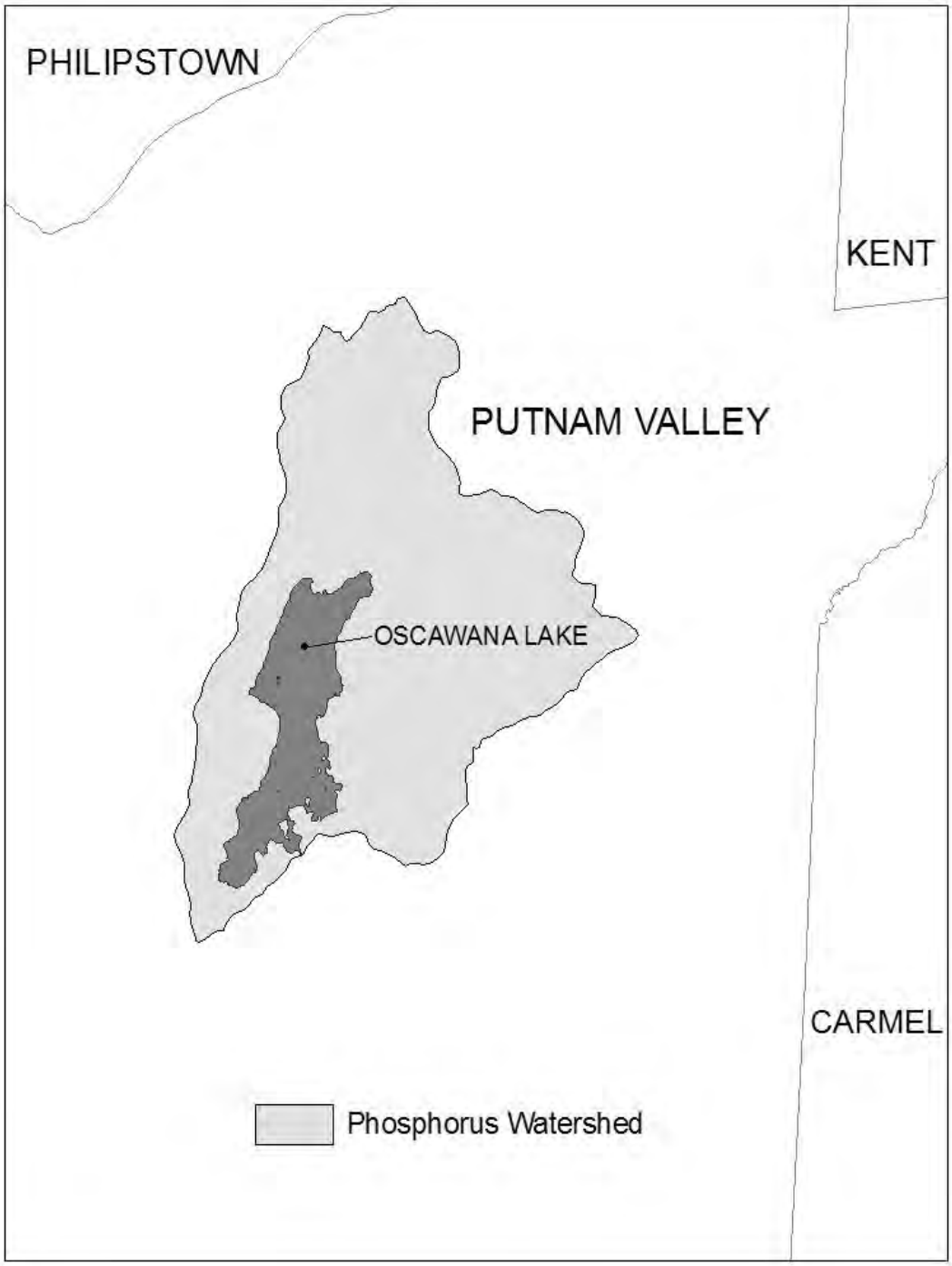
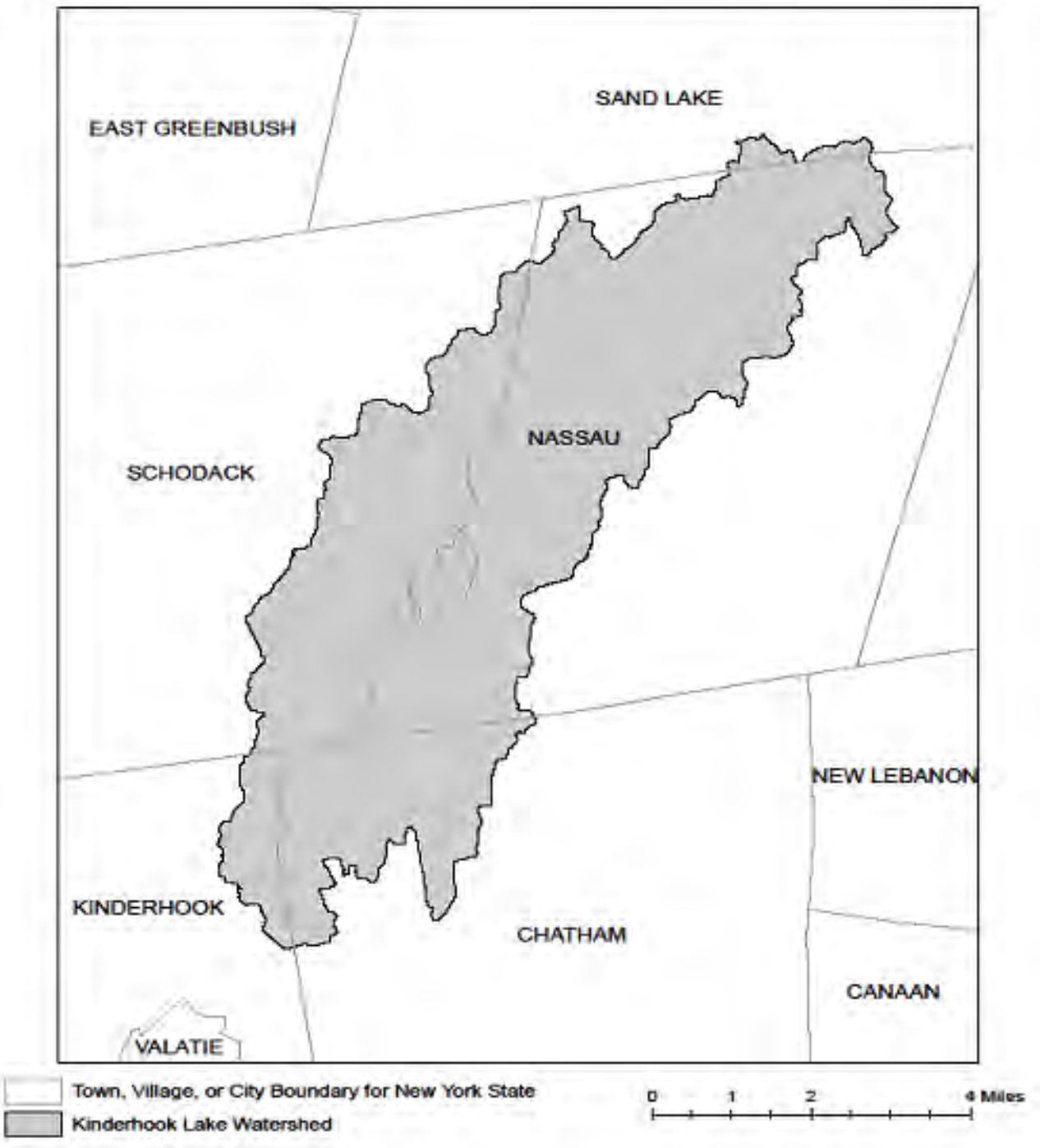


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1W White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX K

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Pond and Wetland Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

PW Drainage Area

Look for areas that are uphill from the pond.

Problem (Check if Present)	**Follow-Up Actions**
☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and straw areas of bare soil to establish vegetation. ☐ Fill in eroded areas with soil, compact, seed and mulch with straw to establish vegetation. ☐ Other:

☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Kick-Out to Level 2 Inspection: If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ If large areas of soil have been eroded or larger channels are forming, this may require rerouting of flow paths or use of an erosion-control seed mat or blanket to reestablish acceptable ground cover or anchor sod where it is practical.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Remove excessive vegetation or woody debris that can block drainage systems. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances exposed to rain in the drainage area	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ If the problem can be remedied with hand tools and done in a safe manner, remove vegetation, trash, woody debris, etc. from blocking inlet structures. ☐ Other: ☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)		Follow-Up Actions
	☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.
	☐ Inlets are broken, and, with pieces of pipe or concrete falling into the pond, there is erosion around the inlet, there is open space under the pipe, or there is erosion where the inlet meets the pond	☐ Kick-Out to Level 2 Inspection: These types of structural or erosion problems are more serious and will require a qualified contractor to repair.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ If the problem can be remedied with hand tools and done in a safe manner, use a flat shovel or other equipment to remove small amounts of sediment. ☐ Remove trash and excessive vegetation from forebays if this can be done in a safe manner. ☐ Other:

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ Kick-Out to Level 2 Inspection: Large amounts of sediment or debris will have to be removed by a qualified contractor. ANY condition that poses a safety concern for working in standing water or soft sediments should be referred to a Level 2 Inspection or qualified contractor.
	☐ The pond area itself has accumulated sediment, trash, debris, or excessive vegetation that is choking the flow of the water, OR the pond area is covered with algae or aquatic plants.	☐ Level 1 includes handling only small amounts of material that can be removed by hand, or with rakes or other hand tools. Do not attempt any repair that poses a safety issue. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most cases will call for a Level 2 Inspection and/or a qualified contractor. ☐ You are not sure what type and amount of vegetation is supposed to be in the pond. ☐ The algae or aquatic plants should be identified so that proper control techniques can be applied.
	☐ The side slopes of the pond are unstable, eroding, and have areas of bare dirt.	☐ If there are only minor areas, try filling in small rills or gullies with topsoil, compacting, and seeding and mulching all bare dirt areas with an appropriate seed. Alternatively, try using herbaceous plugs to get vegetation established in tricky areas, such as steep slopes. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion and many bare dirt areas on steep side slopes will require a Level 2 Inspection and repair by a qualified contractor.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
 	☐ The riser structure is clogged with trash, debris, sediment, vegetation, etc., OR is open, unlocked, or has a steep drop and poses a safety concern. The pond level may have dropped below its "normal" level.	☐ If you can safely access the riser on foot or with a small boat, clear minor amounts of debris and remove it from the pond area for safe disposal. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The riser cannot be accessed safely, the amount of debris is substantial, or the riser seems to be completely clogged and the water level has risen too high. ☐ There are safety issues with the riser and concern about access to pipes, drops, or any other life safety concern. ☐ The riser is leaning, broken, settling or slumping, corroded, eroded or any other structural problem.
	☐ The dam/embankment is slumping, sinking, settling, eroding, or has medium or large trees growing on it.	☐ If there are small isolated areas, try to fix them by adding clean material (clay and topsoil) and seeding and mulching. ☐ Periodically mow embankments to enable inspection of the banks and to minimize establishment of woody vegetation. ☐ Remove any woody vegetation that has already established on embankments. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most of these situations will require a Level 2 Inspection or evaluation and repair by a qualified contractor. Seepage through the dam or problems with the pipe through the dam can be a serious issue that should be addressed to avoid possible dam failure.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The emergency spillway or outfall (if it exists) has ☐ Erosion, settlement, or loss of material. Rock-lined spillways have excessive debris or vegetation.	☐ Clear light debris and vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Displacement of rock lining, excessive vegetation and erosion/settlement may warrant review and decision by Level 2 Inspector to check against original plan. ☐ Any uncertainty about the integrity of the emergency spillway should be referred to a Level 2 Inspector. ☐ Erosion or settlement such that design has been compromised should be reviewed by an engineer.

PW Pond Outlet

Examine the outlet of the pipe on the downstream side of the dam/embankment where it empties into a stream, channel, or drainage system.

Problem (Check if Present)	Follow-Up Actions
 ☐ The pond outlet is clogged with sediment, trash, debris, vegetation, or is eroding, caving in, slumping, or falling apart.	☐ If there is a minor blockage, remove the debris or vegetation to allow free flow of water. ☐ Remove any accumulated trash at the outlet. ☐ Outlet: ☐ Kick-Out to Level 2 Inspection: ☐ If the area at the outlet cannot be easily accessed or if the blockage is substantial, a Level 2 Inspection is warranted. ☐ Erosion at and downstream of the outfall should be evaluated by a qualified professional. ☐ Any structural problems, such as broken pipes, structures falling into the stream, or holes or tunnels around the outfall pipe, should be evaluated by a Level 2 Inspector and will require repair by a qualified contractor. ☐ The pool of water at the outlet pipe is discolored, has an odor, or has excessive algae or vegetative growth.

Additional Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Pond and Wetland Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection: PONDS and WETLANDS

Recommended Repairs and Required Skills	Triggers for Level 3 Inspection
Observed Condition: Bare Soil or Erosion in the Drainage Area	
☐ Condition 1: Extensive problem spots, but no channels or rills forming Reseed problem areas. If problem persists or grass does not take, consider hiring a landscape contractor. ☐ Condition 2: Problem is extensive, and rills/channels are beginning to form May be necessary to divert or redirect water that is causing the erosion problem. If it appears that simple regrading—such as installing a berm or leveling a low spot–will fix the problem, make repairs and ensure that the problem is repaired after the next storm.	• Large rills or gullies are forming in the drainage area. • An attempt to regrade the drainage area has been unsuccessful. • Fixing the problem would require major regrading (i.e., redirecting more than a 100-square-foot area. • It is not clear why the problem is occurring. ☐ Level 3 inspection necessary
Observed Condition: Manholes or Inlet Pipe Buried or Covered with Vegetation	
☐ Condition 1: Nearest manhole and inlet pipe not found Consult as-built drawings to get to closest suspected location and use metal detector to search for metal manhole cover. If unsuccessful, identify nearest drain inlets and approximate pipe direction to locate next manhole. ☐ Condition 2: Manhole located and inspected Never enter a manhole, except by following confined-space entry protocols. If outlet pipe is not visible or greater than 25% full of sediment/debris or trash, it will typically require a qualified contractor to flush, clean and clear blockages. ☐ Condition 3: Inlet pipe not found at pond Clear vegetation and brush that may be covering the inlet pipe. Buried inlet pipes may be found through use of a metal probe. ☐ Condition 4: Inlet pipe buried in sediment or blocked by vegetation Once located, the pipe path can be cleared of vegetation with brush hook or other brush tools. Light digging may clear sediment from the end of the pipe.	• To locate buried manholes and lost storm lines, it is sometimes necessary to hire a pipeline inspection contractor with televising equipment or ground-penetrating radar and enter at the closest upstream access point. • Locating a buried inlet pipe may require wading in the edge of the pond and using a metal probe and brush axe to find and expose the pipe. • If other than light digging is necessary to remove accumulated sediment, a contractor with heavy equipment may be required. ☐ Level 3 inspection necessary

Level 2 Inspection: PONDS and WETLANDS	
Recommended Repairs and Required Skills	**Triggers for Level 3 Inspection**
Observed Condition: Pipe or Headwall Settlement, Erosion, Corrosion or Failure	
☐ Condition 1: Pipe or headwall settlement or failure Severe sinkholes, settlement or corrosion should be kicked out to Level 3 Inspection. ☐ Condition 2: Flow not confined to pipe and visible outside pipe wall With flashlight, observe the inside of the pipe and note its condition. Take photographs. Look for sinkholes developing that indicate pipe failure beneath the surface. Kick out to Level 3 inspection.	• Where blockages are visible, a decision is needed on whether to clear them or leave in place. If a third of the pipe is full of sediment, it should be removed by a contractor with pipe-cleaning equipment. • Corrosion of inlet pipes that allows flow around the pipe exterior is a structural concern because it can lead to settlement, sinkholes and undermining pond embankment. Evidence of this type of failure may require specialized pipe-inspection equipment and investigation by an engineer. ☐ Level 3 inspection necessary
Observed Condition: Pond Conditions	
☐ Condition 1: Pond pre-treatment zone is full of sediment or not constructed as shown on as-built drawings. ☐ Condition 2: Excessive buildup of sediment or overgrowth If the pre-treatment area or pond pool is overgrown or filled with sediment so that the original design is compromised, corrective measures are required. If plants have died, then replanting is necessary. If none of the original design exists due to alteration or sediment, kick out to Level 3 inspection.	• It may require inspection by an engineer to determine next steps for clearing, replanting or reconstruction. • Erosion or settlement such that design has been compromised should be reviewed by an engineer. Recurring erosion may require redesign and/or regrading to direct flow away from eroding area. • If sediment has filled more than 50% of the pond's capacity, dredging is likely needed and should be evaluated by a qualified contractor. • Removal or control of excessive algae or aquatic plants can be assessed by a qualified pond maintenance company. ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

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Inspector/Operator: _____ Date: _____

Disconnection & Sheetflow Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Table 2.4.1 D&S Drainage Area

Visually inspect any surfaces in the drainage area.

Problem (Check if Present)	**Follow-Up Actions**
 ☐ Changes in flow; more runoff; runoff bypassing the practice	☐ For rooftop areas, make sure downspouts are still disconnected and conveying water into the treatment area. ☐ Look for and remove any “dams” of sediment and grass clippings that prevent water from entering the treatment area as sheet flow. ☐ Other:

Table 2.4.1 D&S Drainage Area

Visually inspect any surfaces in the drainage area.

Problem (Check if Present)	Follow-Up Actions
	☐ Kick-Out to Level 2 Inspection: Changes to drainage area size or amount of runoff due to construction, tillage, etc.
 ☐ For parking lots in the drainage area—sediment, grass clippings, or other debris has accumulated at pavement edge.	☐ For small, isolated amounts of debris, sweep up by hand and dispose properly so that it will not be exposed to runoff. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment is widespread and cannot be removed by manual sweeping.
 ☐ For parking lots in the drainage area—dips or damage at pavement edge caused flow to concentrate.	☐ Kick-Out to Level 2 Inspection: This will likely require special expertise to diagnose and fix pavement edge.

Table 2.4.2 D&S Level Spreader/Energy Dissipator

Inspect the energy dissipator closely, during a rain event if possible.

Problem (Check if Present)	Follow-Up Actions
 ☐ Debris and/or sediment accumulated behind or around the level spreader.	☐ Remove debris and sediment by hand and ensure that the area behind the level spreader is relatively flat. Too much debris and sediment can cause runoff to bypass the level spreader structure. ☐ Other:
 ☐ Sinking, cracking, sloughing, or other structural problem makes the energy dissipator no longer level.	☐ For stone/gravel spreaders, add new material or rake out as needed to make it even. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Structural issues that cannot be easily fixed by hand

Table 2.4.3 D&S Treatment Area

Examine where flow enters the treatment area as well as the whole flow path. Look for signs of concentrated flow.

Problem (Check if Present)	Follow-Up Actions
☐ Trash and/or debris in the treatment area	☐ Collect trash/debris and dispose of properly.
 ☐ Grass filter strip has grown very tall, to the point that runoff cannot easily enter or is getting concentrated.	☐ Mow filter strip twice a year or more frequently in a residential yard.

Table 2.4.3 D&S Treatment Area

Examine where flow enters the treatment area as well as the whole flow path. Look for signs of concentrated flow.

Problem (Check if Present)	Follow-Up Actions
☐ Sparse vegetation or bare spots	☐ For grassy areas, add topsoil (as needed), grass seed, mulch, and water during the growing season to re-establish consistent vegetation cover. ☐ Other:
 ☐ Rills or gullies are forming in treatment area where flow has become concentrated	☐ For minor rills, fill in with soil, compact, and add seed and straw to establish vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Rills are more than 2" to 3" deep and require more than just hand raking and re-seeding.

Additional Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Disconnection & Sheetflow Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection – DISCONNECTION AND SHEETFLOW	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Significant sediment on pavement that drains to disconnection area (e.g., grass strip)	
☐ Condition 1: Sediment on parking lot is widespread Enlist a mechanical sweeper or vacuum sweeper to remove sediment across entire pavement surface. Pay special attention to downhill edges of pavement where more sediment may have accumulated.	• Sediment accumulation is so serious that it cannot be sufficiently removed with mechanical sweeper. May indicate a high sediment load from uphill in the drainage area that needs to be mitigated. ☐ Level 3 inspection necessary
Observed Condition: Pavement edge deteriorating	
☐ Condition 1: Dips or damage at pavement edge causing runoff to concentrate Determine whether the damaged edge is causing significant enough concentration of runoff to warrant repair or regrading of the pavement.	• Edge must be patched or re-paved to make secure and level. • Parking lot not draining properly to the energy dissipator and treatment area. ☐ Level 3 inspection necessary
Observed Condition: Level spreader/energy dissipator	
☐ Condition 1: Level spreader sinking or uneven If basic equipment can be used, prop up and secure any section of level spreader that is sinking. Regrade soil all around level spreader and add stone as necessary to prevent erosion and bypassing. ☐ Condition 2: Level spreader is broken These repairs can be simple for small, residential-scale practices, such as at a downspout. Ensure the level spreader is level across, keyed in to soil at the edges, and made of durable material that can withstand the flow of water running across it. Larger or more complicated level spreaders (e.g., concrete) will likely require specialized skill and equipment.	• Level spreader requires specialized equipment, regrading, or large amount of material to make level again. • Level spreader needs to be re-designed and replaced. ☐ Level 3 inspection necessary

Level 2 Inspection – DISCONNECTION AND SHEETFLOW	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Erosion in treatment area	
☐ Condition 1: Rills from concentrated flow Inspect energy dissipator to see whether it needs to be improved to better spread out incoming flow. Regrade flow path to ensure that it is relatively flat (if minor). If major re-grading is needed, the treatment area may need to be redesigned and fixed with specialized equipment.	• Major rills and gullies • Treatment area needs to be re-designed and major grading needed. ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Tree Planting Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

TP Watering

Inspect the trees to determine whether they need watering.

Problem (Check if Present)	**Follow-Up Actions**
☐ Soil is not moist to the touch and/or it has not rained in a week, and leaves/needles are starting to appear wilted/dry.	☐ Water trees deeply and slowly near the base. Soaker hoses and drip irrigation work best for deep watering of trees and shrubs. ☐ Other:

TP Mulch

Mulch should be applied in the late spring and during leaf fall. Check the depth of mulch regularly. Rake the old mulch to break up any matted layers and to refresh the appearance.

Problem (Check if Present)	Follow-Up Actions
☐ Mulch is too thin or thick (should be approximately 3" deep) or does not extend to tree canopy (or 5' radius if tree has a larger than 10' canopy reach).	☐ Add or remove mulch around tree canopy to maximum 5' radius but not within 3" of the bark. ☐ If mulch is against the stems or tree trunks, pull it back several inches to expose the base of the trunk and root crown. ☐ Other:

TP Pruning

Examine the branches and tree shape.

Problem (Check if Present)	Follow-Up Actions
☐ Presence of suckers, dead or diseased branches, branches that interfere with pedestrian traffic	☐ Selective cutting ☐ Prune to make the tree more aesthetically pleasing and remove disease. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Use an arborist or landscaper for more extensive pruning jobs.

Additional Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

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Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Tree Planting Stormwater Management Practices
Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection: TREE PLANTING	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Appearance of fungus or pest damage	
☐ Condition 1: Fungus, discoloration, browning leaves or holes in leaves Check with arborist or other tree professional about the best way to proceed. This requires a Level 3 inspection. ☐ Condition 2: Burrowing insects, holes Check with arborist or other tree professional about the best way to proceed. This requires a Level 3 inspection.	• Any concerns about how to address infestation or disease ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

Swale Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

SW Drainage Area

Look at areas that are uphill from the swale.

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch or sod areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and add seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous.
☐ Grass dying at edge of road	☐ Seed and mulch; add topsoil or compost if needed. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Grass on edge of pavement continues to die off for unknown reasons. Swale edge may need to be replaced with other materials (e.g., stone diaphragm).

SW Inlets

Stand in the swale and look for all the places where water flows in.

Problem (Check if Present)	Follow-Up Actions
☐ Inlets or the swale edge are collecting grit, grass clippings, or debris or have grass/weeds growing. Some water may not be getting into the swale. The objective is to have a clear pathway for water to flow into the swale.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or opening). Parking lots will generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds, and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets or along the edge of the swale where water is supposed to enter. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the swale. ☐ Dispose of all material properly in an area where it will not re-enter the swale. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the swale.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion are present, or there is bare dirt that is washing into the swale.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying an erosion control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other:
	☐ Level 2 Inspection: Erosion is occurring at most of the inlets or along much of the swale edge. The inlet design may have to be modified.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
☐ Minor areas of sediment, grit, trash, or other debris are accumulating in the swale.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the swale. ☐ If removing the material creates a hole or low area, fill with good topsoil and add seed and straw to re-vegetate. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ If the swale is densely vegetated, it may be difficult to do the maintenance; check for excessive ponding or other issues described in this section to see if the accumulated material is causing a problem. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 3 inches deep and covers 25% or more of the swale surface. ☐ The source of sediment is unknown or cannot be controlled with simple measures.
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows through the swale or on the slopes.	☐ Try filling the eroded areas with clean topsoil, and then seed and mulch to establish vegetation. ☐ If the problem recurs, you may have to use some type of matting, stone (e.g., river cobble), or other material to fill in eroded areas. ☐ If the erosion is on a side slope, fill with soil and cover with erosion-control matting or at least straw mulch after re-seeding. ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3 inches deep and seems to be an issue with how water enters and moves through the swale. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., “sinkhole”) due to some underground problem.
☐ Water does not flow evenly down the length of the swale, but ponds in certain areas for long periods of time (e.g., 72 hours after a storm). The swale does not seem to have “positive drainage.” Check during or immediately after a rain storm.	☐ If the problem is minor (just small, isolated areas), try using a metal rake or other tools to create a more even flow path; remove excessive vegetative growth, sediment, or other debris that may be blocking the flow. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Water ponds in more than 25% of the swale for three days or more after a storm. The issue may be with the underlying soil or the grade of the swale. ☐ Water ponds behind check dams for three days or more after a storm. Check dams may be clogged or not functioning properly.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
 ☐ Check dams (if present): water is flowing around the edges of check dams, creating erosion or sinkholes on the uphill or downhill side, or the check dams are breaking apart or breaching .	☐ If the problem is isolated to just a few check dams, try simple repairs. ☐ It is very important for the center of each check dam (where most of the water flows) to be lower (by at least several inches) than the edges of the check dams where they meet the side slopes. Also, the check dams should be keyed into side slopes so water does not flow between the check dam and side slope. ☐ Use a level to check the right check-dam configuration, as noted above. Repair by moving around stone, filling and compacting soil, or adding new material so that water will be directed to the center of the check dam instead of the edges. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Many check dams are impacted and/or the problem seems to be a design issue with height, spacing, shape, or materials used to construct them.

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too overgrown to access swale for maintenance activities	☐ Mow or bush-hog the path. ☐ Other:

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance: pulling weeds, removing dead and diseased plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, block flow, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole swale, bush-hog the entire area before seed heads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Replant with species that are aesthetically pleasing and seem to be doing well in the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.
☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the swale. If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other: ☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., in residential yards), this task will likely require a landscape design professional or horticulturalist.

SW Outlets

Examine outlets that release water out of the swale.

Problem (Check if Present)	Follow-Up Actions
☐ Outlet is obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Additional Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

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Swale Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
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Party Responsible for Maintenance	**System Type**		**Type of Site**
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Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection: SWALE	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Water Stands on Surface for More than 72 Hours after Storm	
☐ Condition 1: Small pockets of standing water Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have compacted soil, try scraping off top 3 to 6 inches of soil and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas. ☐ Condition 2: Standing water is widespread or covers entire surface Requires diagnosis and resolution of problem: • Bad or compacted soil • Filter fabric on the swale bottom • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Longitudinal slope is too flat?	• Soil is overly compacted or clogged and problem is not evident from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice (e.g., not enough slope down through the swale). ☐ Level 3 inspection necessary
Observed Condition: Vegetation is predominantly weeds and invasive species	
For a small area, weed and dig up invasive plants. Replant with natives or plants from original planting plan. If longer than 100 feet, develop a new planting plan and have it professionally reviewed.	• Vegetation deviates significantly from original planting plan; swale has been neglected and suffered from deferred maintenance. • Owner/responsible party does not know how to maintain the practice. • For large area, hire a professional to develop a grading plan and develop a planting plan. ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

APPENDIX L

STORMWATER MANAGEMENT PLAN WORKSHEET

RZ Engineering, PLLC
6320 Fly Road Suite 109 East Syracuse, NY 13057
315-432-1089

Runoff Reduction Volume (RRv) Worksheets

Project #: 17061
Name of project: Hoag Lane Subdivision **Date:** 6/9/2020 **Initial:** HJM
Drainage Area: DA-1a and DA-1b

Watershed Drainage Area, DA (acres):	HSG(s)	90% Rain, P (inches):
58.042	C	1.00

Planning

1. Plan to preserve, avoid, and minimize(underline all concepts utilized):

-Preserve undisturbed, natural buffer, and critical environment areas
-Employ open space, conservation, and clustering site design techniques
-Avoid developing in environmentallyu sensitive areas: floodplain, steep slopes, habitat, ecosystems, bedrock, wetlands, shorelines, shallow groundwater, impervious soils, or unstable soils
-Minimize impervous surfaces: building footprints, parking, roads, sidewalks, and driveways
-Minimize clearing and grading

Water Quality Volume

2. Calculate water quality volume(WQv): WQv= P*A*Rv/12

DA= 58.042 acres Impervious Area*(AI) = 6.53 acres Rv= 0.151 Original WQv= **0.731742** ac-ft

*If soil restoration is not practices include construction compacted areas as impervious.

3. Minimum RRv requirements (when 100% WQv reduction cannot be achieved)

(Calculate minimum required Runoff Reduction Volume (RRv) using):

RRv = 90% rain(P) x .95 x S x AI/12

with S = .55 (A soils); .40(B soils); .30 (C soils); .20 (D soils); OR weighted HSG average in DA

Minimum required RRv =	P	S	AI
	1.00	0.3	6.53

Minimum RRv required= **0.155135** ac-ft

Area Reduction Practices

4. Incorporate area reduction practices (complete for all applicable practices): (area includes practice and contributing area)

Conservation of natural areas:	contributing AI=	0 ac	Area=	6.54 ac	
Riparian buffers/filter strips:	contributing AI=	0 ac	Area=	0 ac	
Tree Planting/tree preservation:	contributing AI=	0.096 ac	Area=	0.096 ac	
Total area reduction:				Total Area Reduced=	6.636 ac
Total Impervious area with area reduction:				AI in Reduced Area=	0.096 ac

5. Subtract total area reduction from DA:

Remaining drainage area(#2 area-#4 area) Remaining Drainage Area= 51.406 ac
Remaining impervious area(#2 AI-#4 AI) Remaining AI= 6.436 ac

6. Recalculate WQv for site area remaining after area reductions:

Remaining DA= 51.406 Remaining AI= 6.436 ac Rv= 0.163 area reduced WQv= **0.696892** ac-ft

7. Runoff reduction volume (RRV) from #2: (#2 WQv- #6 WQv) = RRv= **0.03485** ac-ft

8. **Incorporate rooftop area disconnection:**

Total disconnected rooftop area(now considered pervious for RV calculation(s)) Area= 1.61 ac

9. Recalculate WQv with RV modified for impervious disconnection:

DA(from #5)= 51.406 (remaining AI = 4.83 ac) Rv= 0.134492083 Rv reduced WQV= 0.576142 ac-ft

10. Runoff reduction volume: #6 (area reduced WQv - #9 (Rv reduced WQv) = **RRv =** 0.12075 ac-ft

Source Control WQv Treatment Practices

(From attached worksheet)

11a. Subtotal DA tributary to Souce Control treatment practices= 0 (acres)
11b. Subtotal AI treated by Source Control practices AI= 0 (ac-ft)
11c. Subtotal Runoff Reduction Volume (RRv)= Subtotal(Rv) RRv (ac-ft)

Total Runoff Reduction Volume (RRv)

12a. Total drainage area treated with area reduction and source control(#4+#11a) DA treated= 6.636 ac-ft
12b. Total Impervious Area treated with area reduction or source control RRv(AI #4+AI#8+AI#11b) Total treated AI = 1.71 ac-ft

13. Total RRV provided(#7+#10+#11c)=Total RRv= Total provided RRv= **0.1556** ac-ft

14. Is Provided RRv (#12b >= minimum WQv (#2)? Yes ____ No X If yes, skip to #18

15. Is provided RRv(#12b) >= minimum RRv (#3)? Yes X No ____ If no, provide additional RRv and recalculate, or provide justification

Standard WQv Treatment

16. **Provide treatment for any remaining untreated watershed DA with standard practices: *Minimum Rv for standard practices is .2**

Remaining untreated DA = Watershed (#2)	58.042	-	RRv DA(#12a)	6.64 acres	=	51.41	acres
Remaining impervious area = Total AI(#2)	6.53	-	treated AI(#12b)	1.71 acres	=	4.83	acres

STORMWATER MANAGEMENT PLAN WORKSHEET

RZ Engineering, PLLC
6320 Fly Road Suite 109 East Syracuse, NY 13057
315-432-1089

Ponds	DA Tributary	51.41	acres	AI treated	4.83	acres	WQv provided-= 40.46421 ac-ft
Wetlands	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft
Infiltration	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft
Filters	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft
Open channels	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft
Total	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft

Drainage Area Treated

17a. Total DA treated with RRv practices (#12a) =	6.636	acres
17b. Total DA treated with Standard WQv practices (16) =	51.41	acres
17c. Total DA treated (17a + 17b) =	58.04	acres

18. Is all of the watershed DA treated by either RRv practices or standard WQv treatment practices?

Yes X No

Peak Flow Attenuation

19. Calculate peak runoff rates for pre-development site conditions: (method used =) HydroCAD

-->>>> Provided in SWPPP

DA= acres RCN= Tc= hours
Q1 cfs
Q10 cfs
Q25 cfs
Q100 cfs

20. Calculate peak runoff rates for post-development site conditions (with Runoff Reduction practices: (method used =) HydroCAD

-->>>> Provided in SWPPP

DA= acres RCN= Tc= hours
Q1 cfs
Q10 cfs
Q25 cfs
Q100 cfs

If soil restoration practices are not employed, reduce Hydrologic soil group one leter for RCN computation.
If existing soil is D use RCN of 94 for non-restored soil.

20. Provide necessary stormwater storage volume detention for channel protection, overband and extreme storm runoff to mitigate any increase in post-developed runoff from pre-developed conditions using:
(complete for all applicable practices)

Pond	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft
Wetlands	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft
Dry detention	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft
Underground storage	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft
Blue roofs	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft

11. **Source Control WQv Treatment Practices Worksheet** (complete for all applicable practices and soil types)

Standard Practices (used as source control)

*Infiltration(soils with k>.5"/hour only) DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv = _____	ac-ft (k>.5"/hour soils only)
*Bioretention DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	80% WQv = _____ 40% WQv = _____	ac-ft (A/B soils) OR ac-ft (C/D soils)
*Dry Swale DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	40% WQv = _____ 20% WQv = _____	ac-ft (A/B soils) OR ac-ft (C/D soils)

Green Infrastructure Practices

*Vegetated swale DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	40% WQv = _____ 20% WQv = _____	ac-ft (A/B soils) OR ac-ft (C/D soils)
*Green Roof DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv =	_____ ac-ft
*Rain Garden DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv = _____ 40% WQv = _____	ac-ft (A/B soils) OR ac-ft (C/D soils)
*Stormwater planters DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv =	_____ ac-ft

*Cistern/ rain barrels DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv =	_____ ac-ft
*Porous pavement(A/B/C soils only) DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv =	_____ ac-ft (A/B/C soils)

11a. Subtotal DA tributary to Source Control WQv treatment practices= 0 (acres)

11b. Subtotal AI treated by Source control practices AI= 0 (acres)

11c. Subtotal Runoff Reduction Volume (RRv): Subtotal (Rv) RRv= _____ (ac-ft)

APPENDIX M

EROSION CONTROL NOTES and EROSION CONTROL SEQUENCING

X-SWPPP-EC-NOTES-HOAG

EROSION AND SEDIMENT CONTROL NOTES:

1. PRIOR TO THE START OF CONSTRUCTION AND UNTIL ALL DISTURBED AREAS ARE STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES, AS SHOWN ON THE SITE PLAN AND AS OTHERWISE REQUIRED, SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR, AND SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL AND THE SWPPP PREPARED FOR THE PROJECT, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
2. BARE SOILS SHALL BE MULCHED WITH HAY AT A RATE OF TWO TONS PER ACRE WITHIN 7 DAYS OF EXPOSURE, IF CONSTRUCTION ON AN AREA IS SUSPENDED, THE AREA SHALL BE SEEDED IMMEDIATELY.
3. SITE PREPARATION SHALL INCLUDE:
   - A. SEEDBED PREPARATION - SCARIFY IF COMPACTED, REMOVE DEBRIS AND OBSTACLES SUCH AS ROOTS OR STUMPS.
   - B. SOIL AMENDMENTS
     1. LIME TO pH 6.0
     2. FERTILIZE WITH 600 LBS OF 5-10-10 OR EQUIVALENT PER ACRE (14 LBS/100 SQ FT).
   - C. SEED MIXTURES
     1. TEMPORARY SEEDINGS
        - a. RYEGRASS (ANNUAL OR PERENNIAL) @ 30 LBS/ACRE (0.7 LBS/1000 SQ FT).
        - b. CERTIFIED "AROOSTOCK" WINTER RYE (CEREAL RYE) @ 100 LBS/ACRE (2.5 LBS/1000 SQ FT).
     2. PERMANENT SEEDINGS
        - a. ROUGH OR OCCASIONALLY MOWED AREAS:

	LBS/ACRE	LBS/1000 SQ FT
EMPIRE BIRDSFOOT (TREFOIL OR COMMON)	8	0.20
WHITE CLOVER PLUS*	8	0.20
TALL FESCUE PLUS	20	0.45
REDTOP	2	0.05
RYEGRASS (PERENNIAL)	5	0.10

*ADD INOCULANT IMMEDIATELY PRIOR TO SEEDING

   - D. METHOD OF SEEDING: BROADCASTING, DRILLING WITH CULTIPACK TYPE SEEDER OR HYDROSEEDING ARE ACCEPTABLE.
4. DISTURBED AREAS SHALL BE SEEDED AS NOTED ABOVE AND MULCHED WITH CLEAN STRAW AS OUTLINED IN THE NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL. ON SLOPES GREATER THAN 3:1 SEEDED AREAS SHALL BE STAKED WITH JUTE MESH OR SODDED.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE STREET PAVEMENT AREAS CLEAN OF DIRT AND DEBRIS.
6. ACCESS TO DISTURBED AREAS SHALL BE LIMITED TO THE AREAS SHOWN ON THE PLAN. THE CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AT THE LOCATION SHOWN ON THE PLAN. NO ACCESS IS PERMISSIBLE FROM BEACH ROAD.
7. ANY EXISTING DRAINAGE FACILITIES DISRUPTED BY CONSTRUCTION OR IMPACTED BY INSTALLATION OF EROSION CONTROL MEASURES SHALL BE REPLACED TO MATCH EXISTING CONDITIONS OR BETTER.
8. TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES - AS SEDIMENT ACCUMULATES TO ½ THE DEPTH OF THE STORMWATER BASIN, SEDIMENT SHALL BE REMOVED AS OUTLINED IN THE NYS GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL.
9. DIRECT ACCESS SHALL BE PROVIDED TO ALL BASIN/POND AREAS FOR MAINTENANCE AND REHABILITATION.
10. ALL DESIGN AND MAINTENANCE MEASURES OUTLINED IN THE SWPPP PREPARED FOR THIS PROJECT SHALL BE IMPLEMENTED AND CARRIED OUT BY THE PARTIES DEEMED RESPONSIBLE FOR THOSE DUTIES.
11. THE PERMITEE & ITS SUBCONTRACTORS ARE RESPONSIBLE FOR MEANS & METHODS OF EROSION CONTROL FACILITIES DURING CONSTRUCTION. IT SHOULD BE NOTED THAT FACILITIES ON THIS DRAWING ARE CONSIDERED MINIMUM & ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS CONSTRUCTION PROGRESSES. THE PERMITEE & ITS SUBCONTRACTORS ARE RESPONSIBLE FOR ANY ADDITIONAL MEASURES DEEMED NECESSARY BY THE ENGINEER, TOWN OR NYSDEC.
12. PROVIDE EROSION CONTROL MEASURES AS NOTED ON THE PLANS AND AS OTHERWISE REQUIRED TO PREVENT EROSION AND SEDIMENTATION ONTO ADJOINING PROPERTY, STREETS, WATERWAYS, AND ON SITE IMPROVEMENTS BEYOND THE LIMITS OF WORK. COMPLY WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL" AND THE NYSDEC'S "REDUCING THE IMPACTS OF STORMWATER RUNOFF FROM NEW DEVELOPMENT".
13. MAINTENANCE - THE CONTRACTOR SHALL INSPECT ALL DRAINAGE STRUCTURES AND EROSION CONTROLS ON A WEEKLY BASIS AND AFTER ALL STORMS (½" RAINFALL OR GREATER) INCLUDING BUT NOT LIMITED TO THE FOLLOWING: REPLACING DAMAGED OR SILTED IN EROSION CONTROLS, CLEANING OUT STRUCTURES, AND STABILIZING ERODED OR WASHED OUT SLOPED AREAS.
14. CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE, LAWNS HAVE BECOME ESTABLISHED AND ALL SOURCES OF EROSION HAVE BEEN PERMANENTLY STABILIZED.
15. CONTRACTOR SHALL PROVIDE DUST CONTROL IN ACCORDANCE WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL."

EROSION CONTROL and CONSTRUCTION STAGING AND SEQUENCE:

THE PROJECT WILL CREATE A TOTAL SITE DISTURBANCE OF APPROXIMATELY 20.81± ACRES AND WILL BE CONSTRUCTED IN APPROXIMATELY SEVEN (7) STAGES. THE SITE DISTURBANCE WILL BE PHASED TO LIMIT THE POTENTIAL FOR EROSION AND SEDIMENTATION ISSUES DURING THE CONSTRUCTION PROCESS. REFER TO SHEETS L-102 THRU L-108 STAGING PLANS FOR DISTURBANCE LIMITS IN EACH STAGE. BELOW IS A LISTING OF THE ANTICIPATED STAGES:

STAGE 1- PROPOSED STORMWATER BASIN & ROUGH GRADING

1. STAGE 1 TO CONSIST OF CONSTRUCTION PROPOSED WET POND AND APPLICABLE PROPOSED STORMWATER CONVEYANCE ONLY.
2. PRIOR TO ANY SITE DISTURBANCE, CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT THE INTERSECTION OF SHIRAZ AND HOAG LANE AS SHOWN ON THE DRAWING.
3. SILT FENCE - INSTALL PERIMETER SILT FENCE AS SHOWN ON PLAN PRIOR TO EARTHWORK. SILT FENCE SHALL BE UTILIZED ONLY AS A TEMPORARY MEASURE. DISTURBED AREAS SHALL BE SEEDED IMMEDIATELY FOLLOWING THE COMPLETION OF ANY EARTHWORK.
4. CLEARING AND GRUBBING - REMOVE ALL TREES, STUMPS AND BRUSH WITHIN STAGE 1 PRIOR TO EARTHWORK.
5. STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN. DOWNED TREES, BRANCHES, STUMPS AND VEGETATION TO BE CHIPPED AND BLENDED WITH STRIPPED TOPSOIL. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
6. EXCAVATE PROPOSED WET POND AND WET SWALES. WET POND AND WET SWALES TO BE USED AS A TEMPORARY SEDIMENT BASIN(S). PROVIDE RIP RAP STONE PROTECTION APRONS AND SPILLWAYS AT OUTLET LOCATIONS AS SHOWN ON THE DRAWING. FINE GRADE, SEED AND MULCH WITHIN SEVEN (7) DAYS OF DISTURBANCE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
7. REFER TO DRAWING L-102 FOR STAGING PLAN.

STAGE 2- SITE ROUGH GRADING

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-103 FOR STAGING PLAN.

STAGE 3- SITE ROUGH GRADING (CONT.)

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-104 FOR STAGING PLAN.

STAGE 4- FINAL ROUGH EARTHWORK

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-105 FOR STAGING PLAN.

STAGE 5- UTILITY INSTALLATION

1. PROVIDE DRAINAGE STRUCTURES AND PIPING, INCLUDING DRAINAGE INLET PROTECTION AS SHOWN ON THE DRAWING.
2. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 6- ROAD BASE AND KICKUP GUTTERS

1. EXCAVATE AND FILL REST OF SITE AREAS FOR ROADWAY. FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF DISTURBANCE.
2. PLACE ROAD SUBBASE.
3. AREAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE
4. REMOVE TEMPORARY CONSTRUCTION ENTRANCE AFTER ASPHALT BINDER COURSE IS PLACED.
5. CLEAN STORMWATER POND AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
6. FINE GRADE, SEED, AND PLANT STORMWATER POND AS NOTED ON THE PLANTING PLAN AND ON THE DETAILS.
7. INSTALL POND AND SWALE OUTLET PIPE(S) WITH STRUCTURES AND TRENCHING AFTER 80% VEGETATIVE STABILIZATION IS ACHIEVED.
8. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 7- FINE GRADING AND LOT IMPROVEMENTS

1. CLEAR VEGETATION ON RESIDENTIAL LOTS TO BE CONSTRUCTED. STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN AND / OR AGREED UPON LOCATION WITH OWNER. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
2. PREPARE BUILDING PAD AND DRIVEWAY AREA SUBGRADE.
3. FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
4. CLEAN STORMWATER BMP'S AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
5. SEE DRAWING L-108 DETAIL 2 FOR INDEPENDENT LOT EROSION CONTROL PLANS.
6. SEE DRAWING L-108 FOR STAGING PLAN.

FINAL CLEAN UP & PREVENTATIVE MAINTENANCE

1. REMOVE AND/OR MAINTAIN STOCKPILE AREAS.
2. REMOVE EROSION CONTROL MEASURES FROM STABILIZED AREAS.
3. FINAL CLEAN UP - REMOVE EROSION CONTROL MEASURES AND CLEAN OUT ALL DRAINAGE STRUCTURES, PIPES, POND AND SWALES AFTER LAWN IS WELL ESTABLISHED. OWNER IS RESPONSIBLE FOR MAINTAINING SITE UPON PROJECT CLOSEOUT.
4. CONTRACTOR, ARCHITECT, AND OWNER TO REVIEW SITE FOR COMPLETION. CONTRACTOR TO ADDRESS FINAL COMMENTS ON PUNCH LIST FROM ARCHITECT AND SWPPP INSPECTION REPORTS.

SOIL RESTORATION NOTES

1. ACCORDING TO SECTION 5 OF THE NYS STORMWATER DESIGN MANUAL, SOIL RESTORATION PRACTICES MUST BE APPLIED ACROSS THE SITE IN AREAS OF SOIL DISTURBANCE. SOIL RESTORATION WILL BE COMPLETED IN ACCORDANCE WITH TABLE 4.6 ON PAGE 4.53.

2. **SOIL RESTORATION REQUIREMENTS PER TABLE 4.6 OF NYS BLUEBOOK, 2016:**

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT
NO SOIL DISTURBANCE	RESTORATION NOT PERMITTED
MINIMAL SOIL DISTURBANCE	RESTORATION NOT REQUIRED
AREAS WHERE TOPSOIL IS STRIPPED ONLY - NO CHANGE IN GRADE	HSG A&B - APPLY 6 INCHES OF TOPSOIL HSG C&D AERATE* AND APPLY 6 INCHES OF TOPSOIL
AREAS OF CUT OR FILL (PHASE 1-4)	HSG A&B - AERATE AND APPLY 6 INCHES OF TOPSOIL HSG C&D - APPLY FULL SOIL RESTORATION**
HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY IN ZONE 5-25 FEET AROUND BUILDINGS BUT NOT WITHIN A 5 FOOT PERIMETER AROUND FOUNDATION WALLS) (PHASE 7)	APPLY FULL SOIL RESTORATION (DECOMPACTION AND COMPOST ENHANCEMENT)
AREAS WHERE RUNOFF REDUCTION AND/OR INFILTRATION PRACTICES ARE APPLIED	RESTORATION NOT REQUIRED, BUT MAY BE APPLIED TO ENHANCE THE REDUCTION SPECIFIED FOR APPROPRIATE PRACTICES.

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT
REDEVELOPMENT PROJECTS	SOIL RESTORATION IS REQUIRED ON REDEVELOPMENT PROJECTS IN AREAS WHERE EXISTING IMPERVIOUS AREA WILL BE CONVERTED TO PERVIOUS AREA.

*AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COULTERS MAKING A NARROW SLIT IN THE SOIL, A ROLLER WITH MANY SPIKES MAKING INDENTATIONS IN THE SOIL, OR PRONGS WHICH FUNCTION LIKE A MINI-SUB-SOILER.

**PER "DEEP RIPPING AND DE-COMPACTION, DEC 2008". SEE APPENDIX I IN SWPPP, DATED 06/15/2020.

3. **GENERAL SOIL RESTORATION PRACTICE IMPLEMENTATION:**

DURING PERIODS OF RELATIVELY LOW TO MODERATE SUBSOIL MOISTURE, THE DISTURBED SUBSOILS ARE RETURNED TO ROUGH GRADE AND THE FOLLOWING SOIL RESTORATION STEPS APPLIED:

1. APPLY 3 INCHES OF COMPOST OVER SUBSOIL.
2. TILL COMPOST INTO SUBSOIL TO A DEPTH OF AT LEAST 12 INCHES USING A CAT-MOUNTED RIPPER, TRACTORMOUNTED DISC, OR TILLER, MIXING, AND CIRCULATING AIR AND COMPOST INTO SUBSOILS.
3. ROCK-PICK UNTIL UPLIFTED STONE/ROCK MATERIALS OF FOUR INCHES AND LARGER SIZE ARE CLEANED OFF THE SITE.
4. APPLY TOPSOIL TO A DEPTH OF 6 INCHES.
5. VEGETATE AS REQUIRED BY APPROVED PLAN.
6. COMPOST SHALL BE AGED, FROM PLANT DERIVED MATERIALS, FREE OF VIABLE WEED SEEDS, HAVE NO VISIBLE FREE WATER OR DUST PRODUCED WHEN HANDLING, PASS THROUGH A HALF INCH SCREEN AND HAVE A pH SUITABLE TO GROW DESIRED PLANTS.

FIGURES 5.16 AND 5.17 TO THE BELOW SHOW TWO ATTACHMENTS USED FOR SOIL DECOMPACTION. TILLING (STEP 2 ABOVE) SHOULD NOT BE PERFORMED WITHIN THE DRIP LINE OF ANY EXISTING TREES OR OVER UTILITY INSTALLATION THAT ARE WITHIN 24 INCHES OF THE SURFACE.

Figure 5. 16 Soil aerator implement.



Figure 5. 17 Soil aerator implement.



4. AT THE END OF THE PROJECT AN INSPECTOR SHOULD BE ABLE TO PUSH A 3/8" METAL BAR 12 INCHES INTO THE SOIL JUST WITH BODY WEIGHT.

5. THE CONTRACTOR MUST KEEP THE SITE FREE OF VEHICULAR AND FOOT TRAFFIC OR OTHER WEIGHT LOADS. CONSIDER PEDESTRIAN FOOTPATHS. (SOMETIMES IT MAY BE NECESSARY TO DE-THATCH THE TURF EVERY FEW YEARS)

6. ALL SOIL RESTORATION SHALL BE IN ACCORDANCE WITH NYSDEC REGULATIONS AND THE APPROVED SWPPP FOR THE PROJECT.

STORMWATER POLLUTION PREVENTION PLAN

PROJECT DESCRIPTION PROJECT SCOPE INCLUDES THE SITEWORK NECESSARY TO CONSTRUCT TWENTY (20) PROPOSED RESIDENTIAL HOMES AND ONE (1) EXISTING HOME. SITEWORK INCLUDES THE EXTENSION OF A SANITARY LINE, INSTALLATION OF ALL UTILITIES AND THE CONSTRUCTION OF A WET POND TO MITIGATE THE INCREASE IN STORM RUNOFF.

SPEDES REQUIREMENTS THE PROJECT REQUIRES A NOI (NOTICE OF INTENT) AND SWPPP (STORM WATER MANAGEMENT PREVENTION PLAN) TO COMPLY WITH NYSDEC'S SPEDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. ELIGIBILITY IS BASED UPON A CONSTRUCTION DISTURBANCE AREA WHICH IS GREATER THAN (1) ACRE. THE PROJECT SITE DISTURBED AREA IS APPROXIMATELY 21 ACRES. RZ ENGINEERING HAS SUBMITTED THE (N.O.I.) NOTICE OF INTENT TO BE AUTHORIZED TO DISCHARGE STORM WATER UNDER THIS PERMIT. THE SWPPP WILL BE SUBMITTED TO THE SITEWORK CONTRACTOR PRIOR TO CONSTRUCTION AND BE AVAILABLE ON THE PROJECT SITE DURING CONSTRUCTION. THE CONTRACTOR WILL ALSO MAINTAIN THE REQUIRED LOG BOOK COMPLETE WITH DOCUMENTATION OF WEEKLY SITE INSPECTIONS. ALSO, A 5 ACRE DISTURBANCE LETTER IS REQUIRED TO SUBMIT ALONG WITH THE NOTICE OF INTENT (N.O.I.).

STORM WATER MANAGEMENT REPORT SUMMARY THE STORM WATER MANAGEMENT REPORT SUBMITTED WILL BE REVIEWED BY THE TOWN ENGINEER, DOUG MILLER WITH MILLER ENGINEERS. THE STORM IMPROVEMENTS HAVE BEEN DESIGNED IN ACCORDANCE WITH NYSDEC's PHASE II STORMWATER MANAGEMENT AND STORM WATER DRAINAGE COMPUTATION REQUIREMENTS AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS. STORMWATER MANAGEMENT REPORT WILL BE MADE AVAILABLE IF REQUESTED.

EXISTING PROPERTY DESCRIPTION THE EXISTING PROPERTY CONSISTS OF MAINLY WOODED AREAS WITH ONE EXISTING HOUSE LOCATED AT THE NORTHEAST OF THE PROPERTY. 4" CALIPER VEGETATION HAS BEEN CUT DOWN TO STUMPS AS OF MARCH 2019 WITH TOWN APPROVAL. REMAINING TREES AND VEGETATION UNLESS OTHERWISE IDENTIFIED AS GREEN SPACE WILL BE REMOVED PER STAGING PLANS.

SITE INFORMATION

SOIL TYPE - HYDROLOGIC SOIL TYPE C. REFER TO SWPPP FOR DETAILED SOILS INFORMATION.

RECEIVING WATER BODY - LIMESTONE CREEK

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER.
AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS.

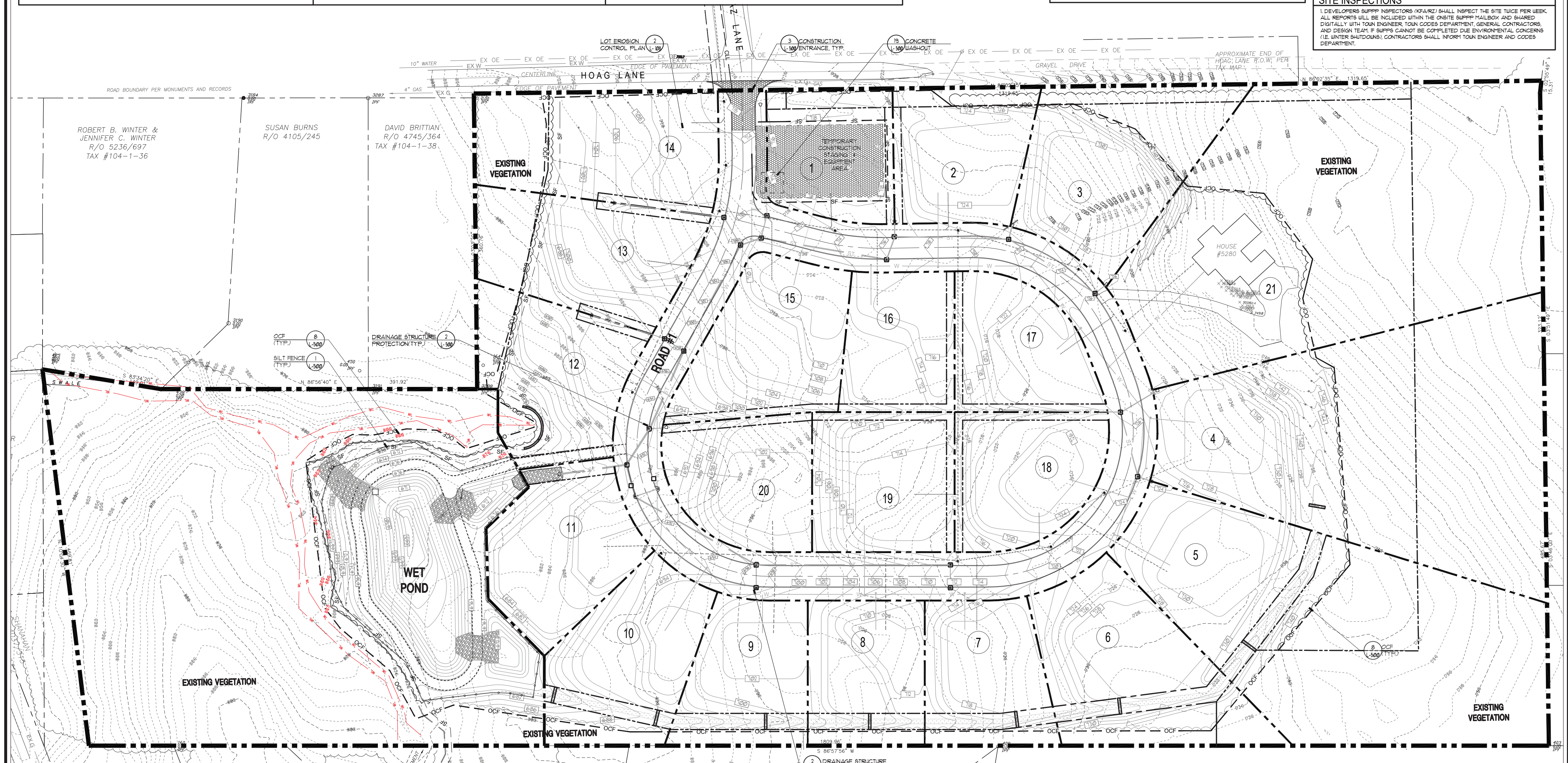
DUST MONITORING PLAN

1. UNIT LOCATION AND DETAIL SHOWN ON PHASING PLANS. SEE DETAIL 8/L-501 FOR SUPPLIER AND MODEL*.

2. REFER TO SWPPP APPENDIX R, DATED 06/15/20 AS PREPARED BY RZ ENGINEERING FOR ADDITIONAL DUST MONITORING PROCEDURES.

SITE INSPECTIONS

1. DEVELOPERS SWPPP INSPECTORS (KFA/RZ) SHALL INSPECT THE SITE TWICE PER WEEK. ALL REPORTS WILL BE INCLUDED WITHIN THE ONSITE SWPPP MAILBOX AND SHARED DIGITALLY WITH TOWN ENGINEER, TOWN CODES DEPARTMENT, GENERAL CONTRACTORS, AND DESIGN TEAM. IF SWPPS CANNOT BE COMPLETED DUE ENVIRONMENTAL CONCERNS (I.E. WINTER SHUTDOWNS), CONTRACTORS SHALL INFORM TOWN ENGINEER AND CODES DEPARTMENT.



1 L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN

0 50 100 150 SCALE IN FEET N

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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STATE OF NEW YORK RUDY L. ZONA 079543 LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

△ - Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
EROSION CONTROL AND STORM WATER POLLUTION PREVENTION PLAN

L-101

Plotted By:
Date Plotted:
Drawing File:

Monday, June 15, 2020 1:04:08 PM

STORM STRUCTURE SCHEDULE

X-HOAG-STORM-CHART

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES # 1	FLARED END SECTION [2]	N/A	-	24"-665.00
DA-1A&B	10' DIA. OUTLET STRUCTURE [1]	675.45	REFER TO DETAIL FOR ORIFICE INFORMATION	665.20
FES # 2	FLARED END SECTION [2]	N/A	-	(E)-24"-676.00
CB # 1	CATCH BASIN - 6'-0" [3]	691.72	(NE)-24"-684.50 (S)-24"- 685.00 UD- 689.20	(W)-24"-684.50
CB # 2	CATCH BASIN - 4'-0" [3]	692.75	(NE)-24"-688.75 (E)-15"-688.50 UD- 691.00	(SW)-24"-687.50
CB # 3	CATCH BASIN - 4'-0" [3]	697.72	(W)-12"-690.90 (NE)-18"-694.00 UD- 696.25	(SW)-24"-690.80
SI # 1	STORM INLET [4]	707.75	(NW)-12"-702.10 (NE)-18"-702.10	(S)-18"-700.00
SI # 2	STORM INLET [4]	710.75	(N)-12"-706.75 (E)-18"-707.25	(SW)-18"-706.00
SI # 3	STORM INLET [4]	715.90	(N)-15"-711.50 UD-714.50	(W)-18"-711.25
SI # 4	STORM INLET [4]	716.05	(N)-12"-713.50 (E)-12"-713.50 UD- 714.50	(S)-15"-712.00
SI # 5	STORM INLET [4]	721.50	(N)-12"-718.00 (SE)-12"-718.50 UD- 718.00	(W)-12"-717.00
SI # 6	STORM INLET [4]	725.75	(NE)-12"-722.10 UD- 722.75	(NW)-12"-722.00
FES # 7	FLARED END SECTION [2]	N/A	-	12"-725.00
FES # 3	FLARED END SECTION [2]	N/A	12" - 691.50	-
FES # 12	FLARED END SECTION [2]	N/A	12" - 704.00	-

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
SI # 7	STORM INLET [4]	709.75	UD-707.00 12"-703.20	(SE)-12"-703.10
SI # 8	STORM INLET [4]	710.55	(N)-10"-708.00 UD-708.91	(S)-12"-707.50
FES # 4	FLARED END SECTION [2]	N/A	10"-713.00	-
FES # 5	FLARED END SECTION [2]	N/A	12"-715.00	-
FES # 6	FLARED END SECTION [2]	N/A	12"-721.00	-
FES # 8	FLARED END SECTION [2]	N/A	-	15"-689.00
FES # 9	FLARED END SECTION [2]	N/A	-	15"-718.00
SI # 9	STORM INLET [4]	726.10	(NE)-12"-720.00 (S)-12"-720.00 UD- 724.10	(W)-15"-719.50
SI # 10	STORM INLET [4]	724.65	(SE)-12"-721.65 UD-721.65	(N)-12"-721.50
FES # 11	FLARED END SECTION [2]	N/A	12" - 722.00	
FES # 10	FLARED END SECTION [2]	N/A	12"- 722.00	-
CB # 5	CATCH BASIN - 4'-0" [3]	691.42	(E)-10"-685.50 (SE)-18"-685.50 UD- 687.50	(N)-24"-685.25
CB # 4	CATCH BASIN - 4'-0" [3]	696.72	(S)-10-"-693.75 (E)-12"-693.75 UD- 694.90	(NW)-18"-693.25
SI # 12	STORM INLET [4]	711.75	(S)-12"-708.25 UD-708.25	(W)-12"-708.00
SI # 13	STORM INLET [4]	711.75	UD-709.40	(N)-12"-708.50
SI # 11	STORM INLET [4]	691.42	UD-687.50	(W)-10"-686.00
SI # 14	STORM INLET [4]	696.72	UD-694.90	(N)-10"-693.90
SI # 15	STORM INLET [4]	697.72	(W) - 691.05 UD-696.00	(E)-12"-691.00
FES # 11	FLARED END SECTION [2]	N/A	24"- 665.00	-

NOTES:
1. INSTALL OUTLET STRUCTURE PER DETAIL 20/L-500.
2. INSTALL FLARED END SECTION PER DETAIL 15/L-500.
3. INSTALL STORM INLET PER DETAIL 13/L-500.
4. INSTALL CATCH BASIN PER DETAIL 11/L-500.
5. INSTALL STORM PIPING TRENCH DETAIL PER DETAIL 12/L-500 & 3/L-503 IN FILL AREAS

GENERAL BUILDING LOT NOTES

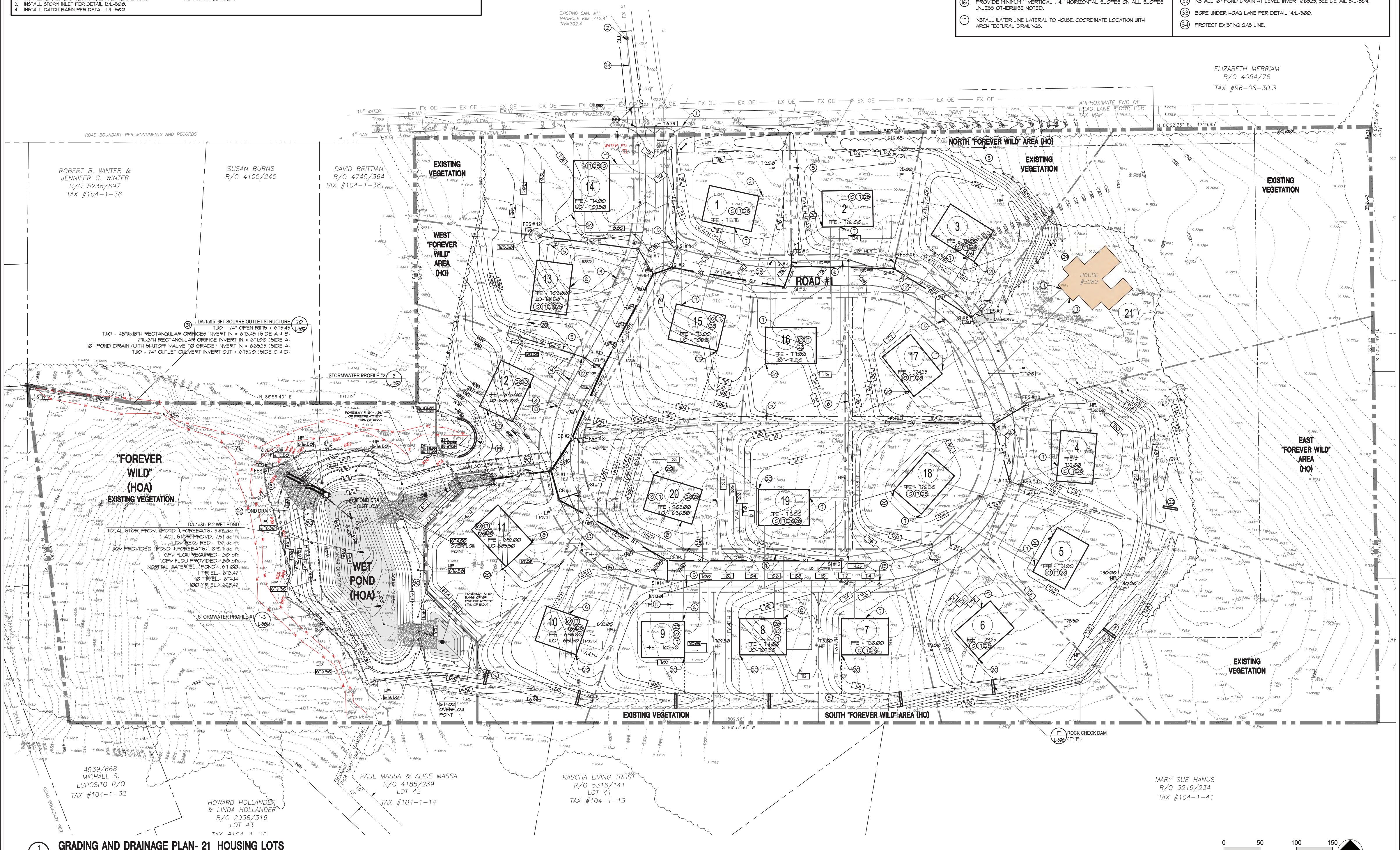
SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% ($\frac{1}{4}$" PER FT.). ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS & PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501. FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS). REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4.1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT. RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 20/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-102 THRU L-108 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE PLANTS.
30. MAINTENANCE ACCESS. NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" WIDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 1'V:8'H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 / L-200 GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK — RUDY L. ZONA — 079543 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

△ - Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001473 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CLUSTER GRADING and DRAINAGE PLAN- 21 LOTS

L-200

Plotted By:
Date Plotted:
Drawing File:

Monday, June 15, 2020 1:11:14 PM

APPENDIX N

15th June 2020

Joesph Lupia
Town of Manlius Planning Board Chairperson
(315) 477-0100 / Fax (315) 477-5071
301 Brooklea Drive
Fayetteville, NY 13066
Tel. 315-637-3414

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: **Woodland Hills Earthwork Summary**

Dear Chairman Lupia and Planning Board Members,

Please refer to the attached earthwork calculations performed by Tobin Construction utilizing Earthworks Elements. Tobin construction has reviewed this project very closely with our design team, has performed several earthwork calculations for the site and is confident that the site will be able to balance.

A. **TOTAL SITE SUMMARY** - Site Excavation Report for the entire site, attachments A and B, show a cut of 39,308 cubic yards and a fill of 53,929 cubic yards with an import of 14,620 cubic yards which is ideal for a sitework contractor. Soil testing will be required for the use and placement of the 2,480 cubic yards required to construct the fill sections of the proposed right of way. According to Tobin Construction the on site soil materials will balance and import of fill material will not be required for general filling. The import quantity of 14,620 cubic yards will accounted for as follows by the items listed below:

   1 - Road pavement and driveway subbase materials, basement excavation – 3240 cubic yards

   2 – Driveway and subbase material – 740 cubic yards

   3 – Road Underdrain - 320 cubic yards

   4 – Basements– 9,300 cubic yards

   5 – Pipe voids and pipe bedding – 900 cubic yards

   14,500+/- cubic yards total

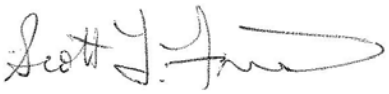
B. **STAGE 1 SITE SUMMARY** – Site Excavation Report for Stage 1 construction (drawing L-102) , attachments B and C, show a cut of 18603 cubic yards and a fill of 17,413 cubic yards. A surplus of 1189 cubic yards will be utilized to as fill during Stage 2 construction.

C. **STAGE 2 SITE SUMMARY** - Site Excavation Report for Stage 2 construction (drawing L-103), attachments E and F, show a cut of 16,779.8 cubic yards and a fill of 15,298.9 cubic yards. A surplus of 1480.9 cubic yards will be utilized to as fill during Stage 3 construction.

On-site material will be utilized within the right of way fill areas, utilities backfilling and fill below basement slabs based in accordance with project testing specifications and field testing which will be coordinated with the Town of Manlius selected testing agency. According to the earthwork material evaluation and berm stability evaluations performed by Kenney Geotechnical Engineering Services the on-site borrow material which meets the testing criteria can be utilized for fill within the right of way and constructing the embankment.

The earthwork operations will occur within the areas shown on the staged site plans (drawings L-102, L-103, L-104, L-105, L-106, L-107, and L-108. The stockpile areas shown within the staged drawings for stockpiled materials is sufficient based on or experience with similar project.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

Attachment 'A' - Total Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 09:01 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

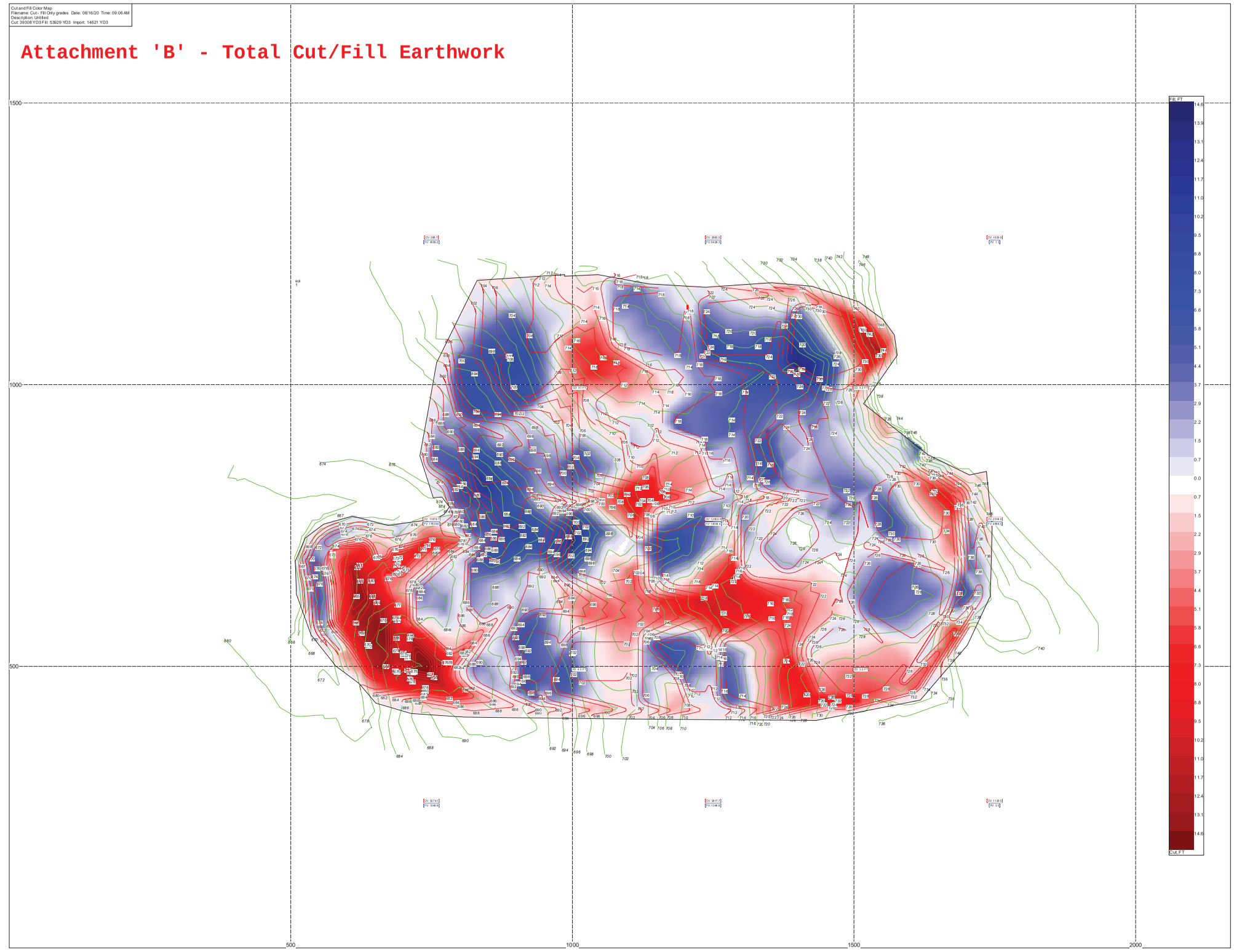
Soil Expansion: 0%
Soil Compression: 0%
Import Soil Compression: 0%

Cut Area: 306228.0 FT2
Fill Area: 439531.0 FT2
Work Area: 751864.0 FT2

Bank Cut:	39308.2 YD3
Expanded Cut:	39308.2 YD3
Bank Fill:	53929.1 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Import:	14620.9 YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 09:06 AM
Description: Untitled
Cut: 38308 YD3 Fill: 53929 YD3 Import: 14621 YD3

Attachment 'B' - Total Cut/Fill Earthwork



Attachment 'C' - Stage 1 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 08:18 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

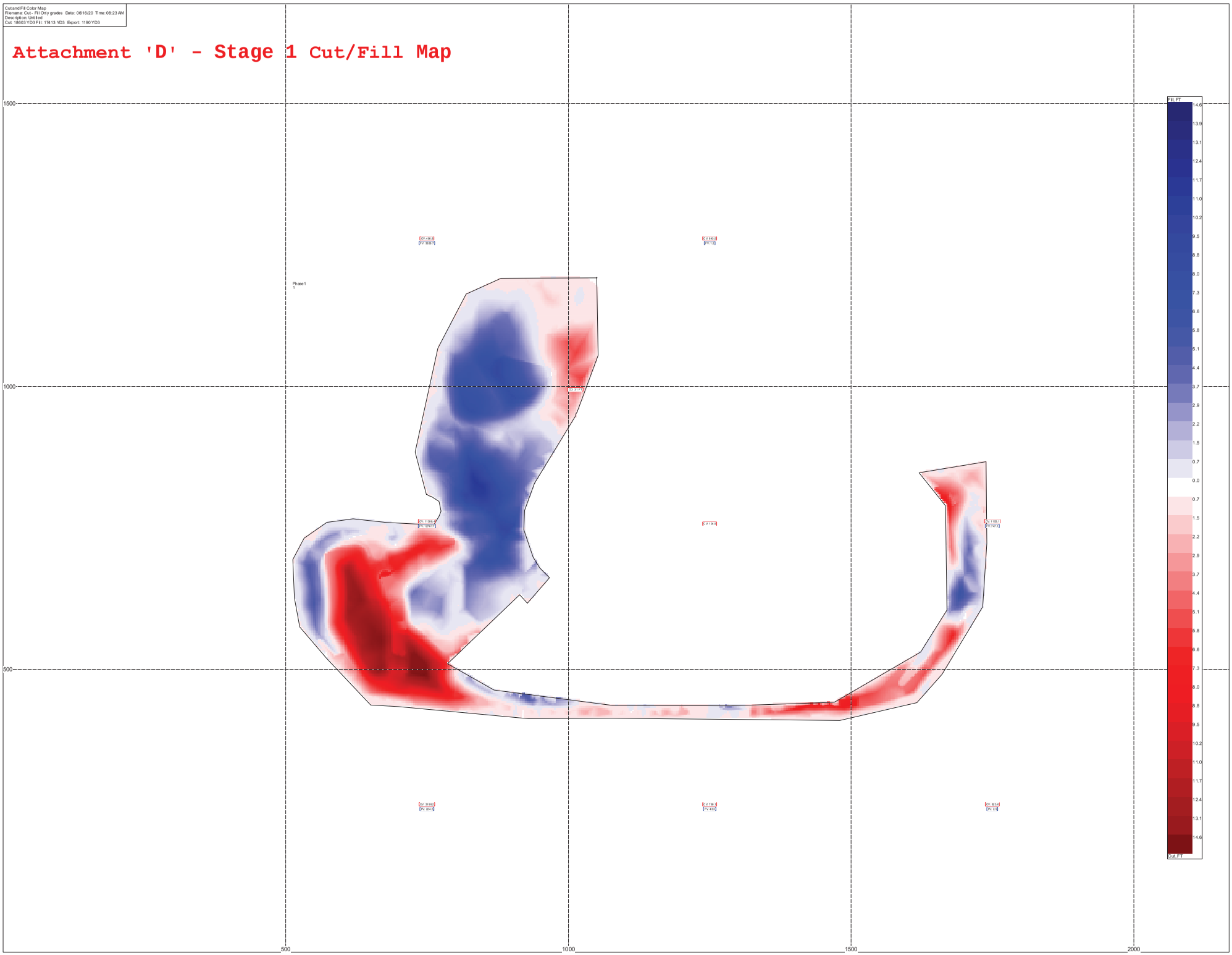
Soil Expansion: 0%
Soil Compression: 0%
Import Soil Compression: 0%

Cut Area:	127234.0	FT2
Fill Area:	139320.0	FT2
Work Area:	267171.0	FT2

Bank Cut:	18603.2	YD3
Expanded Cut:	18603.2	YD3
Bank Fill:	17413.3	YD3
Topsoil Stripped:	0.0	YD3
Topsoil Replaced:	0.0	YD3
Export:	1189.9	YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 08:23 AM
Description: Untitled
Cut: 18603 YD3 Fill: 17413 YD3 Export: 1190 YD3

Attachment 'D' - Stage 1 Cut/Fill Map



Attachment 'E' - Stage 2 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 10:22 AM

Job Filename: EW1
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

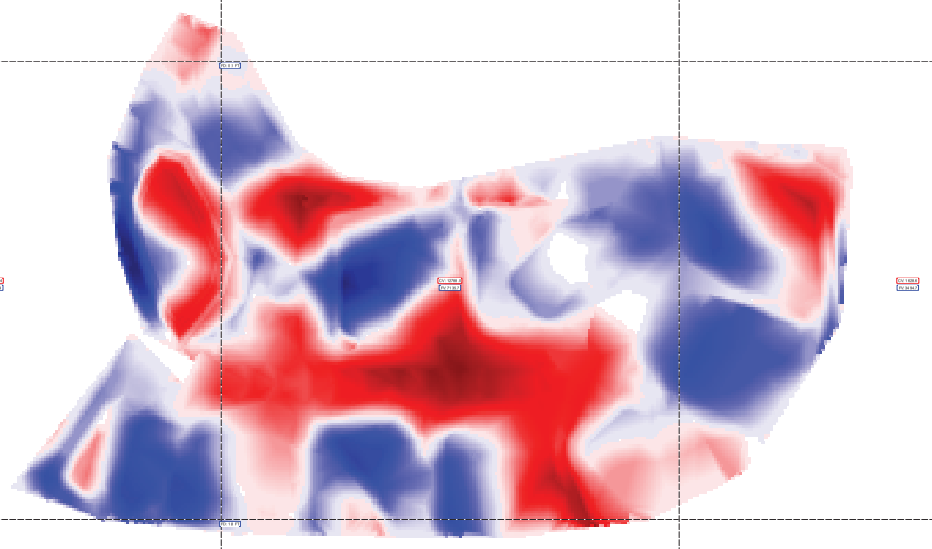
Soil Expansion: 0%
Soil Compression: 0%
Import Soil Compression: 0%

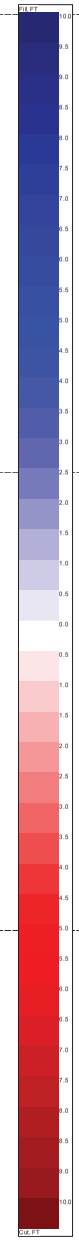
Cut Area: 156400.0 FT2
Fill Area: 174060.0 FT2
Work Area: 334776.0 FT2

Bank Cut:	16779.8 YD3
Expanded Cut:	16779.8 YD3
Bank Fill:	15298.9 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Export:	1480.9 YD3

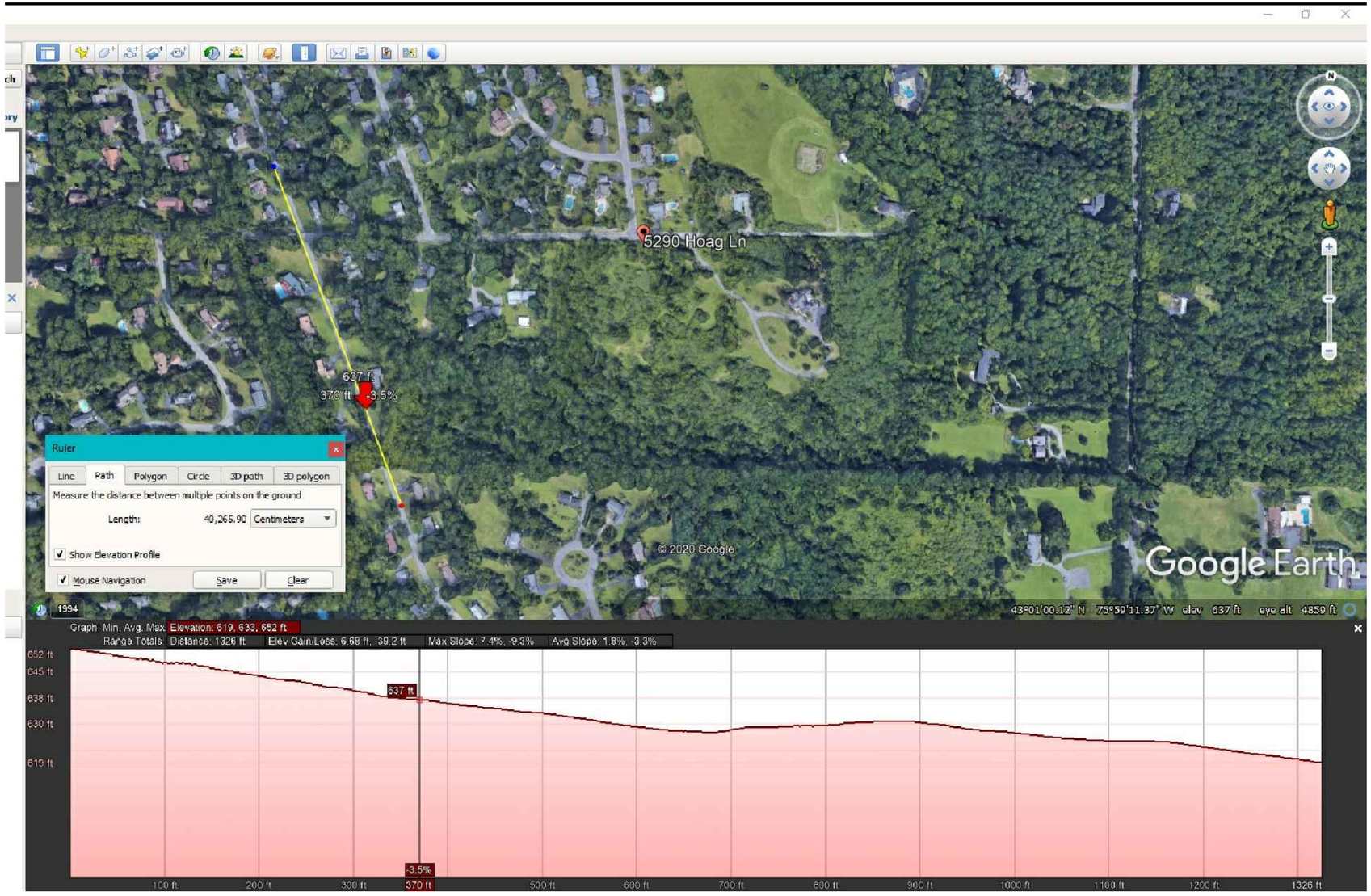
Cut and Fill Color Map
Filename: EW1 Date: 06/16/20 Time: 10:21 AM
Description: Untitled
Cut: 16780 YD3 Fill: 15299 YD3 Export: 1481 YD3

Attachment 'F' - Stage 2 Cut/Fill Map





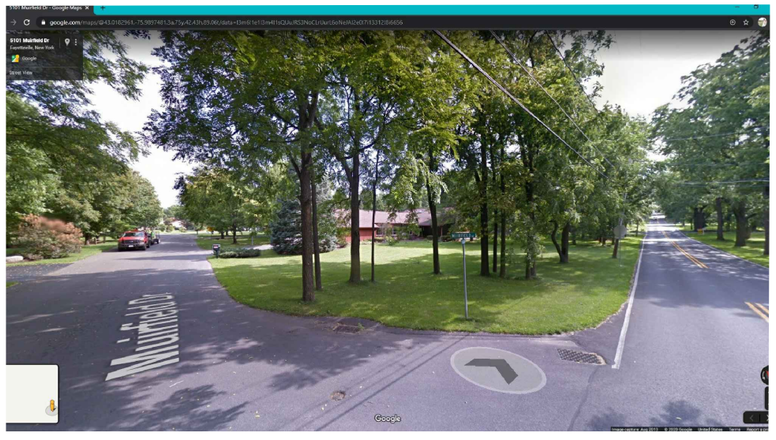
APPENDIX O

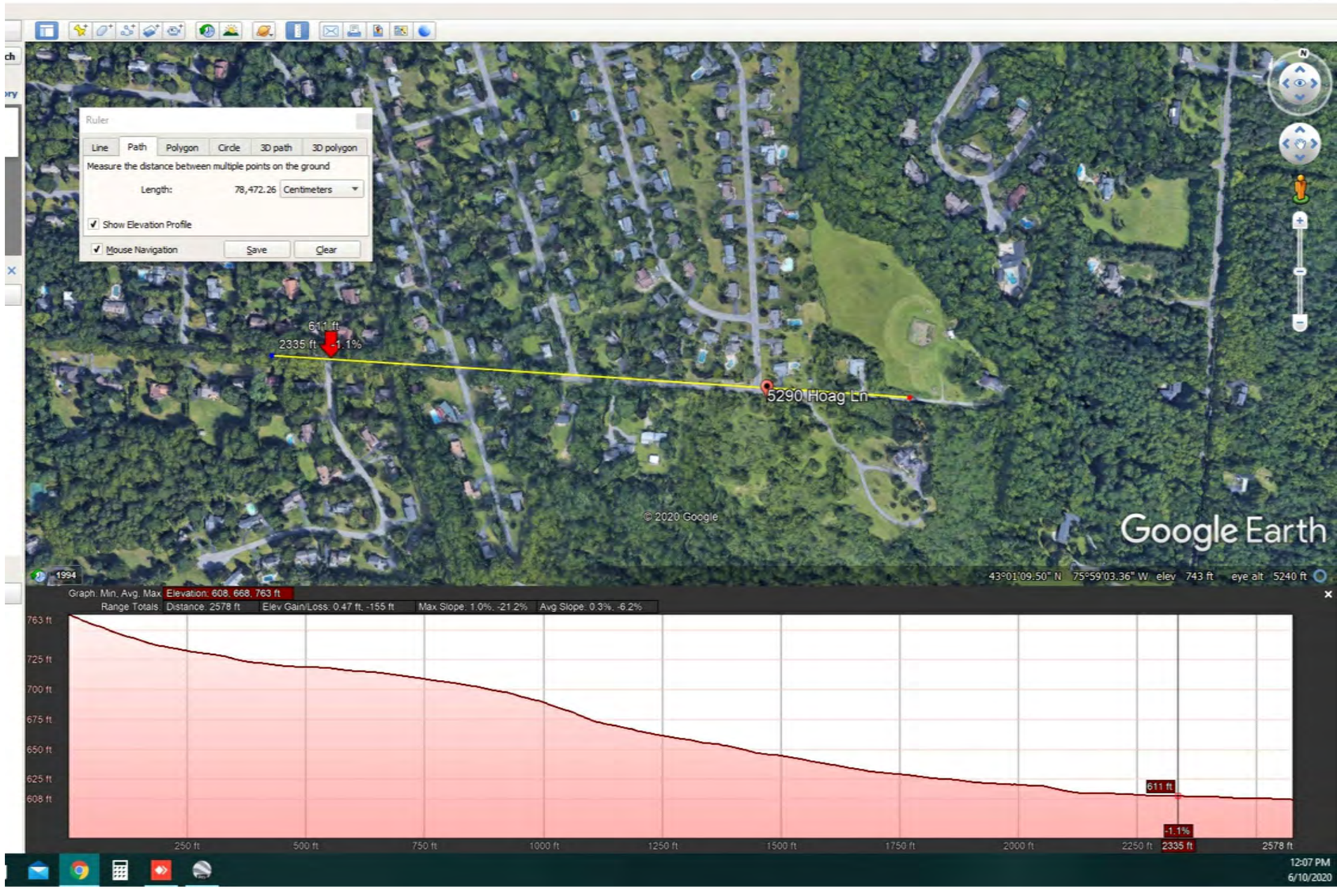


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Appendix O- Google Earth Road Profile - Churchill Lane (marker at culvert)

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

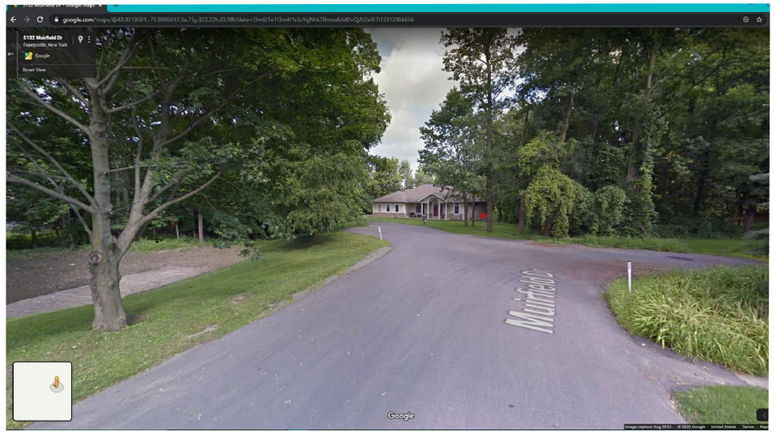


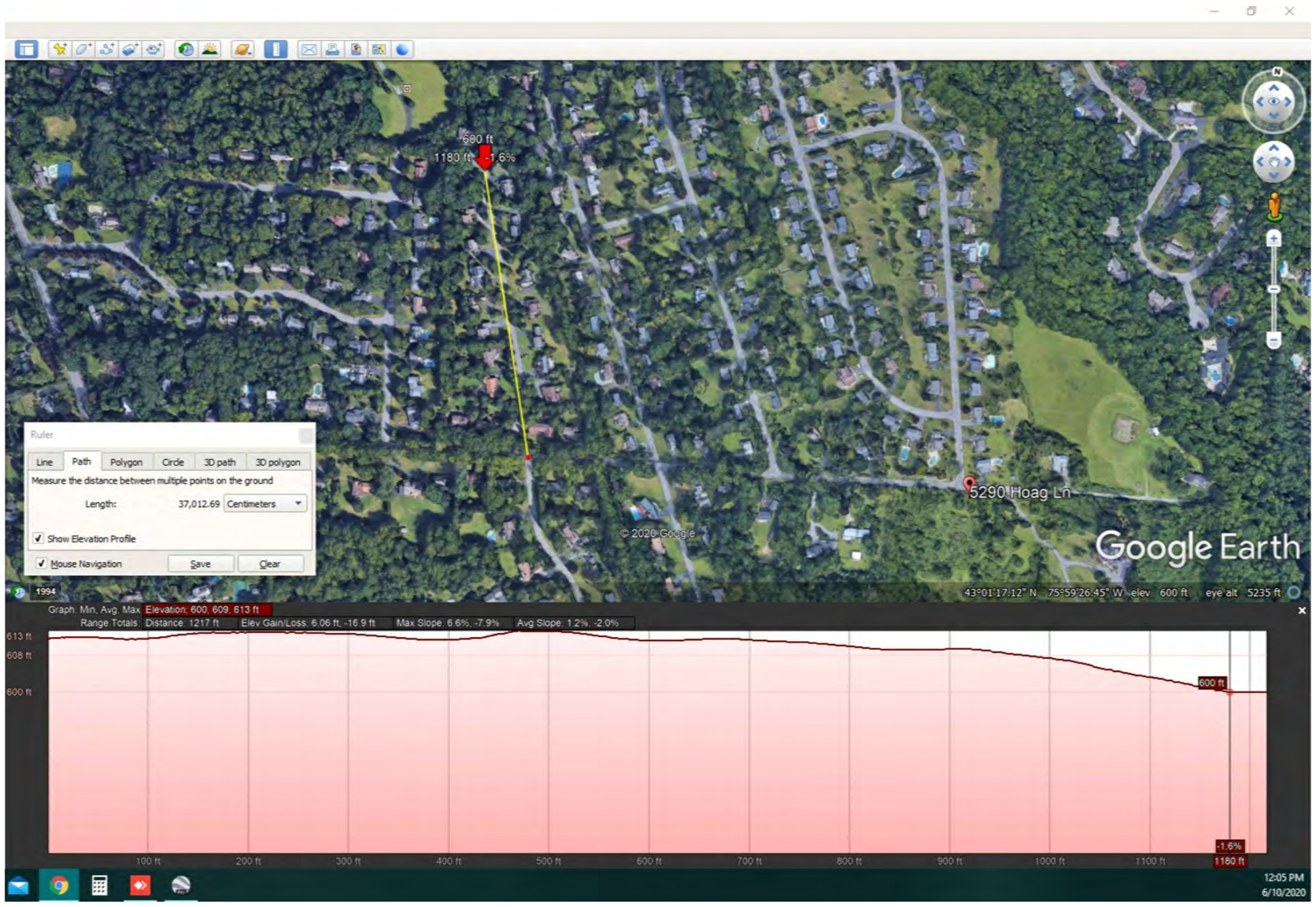


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Appendix O- Google Earth Road Profile - Hoag Lane (marker at road intersection)

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

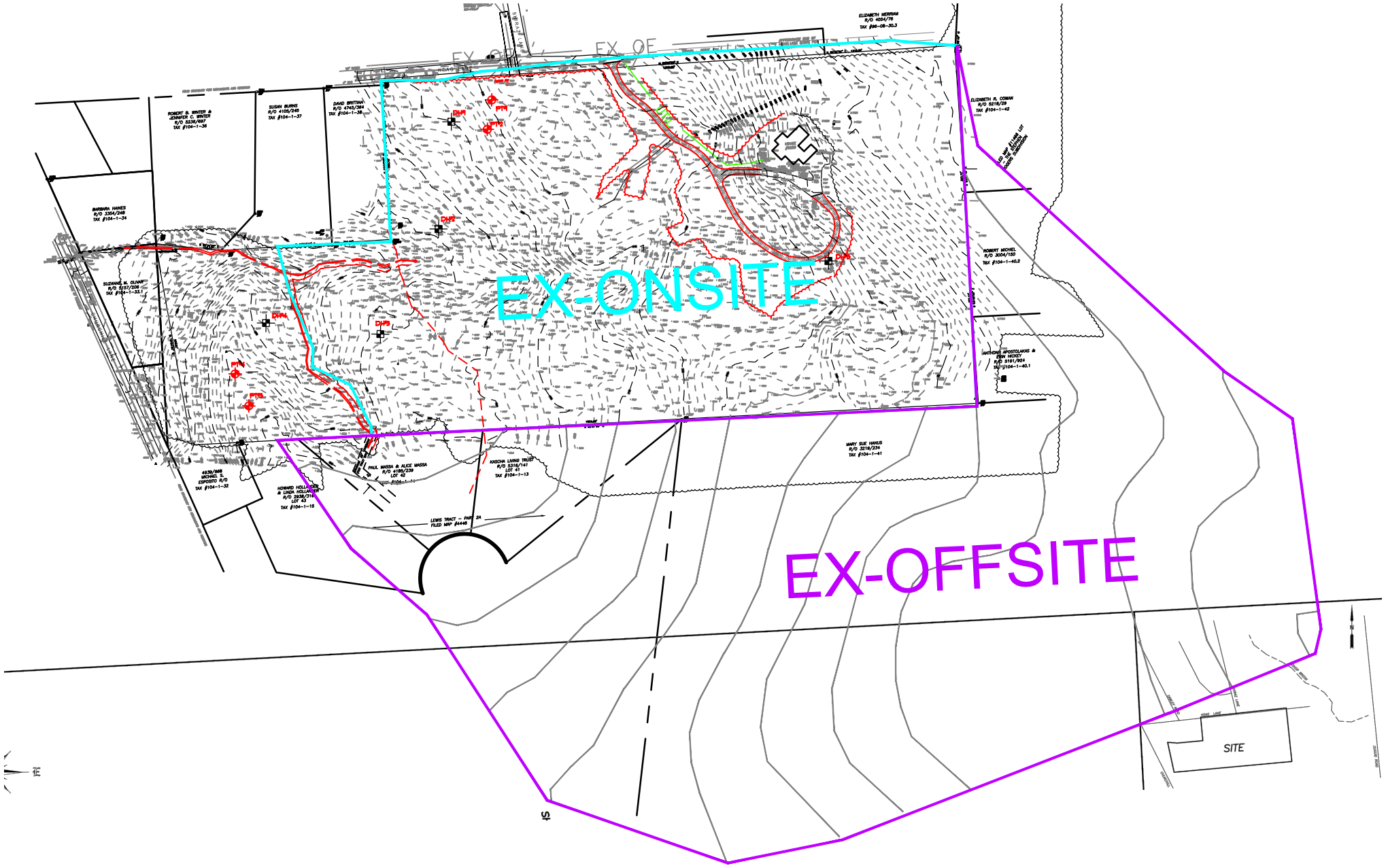




Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Appendix O- Google Earth Road Profile - Muirfield Lane (marker at existing basin)

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision

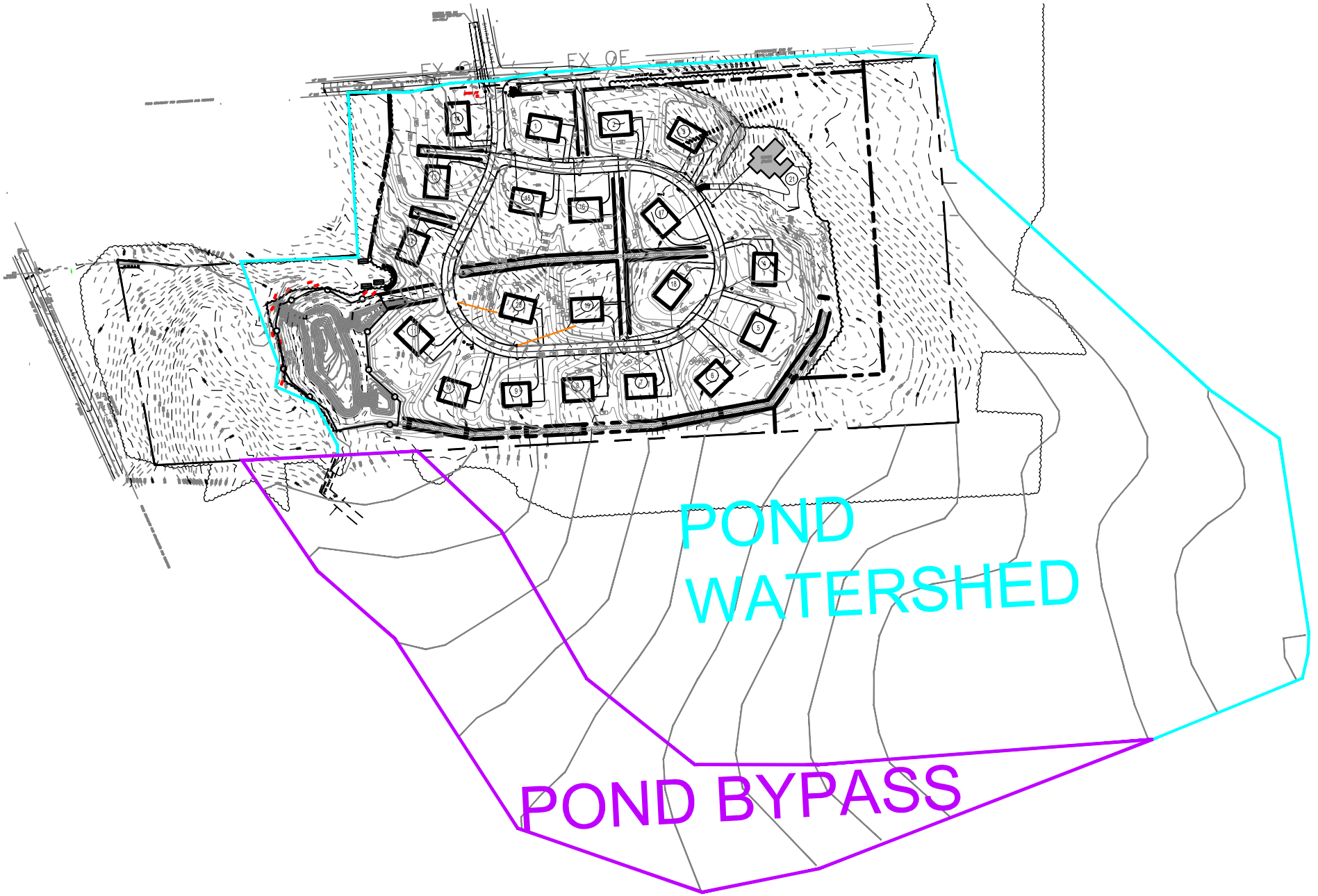
Town of Manlius, Onondaga County, NY

Appendix O- Existing Site Watersheds

SCALE: 1:300

Updated: 03/96/18

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision

Town of Manlius, Onondaga County, NY

Appendix O- Proposed Watersheds

SCALE: 1:300

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



□ = Storm Inlet

→ = Flow

















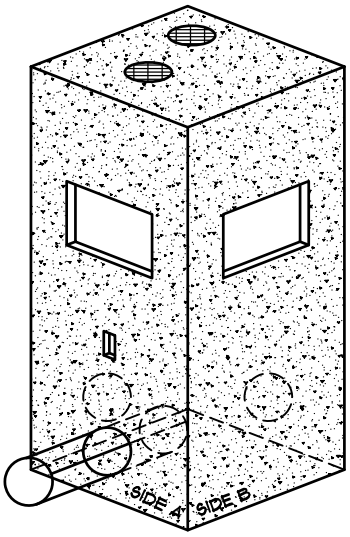



7841

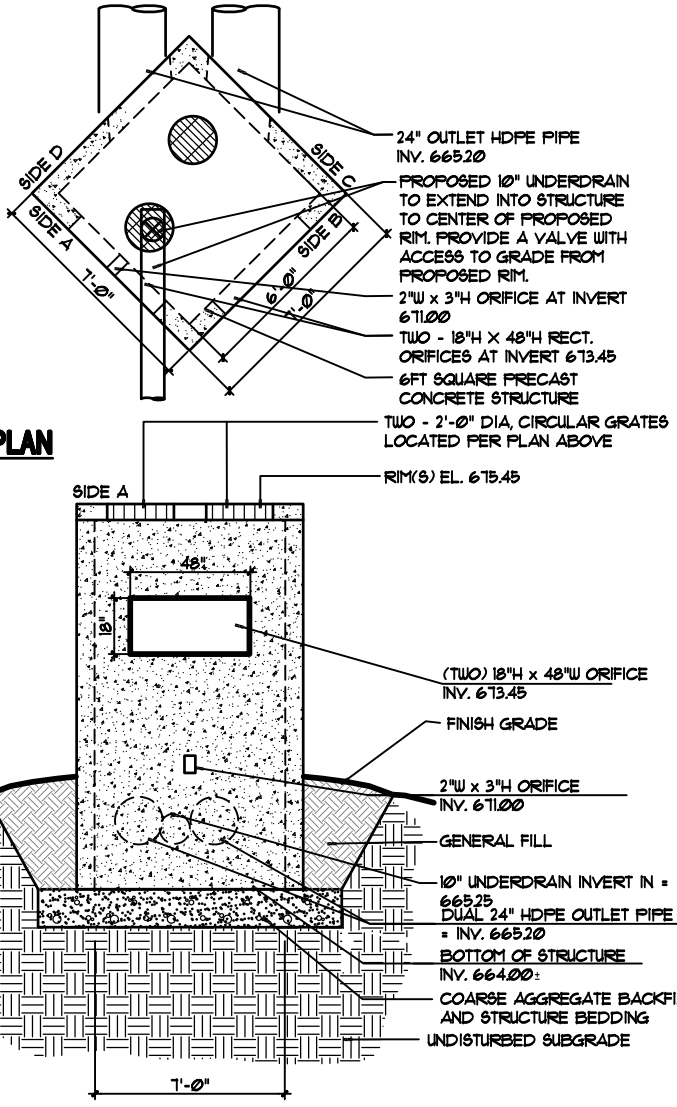




APPENDIX P



ISOMETRIC



PLAN

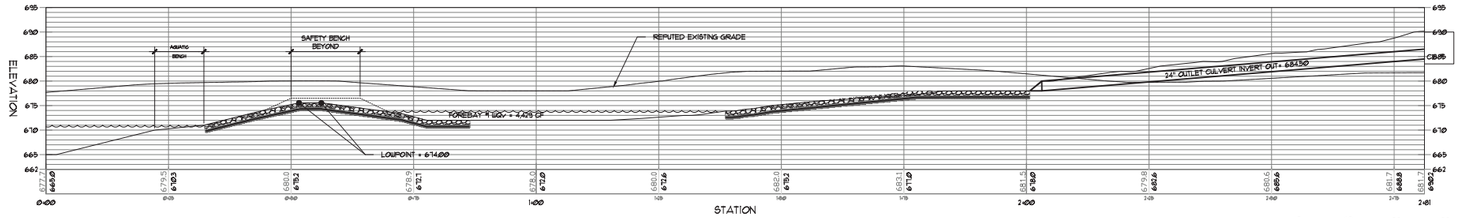
ELEVATION

NOTES:

- CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER PRIOR TO INSTALLATION

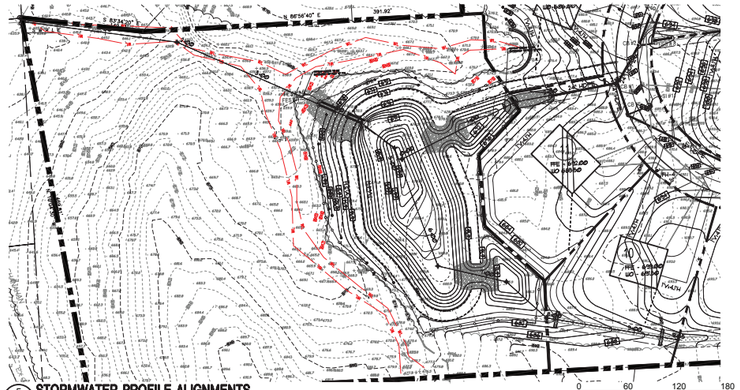
OUTLET STRUCTURE

NOT TO SCALE **33-4000-80**



4 L-502 **STORMWATER PROFILE #2**
HORIZONTAL SCALE 1 : 10
VERTICAL SCALE 1 : 10

0 10 20 30


S87°42'00" E
391.92'
N 66°56'40" E
POND 1
POND 2
POND 3
RIM = 670.00
I.E. = 660.50
RIM = 670.00
I.E. = 660.50
RIM = 670.00
I.E. = 660.50
LIMIT OF DISTURBANCE
LIMIT OF DISTURBANCE
LIMIT OF DISTURBANCE

Manufactured by:
Agri Drain CORPORATION

PO Box 458 · 1462 340th Street · Adair, Iowa 50002
Phone: 1-800-232-4742 · Fax: 1-800-282-3353
www.agridrain.com · email: info@agridrain.com

Inline Water Level Control Structure™

- Available in manual or automated.
- Constructed of rugged ½" PVC with lockable plastic lid.
- Stainless steel screws and custom anodized aluminum corner extrusions used for strength and durability.*
- Flexible couplers allow PVC, plastic pipe, or other materials to be easily attached. *(Please specify type of pipe when ordering.)*
- Stoplogs made of PVC in 5" and 7" heights for adjustability. (Maintenance recommended: Remove stoplogs and grease seal with white lithium grease. Ensure there is no debris in the tracks or along the bottom of the structure. Replace stoplogs after greasing.)
- ***Important!*** To minimize seepage, align stoplogs firmly against one side of the stoplog track.
- Stoplogs must remain in track during structure installation.
- Structures are not pressure rated.
- Structures are intended for gravity flow: Low pressure and some seepage may occur.
- 5-year warranty on all standard structures.
- Customized or special orders will carry a 1-year warranty on workmanship and material and are nonreturnable.

**For water that is caustic, acid, corrosive, salt, or pH below 5 pH or above 9 pH, please notify us of your requirements to ensure structures are built with compatible hardware. For these applications, Agri Drain recommends stainless steel.*

Call for details on Automated.



US Patent No. 6,715,508 B2
US Patent No. 6,786,234 B2
Canadian Patent No. 2,403,456
Canadian Patent No. 2,466,976

Comes with a handle to install and remove stoplogs.



Stoplog seal ensures a tight fit to prevent leakage.



Inline Water Level Control Structure™			
Pipe Size	Available Heights	Width	Depth
4"	2' - 12'	8"	10"
6"	2' - 12'	8"	10"
8"	2' - 12'	11 5/8"	12"
10"	2' - 12'	14"	16"
12"	2' - 12'	16"	20"
15"	2' - 12'	20"	24"
18"	2' - 12'	24"	28"
24"	3' - 10'	31"	39"

Rugged injection molded stoplogs used in structures with 4", 6", 8", 10", and 12" pipe sizes.



PVC stoplogs with stainless steel lifting hooks used in structures with 15", 18", and 24" pipe sizes.



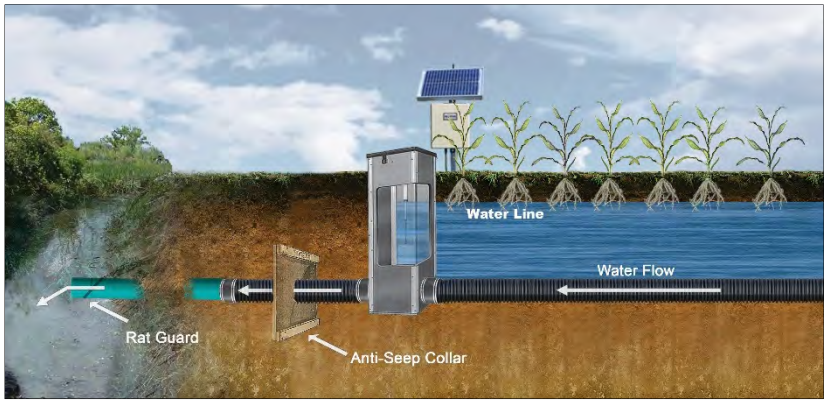
Stoplog Retainer

Hold extra stoplogs up & out of the way!

- Stainless steel retainer hooks to lowest stoplog that you want to hold up within your Inline Water Level Control Structure™.
- 10' of 3/16" nylon rope (included) attaches to the retainer and secures to the inner brace bar near the top of the structure.

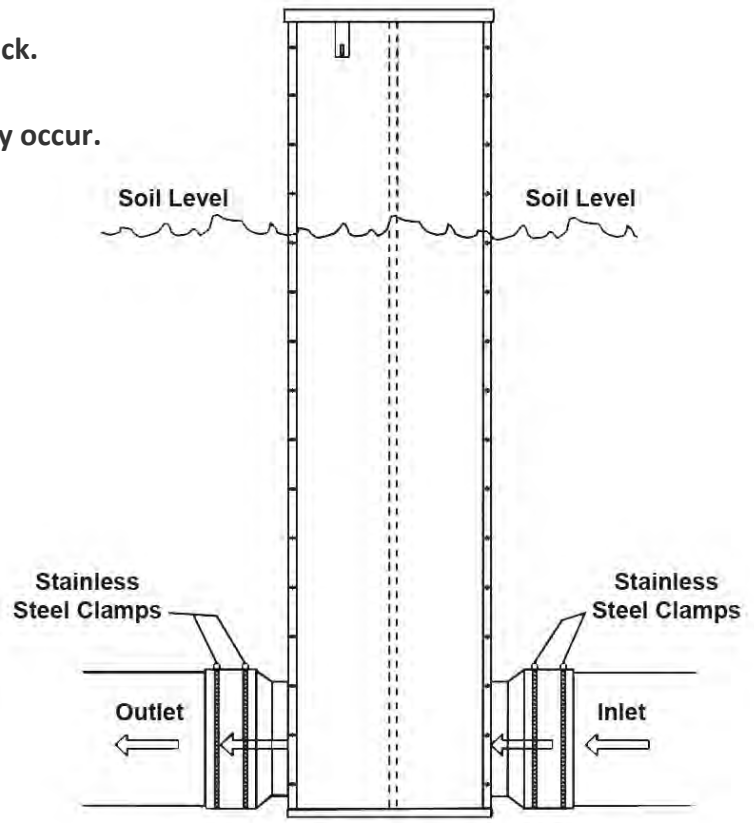






INLINE WATER LEVEL CONTROL STRUCTURE™ INSTALLATION INSTRUCTIONS

Important! **—To minimize seepage, align stoplogs firmly against one side of the stoplog track.**
—Stoplogs must remain in track during structure installation.
—Structures are intended for gravity flow: Low pressure and some seepage may occur.



1.) EXCAVATION AND GRADING

Structure base, inlet pipe, & outlet pipe must be set on compacted soil or fill sand to provide a solid, stable base. This will reduce settling and reduce stress or misalignment of pipe connections.

2.) PIPE CONNECTION

Remove stainless steel clamps from inside structure. Place pipe inside flex couplers and tighten SS clamps.

3.) BACKFILL AND COMPACTION

Level structure vertically before placing backfill. Backfill around control structure by hand in 6" lifts. Hand tamp only - **do not** mechanically compact. **Do not** use a backhoe or blade to place backfill directly against the water control structure.

—**Seal on stoplog faces downstream/outlet side of structure.**

Excessive compaction may cause structural damage or failure.

- Either the inlet or inline structure may be used for primary or secondary outlet, with larger pipe or emergency spillway as primary.
- Inline structure removes subsurface water.
- On the inline installation, the inlet end of the pipe should be held off the bottom of the impoundment to allow for siltation, and be protected with an inlet guard. The outlet end of the structure should be protected with a rodent guard.
- In a controlled drainage or subsurface irrigation application, the structure nearest the outlet should be installed with a minimum of 20' of non-perforated pipe on the downstream end. Anti-Seep Collars are recommended.

Agri Drain CORPORATION

1462 340th Street
Adair, Iowa 50002
P: 800-232-4742
F: 800-282-3353
www.agridrain.com
info@agridrain.com

— Since 1976 —

Manufactured by:
Agri Drain CORPORATION

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www.agridrain.com · email: info@agridrain.com

Water Level Control Structures

The **Water Level Control Structures** manufactured by *Agri Drain Corp*. are constructed of rugged 1/2"-thick PVC sheets, connected at the corners by means of specially extruded anodized aluminum profiles sealed with waterproof caulking and secured with stainless steel screws.* The bottom of the structure is sealed with either a 1/2"- or 1"-thick PVC sheet (dependent upon structure size) and also utilizes waterproof caulking for sealant and stainless steel screws to hold it in place. **For water that is caustic, acid, corrosive, salt, or pH below 5 pH or above 9 pH, please notify us of your requirements to ensure structures are built with compatible hardware. For these applications, Agri Drain recommends stainless steel.*

The stoplogs* are constructed of PVC and utilize a seal that mates against the downstream surface of the extruded aluminum track and the top of the stoplog that it rests upon. The stoplogs are equipped with hooks to facilitate their removal by means of a special handle/hook assembly. ***Important!** To minimize seepage, align stoplogs firmly against one side of the stoplog track. Stoplogs must remain in track during structure installation.

In order to obtain inch-by-inch water level adjustment capabilities, the stoplogs are built in two heights: 5" and 7" tall. This allows for various combinations and nearly infinite adjustability. An additional, 7"-tall stoplog is specified with a sticker stating “Bottom Board”, and this stoplog must be placed in the bottom of the structure. Examples: 7"+7"=14", 5"+5"+5"=15", 5"+5"+7"=17", 5"+7"+7"=19", 5"+5"+5"+5"=20", etc.

The means of connecting to the downstream and upstream pipe is a flexible rubber sewer coupler. It will accommodate corrugated plastic tubing, PVC pipe, corrugated metal pipe or virtually any other conduit material.

The units are available in two different types. The first type (Inlet) is designed to be installed on the upstream end of the conduit so the water must enter the structure before it enters the pipe. The Inlet must be anchored down when installed or it may have the tendency to float. The second type (Inline) is designed to be installed in the pipe line, so the water enters the pipe, then flows into the box, over the stoplogs, then out the downstream side of the structure. The Inline structure is equipped with a lockable plastic lid and is available in manual or automated. Both structures come with a handle to remove, install, or adjust the stoplogs.

The structures are manufactured in various sizes based on diameter of the conduit and engineered to provide a minimum of 30% greater capacity than the conduit it is connected to. They are available in heights to suit the specific installation.

INLINE WATER LEVEL CONTROL STRUCTURE™ SHIPPING WEIGHTS

Pipe Size	HEIGHT							
	2'	3'	4'	5'	6'	8'	10'	12'
4"	50U	64U	81U	102U	121T	216T	244T	278T
6"	52U	66U	83U	103U	164T	222T	272T	320T
8"	64U	84U	105U	176T	198T	264T	320T	392T
10"	79U	107U	168T	210T	238T	300T	375T	458T
12"	99U	157T	190T	242T	294T	366T	480T	542T
15"	154T	222T	270T	322T	382T	502T	614T	722T
18"	191T	236T	340T	402T	450T	592T	710T	834T
24"	N/A	348T	454T	524T	600T	766T	946T	N/A

INLET WATER LEVEL CONTROL STRUCTURE™ SHIPPING WEIGHTS

Pipe Size	HEIGHT				
	2'	3'	4'	5'	6'
4"	26U	38U	51U	64U	76U
6"	35U	41U	52U	67U	78U
8"	37U	51U	67U	86U	132T
10"	49U	62U	85U	130T	150T
12"	55U	76U	125T	164T	152T
15"	82U	126T	158T	196T	216T
18"	110T	150T	186T	224T	250T
24"	178T	192T	248T	310T	336T

UPS=U
TRUCK LINE=T

Larger CMP structures also available. Call for details on custom sizes and pricing.

APPENDIX Q

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

March 26, 2018

Mr. Vincent Ryan
Keplinger Freeman Associates
6320 Fly Rd.
Suite 109
East Syracuse, NY 13057

Re: DEC
Hoag Lane Subdivision
5291 Hoag Lane, Town of Manlius, Onondaga County, NY
18PR01562

Dear Mr. Ryan:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Michael F. Lynch, P.E., AIA

Director, Division for Historic Preservation

APPENDIX R

Department of Environmental Protection
Promulgation of
Chapter 13 of Title 15 of the Rules of the City of New York
Rules Pertaining to the Prevention of the Emission of Dust from Construction Related Activities

PURSUANT TO THE AUTHORITY VESTED IN THE Department of Environmental Protection by section 1043 of the New York City Charter and section 24-146 of the Administrative Code of the City of New York, the Department of Environmental Protection promulgates a rule pertaining to the prevention of the emission of dust from construction related activities (15RCNY 13-01 *et. seq.*)
These amendments were proposed and published on September 15th, 2008 in The City Record. The required public hearing was held on October 21st, 2008.

Statement of Basis and Purpose

Section 24-146(c) of the New York City Administrative Code states, in summary, that no person shall cause or permit a building or road to be constructed without taking such cautions as may be ordered by the Commissioner of Environmental Protection to prevent particulate matter from becoming airborne. Subdivision (f) of the same section states that demolition by toppling of walls shall not occur except when approved by the Commissioner of DEP.

These two provisions authorize the DEP Commissioner to promulgate rules regarding dust control in the above circumstances. No such rules currently exist, and DEP has received requests for guidance regarding methods of compliance with this section of the Air Code.

Consistent with the above, DEP promulgates the following new Rule, to be found at 15 RCNY chapter 13. This Rule sets forth "best management practices," and is similar to other local laws and rules regulating the construction industry found in many jurisdictions throughout the United States.

The Rule is authorized by section 1043 of the Charter of the City of New York and section 24-146 of the Administrative Code of the City of New York.

The text of the Rules follows.

***

Title 15 of the Rules of the City of New York is amended by adding a new Chapter 13, to read as follows:

Chapter 13

Rules pertaining to the prevention of the emission of dust from construction related activities

§13-01 *Scope and Application*

(a) The following dust prevention regulations, §13-01 et seq., shall apply to all construction related activities occurring within the city of New York.

(b) Every owner of a building or property where construction related activity occurs shall be responsible for the performance of the construction related activities by his/her agent, contractor, employee, or other representative.

(c) Every contractor and worker engaged in construction related activities shall comply with the provisions of this chapter except as otherwise specified.

(d) The Department may inspect, at a reasonable time and in a reasonable manner, any site where construction related activity is being conducted.

(e) No person shall interfere with or obstruct any employee of the Department in the performance of his/her official duties, including but not limited to the performance of inspections.

§13-02 *Definitions*

Adequately Wetted shall mean sufficiently mixed or penetrated with liquid to prevent the release of particulate matter. If visible emissions are observed coming from particulate matter, then that material has not been adequately wetted.

Board or **ECB** shall mean the environmental control board of the city of New York.

City shall mean the city of New York.

Commissioner shall mean the commissioner of environmental protection.

Contractor shall mean a public authority or any other governmental agency or instrumentality thereof, self-employed person, company, unincorporated association, firm, limited liability corporation, partnership or corporation and any owner or operator thereof, which engages in a construction project or employs persons engaged in a construction project.

Control apparatus shall mean any device which prevents or controls the emission of any air contaminant.

Construction shall mean any or all activity necessary or incidental to the erection, demolition, assembling, altering, installing or equipping of buildings, public or private highways, roads, premises, parks, utility lines including such lines in already-constructed tunnels, or other property, including land clearing, grading, excavating and filling.

Construction Material shall mean any material, regardless of composition, designed and customarily used in construction including but not limited to any rails, pillars, columns, beams, bricks, flooring, wall, ceiling, or roofing material, gravel, sand, cement or asphalt.

Controlled Filled Operations shall mean the use of a dust control apparatus that utilizes an exhaust ventilation system which bags the dust, thereby preventing dust from becoming airborne.

Demolition shall mean the dismantling or razing of a building, including all operations incidental thereto and any removal of non-structural interior building walls, partitions, finishes, equipment and fittings as would be required for an interior renovation project.

Department or **DEP** shall mean Department of Environmental Protection.

Disturbed area shall mean an area that has been significantly disrupted by fugitive dust.

Dust shall mean solid particulate matter which has been released into the open air by natural forces or by mechanical processes.

Emission shall mean dispersion of an air contaminant into the open air of the city.

Open air shall mean all the air that is available for human, animal, or plant respiration, but shall not include the air in equipment and private dwellings.

Owner shall mean and includes the owner of a freehold of the premises or lesser estate therein or mortgagee thereof, a lessee or an agent of any of the above persons, a lessee of the equipment or his or her agent, a tenant, operator, or any other person who has regular control of equipment or apparatus.

Person shall mean an individual or partnership, company, corporation, association, firm, organization, governmental agency, administration or department, or any other group of individuals, or any officer or employee thereof.

Re-suspension shall mean dust accumulation that once again becomes airborne.

Sandblasting shall mean the use of a high pressure current of air or stream carrying sand, water, or other material for the cleaning or grinding of hard surfaces, including, but not limited to, stone and metal.

§13-03 *Enforcement*

Any person who is in violation of or fails to comply with any provision, standard or requirement of these Rules or the terms and conditions of any permit issued pursuant to these Rules shall be subject to the issuance of notice(s) of violation and other civil or criminal enforcement action(s) pursuant to the provisions of Title 24, Chapter 1, Subchapter 9 of the Administrative Code of the city of New York, including but not

limited to payment of civil penalties and compliance with orders of the Commissioner and/or ECB.

§13-04 *Wetting*

(a) Provision shall be made at every construction site to control the amount of airborne dust released off site from construction operations, by wetting the construction material as necessary with appropriate spraying agents, provided wetting will not damage utility infrastructure or create any safety hazards. Other means or dust-control apparatus may also be used provided they are acceptable to the Commissioner. Fire hydrants shall not be opened to accomplish this purpose unless a fire hydrant use permit is in effect

(b) Trucks and other vehicles used to transport particulate mater shall be covered and any particulate matter kept on site shall be sufficiently wetted or stored to prevent particulate matter from becoming airborne.

(c) The wet method of dust control shall include an adequate and continuous supply of water delivered to the construction site under proper pressure and distributed by a hose system and terminating in suitable water sprays or jets at the several points of application, or shall provide the same facilities by means of a self-contained recirculating system. For excavation jobs, a fine mist is deemed to be an adequate supply of water. The application of water shall be done in such a way so as not to create a slipping hazard. Controlled filled operations shall be exempt from this section. When the fill pile is to remain on site and undisturbed overnight or longer, the pile shall be covered with a tarp.

(d) Portable hand water sprinklers or hose sprinklers are acceptable means of wetting for dust control. The water sprays or jets shall be designed to break the water stream into small droplets or otherwise to provide effective wetting.

(e) Suitable drainage means shall be provided for the removal of water and sludge which drains from the operation. When no such drainage is available, the use of access roads and other acceptable methods shall be used.

§13-05 *Construction activities requiring wetting*

(a) Prior to the commencement of demolition activities, all exterior surfaces of a building up to six stories in height shall be wetted and shall be maintained adequately wet thereafter while operations continue.

(b) All construction material shall be sufficiently wetted to prevent dust from becoming airborne before loading into trucks, vehicles or other containers. During transport, such material shall be enclosed or covered to prevent dust dispersion.

(c) Wetting shall be used to control dust where drilling, grinding, or other similar construction activities occur.

(d) Sprinklers or other effective means shall be provided to control dust produced at dumps, conveyors, chutes, and other transfer points.

(e) Wherever water sprinklers are used to control dust at transfer points, they shall be capable of being operated by the person(s) responsible for conducting the loading.

(f) Soil or debris piles shall be moistened if dust is being emitted from the piles due to prevailing winds and not from a momentary gust. Adequately secured tarps, plastic or other material may be required by the Commissioner to further reduce dust emissions.

§13-06 *Construction activities requiring additional forms of dust control*

(a) Where the demolition or renovation of any building or other structure is being performed by hand, debris, bricks, and other material shall be removed by means of chutes, by means of buckets or hoists, or through openings in the floors of the building or other structure in compliance with these Rules and the Administrative Code of the city of New York.

(b) Where windows and other exterior wall openings in buildings or other structures being renovated are more than 25 feet in height above the ground or grade level and are within 20 feet of any floor opening used for removal of debris from floors above, such windows and other openings shall be solidly boarded up during renovation operations to prevent the emission of dust into the atmosphere so long as applicable OSHA standards are followed.

(c) During sandblasting or other similar operations, installation and use of hoods, fans and dust collectors to enclose and vent the handling of dusty materials or the use of water sprays or other measures and control apparatuses acceptable to the Commissioner to suppress the dust emission or adequate containment methods shall be employed.

(d) Open-bodied trucks transporting dust producing construction materials likely to become airborne shall be covered at all times when in motion.

(e) Removal of earth or other material from paved roads, driveways and parking lots on which earth or other material has been deposited by trucking, earth moving equipment or erosion is required daily. There shall be no re-suspension of roadway dust during the removal process.

(f) Dry street sweepers, including broom sweeping, may be used if designed to prevent the re-suspension of street/sidewalk particulate matter.

(g) The use of blower devices for the removal of deposited mud or dirt is prohibited.

(h) Vehicles entering or exiting construction areas shall travel at slow speeds to minimize dust emissions.

(i) Disturbed areas shall be stabilized for the duration of the construction activity or until construction work resumes on the inactive disturbed area. All disturbed areas of a construction site, including storage piles of fill dirt and other bulk materials, which are not being actively utilized for construction purposes for a period of seven calendar days or more, shall be stabilized using one or more of the following soil stabilization methods:

(1) Water, as a dust suppressant;
(2) Chemical dust stabilizer or suppressant;
(3) Planting of trees or vegetative ground cover.

Where soil moisture or natural crushing is sufficient to limit visible dust emissions, no action is required

§13-07 *Demolition*

(a) A DEP demolition registration shall be filed with the Department 10 days prior to the commencement of demolition. Such registration shall include the following information: name of owner or demolition contractor, address of owner or demolition contractor, description of the building, structure, facility or installation, scheduled starting and completion dates of demolition, method of demolition to be employed, and procedure to be employed to meet the requirements of these Rules .

(b) Adequate wetting shall be employed before and during the demolition of any section or wall of the structure.

(c) Debris shall be transported through dust-tight chutes or in buckets and shall not be dropped or thrown from any floor. Any debris in chutes or buckets shall be sufficiently wetted to preclude dust dispersion at the point of discharge.

(d) Dust and debris from the demolition operations shall be removed daily from the adjacent streets, sidewalks and alleys.

(e) Any contractor or person who intends to demolish a building, structure, facility or installation to which the provisions of this section apply is exempt from the requirements of this section if such building, structure, facility or installation has

been declared by a state or local governmental authority to be structurally unsound and in danger of imminent collapse.

§13-08 *Sandblasting*

(a) No dry sandblasting shall be permitted except where wet sandblasting cannot be done due to unique circumstances.

(b) Whenever sandblasting is done, contaminant methods such as blast-cleaning machines and cabinets shall be used.

(c) Whenever sandblasting is done, curtains shall be used as temporary dust-containment structures.

(d) A minimum of three days notice shall be given by the contractor to owners, tenants and occupants of all structures within one hundred fifty feet of the site on which sandblasting is to be done.

§13-09 *Construction Devices*

All persons constructing or operating a large article, machine, device, equipment, such as a rock crusher, or other contrivance or facility capable of causing or permitting emission of dust into the atmosphere at a construction site shall keep on site a document detailing such equipment . Information provided on this document shall include the ownership, location, design, make and model, operation, i.e. how does it operate, as well as any other pertinent information requested by the Department. In addition, the measures utilized to reduce dust emissions resulting from the use of these items as set forth in 15 RCNY 13-01 *et seq.* shall be clearly outlined. This document shall be attached as an addendum sheet to the Noise Mitigation Plan prepared pursuant to Section 24-220 of the Noise Code.

§13-10 *Open Areas*

Owners shall take sufficient measures including wetting and covering an open area to prevent dust emissions from becoming airborne after demolition is completed.

aeroqual

DUST SENTRY

Near reference real-time particle monitor for specific dust fractions

Designed for those who need to monitor and manage specific outdoor dust and particulate emissions continuously and in real-time.

The Dust Sentry is a nephelometer-based instrument that delivers defensible and accurate mass measurement for PM_{10}, $PM_{2.5}$, PM_1, or TSP.

MCERTS certified and SCAQMD 1466 pre-approved.



What is it?

- A weather-proof nephelometer-based monitor with integrated solar shielding for outdoor monitoring of dust and particulates
- A modular and configurable monitoring platform for measurement and compliance of a specific dust and particulate designation, and the option to integrate environmental sensors e.g. wind, noise, weather, and solar
- A flexible communications platform that transfers real-time data wirelessly, and gives you access through an API
- A web interface accessed via browser on any device, see all your data in one place and set email / SMS alerts on parameters of concern

What can it measure?

- Specific dust fraction, wind and noise

PM_{10} $PM_{2.5}$ PM_1 TSP dB

Who is it for?

- **Industrial operators** who need a cost-effective and robust solution to manage and control dust and particulates from site activities within regulatory or permitted limits:
  - Construction and remediation
  - Quarry and mine operators
  - Port and bulk handling terminals
  - Waste management sites
- **Environmental consultants** who require defensible particulate measurement for their clients air quality permits
- **Regulatory authorities** who require deployable, rapid response incident monitoring
- **EHS managers** who need to demonstrate that they are providing a safe environment for the people in their care
- **Researchers** who are on a limited budget and want to collect accurate, scientifically robust data

Specifications | Dust Sentry

Particle Module	Sizes	Range	Accuracy	Resolution	Lower Detectable Limit (2σ)
Nephelometer	PM_1, $PM_{2.5}$, PM_{10} or TSP	0 to 60,000 µg/m³	<±(2 µg/m³ + 5 % of reading)	0.1 ug/m³	<1 µg/m³
System Specifications					
Control System	Embedded fanless PC, Intel Atom N2600, 1.6 GHz, 2 GB RAM, 32 GB SSD, Ubuntu Linux Operating System				
Communications	Standard: WIFI, Ethernet (LAN) Optional: Cellular IP HSPA 4G modem				
Software	Connect: Runs on embedded PC, access via browser (IE, Firefox, Chrome, Safari) Cloud: Runs on secure 'cloud' servers, accessed via web browser Connect / Cloud Features: configuration, diagnostics, journal, calibration and data acquisition, plus SMS and email alerts (optional), auto data export via FTP and email (optional), and data export API (optional)				
Data logging	32 GB Hard Drive (> 5 years data storage)				
Outputs	2 x Relay (optional) 4 x 4-20mA (optional)				
Averaging period	1 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 hr, 2 hr, 4 hr, 8 hr, 12 hr, 24 hr				
Power requirements*	100-260 VAC (standard): 21 W / 30 W * Regulated 12 VDC (if required): 21 W / 30 W				
Enclosure	Lockable IP65 GRP cabinet with integrated aluminium solar shield armour				
PM Sampling System	Inlet: Omni-directional 36 cm (14.1 inches) heated inlet; Optional sharp cut cyclones for PM10, PM2.5 or PM1 size selection Pump: 12 V brushless DC diaphragm Optics: 670nm laser, near-forward scattering nephelometer with shealth air protection				
Dimensions	483 H x 330 W x 187 D mm (19 H x 13 W x 7.4 D inches) Includes solar shield armour & mounting brackets				
Weight*	< 13 kg (28.6 lbs)				
Environmental operating range	-10 °C to +50 °C (14 °F to 122 °F)				
Mounting	Pole, tripod and wall mounting brackets included				
47mm Sample Filter (Optional)	47mm filter for particle loading analysis				
Factory Integrated & Tested Sensors (Optional)	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Met One MSO (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation)				

* Configuration used for power and weight calculations: base unit, nephelometer, PM_{10} sharp cut, modem, heater off / heater on

APPENDIX S

EXDA-1a

DA-1b

DA-1c

DA-1d

SWALE 1

SWALE 2

SWALE 3

TC FLOWPATH

HOAG LANE

SHIRAZ LANE

CHURCHILL LANE

CAHILL RD

ELIZABETH MERRIAM
R/O 4054/76
TAX #96-08-30.3

ROBERT B. WINTER &
JENNIFER C. WINTER
R/O 5236/697
TAX #104-1-36

SUSAN BURNS
R/O 4105/245

DAVID BRITTAIN
R/O 4745/364
TAX #104-1-38

BARBARA HAINES
R/O 3354/248
TAX #104-1-34

SUZANNE M. OLIVARI
R/O 5157/206
TAX #104-1-33.1

ELIZABETH R. COWAN
R/O 5218/29
TAX #104-1-42

ROBERT MICHIEL
R/O 3004/150
TAX #104-1-40.2

ANTHONY APOSTOLAKAS &
ERIN HICKEY
R/O 5191/924
TAX #104-1-40.1

MARY SUE HANUS
R/O 3219/234
TAX #104-1-41

4939/668
MICHAEL S.
ESPOSITO R/O
TAX #104-1-32

PAUL MASSA & ALICE MASSA
R/O 4185/239
LOT 42
TAX #104-1-14

HOWARD HOLLISTER
& LINDA HOLLISTER
R/O 2938/3
LOT 43
TAX #104-1-15

KASCHA LIVING TRUST
R/O 5316/
LOT 41
#104-1-13

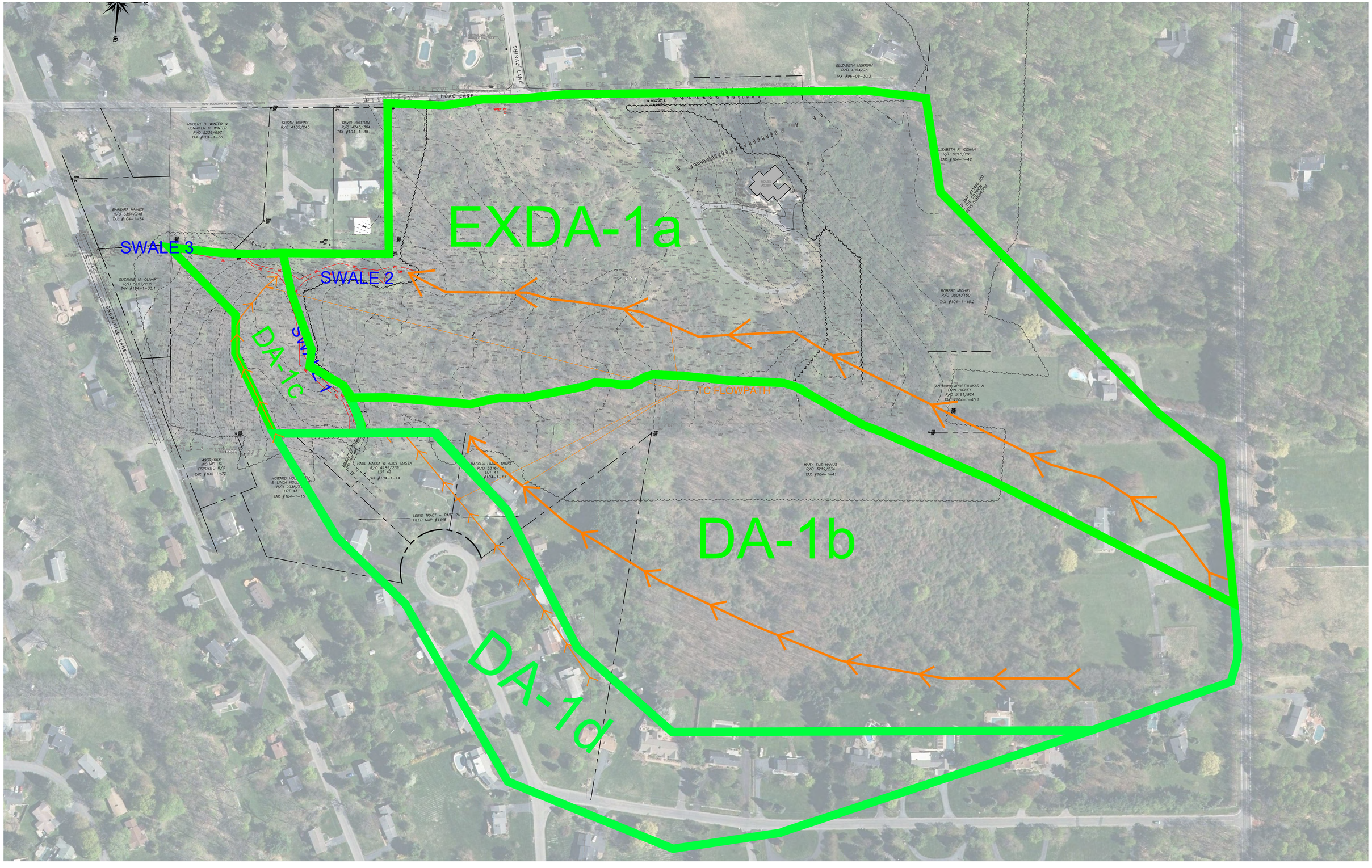
LEWIS TRACT – PART 2A
FILED MAP #4448

Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 4a: Existing Site Watershed with USGS

SCALE: 1:100
Updated: 09/19/19

RZ Engineering, PLLC
ENGINEERS SURVEYORS WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 4b: Existing Site Watershed with Aerial

SCALE: 1:100
Updated: 09/19/19

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6320 FLY ROAD SUITE 109
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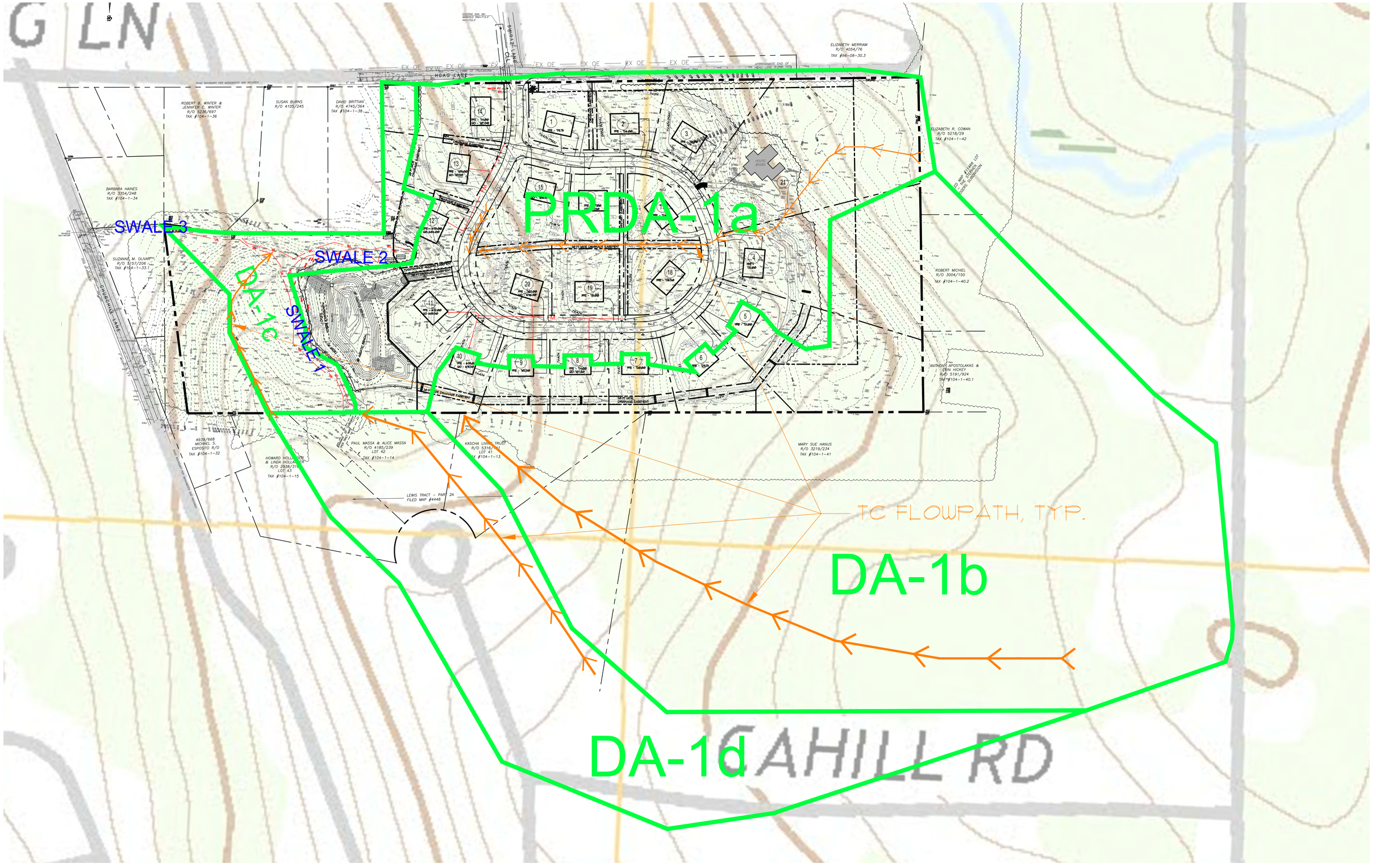
PH (315) 432-1089
FAX (315) 445-7981

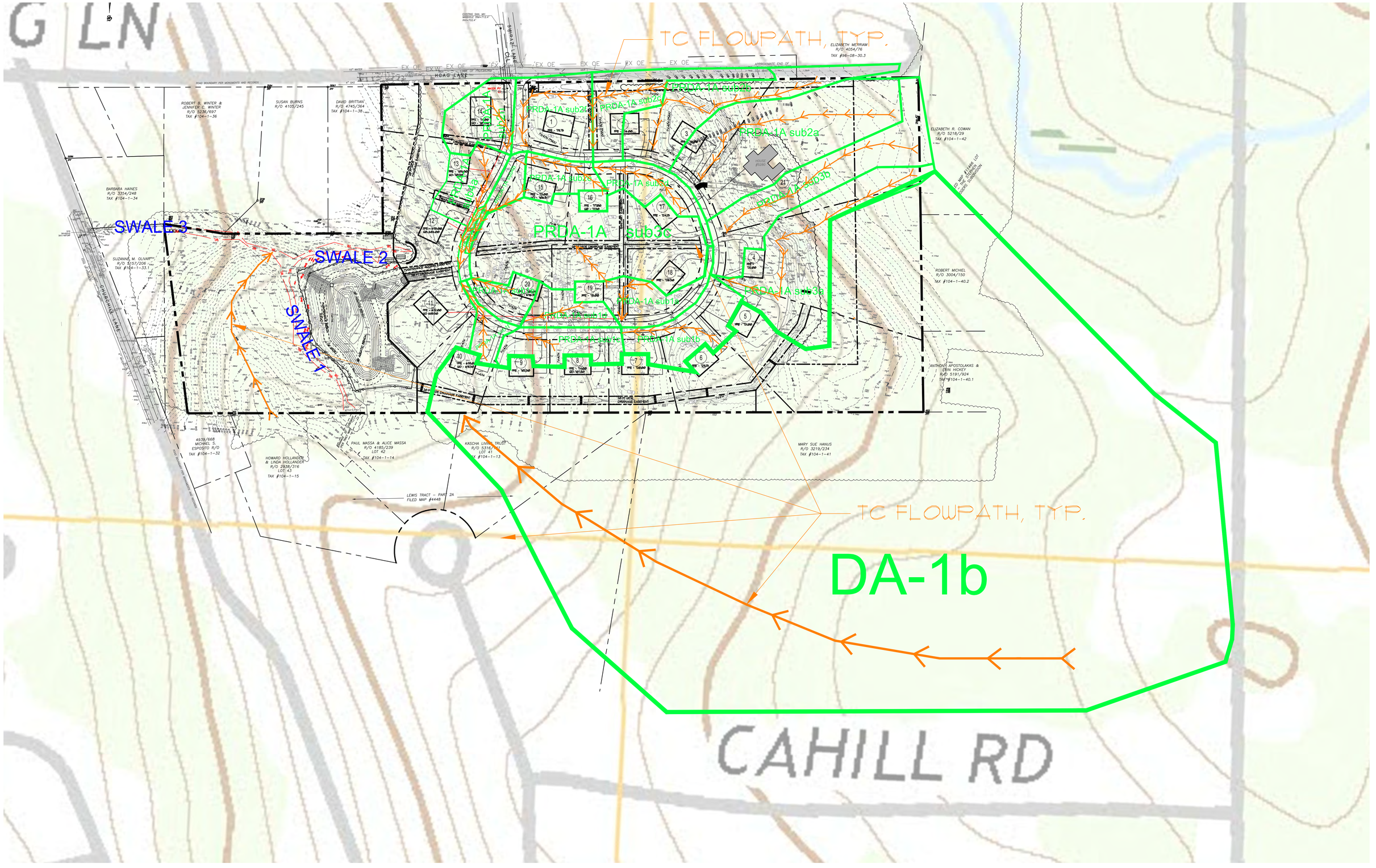


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 5: Proposed Watershed

SCALE: 1:100
Updated: 06/15/2020

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure F: Proposed Sub-Watersheds

SCALE: 1:100
Updated: 09/19/19

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
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PH (315) 432-1089
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APPENDIX T

APPENDIX B
DESIGN EXAMPLES FOR SELECTED EROSION AND SEDIMENT CONTROL PRACTICES

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Runoff Control Practices Design Examples B.1

Sediment Storage Volume Design Procedure B.2

Rock Outlet Protection Design Examples B.3

Flow Diffuser Design Examples B.4

Cedar Point Section 3 Sediment Basin Design Example B.6

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State University of New York, College of Environmental Science and Forestry

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APPENDIX B
DESIGN EXAMPLES FOR SELECTED EROSION AND SEDIMENT CONTROL PRACTICES

Background

Standard details and drawings for temporary erosion and sediment control practices have been used since the early 1970's. Many of these details were developed by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS), now known as the Natural Resources Conservation Service (NRCS). These details were incorporated into many state design manuals. These practices included the following:

- Earth Dike
- Construction Ditch
- Perimeter Dike/Swale
- Flow Spreader
- Pipe Slope Drain
- Straw Bale Dike
- Silt Fence

What made the use of these details attractive was that they were sized based upon the drainage area, and no extensive engineering calculations were needed for design. For example, if we needed to design a construction ditch to control the runoff from 8 acres above a disturbed construction area by sloping the swale at 3 percent, we would look at page 3.4 and select Ditch B, with a channel treatment of seed and straw mulch. The Ditch B cross section is a 6-foot bottom width, 1-foot design depth, and 2:1 side slopes.

This selection process is independent of location in New York State as well as the design rainfall amount. As a result, individuals have often wondered what level of protection is actually being provided.

Site specific practice design depends on a number of variables. These include drainage area, hydrologic soil group, cover, topography, rainfall amount, and intensity or distribution.

The following design examples illustrate how these variables can be incorporated into site specific design process.

Determining Stormwater Runoff

Stormwater runoff volumes and peak discharges should be calculated using current hydrologic data. As noted in Section 1, the hydrologic data published by the Northeast Regional Climate Center (NRCC), provides updated rainfall values for a wide range on frequencies and durations on their website, http://precip.eas.cornell.edu/. These data combined with construction site runoff curve numbers are then used with appropriate software to calculate peak rates of runoff, runoff volumes, and flow durations.

A detailed example of this process is presented in the design example for Sediment Basin Design.

Runoff Control Practices Design Examples

This method of designing a practice or evaluating the performance of a proposed practice, is applicable to most of the temporary runoff practices. The first example evaluates the effectiveness of the construction ditch.

Example 1: Case 1 - Construction Ditch A

Given:

Drainage Area = 4.9 acres

Hydrologic Soil Group = C

Runoff Curve Number = 91 (C soil disturbed for construction)

Slope of Swale = 3%

Rainfall (P) = 2.5 inches (from NRCC) (This represents NY state's average 1-year, 24-hour storm)

Runoff (Q) = 1.6 inches (from TR55 RCN tables)

Time of Concentration for Runoff (T_c) = 6 minute (assumed 0.1 hour, the shortest allowed with TR-55)

From HydroCAD routing:

Q_p = 12.2 cfs

For Ditch A, the design cross-section shows a bottom width of 4 feet., design depth of 1 foot, and 2:1 side slopes.

Therefore, ditch area = 6 ft^2 for design depth

Compute velocity, $V = \frac{1.486}{n} \left(\frac{A}{Wp}\right)^{2/3} S^{1/2}$

Where:

n = 0.040 for vegetated channels

A = 6 sq. ft.

Wp = 8.2 ft. (wetted perimeter)

S = .03 ft/ft (slope)

Therefore, $V = \frac{1.486}{.04} \left(\frac{6}{8.2}\right)^{2/3} (.03)^{1/2}$

$= 5$ feet per second

Select the appropriate stabilization lining.

Since Q = AV, the ditch capacity is

$Q = (6\ ft^2)(5\ ft/sec) = 30$ cfs or more than twice required

Case 2—Construction Ditch B

Given:

Drainage Area = 10 acres
Hydrologic Soil Group = C
Runoff Curve Number = 91
Slope of Swale = 3%
Rainfall (P) = 2.5 inches

Runoff (Q) = 1.6 inches

Time of Concentration for Runoff (T_c) = 0.1

From HydroCAD routing:

$Q_p = 25$ cfs

For Ditch B, the design cross-section has a 6-foot bottom width, 1-foot depth, and 2:1 side slopes.

Therefore, the area = 8 ft^2

Computing velocity for a ditch slope of 3%,

$V = \frac{1.486}{.04} \left(\frac{8}{10.47}\right)^{2/3} (.03)^{1/2}$

$V = (37.15)(.836)(.173) = 5.37$ ft/sec

Since:

Q = AV, the ditch capacity is

$Q = (8\ ft^2)(5.37\ ft/sec) = 43$ cfs

Case 3 - This site is adjacent to a significant water body in Westchester County. We want to protect the site for the 2-year, 24-hour storm.

Given:

Drainage Area = 10 acres

Hydrologic Soil Group = D soils

Runoff Curve Number = 94, ("D" under construction)

Slope of Swale = 3%

Rainfall (P) = 3.5 inches (NRCC)

Runoff (Q) = 2.8 inches (TR55 RCN)

Assume Time of Concentration for Runoff (T_c) = 0.1 hour (most conservative value)

From HydroCAD routing:

Qp = 28.7 cfs

From Case 2, Ditch B, we know that the maximum capacity is 43 cfs with a velocity of 5.37 feet per second.

Our conclusions would indicate that Ditch B is adequate for capacity. The velocity is higher and thus a lining should be used to protect the ditch from erosion.

Sediment Storage Volume Design Procedure

Practices such as silt fence, straw bale dikes, earthen berms, and other slope interupters, are often used on slopes or near the toes of fill slopes to capture sediment laden runoff. These have failed many times in the field due to poor siting, improper installation, lack of maintenance, and little consideration of the proper use of the practice.

The following design example shows how careful we need to be in using these practices. We will look at the use of silt fence in the following typical situations.

Case 1 - At the toe of a 3:1 earthfill

Given:

Earthfill slope 30 feet high , slope length 95 feet

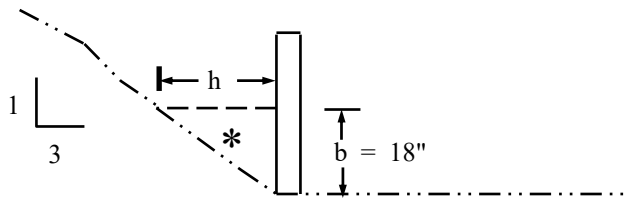
Hydrologic Soil Group—C

The Runoff Curve Number = 91 (bare soil)

Typically, the installed height of the silt fence is 30-36". The maximum design sediment depth behind the silt fence is 50% of its height, or 18" maximum.

For this case, the design sediment area is equal to:

A = 1/2bh



* Design sediment storage volume

A = 1/2 (1.5')(4-5') = 3.375 sq. ft. per linear foot

This equals 337.5 cubic feet per 100 feet of fence.

The actual slope surface is approximately 95 feet. For a rainfall of 1 inch on this site, the runoff equals 0.4 inches (TR55). The total volume of runoff would equal

$\frac{0.4 \text{ inches}}{12 \text{ inches/ft}}$ x 9500 sq. ft. = 317 cu. ft.

This example shows that the volume required for a 1-inch storm is barely provided, but the location of the fence provides no buffer for material that rolls down the slope nor room for maintenance. The fence should be located at least 10 feet from the toe of the slope.

Case 2- Determine level of protection for CASE 1 when fence is moved 10 feet from the toe of slope.

When the silt fence is moved 10' away from the 3:1 slope, the design area of storage equals,

337.5 sq. ft. + 1,500 sq. ft. = 1,837.5 cu.ft. per 100 feet of fence

Since this is the maximum runoff volume that can be controlled, the runoff depth equates to:

$\frac{1{,}837.5 \text{ ft}^3}{9{,}500 \text{ ft}^2}$ = 0.193 feet = 2.3 inches

From TR55 for a runoff Q = 2.3 inches, with a Curve Number at 91, P, rainfall is found to be 3.2 inches.

Thus, this design configuration can manage to store the runoff from a 3.2 inch rainfall event.

This method can be used to evaluate the positioning of these sediment control practices on the contour to hold sediment close to its source. It allows a designer to evaluate an existing condition, or to select a specific level of protection higher than that which may be provided by the standard details.

Rock Outlet Protection Design Examples

(Refer to Rock Outlet Protection Standard on Page 3.40)

Example 1: Pipe Flow (full) with discharge to unconfined section.

Given: A circular conduit flowing full.

Q = 280 cfs, diam. = 66 in., tailwater (surface) is 2 ft. above pipe invert (minimum tailwater condition).

Find: Read d_{50} = 1.2 and apron length (L_a) = 38 ft.
Apron width = diam. + L_a = 5.5 + 38 = 43.5 ft.

Use: d_{50} = 15", d_{max} = 22", blanket thickness = 32"

Example 2: Box Flow (partial) with high tailwater

Given: A box conduit discharging under partial flow conditions. A concrete box 5.5 ft. x 10 ft. flowing 5.0 ft. deep,

Q = 600 cfs and tailwater surface is 5 ft. above invert (max. tailwater condition).

Since this is not full pipe and does not directly fit the nomograph assumptions of Figure 7B.13 substitute depth as the diameter, to find a discharge equal to full pipe flow for that diameter, in this case 60 inches.

Since, Q = AV and $A = \frac{\pi D^2}{4}$

First, compute the actual box culvert velocity for the given flow conditions:

V = (Q/A) = (600/(5) (10)) = 12 fps

Then determine the equivalent flow through a 5 foot diameter pipe using the same velocity as the box culvert as computed above:

$Q = \frac{\pi D^2}{4}$ x $V = \frac{3.14 (5 \text{ ft})^2}{4}$ x 12 fps = 236 cfs

At the intersection of the curve d = 60 in. and Q = 236 cfs, read d_{50} = 0.4 ft.

Then reading the d = 60 in. curve, read apron length (L_a) = 40 ft.

Apron width, W = conduit width + (0.4)(L_a) = 10 + (0.4) (40) = 26 ft.

Example 3: Open Channel Flow with Discharge to Unconfined Section

Given: A trapezoidal concrete channel 5 ft. wide with 2:1 side slopes is flowing 2 ft. deep, Q = 180 cfs (velocity = 10 fps) and the tailwater surface downstream is 0.8 ft. (minimum tailwater condition).

Find: Using similar principles as Example 2, compute equivalent discharge for a 2 foot, using depth as a diameter, circular pipe flowing full at 10 feet per second.

Velocity:

$Q = \frac{\pi (2\text{ft})^2}{}$ x 10 fps = 31.4 cfs

4

At intersection of the curve, d = 24 in. and Q = 32 cfs, read d_{50} = 0.6 ft.

Then reading the d = 24 in. curve, read apron length (L_a) = 20 ft.

Apron width, W = bottom width of channel + L_a = 5 + 20 = 25 ft.

Example 4: Pipe flow (partial) with discharge to a confined section

Given: A 48 in. pipe is discharging with a depth of 3 ft. Q = 100 cfs, and discharge velocity of 10 fps (established from partial flow analysis) to a confined trapezoidal channel with a 2 ft. bottom, 2:1 side slopes, n = .04, and grade of 0.6%.

Calculation of the downstream channel (by Manning's Equation) indicates a normal depth of 3.1 ft. and normal velocity of 3.9 fps.

Since the receiving channel is confined, the maximum tailwater condition controls.

Find: discharge using previous principles:

$$Q = \frac{\pi (3ft)^2}{4} \times 10 \text{ fps} = 71 \text{ cfs}$$

At the intersection of d = 36 in. and Q = 71 cfs, read d_{50} = 0.3 ft.

Reading the d = 36" curve, read apron length (L_a) = 30 ft.

Since the maximum flow depth in this reach is 3.1 ft., that is the minimum depth of riprap to be maintained for the entire length.

Flow Diffuser Design Examples

(Refer to Flow Diffuser on Page 3.16)

The stormwater runoff from a 3.5 acre drainage area is to be discharged offsite through a flow diffuser. The drainage area is upland meadow, pasture and access road. The 10 year, 24 hour rainfall is 3.5 inches. A peak rate of runoff of 8.8 cubic feet per second results from a curve number of 80 and a time of concentration of 6 minutes (0.10 hour), using the HydroCAD computer model. This flow is being diffused off the right of way to prevent excessive flows further down the access road corridor.

A. Determine the diffuser length:

Since the maximum flow rate from the diffuser onto the vegetated buffer area is 0.25 cfs, per linear foot of weir length, the diffuser length is:

$$W = \frac{Q_{10}}{Q_D} = \frac{8.8 \text{ cfs}}{0.25 \text{ cfs.ft}} = 35.2 \text{ ft}$$

B. Using the standard minimum diffuser cross-section dimensions, solve for the d_{50} rock size:

Assume: 1:1 side slopes, 2 ft top width, h = 1.0 ft, W = 36 ft for:

$$Q = \frac{(h^{2/3})(W)}{[L/D + 2.5\ L^2]^{0.5}}$$

Where:

h = ponding depth behind the diffuser

W = linear length of diffuser along centerline

L = average horizontal flow length through the diffuser perpendicular to the centerline

D = average stone diameter (ft.) in the structure

Try a D (d50) = 0.50 ft (6 inches), from typical cross section, L=3 ft, then,

$$Q = \frac{1^{2/3} \times 36}{[3/0.5 + 2.5 + (3)^2]^{0.5}} = \frac{36}{(17)^{0.5}} = \frac{36}{4.18}$$

Therefore, Q = 8.6 cfs, this approximates the 10 year discharge and the design is balanced.

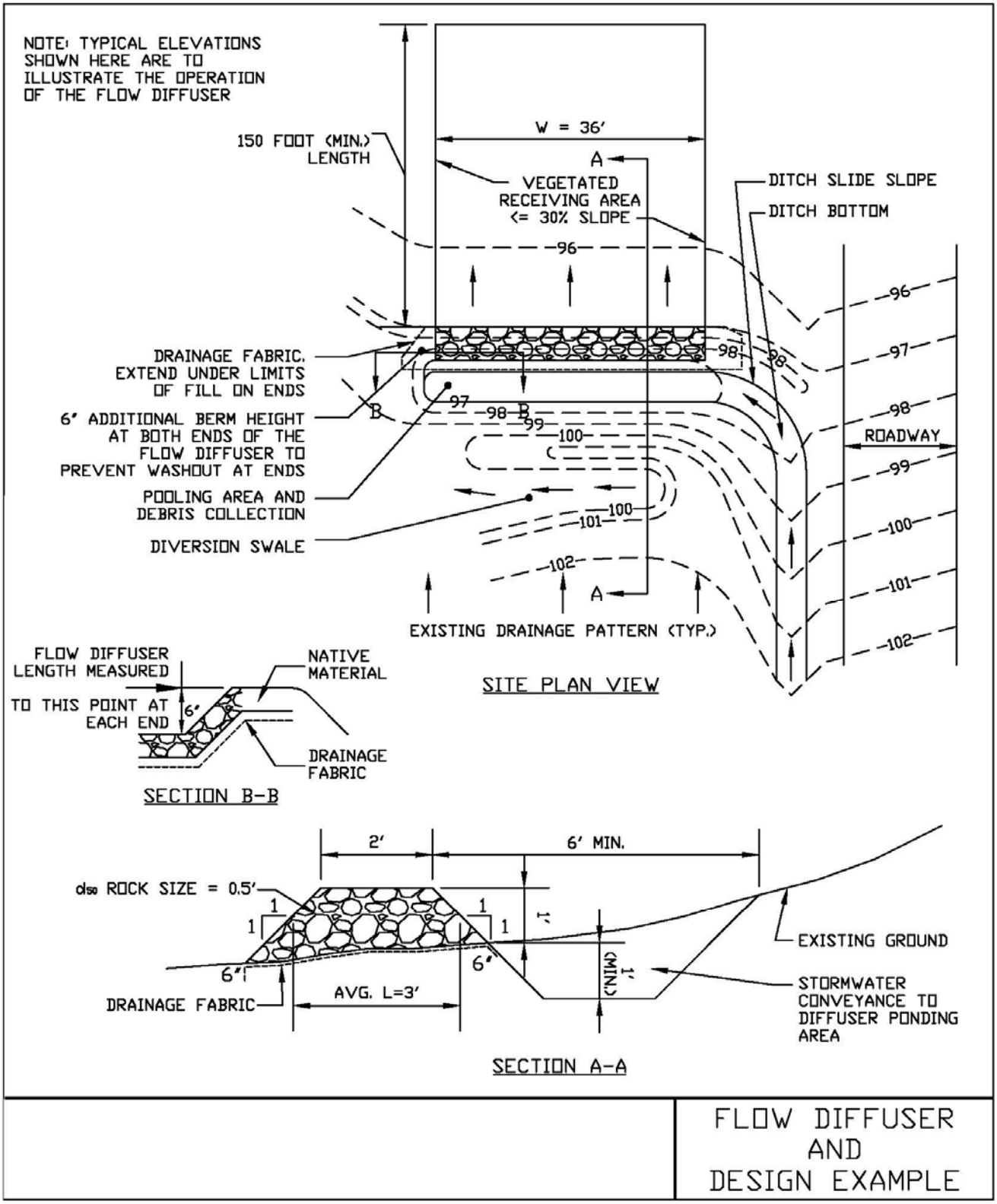
What if d_{50} is 0.75 ft. or 9 in.?, then:

$$Q = \frac{36}{[3/0.75 + 2.5 + (3)^2]^{0.5}} = \frac{36}{3.94} = 9.1 \text{ cfs}$$

And this flow exceeds the maximum allowable. Figure B.1 on page B.5 shows the dimensions and details for the final diffuser configuration.

Design Note: Changing the variables of height, side slope, rock size, and weir length, will result in a change of the diffuser discharge. All dimensions need to be balanced so the diffused flow does not exceed the maximum allowable of 0.25 cfs per linear foot of the diffuser. This practice can be modeled for storage requirements as a pond with a constant overflow rate.

Figure B.1
Flow Diffuser Design Example



CEDAR POINT SECTION 3
SEDIMENT BASIN DESIGN EXAMPLE

Cedar Point is a residential construction project in Cicero, Onondaga County, New York. Section 3 contains quarter acre lots with residential streets on approximately 20.4 acres. A sediment basin will be utilized as a component of the erosion and sediment control plan for this project. It will be located at the storm drainage outlet of the project (See Figure B.5). The drainage area to the basin is 14.9 acres.

The runoff curve number (RCN) used to calculate the stormwater runoff for design storms from this drainage area is based on the maximum disturbed construction condition. In this case it means bare soil for all the lot areas and impervious surface for the street area. This drainage area has 1.6 acres of paved roads and gutters; 6.4 acres of exposed soil in Hydrologic Soil Group (HSG) B; and 6.9 acres of exposed soil in HSG C. This results in a composite RCN of 90. Based on hydrologic data obtained from the Northeast Regional Climate Center (NRCC) and using the HydroCAD computer model, the peak discharge for the 10 year frequency storm is 39.2 cubic feet per second. See Figures B.2 to B.7 that show the development of the hydrology data. The steps to obtain this data are listed below:

1. Go to the NRCC website, **http://precip.eas.cornell.edu/**.
2. Select the tab Data and Products.
3. Use the Google Map to zoom into the project and double click.
4. From the Products list, select Extreme Precipitation Tables- Text/CSV.
5. At the bottom of the page, set smoothing to No, then click Submit.
6. Select Save when asked.
7. Set Save In to your HydroCAD IDF file or your HydroCAD projects folder.
8. Set the name for this file as NY-Cicero.hci.
9. Set the file format as “plain text”.
10. Click save and close the NRCC site.

If you are using a different computer program, import the text files into that program in accordance with the programs protocols. These text files will be converted into rainfall distribution curves for each specific rainfall frequency.

11. Open HydroCAD and click on the calculator icon.
12. Click “Rainfall”
13. Click “Import Events from IDF”
14. Click “Create Mass Curves”, then OK.
15. Click “Yes” on popup screen to replace the storm events, and accept.

This process imports rainfall values from the 1 year to the 500 year storm. This will be shown on the main screen when you toggle down the storm event window. Make sure when calculating Tc with HydroCAD that the NRCC 2 year storm value is used for the sheet flow calculation and not the older value. For our example, the 2 year rainfall is 2.37 inches and the 10 year rainfall is 3.39 inches.

The design results are shown on the following Temporary Sediment Basin Design Data Sheet. The instructions for the use of this form are shown on page 5.25.

The outlet for this sediment basin is a skimmer device. It is critical to size the orifice so that the appropriate detention time for dewatering is applied to maximize the basin efficiency. The Dewatering Device standard on page 5.10 sets the criteria for orifice sizing.

The Cedar Point Section 3 soils contain approximately 45 % fines (less than the #200 sieve size); therefore the storage volume drawdown time should be a minimum of 48 hours. The dewatering volume is calculated to be approximately 54,000 cubic feet. Therefore, from Figure 5.3 on page 5.11 of the Dewatering Device standard, enterthe bottom of the chart at 54,000 cubic feet. Travel vertically to the 2 day dewatering time line. Then read across to find the orifice diameter at approximately 4.5 inches.

The arm length for the skimmer is equal to the hypotenuse of a 45 degree right triangle using the full storage depth as the leg of the triangle (see Figure 5.4 on page 5-12). Our full storage depth is 8 feet. Therefore, the length of the skimmer arm is 8 feet x 1.414 = 11.3 feet. Use 12.0 feet for ease of field construction with a four foot flexible coupling to the bottom of the riser (see Figure B.13 on page B.18).

The design results are shown on the Temporary Sediment Basin Design Data Sheet, Figure B.9 on page B.14.

Figure B.2
NRCC Project Locator Map

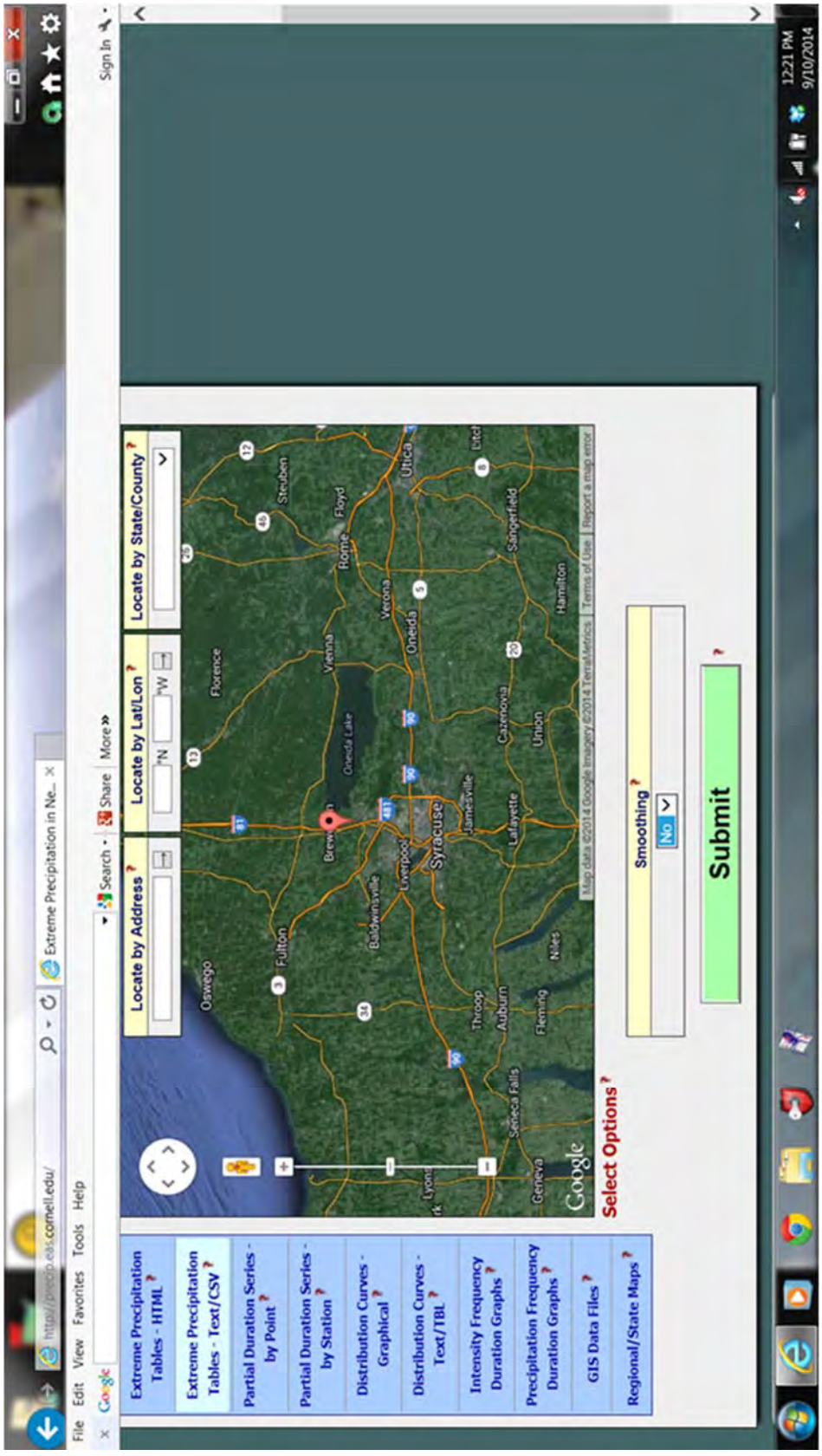


Figure B.3
NRCC Sediment Basin Location

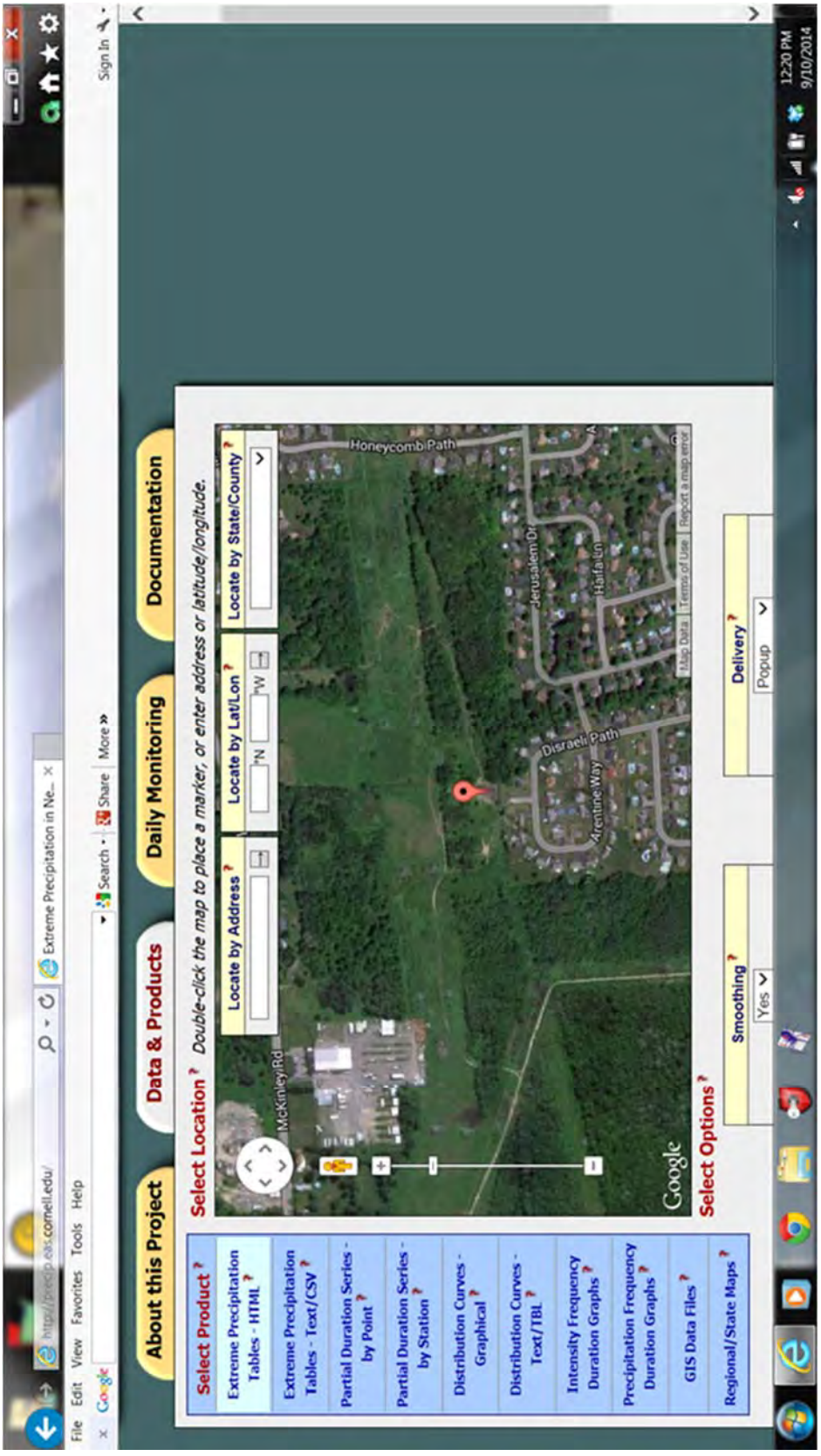


Figure B.4
Cedar Point Google Map Pre-Construction

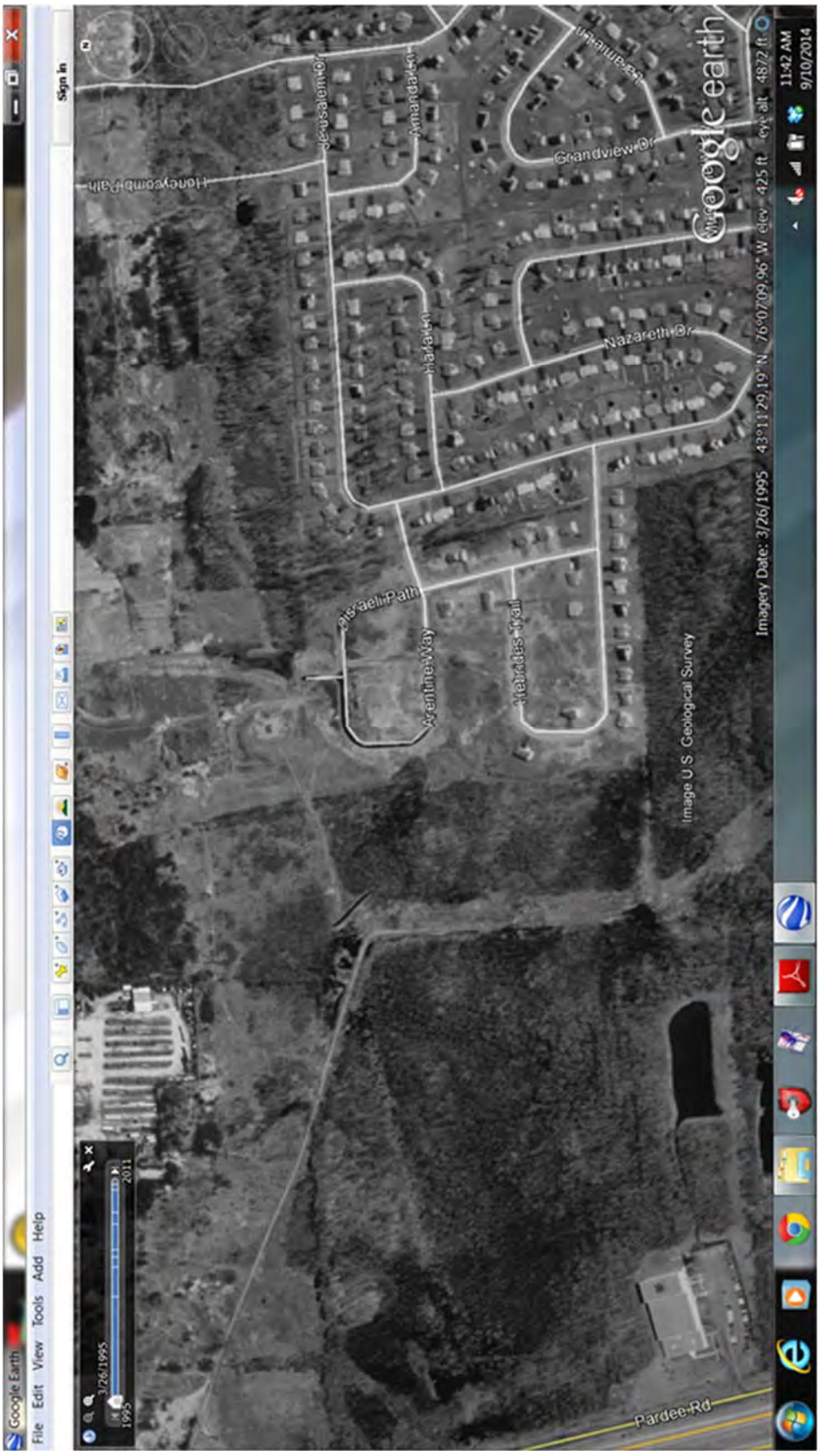


Figure B.5
Cedar Point Site Sediment Basin Photograph

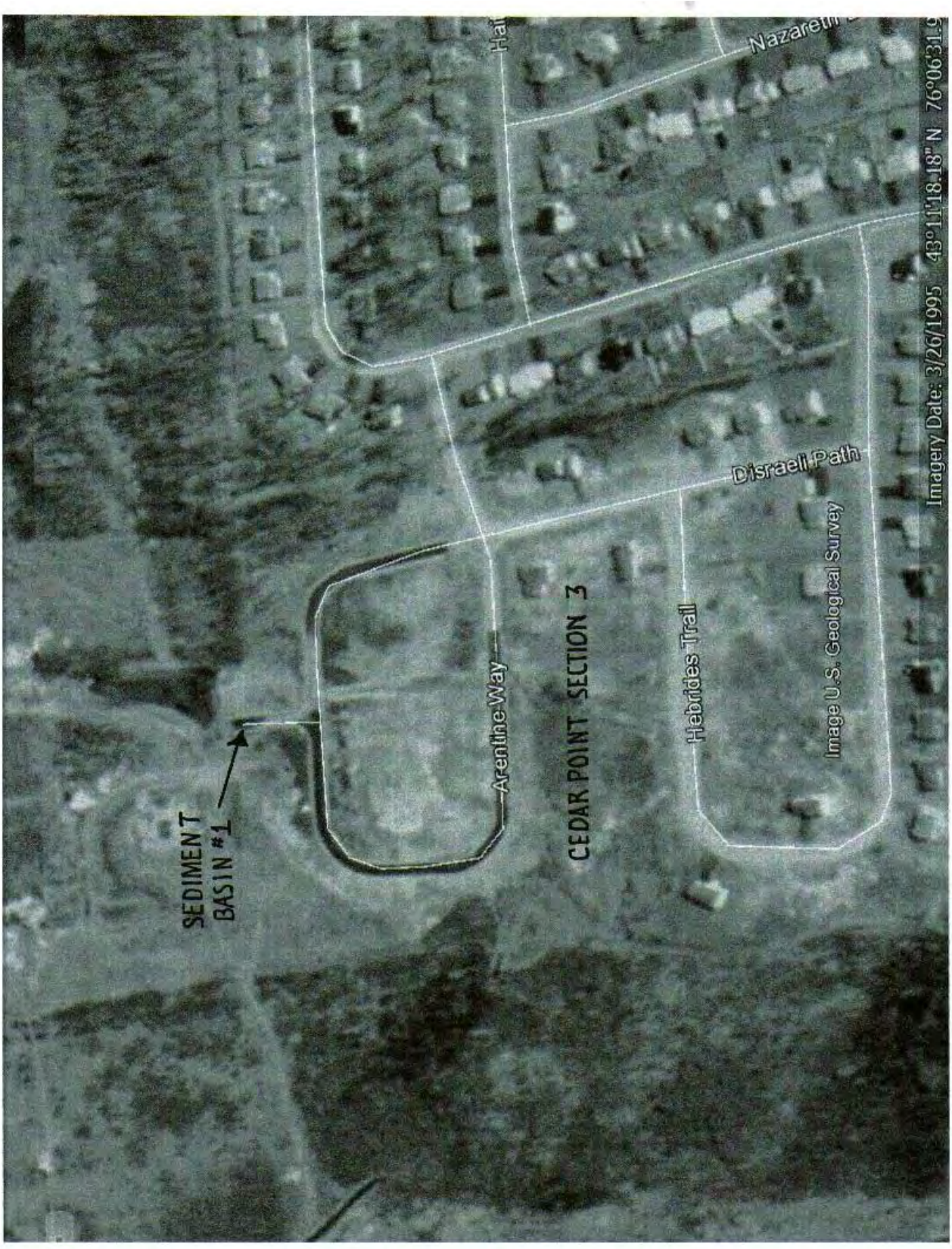


Figure B.6
NRCC Rainfall Text Table

output - Notepad

File Edit Format View Help

Northeast Regional Climate Center Extreme Precipitation estimates (inches)
Point Estimates, Unsmoothed
Data series, Partial duration series
State, New York
Location,
Lon (dd), -76.109
Lat (dd), 43.190
Elev (feet), unknown
MEAN PRECIPITATION FREQUENCY ESTIMATES
Freq (yr),5-min,10-min,15-min,30-min,60-min,120-min,3-hr,6-hr,12-hr,24-hr,2-day,4-day,7-day,10-day
1, 0.28, 0.43, 0.53, 0.71, 0.88, 1.00, 1.11, 1.39, 1.68, 2.05, 2.29, 2.65, 3.22, 3.78
2, 0.33, 0.50, 0.62, 0.84, 1.04, 1.19, 1.30, 1.63, 1.96, 2.37, 2.67, 3.03, 3.66, 4.25
5, 0.39, 0.60, 0.74, 1.02, 1.30, 1.46, 1.62, 2.00, 2.42, 2.90, 3.29, 3.69, 4.38, 5.00
10, 0.45, 0.69, 0.85, 1.19, 1.54, 1.71, 1.92, 2.35, 2.84, 3.39, 3.86, 4.28, 5.02, 5.67
25, 0.54, 0.83, 1.03, 1.47, 1.94, 2.12, 2.39, 2.89, 3.52, 4.15, 4.77, 5.22, 6.01, 6.70
50, 0.63, 0.96, 1.19, 1.71, 2.31, 2.49, 2.82, 3.39, 4.13, 4.84, 5.59, 6.06, 6.89, 7.60
100, 0.73, 1.11, 1.39, 2.00, 2.74, 2.93, 3.33, 3.97, 4.86, 5.65, 6.57, 7.05, 7.90, 8.62
200, 0.85, 1.28, 1.62, 2.35, 3.27, 3.44, 3.95, 4.66, 5.72, 6.59, 7.71, 8.19, 9.06, 9.78
500, 1.04, 1.55, 2.00, 2.90, 4.13, 4.28, 4.93, 5.76, 7.09, 8.09, 9.55,10.01,10.86,11.56

UPPER LIMIT PRECIPITATION FREQUENCY ESTIMATES
Freq (yr),5-min,10-min,15-min,30-min,60-min,120-min,3-hr,6-hr,12-hr,24-hr,2-day,4-day,7-day,10-day
1, 0.31, 0.47, 0.58, 0.78, 0.96, 1.08, 1.22, 1.56, 1.85, 2.21, 2.57, 2.84, 3.44, 4.01
2, 0.35, 0.53, 0.66, 0.89, 1.10, 1.24, 1.36, 1.70, 2.08, 2.48, 2.78, 3.13, 3.80, 4.36
5, 0.42, 0.64, 0.80, 1.09, 1.39, 1.60, 1.75, 2.20, 2.63, 3.12, 3.55, 3.96, 4.66, 5.32
10, 0.49, 0.75, 0.93, 1.30, 1.68, 1.98, 2.14, 2.70, 3.24, 3.82, 4.28, 4.75, 5.48, 6.18
25, 0.61, 0.93, 1.16, 1.66, 2.18, 2.61, 2.78, 3.57, 4.27, 4.78, 5.53, 6.06, 6.80, 7.56
50, 0.72, 1.10, 1.37, 1.97, 2.65, 3.21, 3.40, 4.40, 5.24, 5.74, 6.72, 7.30, 8.01, 8.80
100, 0.86, 1.30, 1.63, 2.36, 3.24, 3.93, 4.15, 5.44, 6.47, 6.92, 8.17, 8.80, 9.46,10.26
200, 1.02, 1.54, 1.95, 2.82, 3.93, 4.84, 5.06, 6.74, 7.99, 8.33, 9.95,10.62,11.18,11.97
500, 1.33, 1.98, 2.55, 3.70, 5.26, 6.37, 6.54, 8.94,10.58,10.69,12.95,13.67,13.94,14.69

LOWER LIMIT PRECIPITATION FREQUENCY ESTIMATES
Freq (yr),5-min,10-min,15-min,30-min,60-min,120-min,3-hr,6-hr,12-hr,24-hr,2-day,4-day,7-day,10-day
1, 0.24, 0.38, 0.46, 0.62, 0.76, 0.87, 0.93, 1.10, 1.37, 1.83, 2.07, 2.43, 2.94, 3.45
2, 0.32, 0.49, 0.61, 0.82, 1.01, 1.13, 1.26, 1.55, 1.88, 2.31, 2.59, 2.94, 3.58, 4.15
5, 0.36, 0.55, 0.69, 0.94, 1.20, 1.35, 1.49, 1.85, 2.25, 2.69, 3.05, 3.43, 4.10, 4.72
10, 0.39, 0.60, 0.74, 1.04, 1.34, 1.53, 1.68, 2.08, 2.51, 3.01, 3.42, 3.83, 4.51, 5.20
25, 0.44, 0.67, 0.83, 1.19, 1.56, 1.79, 1.99, 2.43, 2.88, 3.47, 3.97, 4.42, 5.09, 5.91
50, 0.47, 0.72, 0.89, 1.28, 1.73, 2.03, 2.24, 2.70, 3.17, 3.85, 4.41, 4.92, 5.57, 6.49
100, 0.52, 0.78, 0.98, 1.41, 1.94, 2.33, 2.54, 3.02, 3.48, 4.25, 4.90, 5.47, 6.07, 7.14
200, 0.56, 0.85, 1.07, 1.56, 2.17, 2.65, 2.87, 3.35, 3.82, 4.70, 5.42, 6.06, 6.59, 7.86
500, 0.66, 0.98, 1.26, 1.83, 2.61, 3.17, 3.45, 3.87, 4.32, 5.34, 6.16, 6.92, 7.34, 8.89

Date/time: Wed Sep 10 12:25:09 EDT 2014

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9/10/2014

Figure B.7
HydroCAD Summary Sheet

Subcat 1S: Cedar Point DA - CESF Fut Cedar Point

Summary | Hydrograph | Events

DA-2 is the upper area of residential lots.

Runoff = 39.16 cfs @ 12.12 hrs, Volume= 2.912 af, Depth= 2.37" Click any item for help

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
NY-CedarPt 24-hr S1 10-yr 10-yr Rainfall=3.39"

Area (ac)	CN	Description
1.600	98	paved roads w gutter
6.400	86	Newly graded area, HSG B
6.900	91	Newly graded area, HSG C
14.900	90	Weighted Average
13.300		89.26% Pervious Area
1.600		10.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	115	0.0143	0.32		**Sheet Flow, lawn**
					Fallow n= 0.050 P2= 2.37"
1.4	145	0.0110	1.69		**Shallow Concentrated Flow, grass swale**
					Unpaved Kv= 16.1 fps
1.2	120	0.0070	1.70		**Shallow Concentrated Flow, road gutter**
					Paved Kv= 20.3 fps
1.6	310		3.20		**Direct Entry, sewer pipe**
2.1	555		4.40		**Direct Entry, sewer pipe**
12.3	1,245	Total			

Print | Export | Edit | Help

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Figure B.8
Cedar Point Sediment Basin Stage - Storage Curve

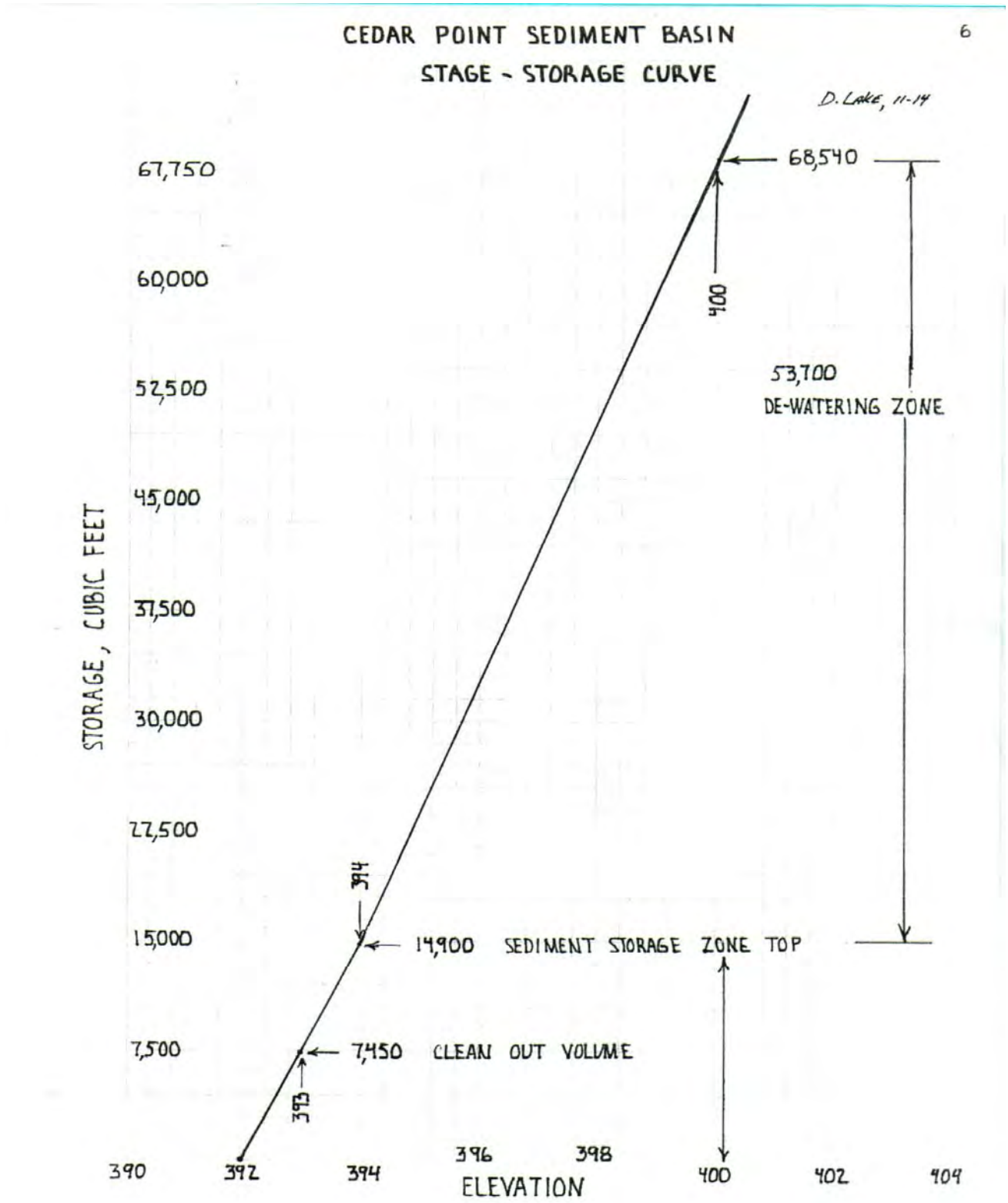


Figure B.9
Temporary Sediment Basin Design Data Sheet

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by D. Lake Date _____ Checked by _____ Date _____
Project Cedar Point Section 3 Basin # 1
Location Cicero, NY Total Area draining to basin (≤50 Ac.) 14.9 Acres

BASIN SIZE DESIGN

1. Sediment storage zone volume = 1,000 cu. ft. x number of disturbed acres = 14900 cu. ft., Top of Zone Elev. 394.0
2. Dewatering zone volume = 3,600 cu. ft. x number of drainage area acres = 53640 cu. ft., Top of Zone Elev. 400.0
3. Length to width ratio = 3.4 : 1
4. A. Cleanout at 50% of sediment storage zone volume, Elev. 393.0
   B. Distance below top of riser 7.0 feet
5. Minimum surface area is larger of 0.01 $Q_{(10)}$ 0.39 or, 0.015 DA = 0.22 use 0.4 acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

6. $Q_{p(10)}$ = 39.2 cfs (Attach runoff computation sheets)

Pipe Spillway (Q_{ps})

7. Min. pipe spillway cap., Q_{ps} = 0.2 x 14.9 Drainage Area, acres = 3 cfs
   Note: If there is no emergency spillway, then required $Q_{ps} = Q_{p(10)}$ = — cfs.
8. H, head = 8 ft. Barrel length = 60 ft
9. Barrel: Diam. 12 inches; Q_{ps} = (Q) 9.1 x (cor.fac.) 1.04 = 9.5 cfs.
10. Riser: Diam. 21 inches; Length 7.5 ft.; h = 1.0 ft. Crest Elev. 400.0
11. Trash Rack: Diameter = 30 inches; H, height = 11 inches

Emergency Spillway Design

12. Emergency Spillway Flow, $Q_{es} = Q_p - Q_{ps}$ = 39.2 - 9.5 = 29.7 cfs.
13. Width 12 ft.; H_p 1.0 ft Crest elevation 401.0 ; Design High Water Elev. 402.0
    Entrance channel slope 2 % ; Top of Dam Elev. 403.0
    Exit channel slope 3 %

ANTI-SEEP COLLAR/SEEPAGE DIAPHRAGM DESIGN

Collars:

14. y = 7.5 ft.; z = 2.5 :1; pipe slope = 1 %, L_s = 51 ft.
    Use 2 collars, 4' - 9 inches square; projection = 1.8 ft.

Diaphragms:

_____ width _____ ft. height _____ ft.

DEWATERING ORIFICE SIZING

(Determined from the Dewatering Device Standard)

15. Dewatering orifice diameter = 4.5 inches. Skimmer X or Riser ____ (check one)
16. Design dewatering time 2 days (Min. 2 days required)

Figure B.10
Temporary Sediment Basin Profile Detail

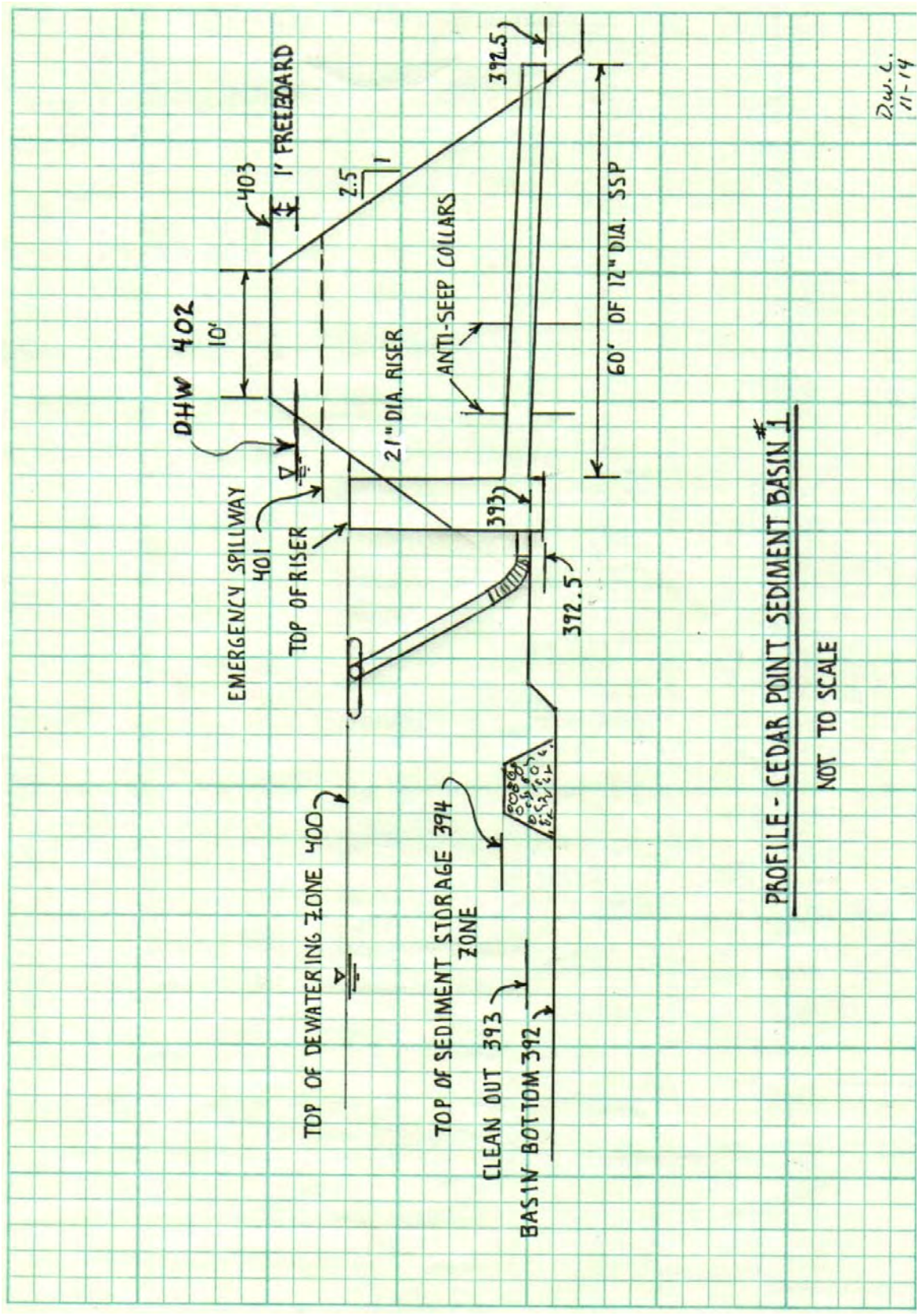


Figure B.11
Temporary Sediment Basin Spillway Detail

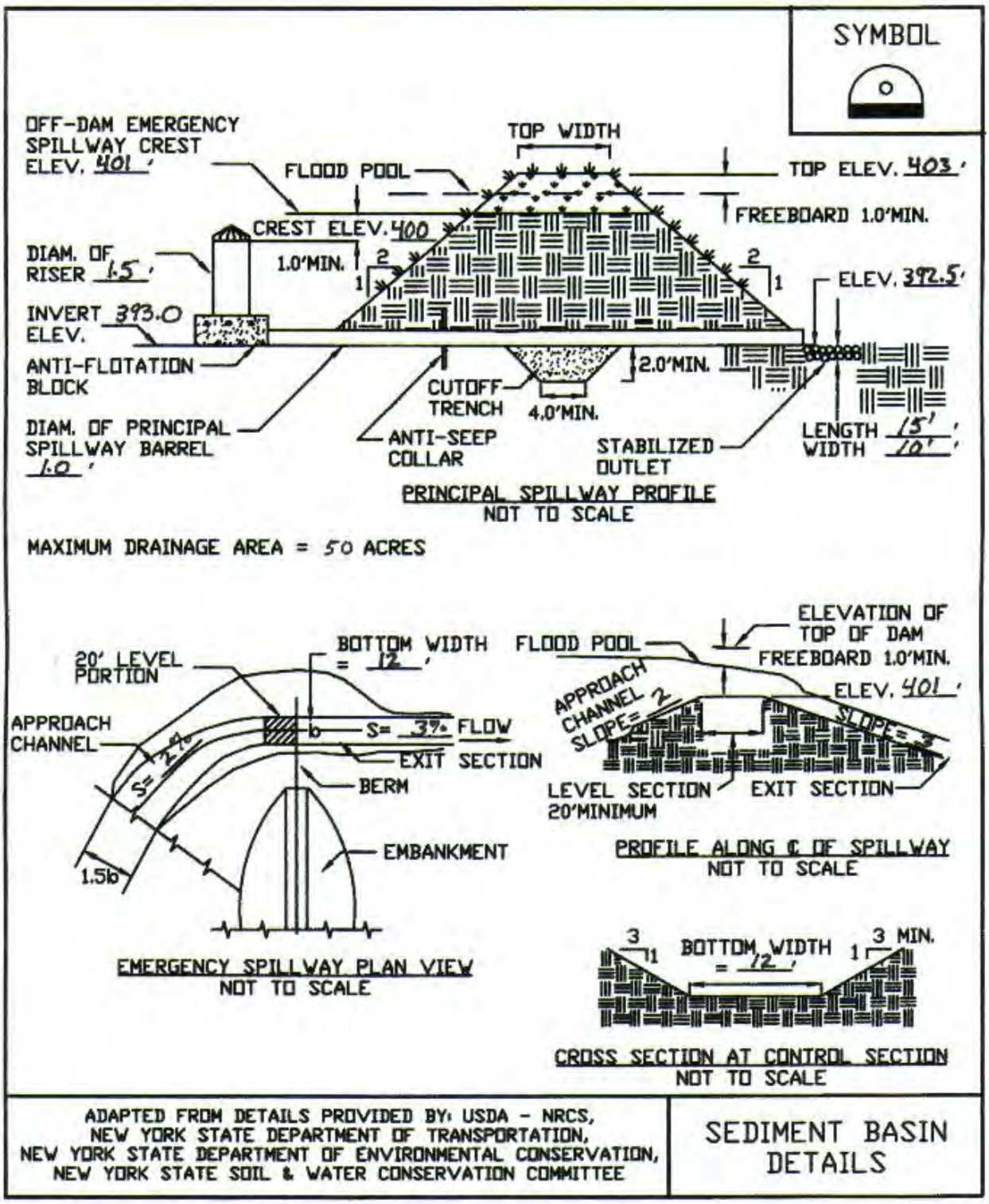


Figure B.12
Skimmer Orifice Design Chart

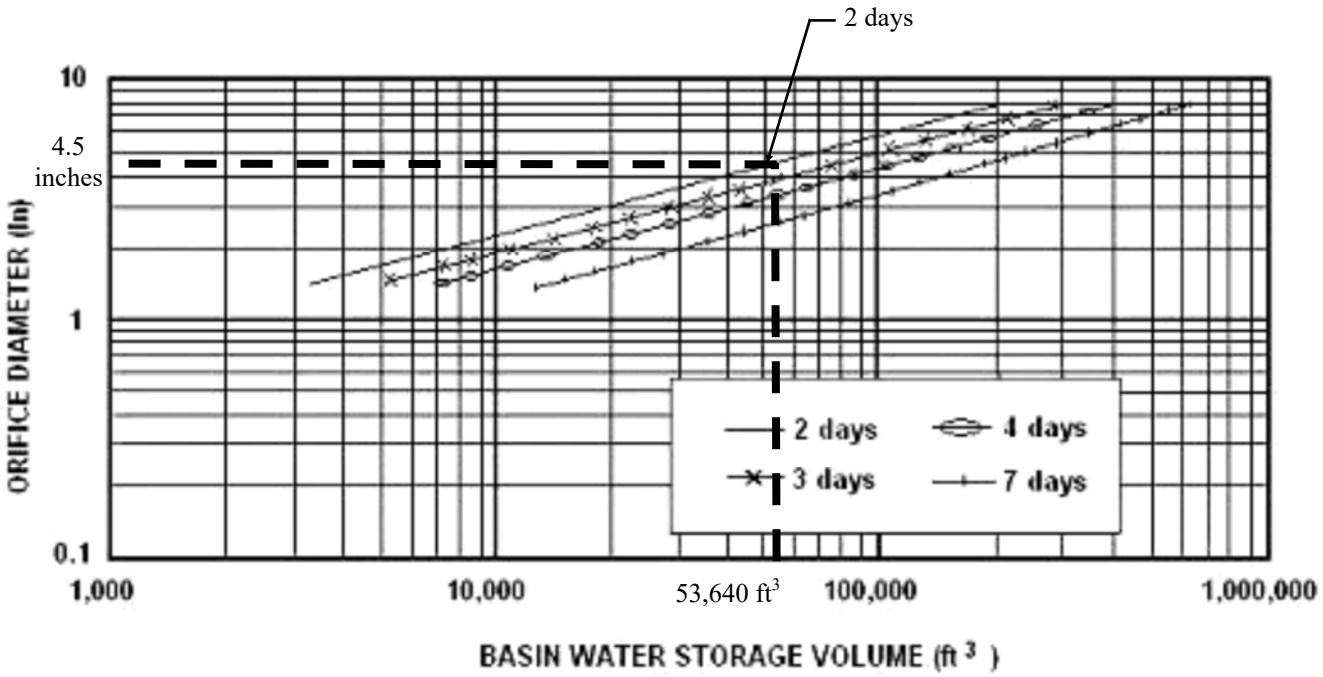
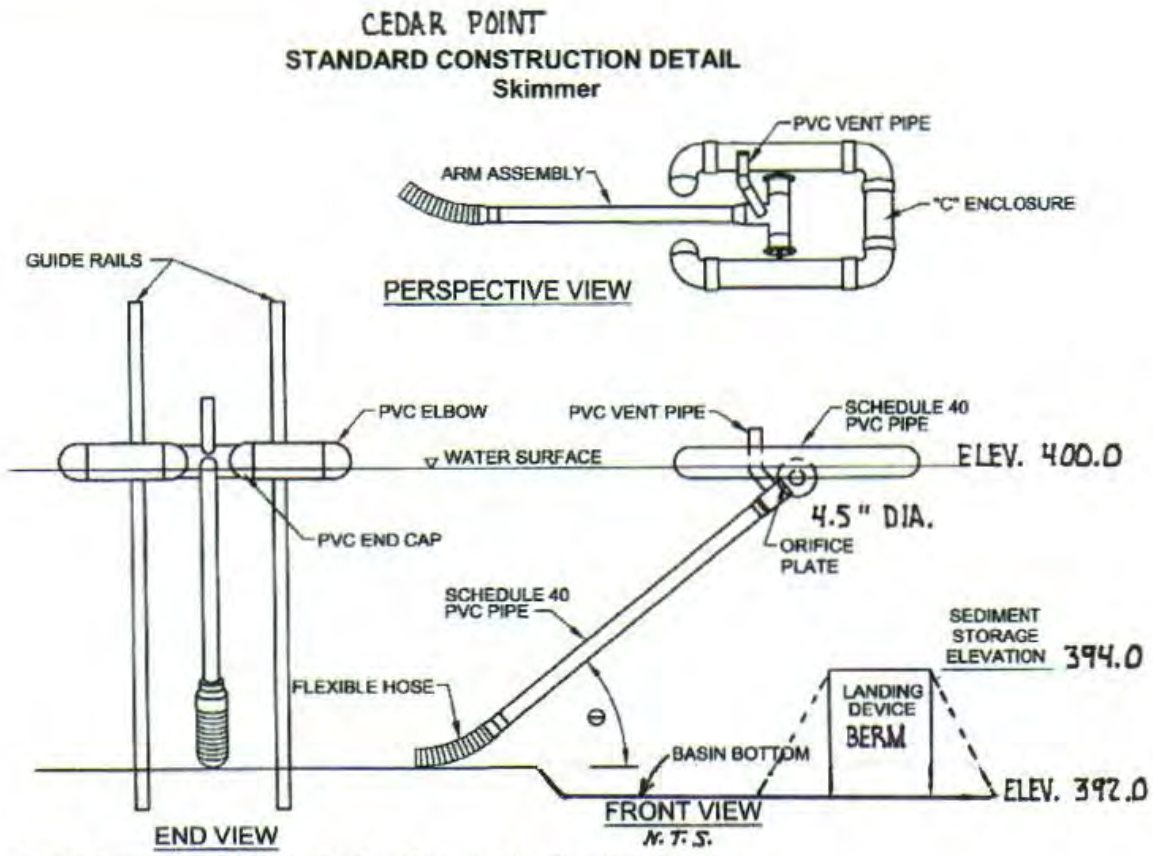


Figure B.13
Skimmer Dewatering Device Detail



Adapted from Penn State Agricultural and Biological fact Sheet F-253

NOTE: This table is intentionally blank and should be filled in by the plan preparer.

Basin No.	Water Surface Elevation (ft)	Arm Length (ft)	Arm Dia. (in)	Orifice Size* (in)	Top of Landing Device Elevation (ft)	Flexible Hose Length (in)	Flexible Hose Attachment Elevation (ft)
CP-1	400.0	12	6	4.5	394.0	48	393.0

*** Must be equal to or less than arm diameter**

A rope shall be attached to the skimmer arm to facilitate access to the skimmer once installed.

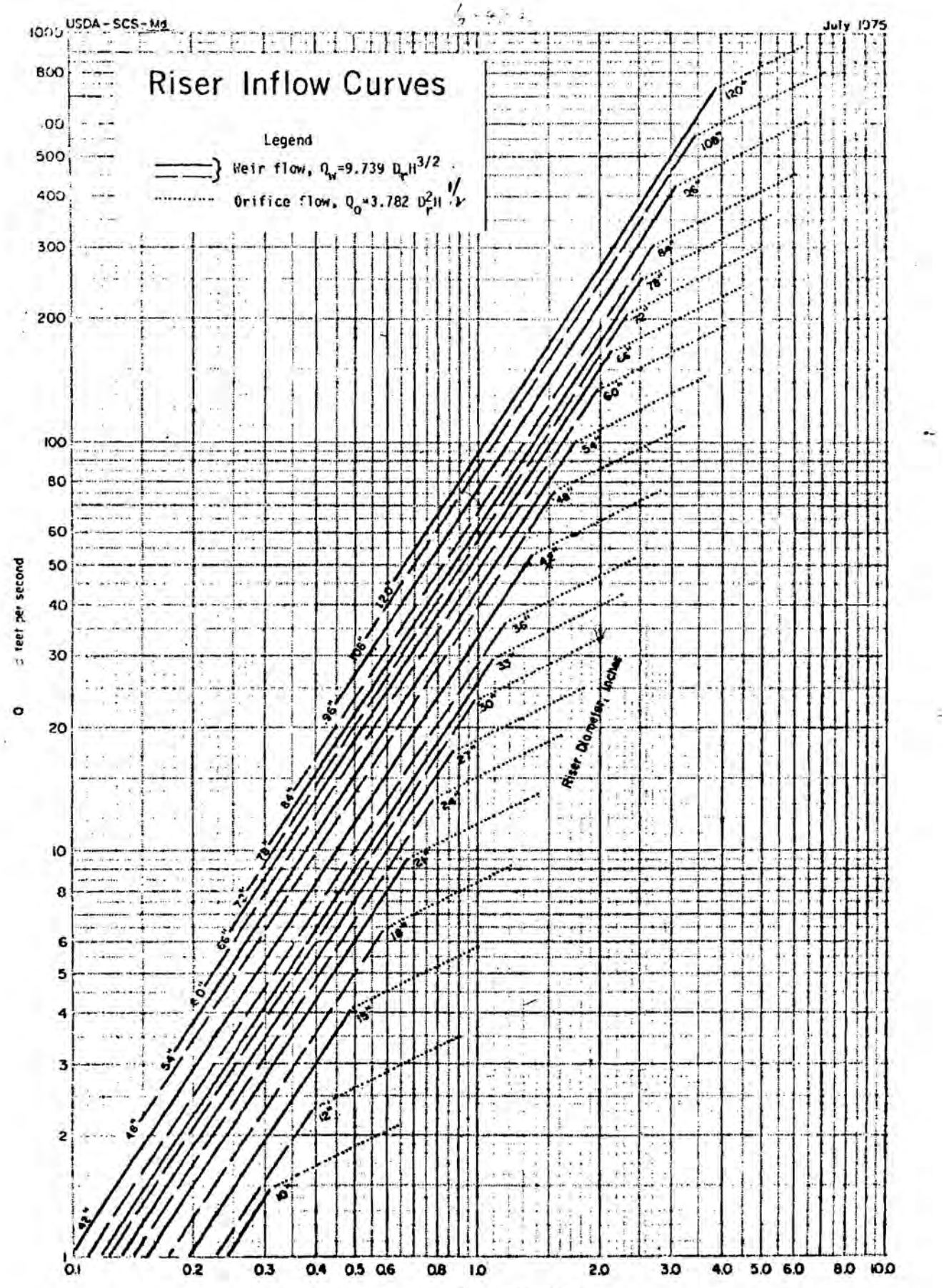
Skimmer shall be inspected weekly and after each runoff event.

Any malfunctioning skimmer shall be repaired or replaced within 24 hours of inspection.

Ice or sediment buildup around the principal spillway shall be removed so as to allow the skimmer to respond to fluctuating water elevations.

Sediment shall be removed from the basin when it reaches the level marked on the sediment clean-out stake or the top of the landing device.

A semi-circular landing zone may be substituted for the guide rails


USDA - SCS - Md
July 1975
Riser Inflow Curves
Legend
Weir flow, $Q_w = 9.739\ D_r H^{3/2}$
Orifice flow, $Q_o = 3.782\ D_r^2 H^{1/2}$
Riser Diameter, Inches
Q = cubic feet per second
Head in feet, measured from crest of riser
1000
800
600
500
400
300
200
100
80
60
50
40
30
20
10
8
6
5
4
3
2
1
0.1
0.2
0.3
0.4
0.5
0.6
0.8
1.0
2.0
3.0
4.0
5.0
6.0
8.0
10.0

A-19.14

6-42a.

Table 4/Values of $S^{1/2}$

	1	2	3	4	5	6	7	8	9
.00	—.	.0316	.0447	.0548	.0632	.0707	.0775	.0837	.0894	.0949
.01	.10	.1049	.1095	.1140	.1183	.1225	.1265	.1304	.1342	.1378
.02	.1414	.1449	.1483	.1517	.1549	.1581	.1612	.1643	.1673	.1703
.03	.1732	.1761	.1789	.1817	.1844	.1871	.1897	.1924	.1949	.1975
.04	.20	.2025	.2049	.2074	.2098	.2121	.2145	.2168	.2191	.2214
.05	.2236	.2258	.2280	.2302	.2324	.2345	.2366	.2387	.2408	.2429
.06	.2449	.2470	.2490	.2510	.2530	.2550	.2569	.2588	.2608	.2627
.07	.2646	.2665	.2683	.2702	.2720	.2739	.2757	.2775	.2793	.2811
.08	.2828	.2846	.2864	.2881	.2898	.2915	.2933	.2950	.2966	.2983
.09	.30	.3017	.3033	.3050	3066	.3082	.3098	.3114	.3130	.3146
.10	.3162	.3178	.3194	.3209	.3225	.3240	.3256	.3271	.3286	.3302

Note: numbers across top represent third decimal place e.g. if given slopes are .002 ft/ft and .034 ft/ft then respective $S^{1/2}$ values are .0447 and .1844.

Table 5/Summary of Roughness Coefficients—Manning's "n" Based on Test Results

Pipe Diam. (in)	Corrugation Configuration & Construction						
	¼ x 1½ Helical *	½ x 2⅔ Helical *	½ x 2⅔ Annular *	1 x 3 Helical *	1 x 6 Annular *	1 x 6 Helical *	2½ x 9 Annular **
6	.010						
8	.013						
10	.016						
12		.010	.026				
15		.012	.025				
18		.014	.025				
21		.016	.025				
24		.017	.025				
30		.018	.025	.019			
36		.019	.025	.020	.025		
42		.020	.024	.020	.024		
48		.020	.024	.020	.024	.020	
54		.020	.024	.021	.024	.020	
60		.021	.024	.021	.024	.021	.035
66		.021	.024	.021	.024	.021	.035
72		.021	.024	.021	.024	.021	.034
78		.021	.024	.021	.024	.021	.034
84		.021	.024	.022	.024	.021	.034
90		.021	.024	.022	.024	.021	.034
96		.021	.024	.022	.024	.021	.034
102				.022	.023	.021	.034
108				.022	.023	.022	.033
114				.022	.023	.022	.033
120				.022	.023	.022	.033
126-162							.033
168-246							.032
252							.031

from * St. Anthony Falls Hydraulic Laboratory, Minn.
** Corps of Engineers

Figure 5A.24(1)
Sediment Basin Design Example #1

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by DWL Date 1-04 Checked by PLS Date 1-04
Project SNOOKS POND Basin # 1
Location MANLIUS, NY Total Area draining to basin 20 Acres

BASIN SIZE DESIGN

1. Minimum sediment storage volume = 134 cu. yds. x 20 acres of drainage area = 2,680 cu.yds.
2. a. Cleanout at 50 percent of minimum required volume = 1,340 cu. yds.
   b. Elevation corresponding to scheduled time to clean out 96.5
   c. Distance below top of riser 3.5 Ft.
3. Minimum surface area is larger of 0.01 $Q_{(1)}$ 0.32 or, 0.015 DA = 0.30 use 0.32 Acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

4. $Q_{p(10)}$ = 88 cfs
   (EFH, Ch. 2, TR-55, or Section 4; Attach runoff computation sheet)

Pipe Spillway (Q_{ps})

5. Min. pipe spillway cap., Q_{ps} = 0.2 x 20 ac. Drainage = 4 cfs
   Note: If there is no emergency spillway, then req'd Q_{ps} = $Q_{p(10)}$ = ——— cfs.
6. H = 10 ft. Barrel length = 85 ft
7. Barrel: Diam. 12 inches; Q_{ps} = (Q) 10.2 x (cor.fac.) .945 = 9.6 cfs.
8. Riser: Diam. 21 inches; Length 9 ft.; h = 1.0 ft. Crest Elev. 100.0
9. Trash Rack: Diam. 30 inches; H = 11 inches

Emergency Spillway Design

10. Emergency Spillway Flow, Q_{es} = Q_p - Q_{ps} = 88 - 10 = 78 cfs.
11. Width 20 ft.; H_p 1.4 ft Crest elevation 101.0 ; Design High Water Elev. 102.4
    Entrance channel slope 2 % ; Top of Dam Elev. 103.4
    Exit channel slope > 2.7 %

ANTI-SEEP COLLAR/
SEEPAGE DIAPHRAGM DESIGN

Collars:

12. y = 8 ft.; z = 2 :1; pipe slope = 1 %, L_s = 50 ft.
    Use 2 collars, 4' - 6" inches square; projection = 1.8 ft.

Diaphragms:

1 width 7 ft. height 10 ft.

DEWATERING ORIFICE SIZING

13. $Ao = \frac{A_s \times (2h)^{0.5}}{122{,}568}$ = 0.30 sq. ft.; h = 3.5 ft.; therefore use, 7.4" → USE 6" orifice

Figure 5A.24(2)
Sediment Basin Design Example #2

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by DWL Date 1-04 Checked by PLS Date 1-04

Project SNOOKS POND Basin # 1

Location MANLIUS, NY Total Area draining to basin 20 Acres

BASIN SIZE DESIGN

1. Minimum sediment storage volume = 134 cu. yds. x 20 acres of drainage area = 2,680 cu.yds.
2. a. Cleanout at 50 percent of minimum required volume = 1,340 cu. yds.
   b. Elevation corresponding to scheduled time to clean out 96.5
   c. Distance below top of riser 3.5 feet
3. Minimum surface area is larger of 0.01 $Q_{(1)}$ 0.32 or, 0.015 DA = 0.30 use 0.32 acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

4. $Q_{p(10)}$ = 88 cfs
   (EFH, Ch. 2, TR-55, or Section 4; Attach runoff computation sheet)

Pipe Spillway (Q_{ps})

5. Min. pipe spillway cap., Q_{ps} = 0.2 x 20 ac. Drainage = 4 cfs
   Note: If there is no emergency spillway, then req'd Q_{ps} = $Q_{p(10)}$ = 88 cfs.
6. H = 10 ft. Barrel length = 85 ft
7. Barrel: Diam. 36 inches; Q_{ps} = (Q) 91.2 x (cor.fac.) .955 = 87.1 cfs.
8. Riser: Diam. 54 inches; Length 9 ft.; h = 1.7 ft. Crest Elev. 100.0
9. Trash Rack: Diam. 78 inches; H = 25 inches

Emergency Spillway Design

10. Emergency Spillway Flow, Q_{es} = Q_p - Q_{ps} = _____ - _____ = _____ cfs.
11. Width _____ ft.; H_p _____ ft Crest elevation _____; Design High Water Elev. _____
    Entrance channel slope _____ % ; Top of Dam Elev. _____
    Exit channel slope _____ %

ANTI-SEEP COLLAR/
SEEPAGE DIAPHRAGM DESIGN

Collars:

12. y = 8 ft.; z = 2 :1; pipe slope = 1 %, L_s = 50 ft.
    Use 2 collars, 4' - 6 inches square; projection = 1.8 ft.

Diaphragms:

1 width 7 ft. height 10 ft.

DEWATERING ORIFICE SIZING

13. $Ao = \frac{A_s \times (2h)^{0.5}}{122{,}568}$ = 0.30 sq. ft.; h = 3.5 ft.; therefore use, 7.4" → USE 6" orifice

Figure 5A.25
Riser Inflow Chart (USDA - NRCS)

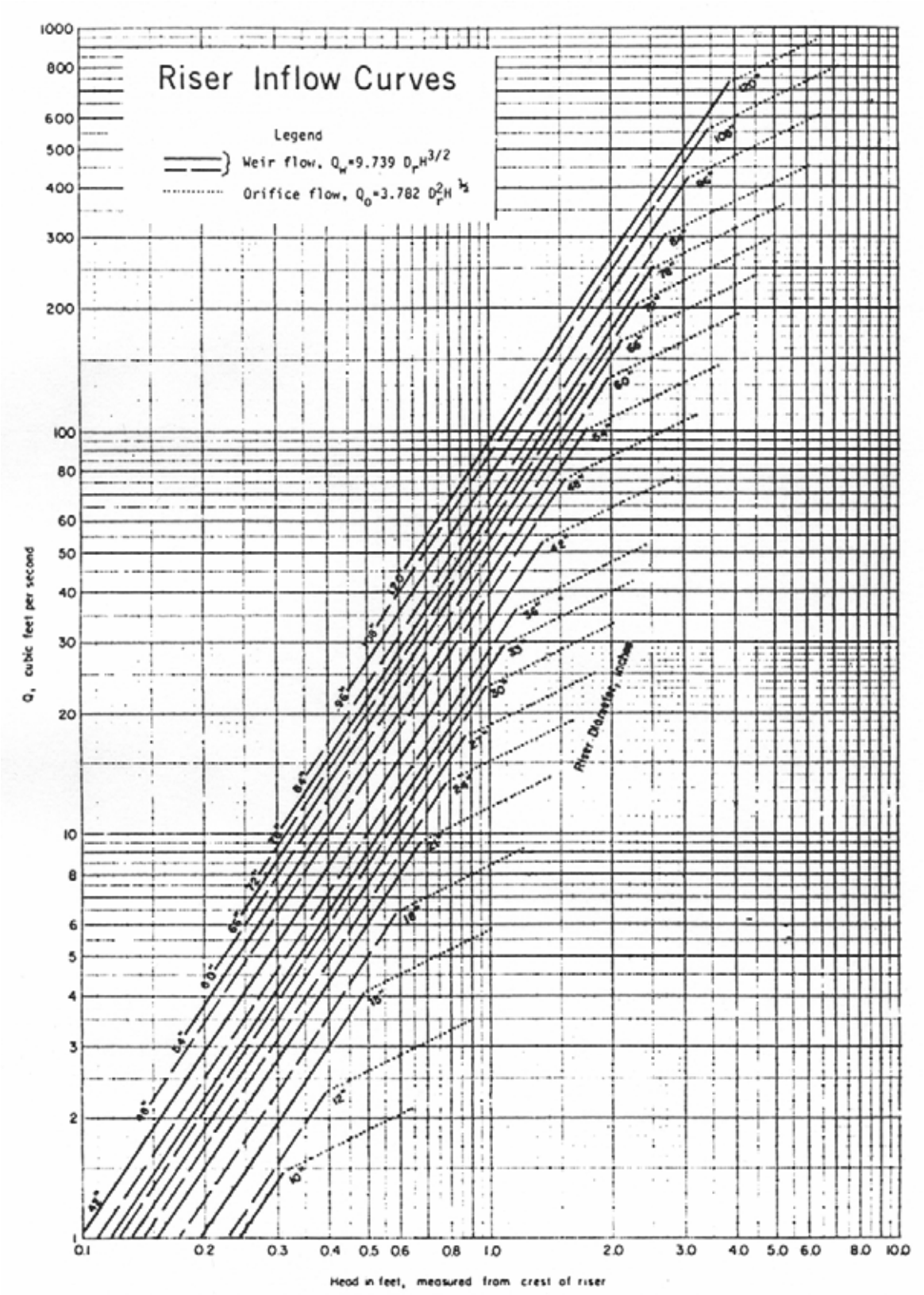


Figure 5A.26
Pipe Flow Chart; "n" = 0.025 (USDA - NRCS)

PIPE FLOW CHART n = 0.025

FOR CORRUGATED METAL PIPE INLET $K_m = K_e + K_b = 1.0$ AND 70 FEET OF CORRUGATED METAL PIPE CONDUIT (full flow assumed)

Note correction factors for pipe lengths other than 70 feet

H, in feet	Diameter of pipe in inches																							
	6"	8"	10"	12"	15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"
1	0.33	0.70	1.25	1.98	3.48	5.47	7.99	11.0	18.8	28.8	41.1	55.7	72.6	91.8	113	137	163	191	222	255	290
2	0.47	0.99	1.76	2.80	4.92	7.74	11.3	15.6	26.6	40.8	58.2	78.8	103	130	160	194	231	271	314	360	410
3	0.58	1.22	2.16	3.43	6.02	9.48	13.8	19.1	32.6	49.9	71.2	96.5	126	159	196	237	282	331	384	441	502
4	0.67	1.40	2.49	3.97	6.96	10.9	16.0	22.1	37.6	57.7	82.3	111	145	184	226	274	326	383	444	510	580
5	0.74	1.57	2.79	4.43	7.78	12.2	17.9	24.7	42.1	64.5	92.0	125	162	205	253	306	365	428	496	570	648
6	0.82	1.72	3.05	4.86	8.52	13.4	19.6	27.0	46.1	70.6	101	136	178	225	277	336	399	469	544	624	710
7	0.88	1.86	3.30	5.25	9.20	14.5	21.1	29.2	49.8	76.3	109	147	192	243	300	362	431	506	587	674	767
8	0.94	1.99	3.53	5.61	9.84	15.5	22.6	31.2	53.2	81.5	116	158	205	260	320	388	461	541	628	721	820
9	1.00	2.11	3.74	5.95	10.4	16.4	24.0	33.1	56.4	86.5	123	167	218	275	340	411	489	574	666	764	870
10	1.05	2.22	3.94	6.27	11.0	17.3	25.3	34.9	59.5	91.2	130	176	230	290	358	433	516	605	702	806	917
11	1.10	2.33	4.13	6.58	11.5	18.2	26.5	36.6	62.4	95.6	136	185	241	304	376	454	541	635	736	845	962
12	1.15	2.43	4.32	6.87	12.1	19.0	27.7	38.2	65.2	99.9	142	193	252	318	392	475	565	663	769	883	1004
13	1.20	2.53	4.49	7.15	12.6	19.7	28.8	39.8	67.8	104	148	201	262	331	408	494	588	690	800	919	1045
14	1.25	2.63	4.66	7.42	13.0	20.5	29.9	41.3	70.4	108	154	208	272	343	424	513	610	716	830	953	1085
15	1.29	2.72	4.83	7.68	13.5	21.2	30.9	42.8	72.8	112	159	216	281	355	439	531	631	741	860	987	1123
16	1.33	2.81	4.99	7.93	13.9	21.9	32.0	44.2	75.2	115	165	223	290	367	453	548	652	765	888	1019	1160
17	1.37	2.90	5.14	8.18	14.3	22.6	32.9	45.5	77.5	119	170	230	229	378	467	565	672	789	915	1051	1195
18	1.41	2.98	5.29	8.41	14.8	23.2	33.9	46.8	79.8	120	174	236	308	389	480	581	692	812	942	1081	1230
19	1.45	3.06	5.43	8.64	15.2	23.9	34.8	48.1	82.0	126	179	243	316	400	494	597	711	834	967	1111	1264
20	1.49	3.14	5.57	8.87	15.6	24.5	35.7	49.4	84.1	129	184	249	325	410	506	613	729	856	993	1139	1297
21	1.53	3.22	5.71	9.09	15.9	25.1	36.6	50.6	86.2	132	188	255	333	421	519	628	747	877	1017	1168	1329
22	1.56	3.29	5.85	9.30	16.3	25.7	37.5	51.8	88.2	135	193	261	341	430	531	643	765	898	1041	1195	1360
23	1.60	3.37	5.98	9.51	16.7	26.2	38.3	53.0	90.2	138	197	267	348	440	543	657	782	918	1064	1222	1390
24	1.63	3.44	6.11	9.72	17.0	26.8	39.1	54.1	92.1	141	201	273	356	450	555	671	799	937	1087	1248	1420
25	1.66	3.51	6.23	9.92	17.4	27.4	39.9	55.2	94.0	144	206	279	363	459	566	685	815	957	1110	1274	1450
26	1.70	3.58	6.36	10.1	17.7	27.9	40.7	56.3	95.9	147	210	284	370	468	577	699	831	976	1132	1299	1478
27	1.73	3.65	6.48	10.3	18.1	28.4	41.5	57.4	97.7	150	214	290	377	477	588	712	847	994	1153	1324	1507
28	1.76	3.72	6.60	10.5	18.4	29.0	42.3	58.4	99.5	153	218	295	384	486	599	725	863	1013	1174	1348	1534
29	1.79	3.78	6.71	10.7	18.7	29.5	43.0	59.5	101	155	221	300	391	494	610	738	878	1030	1195	1372	1561
30	1.82	3.85	6.83	10.9	19.1	30.0	43.7	60.5	103	158	225	305	398	503	620	750	893	1048	1216	1396	1588

L, in feet	Correction Factors For Other Pipe Lengths																				
20	1.69	1.63	1.58	1.53	1.47	1.42	1.37	1.34	1.28	1.24	1.20	1.18	1.16	1.14	1.13	1.11	1.10	1.10	1.09	1.08	1.08
30	1.44	1.41	1.39	1.36	1.32	1.29	1.27	1.24	1.21	1.18	1.15	1.13	1.12	1.11	1.10	1.09	1.08	1.07	1.07	1.06	1.06
40	1.26	1.27	1.25	1.23	1.21	1.20	1.18	1.17	1.14	1.12	1.11	1.10	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.05	1.04
50	1.16	1.16	1.15	1.14	1.13	1.12	1.11	1.10	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.04	1.04	1.04	1.04	1.03	1.03
60	1.07	1.07	1.07	1.06	1.06	1.05	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.01
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
80	.94	.94	.95	.95	.95	.95	.96	.96	.96	.97	.97	.97	.98	.98	.98	.98	.98	.98	.99	.99	.99
90	.89	.89	.90	.90	.91	.91	.92	.92	.93	.94	.94	.95	.95	.96	.96	.96	.97	.97	.97	.97	.94
100	.85	.85	.86	.86	.87	.88	.88	.89	.90	.91	.92	.93	.93	.94	.94	.95	.95	.95	.96	.96	.94
120	.78	.79	.79	.80	.81	.82	.83	.83	.85	.86	.87	.89	.89	.90	.91	.89	.92	.93	.93	.94	.92
140	.72	.73	.74	.75	.76	.77	.78	.79	.81	.82	.84	.85	.86	.87	.88	.86	.89	.90	.91	.91	.90
160	.68	.69	.69	.70	.71	.73	.74	.75	.77	.79	.80	.82	.83	.84	.85	.92	.87	.88	.89	.89	

Figure 5A.27
Pipe Flow Chart; "n" = 0.013 (USDA - NRCS)

PIPE FLOW CHART n = 0.013

FOR REINFORCED CONCRETE PIPE INLET $K_m = K_e + K_b = (1.00$ AND 70 FEET OF REINFORCED CONCRETE PIPE CONDUIT (full flow assumed)

Note correction factors for pipe lengths other than 70 feet

diameter of pipe in inches

H, in feet	12"	15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"
1	3.22	5.44	8.29	11.8	15.9	26.0	38.6	53.8	71.4	91.5	114	139	167	197	229	264	302	342
2	4.55	7.69	11.7	16.7	22.5	36.8	54.6	76.0	101	129	161	197	236	278	324	374	427	483
3	5.57	9.42	14.4	20.4	27.5	45.0	66.9	93.1	124	159	198	241	289	341	397	458	523	592
4	6.43	10.9	16.6	23.5	31.8	52.0	77.3	108	143	183	228	278	334	394	459	529	604	683
5	7.19	12.2	18.5	26.3	35.5	58.1	86.4	120	160	205	255	311	373	440	513	591	675	764
6	7.88	13.3	20.3	28.8	38.9	63.7	94.6	132	175	224	280	341	409	482	562	647	739	837
7	8.51	14.4	21.9	31.1	42.0	68.8	102	142	189	242	302	368	441	521	607	699	798	904
8	9.10	15.4	23.5	33.3	44.9	73.5	109	152	202	259	323	394	472	557	685	748	854	966
9	9.65	16.3	24.9	35.3	47.7	78.0	116	161	214	275	342	418	500	590	688	793	905	1025
10	10.2	17.2	26.2	37.2	50.2	82.2	122	170	226	289	361	440	527	622	725	836	954	1080
11	10.7	18.0	27.5	39.0	52.7	86.2	128	178	237	304	379	462	553	653	761	877	1001	1133
12	11.1	18.9	28.7	40.8	55.0	90.1	134	186	247	317	395	482	578	682	794	916	1045	1184
13	11.6	19.6	29.9	42.4	57.3	93.7	139	194	257	330	411	502	601	710	827	953	1088	1232
14	12.0	20.4	31.0	44.1	59.4	97.3	145	201	267	342	427	521	624	736	858	989	1129	1278
15	12.5	21.1	32.1	45.6	61.5	101	150	208	277	354	442	539	646	762	888	1024	1169	1323
16	12.9	21.8	33.2	47.1	63.5	104	155	215	286	366	457	557	667	787	917	1057	1207	1367
17	13.3	22.4	34.2	48.5	65.5	107	159	222	294	377	471	574	688	812	946	1090	1244	1409
18	13.7	23.1	35.2	49.9	67.4	110	164	228	303	388	484	591	708	835	973	1121	1280	1450
19	14.0	23.7	36.1	51.3	69.2	113	168	234	311	399	497	607	727	858	1000	1152	1315	1489
20	14.4	24.3	37.1	52.6	71.0	116	173	240	319	409	510	623	746	880	1026	1182	1350	1528
21	14.7	24.9	38.0	53.9	72.8	119	177	246	327	419	523	638	764	902	1051	1211	1383	1566
22	15.1	25.5	38.9	55.2	74.5	122	181	252	335	429	535	653	782	923	1076	1240	1415	1603
23	15.4	26.1	39.8	56.5	76.2	125	186	258	342	439	547	668	800	944	1100	1268	1447	1639
24	15.8	26.7	40.6	57.7	77.8	127	189	263	350	448	559	682	817	964	1123	1295	1478	1674
25	16.1	27.2	41.5	58.9	79.4	130	193	269	357	458	571	696	834	984	1147	1322	1509	1708
26	16.4	27.7	42.3	60.0	81.0	133	197	274	364	467	582	710	850	1004	1169	1348	1539	1742
27	16.7	28.3	43.1	61.2	82.5	135	201	279	371	476	593	723	867	1023	1192	1373	1568	1775
28	17.0	28.8	43.9	62.3	84.1	138	204	285	378	484	604	737	883	1041	1214	1399	1597	1808
29	17.3	29.3	44.7	63.4	85.5	140	208	290	384	493	615	750	898	1060	1235	1423	1625	1840
30	17.6	29.8	45.4	64.5	87.0	142	212	294	391	501	625	763	913	1078	1256	1448	1653	1871

Correction Factors For Other Pipe Lengths

L, in feet																		
20	1.30	1.24	1.21	1.18	1.15	1.12	1.10	1.08	1.07	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.03
30	1.22	1.18	1.15	1.13	1.12	1.09	1.08	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02
40	1.15	1.13	1.11	1.10	1.08	1.07	1.05	1.05	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02
50	1.09	1.08	1.07	1.06	1.05	1.04	1.04	1.03	1.03	1.02	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01
60	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
80	.96	.97	.97	.97	.98	.98	.98	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
90	.93	.94	.94	.95	.95	.96	.97	.97	.98	.98	.98	.98	.98	.99	.99	.99	.99	.99
100	.90	.91	.92	.93	.93	.95	.95	.96	.97	.97	.97	.98	.98	.98	.98	.98	.98	.99
120	.84	.86	.87	.89	.90	.91	.93	.94	.94	.95	.96	.96	.96	.97	.97	.97	.97	.98
140	.80	.82	.83	.85	.86	.88	.90	.91	.92	.93	.94	.94	.95	.95	.96	.96	.96	.97
160	.76	.78	.80	.82	.83	.86	.88	.89	.90	.91	.92	.93	.94	.94	.95	.95	.95	.96

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by H. McMillen Date 6-15-20 Checked by RLZ Date _____
Project Howe Lane Subdivision Basin # 1
Location Stage 2 Total Area draining to basin (≤50 Ac.) 9.184 Acres

BASIN SIZE DESIGN

1. Sediment storage zone volume = 1,000 cu. ft. x number of disturbed acres = 7,820 (7.82) cu. ft., Top of Zone Elev. 690
2. Dewatering zone volume = 3,600 cu. ft. x number of drainage area acres = 33,062 cu. ft., Top of Zone Elev. 695
3. Length to width ratio = 2:1
4. A. Cleanout at 50% of sediment storage zone volume, Elev. 683.49
   B. Distance below top of riser 1.51 feet
5. Minimum surface area is larger of 0.01 $Q_{(10)}$ 0.21 or, 0.015 DA = 0.14 use 0.21 acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

6. $Q_{p(10)}$ = 19.79 cfs (Attach runoff computation sheets)

Pipe Spillway (Q_{ps})

7. Min. pipe spillway cap., Q_{ps} = 0.2 x _____ Drainage Area, acres = _____ cfs
   Note: If there is no emergency spillway, then required $Q_{ps} = Q_{p(10)}$ = _____ cfs.
8. H, head = _____ ft. Barrel length = _____ ft
9. Barrel: Diam. _____ inches; Q_{ps} = (Q) _____ x (cor.fac.) _____ = _____ cfs.
10. Riser: Diam. _____ inches; Length _____ ft.; h = _____ ft. Crest Elev. _____
11. Trash Rack: Diameter = _____ inches; H, height = _____ inches

Design per HydroCAD

Emergency Spillway Design

12. Emergency Spillway Flow, $Q_{es} = Q_p - Q_{ps}$ = _____ - _____ = _____ cfs.
13. Width _____ ft.; H_p _____ ft Crest elevation _____; Design High Water Elev. _____
    Entrance channel slope _____ % ; Top of Dam Elev. _____
    Exit channel slope _____ %

ANTI-SEEP COLLAR/SEEPAGE DIAPHRAGM DESIGN

Collars:

14. y = _____ ft.; z = _____ :1; pipe slope = _____ %, L_s = _____ ft.
    Use _____ collars, _____ - _____ inches square; projection = _____ ft.

→ see 5/27/20 Kenney Geotech report for justification of non-usage

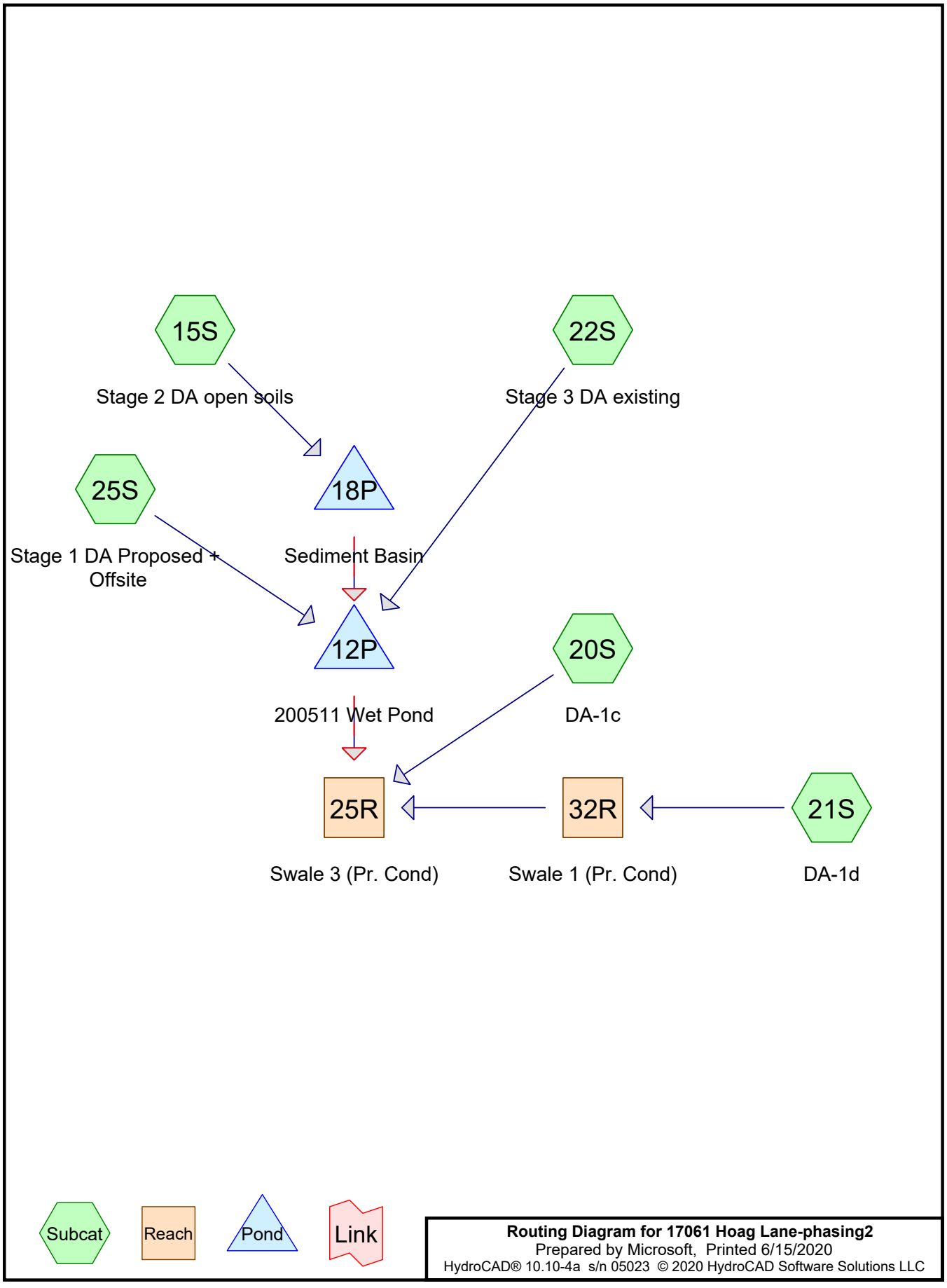
Diaphragms:

_____ width _____ ft. height _____ ft.

DEWATERING ORIFICE SIZING

(Determined from the Dewatering Device Standard)

15. Dewatering orifice diameter = 5.5 inches. Skimmer X or Riser ___ (check one)
16. Design dewatering time 2 days (Min. 2 days required)



Routing Diagram for 17061 Hoag Lane-phasing2
Prepared by Microsoft, Printed 6/15/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 15S: Stage 2 DA open soils

Runoff = 39.44 cfs @ 12.14 hrs, Volume= 3.174 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
33,147	55	Woods, Good, HSG B
9,714	70	Woods, Good, HSG C
340,639	91	Newly graded area, HSG C
383,500	87	Weighted Average
383,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.39"
2.7	234	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	227	0.1280	3.58		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.1	52	0.0400	8.03	4.38	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.0	140	0.2070	58.97	3,361.40	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=3.00' Z= 3.0 '/' Top.W=28.00' n= 0.018 Earth, clean & straight
21.9	753	Total			

Summary for Subcatchment 22S: Stage 3 DA existing

Runoff = 17.44 cfs @ 12.20 hrs, Volume= 1.563 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
59,680	55	Woods, Good, HSG B
140,307	70	Woods, Good, HSG C
16,841	98	Paved parking, HSG C
84,654	74	>75% Grass cover, Good, HSG C
7,122	61	>75% Grass cover, Good, HSG B
308,604	70	Weighted Average
291,763		94.54% Pervious Area
16,841		5.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0800	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.39"
4.2	471	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	24	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	45	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	60	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	73	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.5	259	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.4	1,044	Total			

Summary for Subcatchment 25S: Stage 1 DA Proposed + Offsite

Runoff = 50.53 cfs @ 12.74 hrs, Volume= 8.598 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (sf)	CN	Description
	205,473	79	1 acre lots, 20% imp, HSG C
	375,052	65	2 acre lots, 12% imp, HSG B
	609,971	55	Woods, Good, HSG B
	383,981	70	Woods, Good, HSG C
	253,130	79	50-75% Grass cover, Fair, HSG C
*	47,480	98	Proposed Site Impervious
*	13,068	98	Permanent Pool of Wet Pond
	1,888,155	67	Weighted Average
	1,741,506		92.23% Pervious Area
	146,649		7.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Summary for Pond 12P: 200511 Wet Pond

Inflow Area = 59.235 ac, 6.34% Impervious, Inflow Depth = 2.61" for 100-yr event
Inflow = 65.38 cfs @ 12.61 hrs, Volume= 12.872 af
Outflow = 60.04 cfs @ 12.87 hrs, Volume= 12.739 af, Atten= 8%, Lag= 15.7 min
Primary = 60.04 cfs @ 12.87 hrs, Volume= 12.739 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 4
Starting Elev= 671.00' Surf.Area= 13,672 sf Storage= 30,510 cf
Peak Elev= 675.27' @ 12.87 hrs Surf.Area= 29,836 sf Storage= 117,376 cf (86,866 cf above start)

Plug-Flow detention time= 195.2 min calculated for 12.037 af (94% of inflow)
Center-of-Mass det. time= 143.9 min (1,029.4 - 885.5)

Volume	Invert	Avail.Storage	Storage Description
#1	665.00'	159,782 cf	**Pond (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
665.00	622	0	0
666.00	1,412	1,017	1,017
667.00	2,440	1,926	2,943
668.00	4,748	3,594	6,537
669.00	6,541	5,645	12,182
670.00	8,222	7,382	19,563
671.00	13,672	10,947	30,510
672.00	15,804	14,738	45,248
673.00	18,037	16,921	62,169
674.00	24,162	21,100	83,268
675.00	28,220	26,191	109,459
676.00	34,146	31,183	140,642
676.50	42,414	19,140	159,782

Device	Routing	Invert	Outlet Devices
#1	Primary	665.20'	**24.0" Round Outlet Culvert X 2.00** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 665.20' / 665.00' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	675.50'	**Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 Width (feet) 15.00 25.00
#3	Device 1	671.00'	**2.0" W x 3.0" H Vert. 2"x3" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	675.45'	**24.0" Horiz. Rims X 2.00** C= 0.600 Limited to weir flow at low heads
#5	Device 1	673.45'	**Rectangular Orifice X 2.00, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 1.50 Width (feet) 4.00 4.00 0.00

Primary OutFlow Max=60.08 cfs @ 12.87 hrs HW=675.27' (Free Discharge)
└**1=Outlet Culvert** (Passes 60.08 cfs of 91.13 cfs potential flow)
  ├**3=2"x3" Orifice** (Orifice Controls 0.41 cfs @ 9.81 fps)
  ├**4=Rims** (Controls 0.00 cfs)
  └**5=Rectangular Orifice** (Orifice Controls 59.67 cfs @ 4.97 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=671.00' (Free Discharge)
└**2=Spillway** (Controls 0.00 cfs)

Summary for Pond 18P: Sediment Basin

Inflow Area = 8.804 ac, 0.00% Impervious, Inflow Depth = 4.33" for 100-yr event
Inflow = 39.44 cfs @ 12.14 hrs, Volume= 3.174 af
Outflow = 9.58 cfs @ 12.58 hrs, Volume= 2.711 af, Atten= 76%, Lag= 26.1 min
Primary = 9.58 cfs @ 12.58 hrs, Volume= 2.711 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 693.99' @ 12.58 hrs Surf.Area= 26,040 sf Storage= 58,837 cf

Plug-Flow detention time= 123.3 min calculated for 2.711 af (85% of inflow)
Center-of-Mass det. time= 56.6 min (864.0 - 807.4)

Volume	Invert	Avail.Storage	Storage Description
#1	688.00'	18,058 cf	**Sediment Storage Zone (Prismatic)**Listed below (Recalc)
#2	691.00'	57,082 cf	**Dewatering Zone (Prismatic)**Listed below (Recalc)
		75,140 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
688.00	7,846	0	0
689.00	9,013	8,430	8,430
690.00	10,244	9,629	18,058

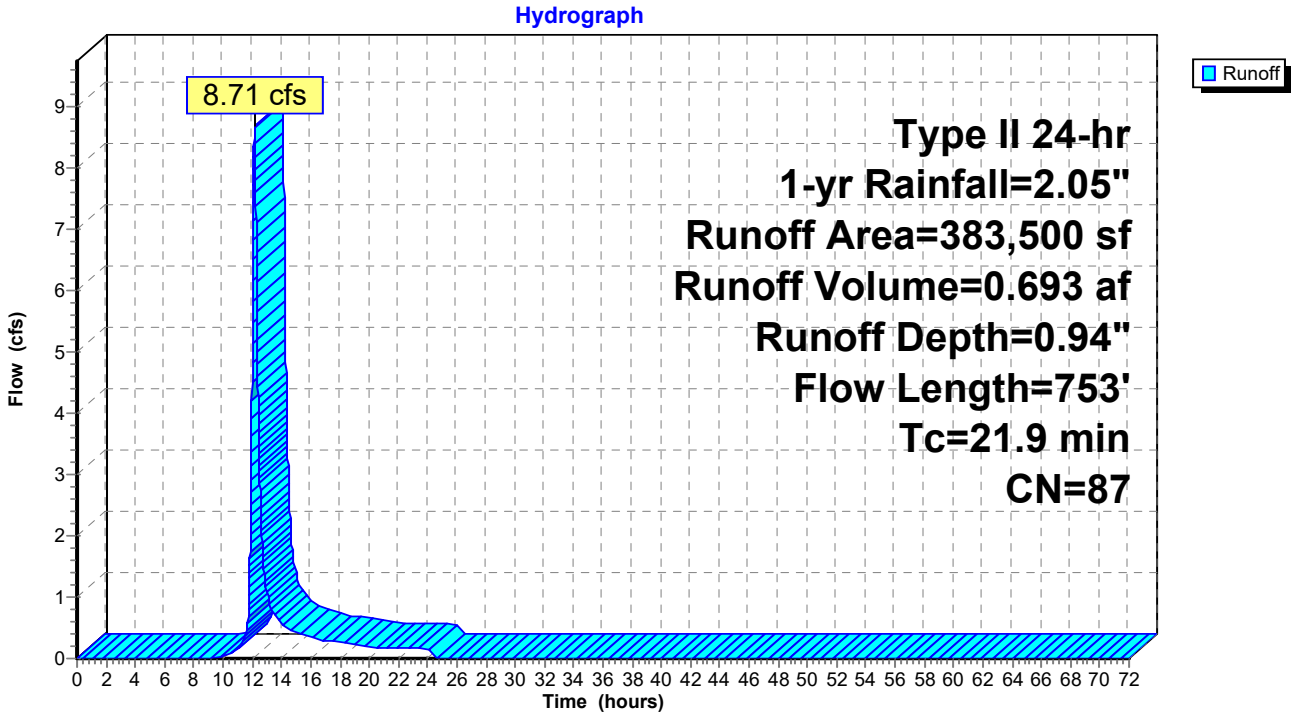
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
691.00	11,539	0	0
692.00	12,898	12,219	12,219
693.00	14,320	13,609	25,828
694.00	15,807	15,064	40,891
695.00	16,575	16,191	57,082

Device	Routing	Invert	Outlet Devices
#1	Primary	684.00'	**12.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 684.00' / 683.00' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	690.00'	**15.0" Horiz. Standpipe** C= 0.600 Limited to weir flow at low heads
#3	Secondary	694.00'	**Emergency Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 10.00 15.00

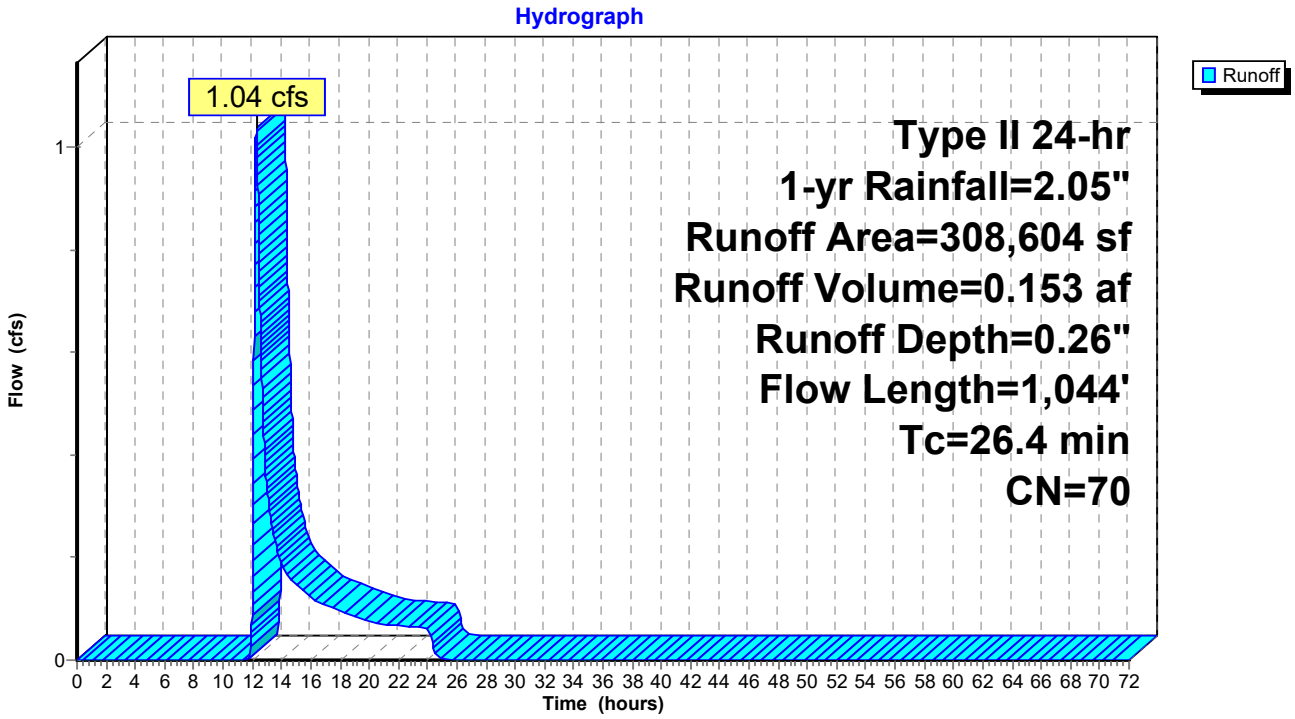
Primary OutFlow Max=9.58 cfs @ 12.58 hrs HW=693.99' (Free Discharge)
└**1=Culvert** (Barrel Controls 9.58 cfs @ 12.20 fps)
└**2=Standpipe** (Passes 9.58 cfs of 11.81 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=688.00' (Free Discharge)
└**3=Emergency Spillway** (Controls 0.00 cfs)

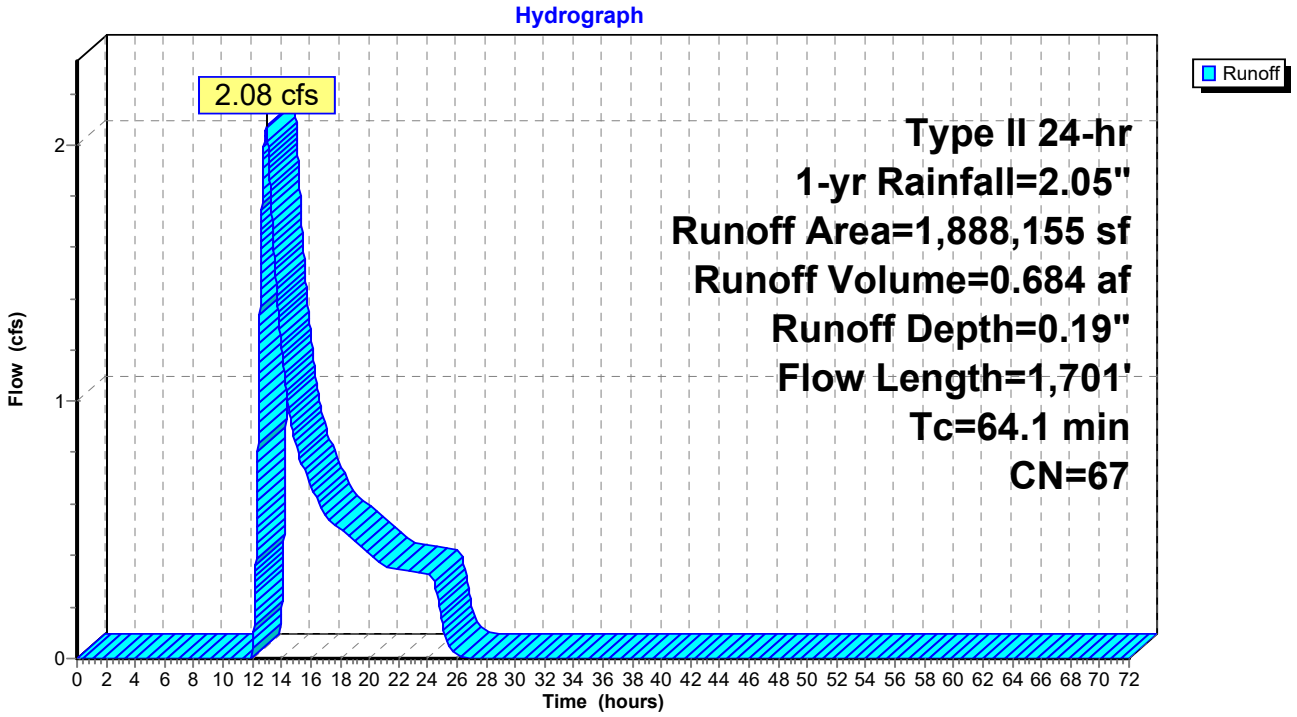
Subcatchment 15S: Stage 2 DA open soils



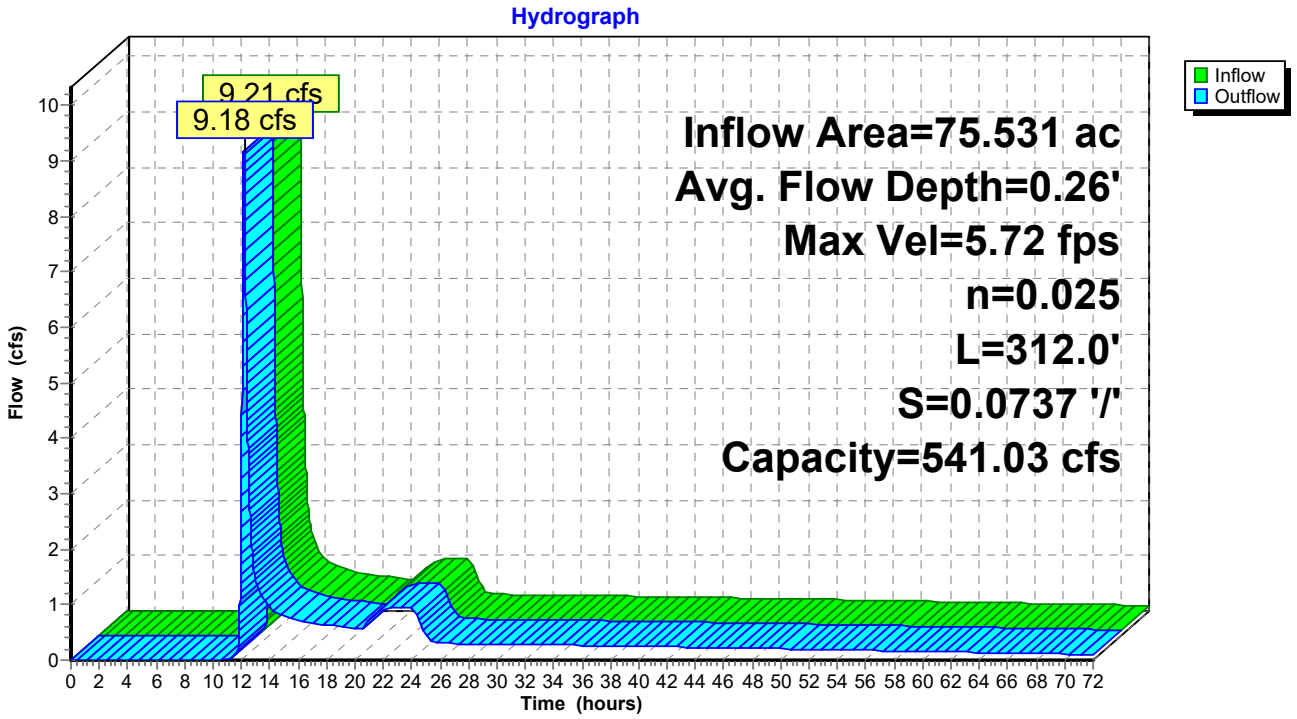
Subcatchment 22S: Stage 3 DA existing



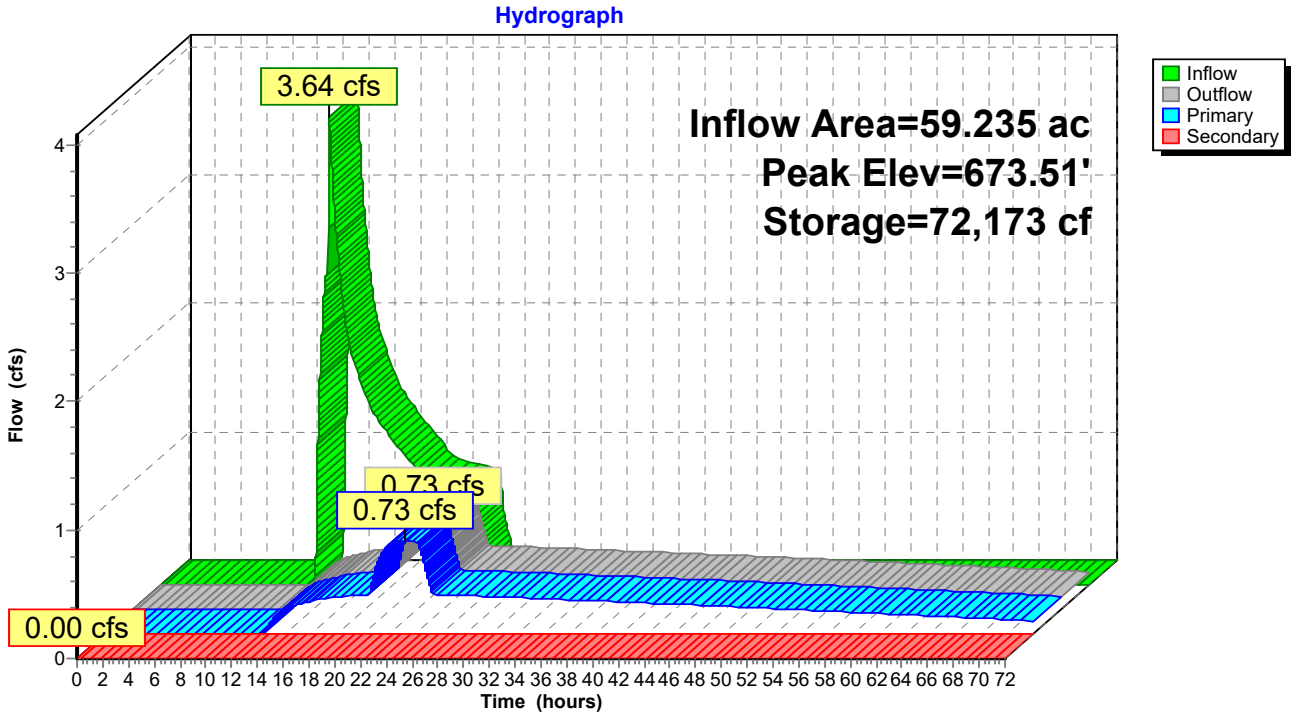
Subcatchment 25S: Stage 1 DA Proposed + Offsite



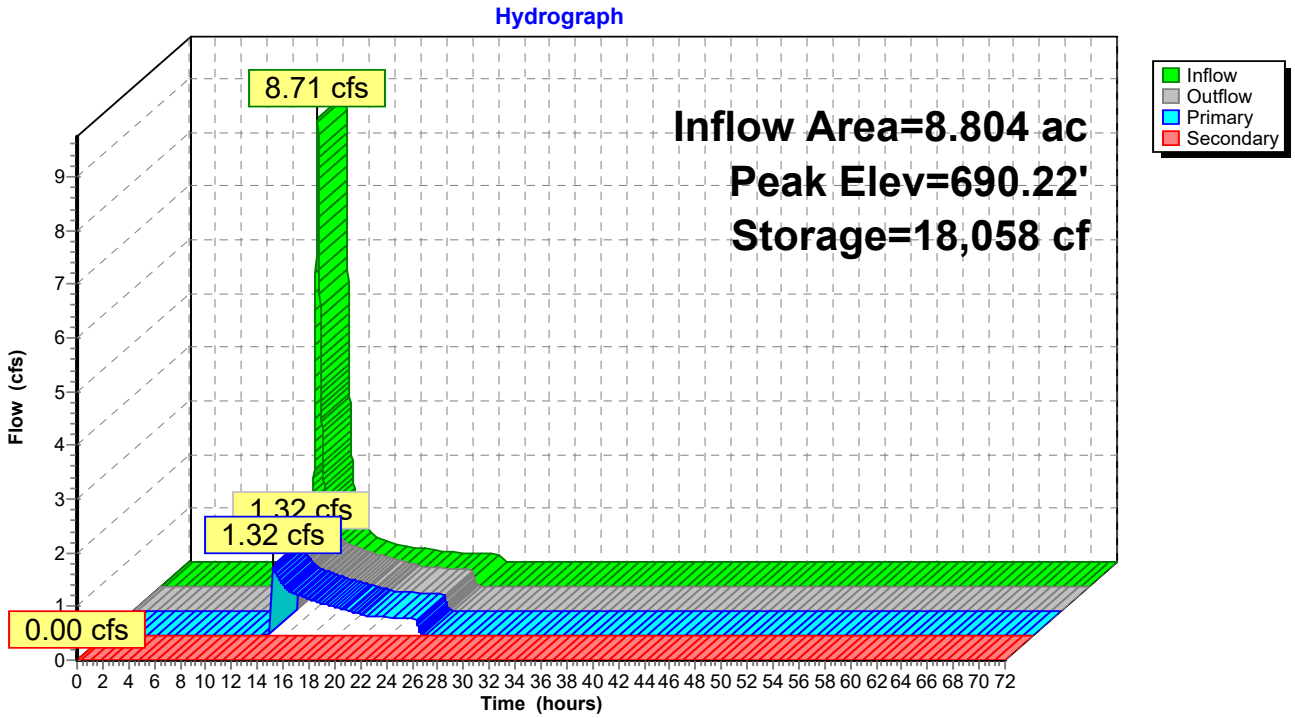
Reach 25R: Swale 3 (Pr. Cond)



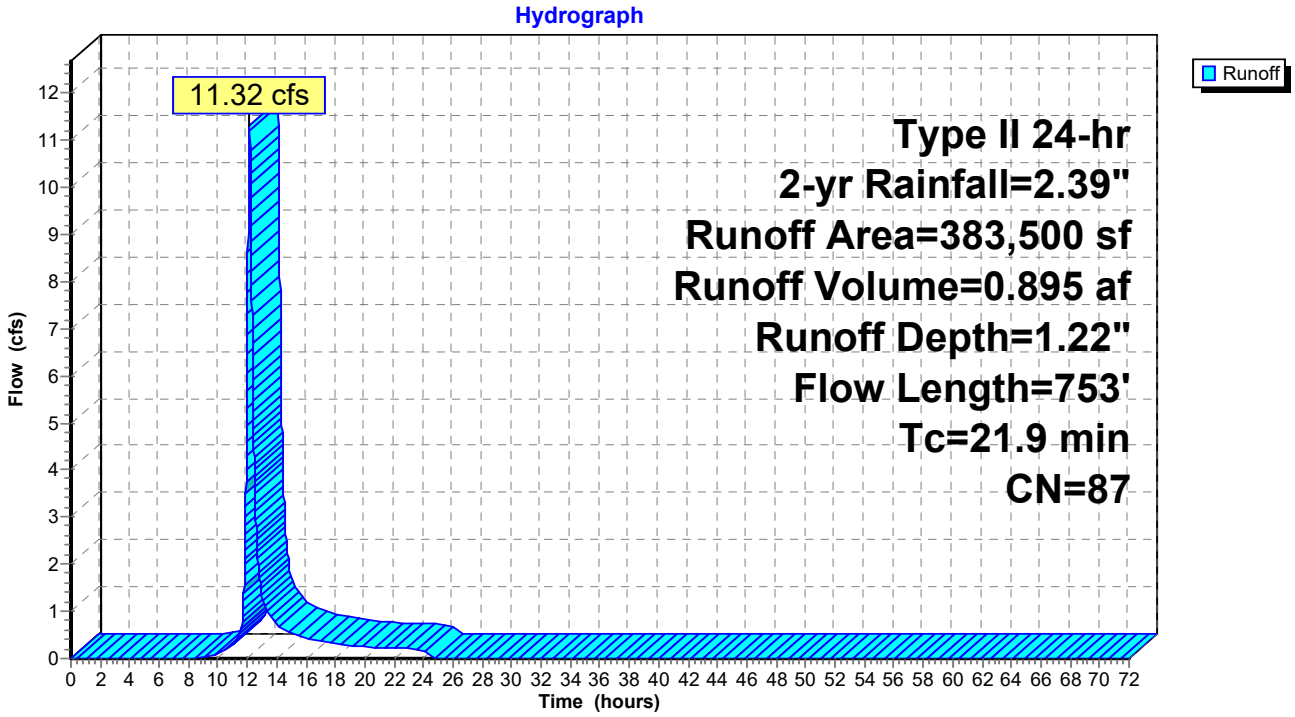
Pond 12P: 200511 Wet Pond



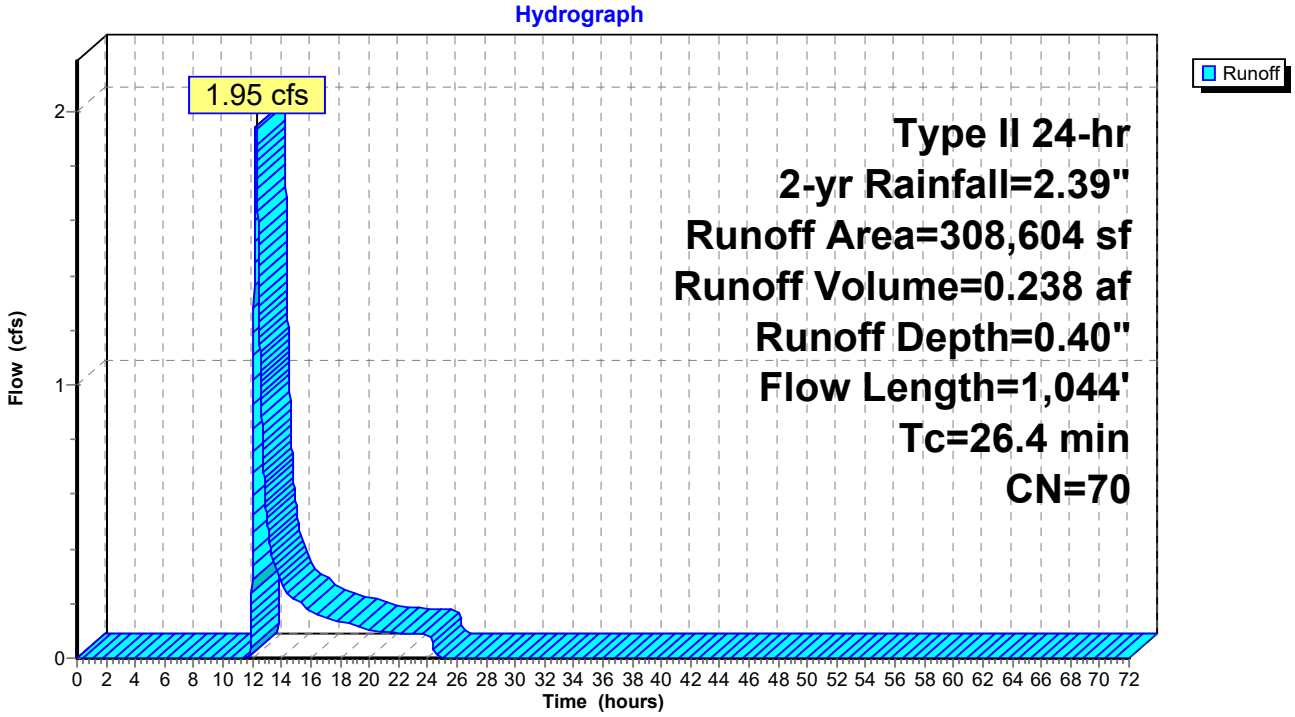
Pond 18P: Sediment Basin



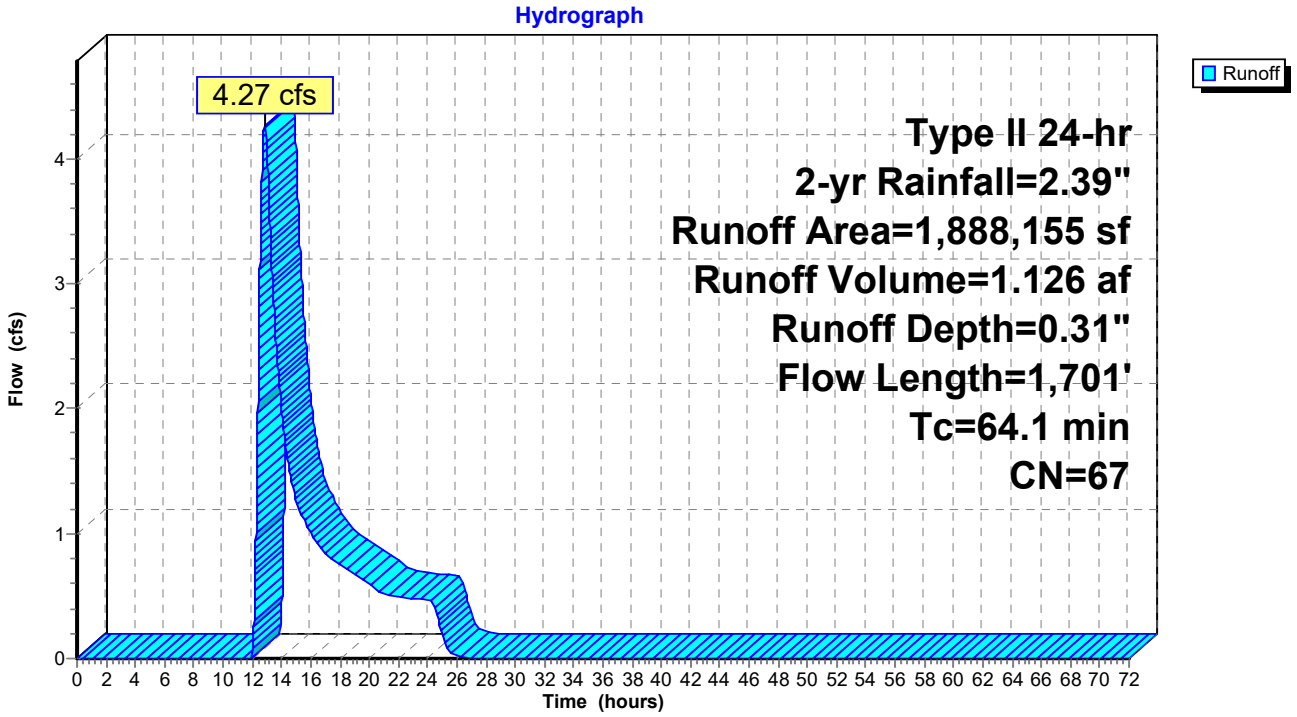
Subcatchment 15S: Stage 2 DA open soils



Subcatchment 22S: Stage 3 DA existing



Subcatchment 25S: Stage 1 DA Proposed + Offsite



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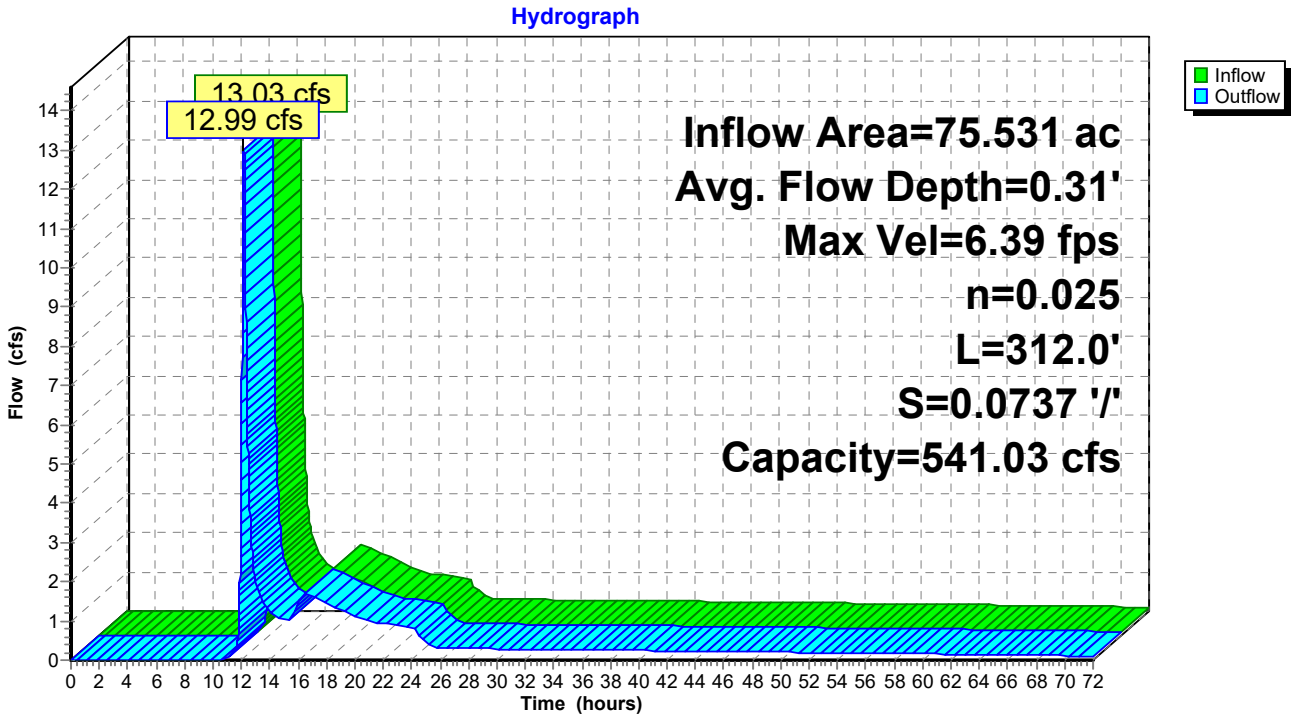
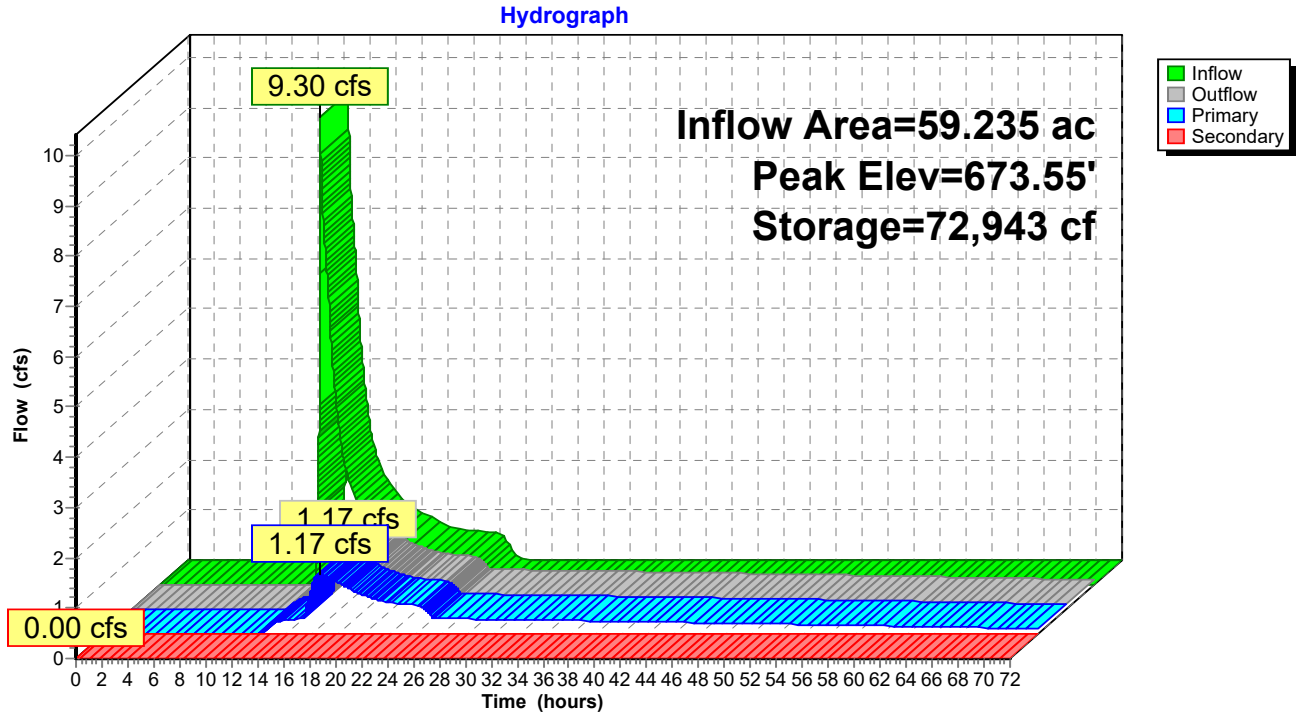
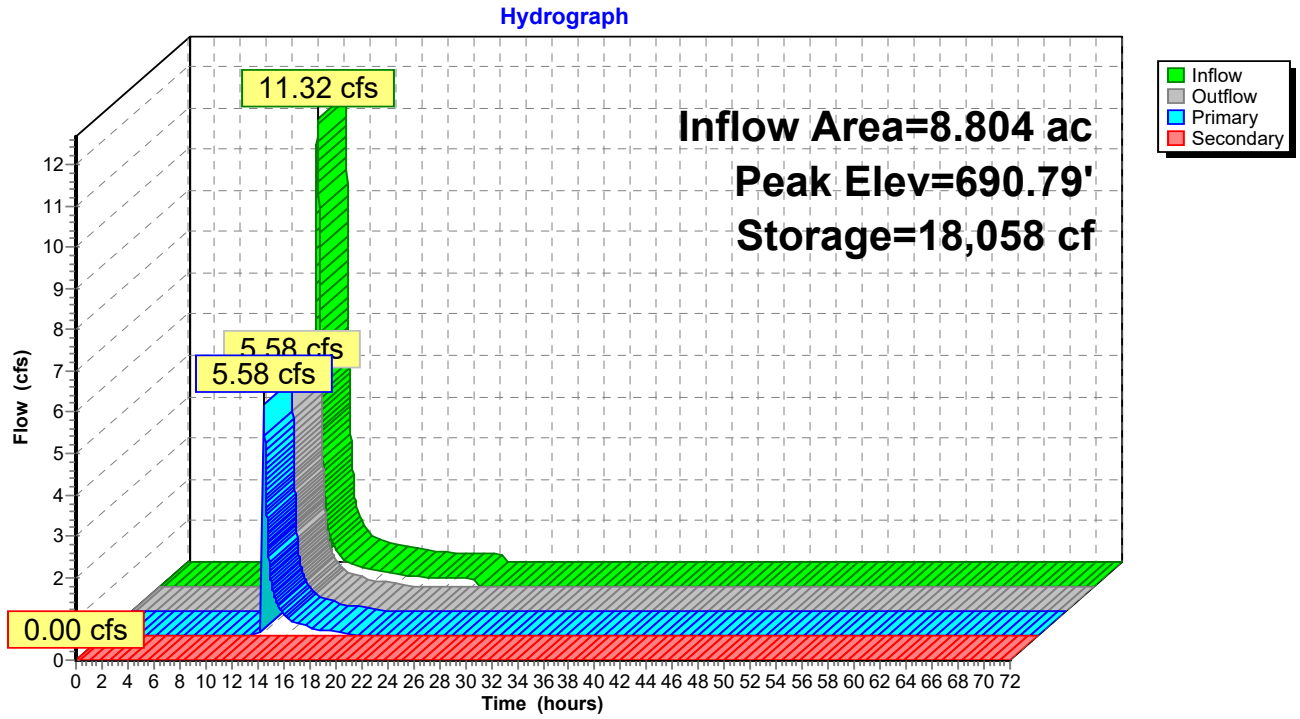


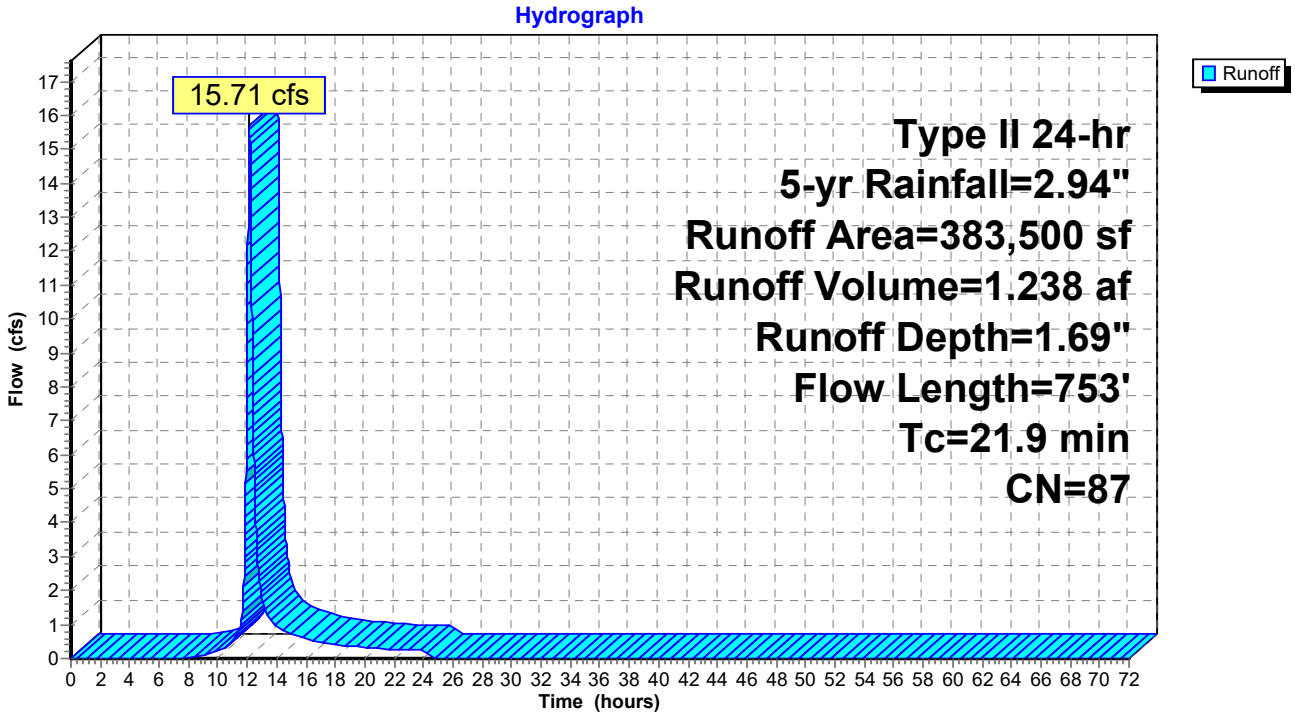
Pond 12P: 200511 Wet Pond



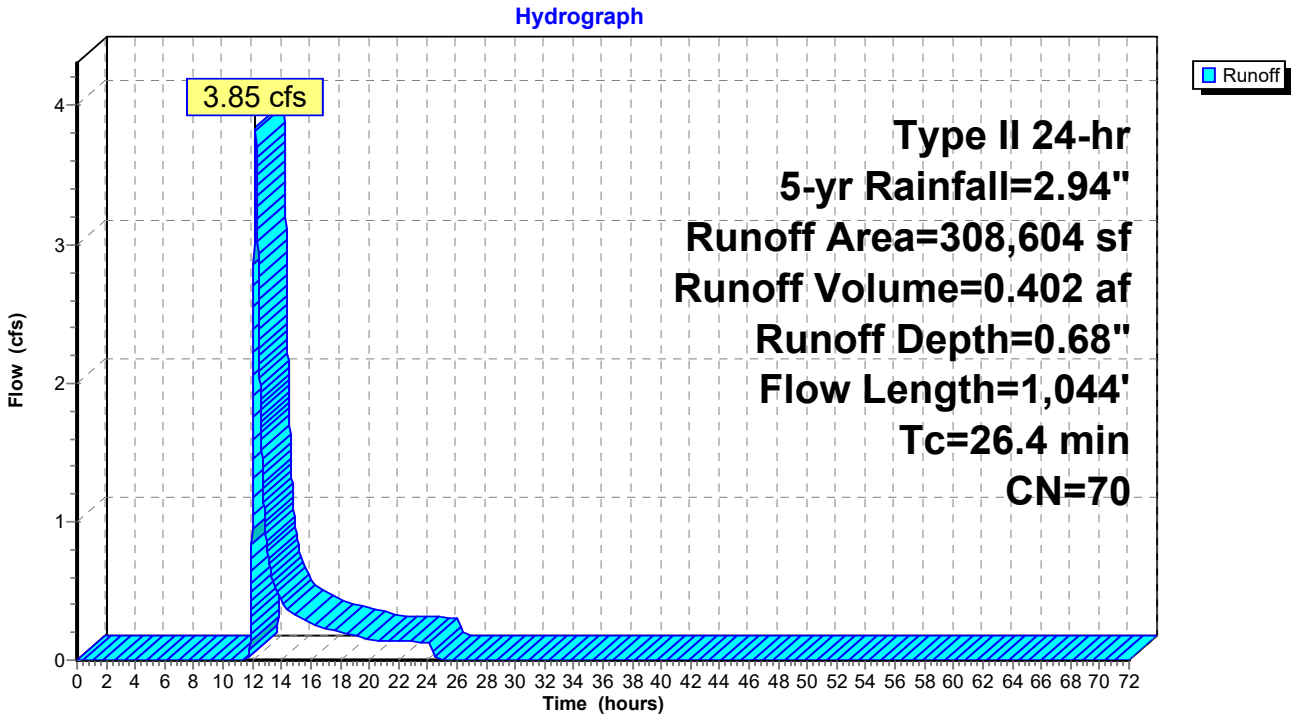
Pond 18P: Sediment Basin



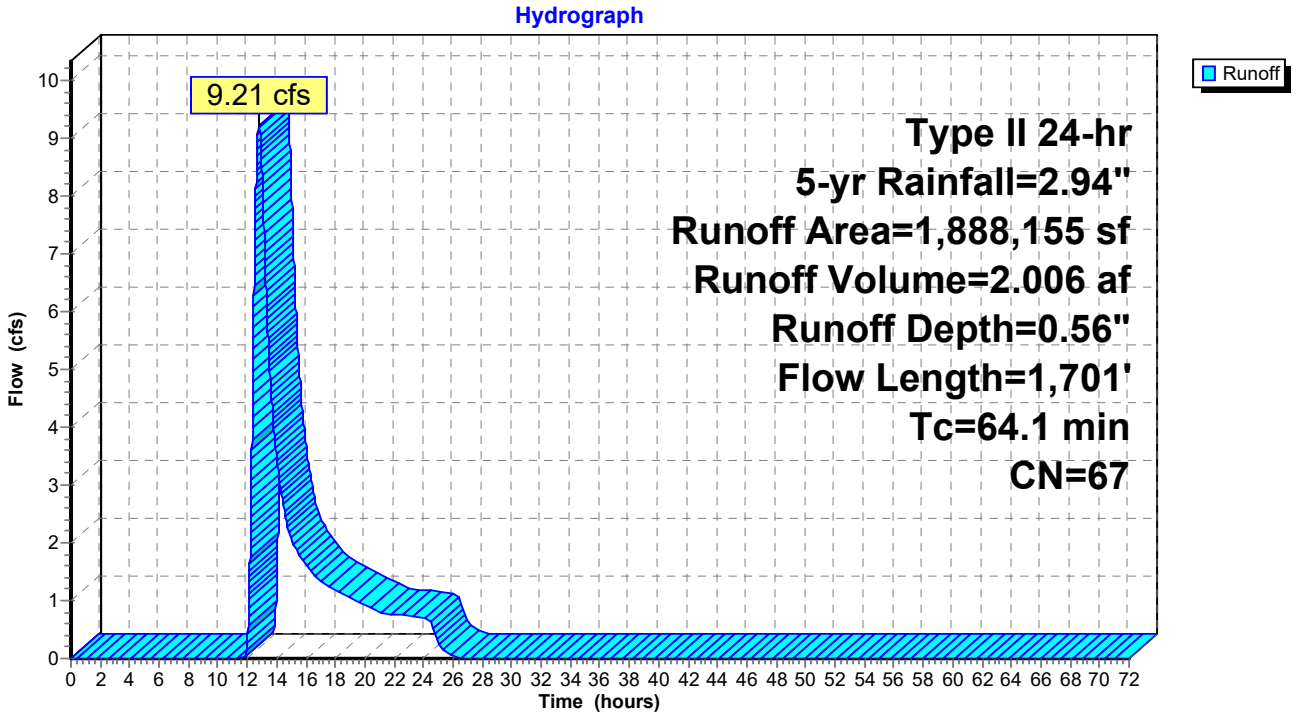
Subcatchment 15S: Stage 2 DA open soils



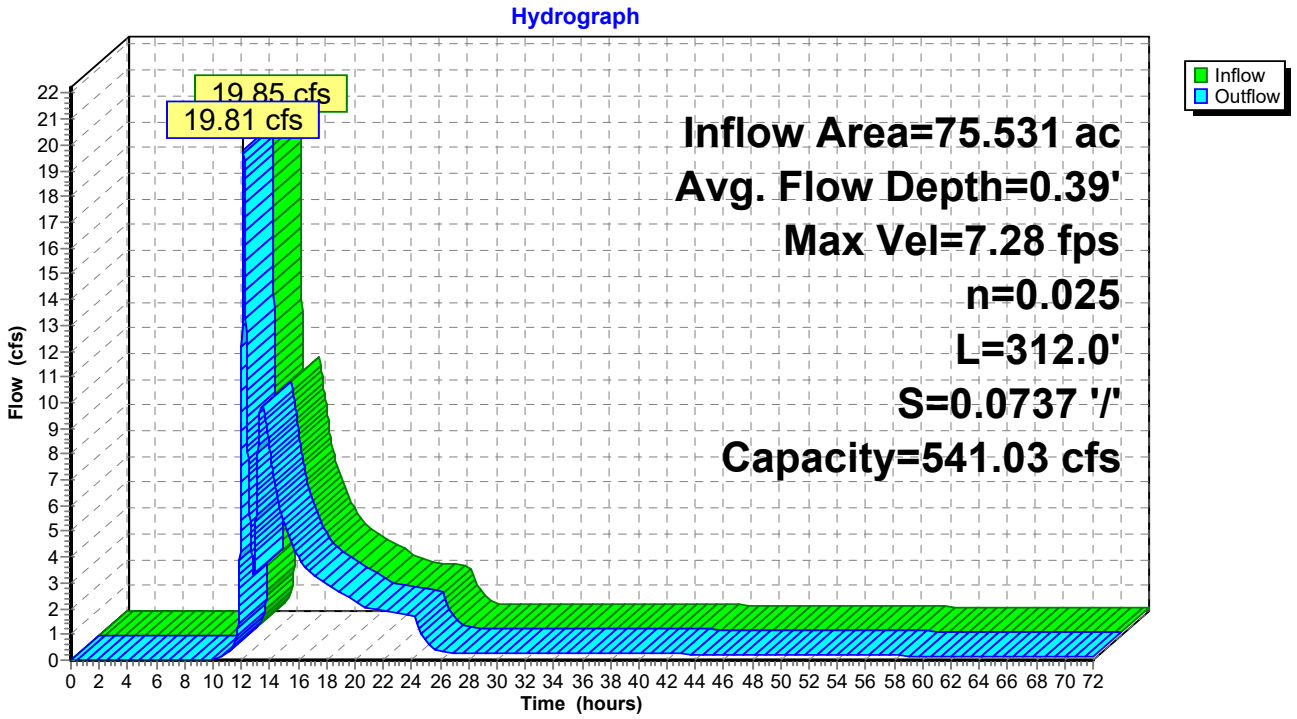
Subcatchment 22S: Stage 3 DA existing



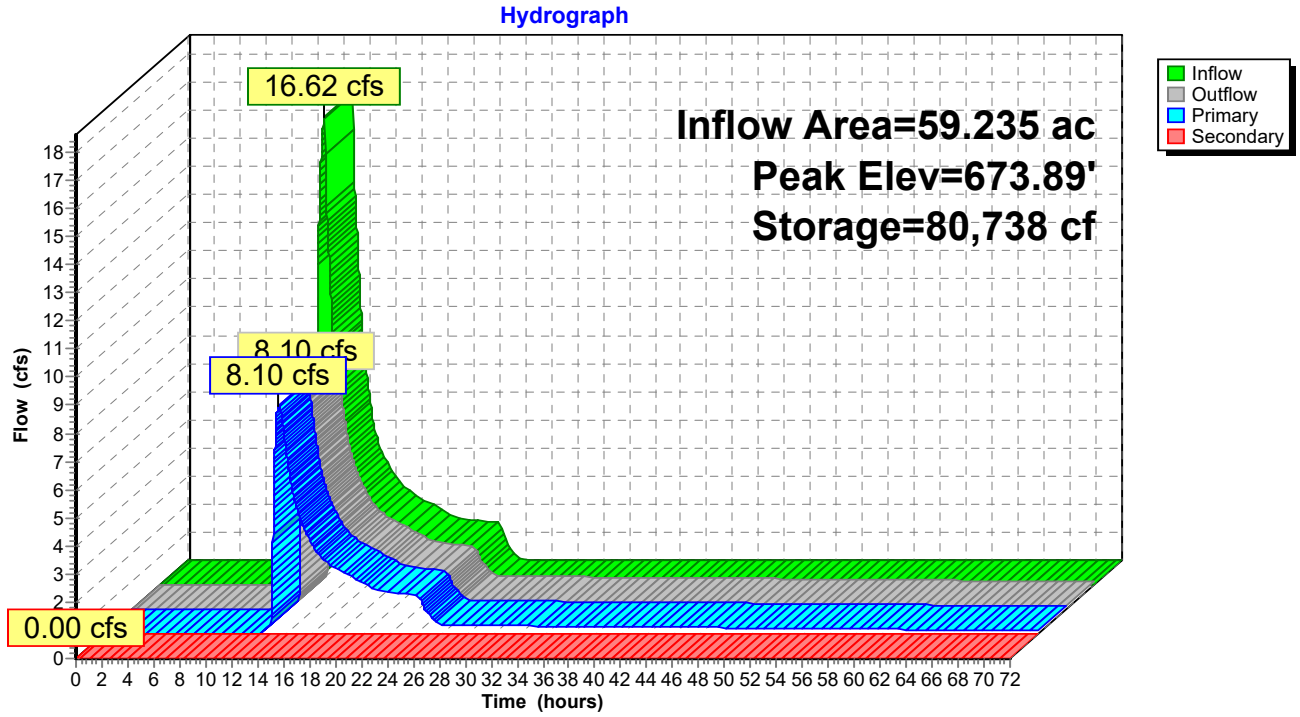
Subcatchment 25S: Stage 1 DA Proposed + Offsite



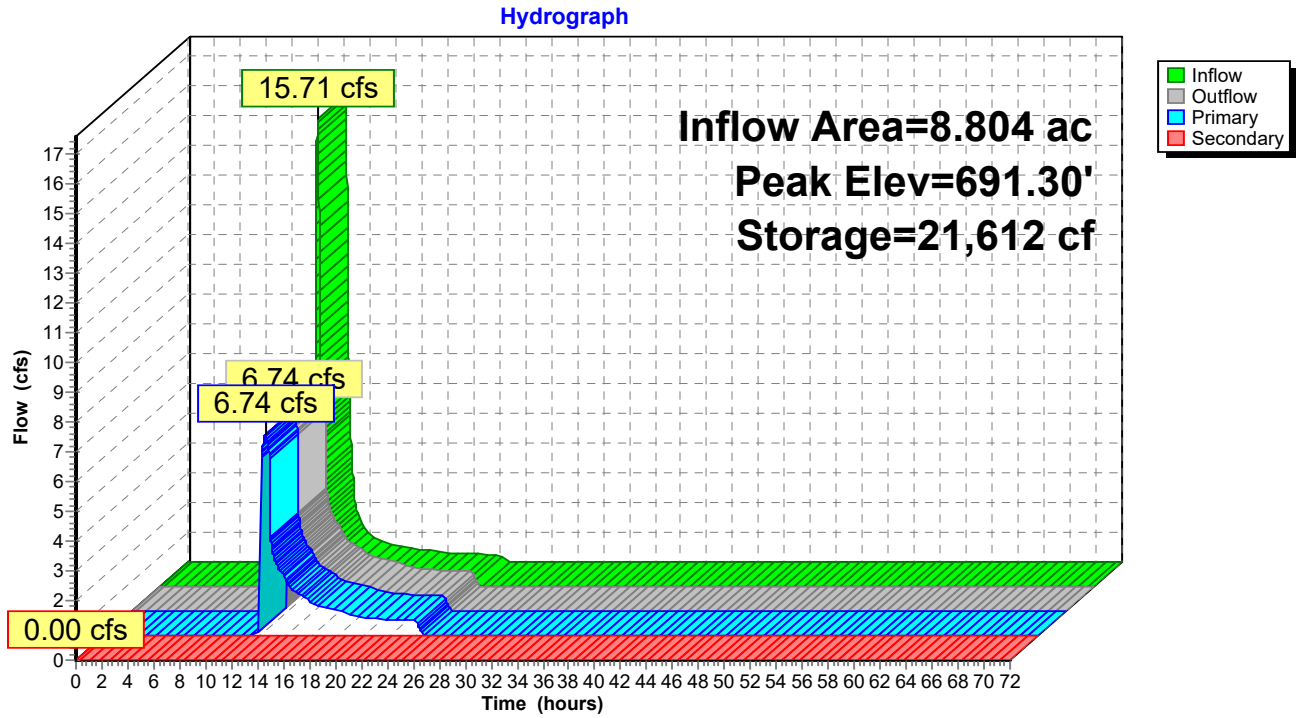
Reach 25R: Swale 3 (Pr. Cond)



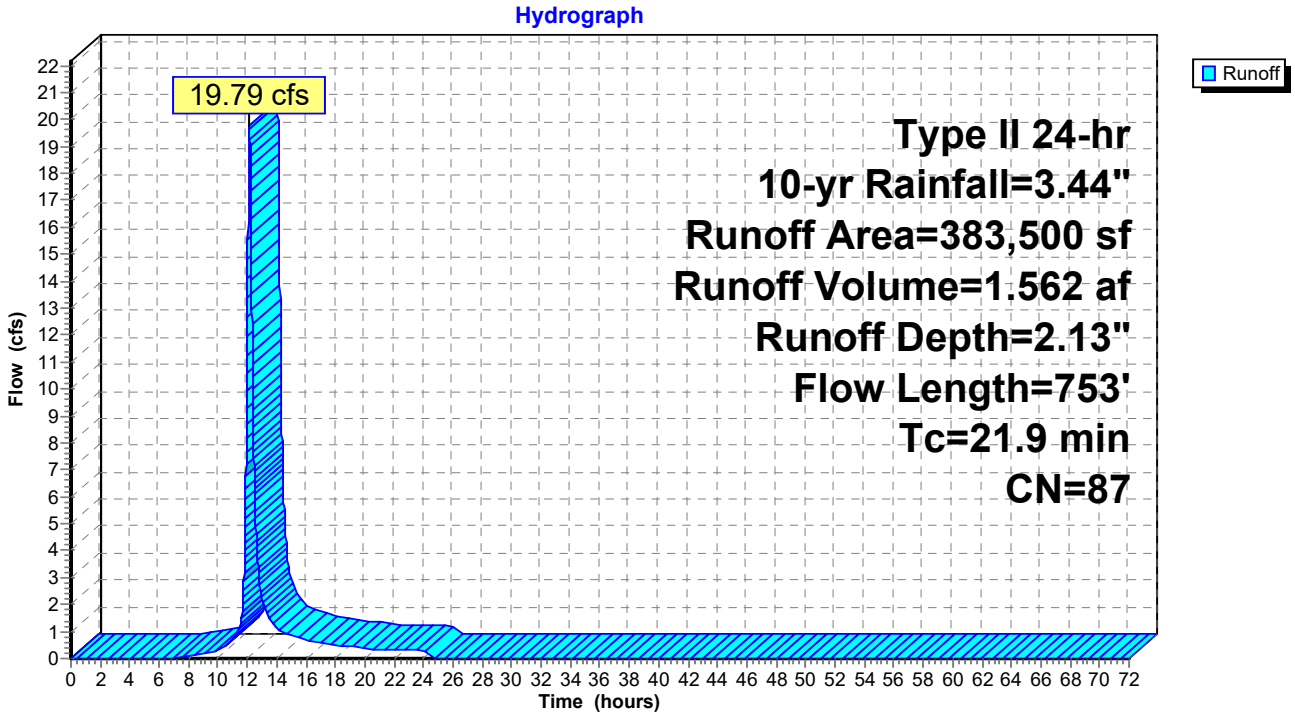
Pond 12P: 200511 Wet Pond



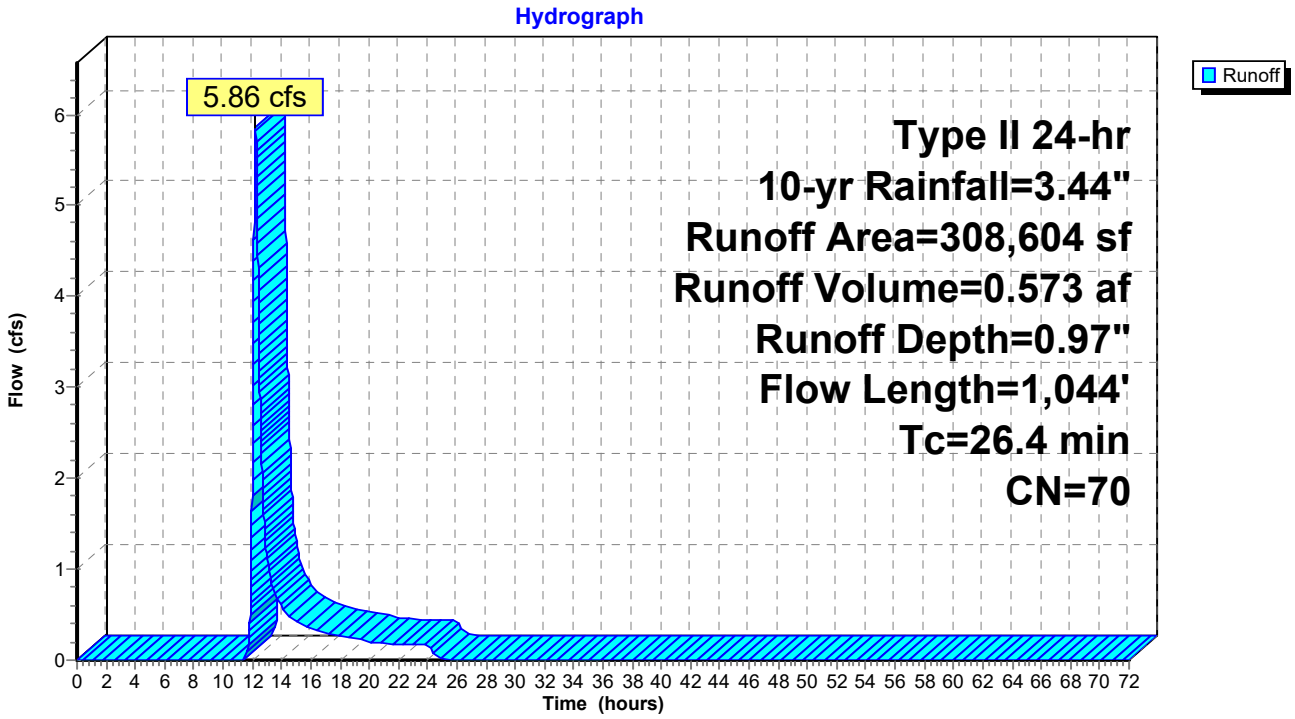
Pond 18P: Sediment Basin



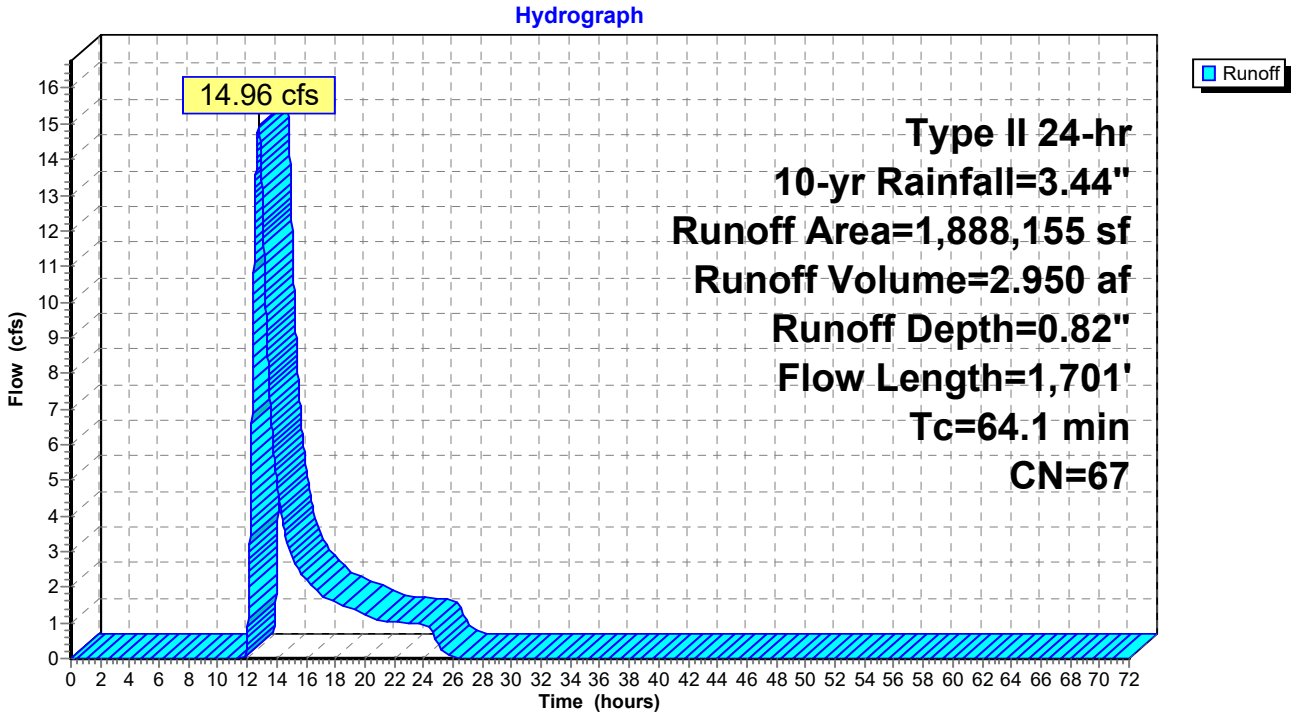
Subcatchment 15S: Stage 2 DA open soils



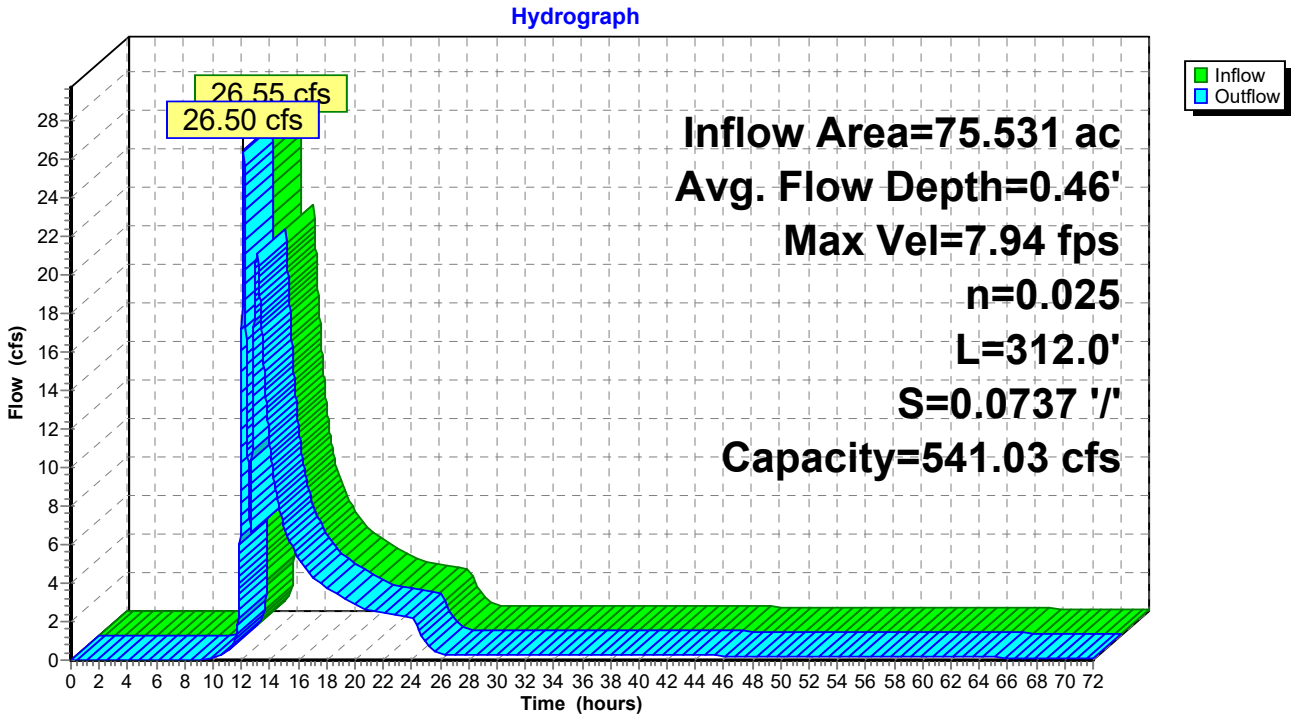
Subcatchment 22S: Stage 3 DA existing



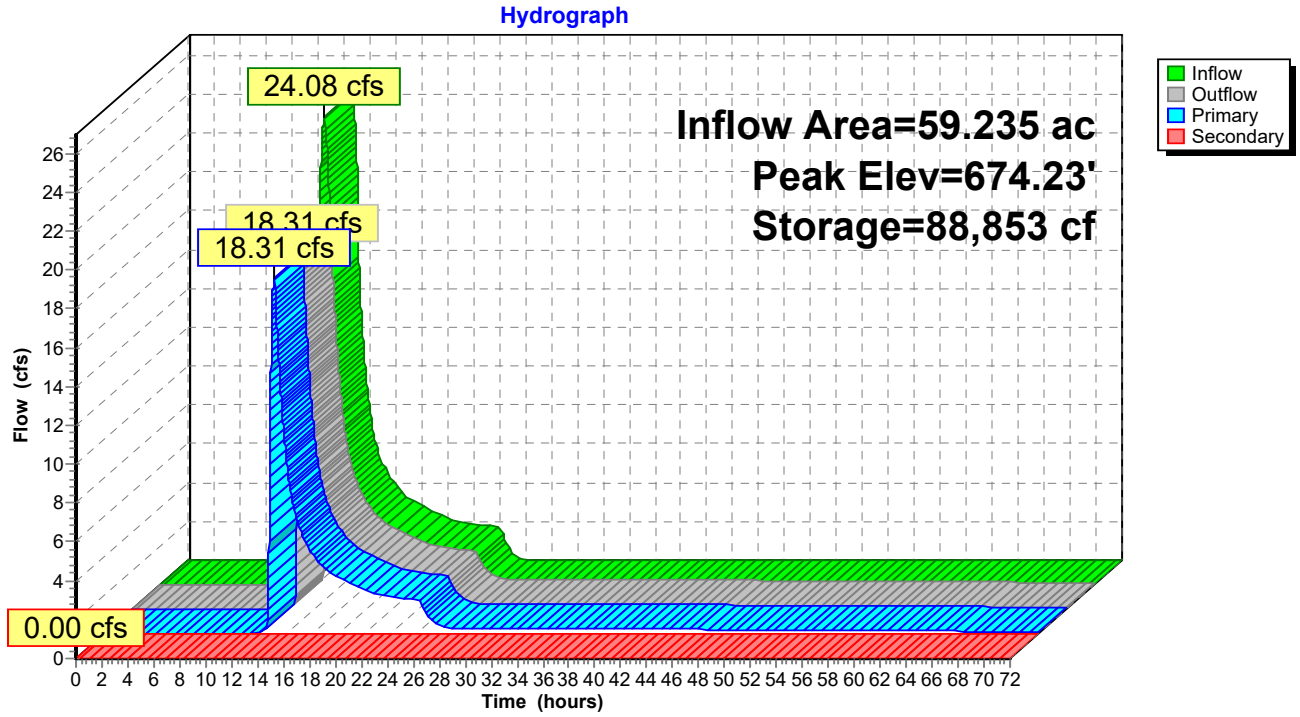
Subcatchment 25S: Stage 1 DA Proposed + Offsite



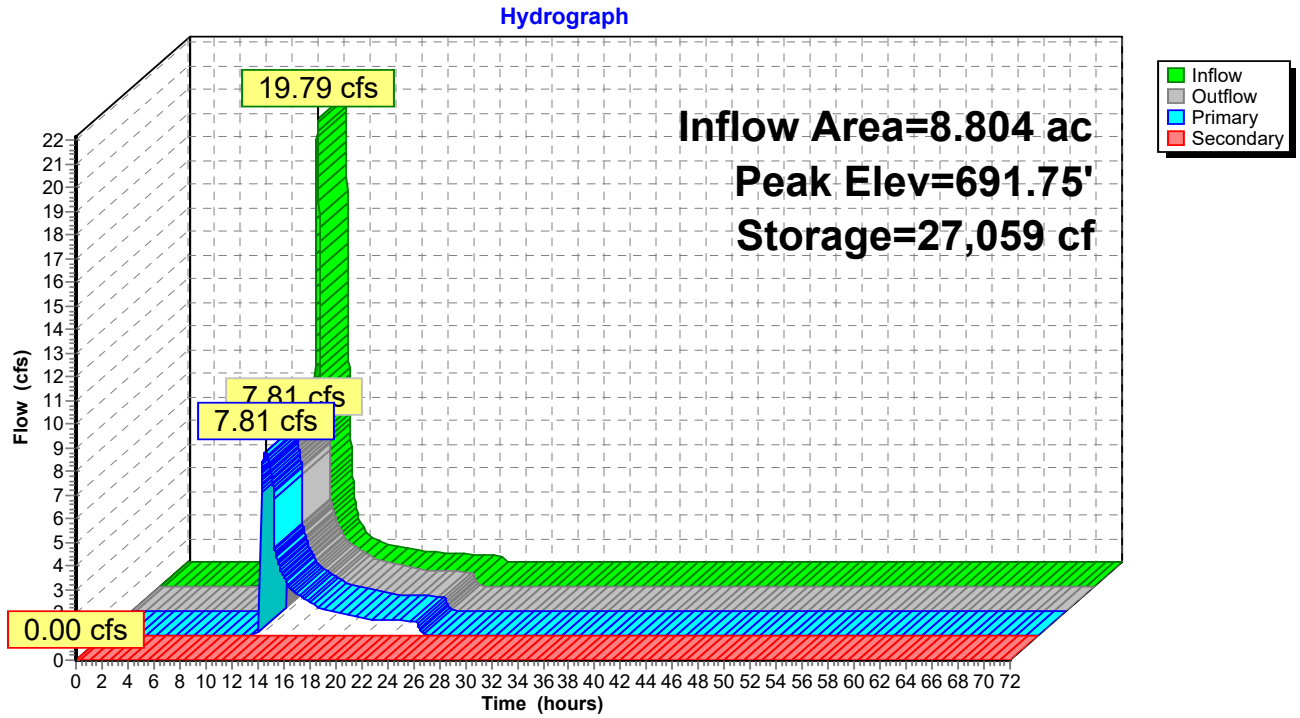
Reach 25R: Swale 3 (Pr. Cond)



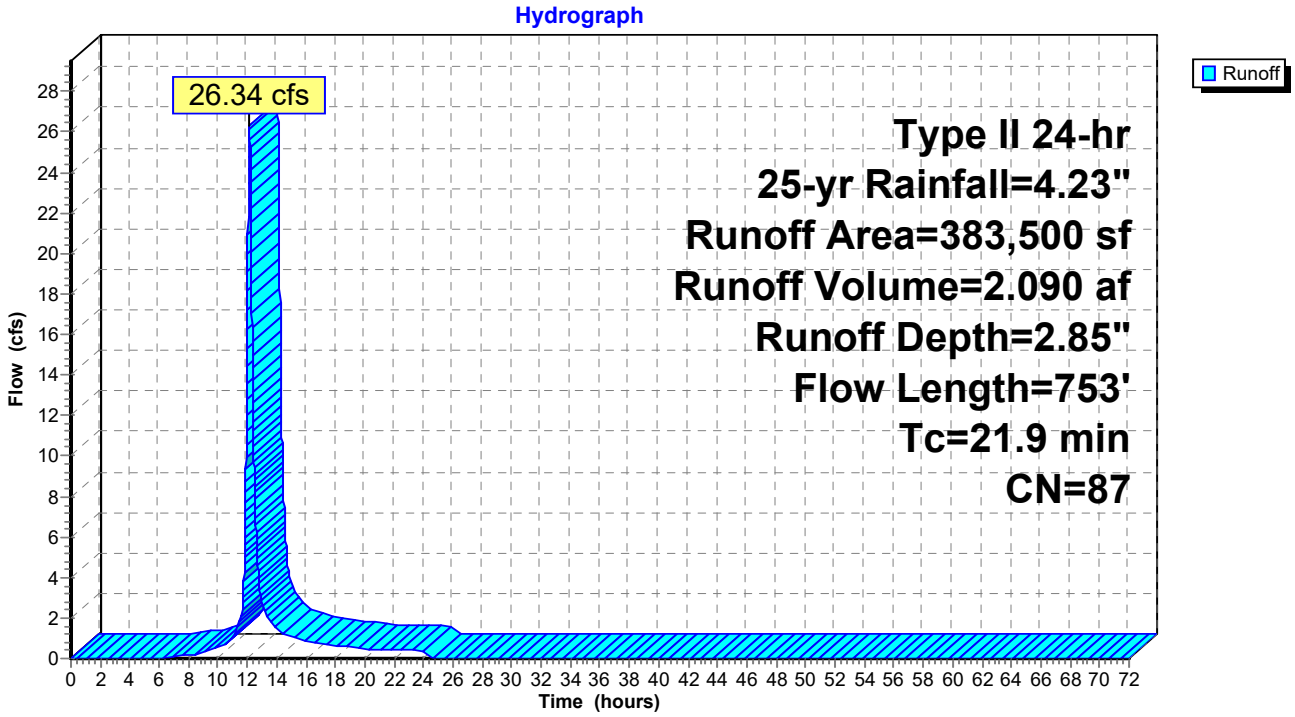
Pond 12P: 200511 Wet Pond



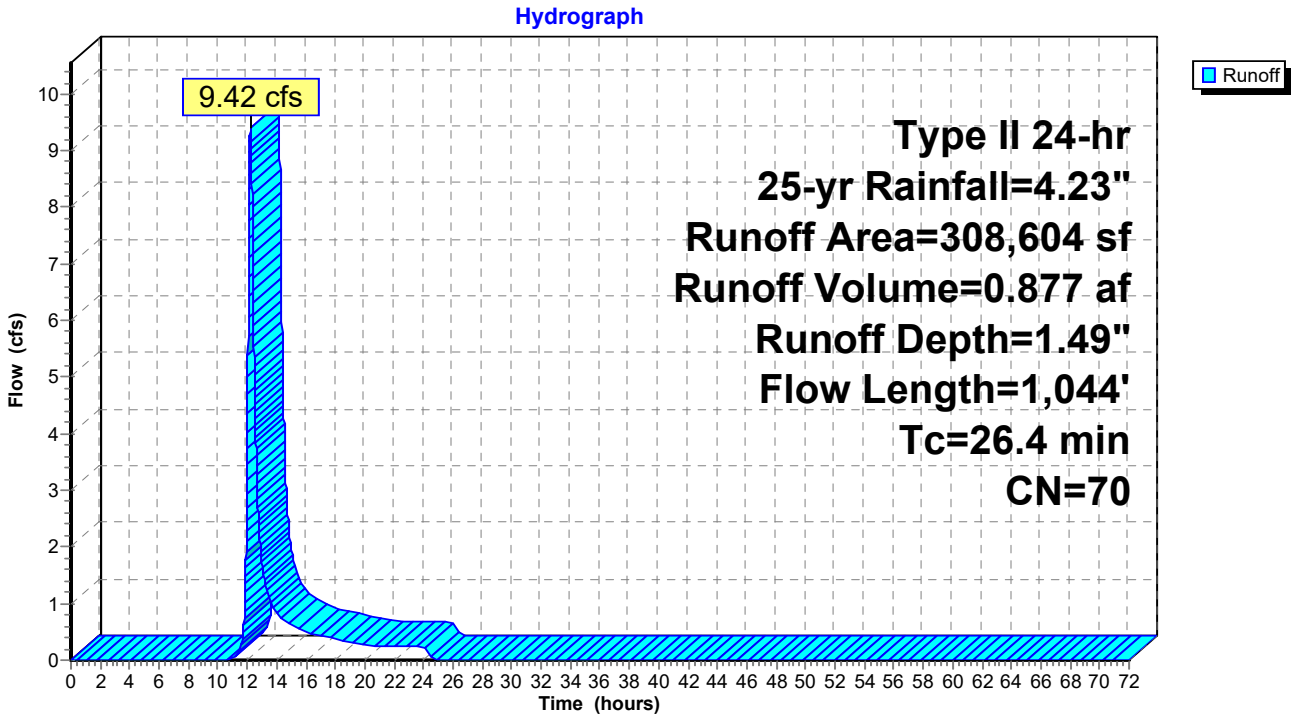
Pond 18P: Sediment Basin



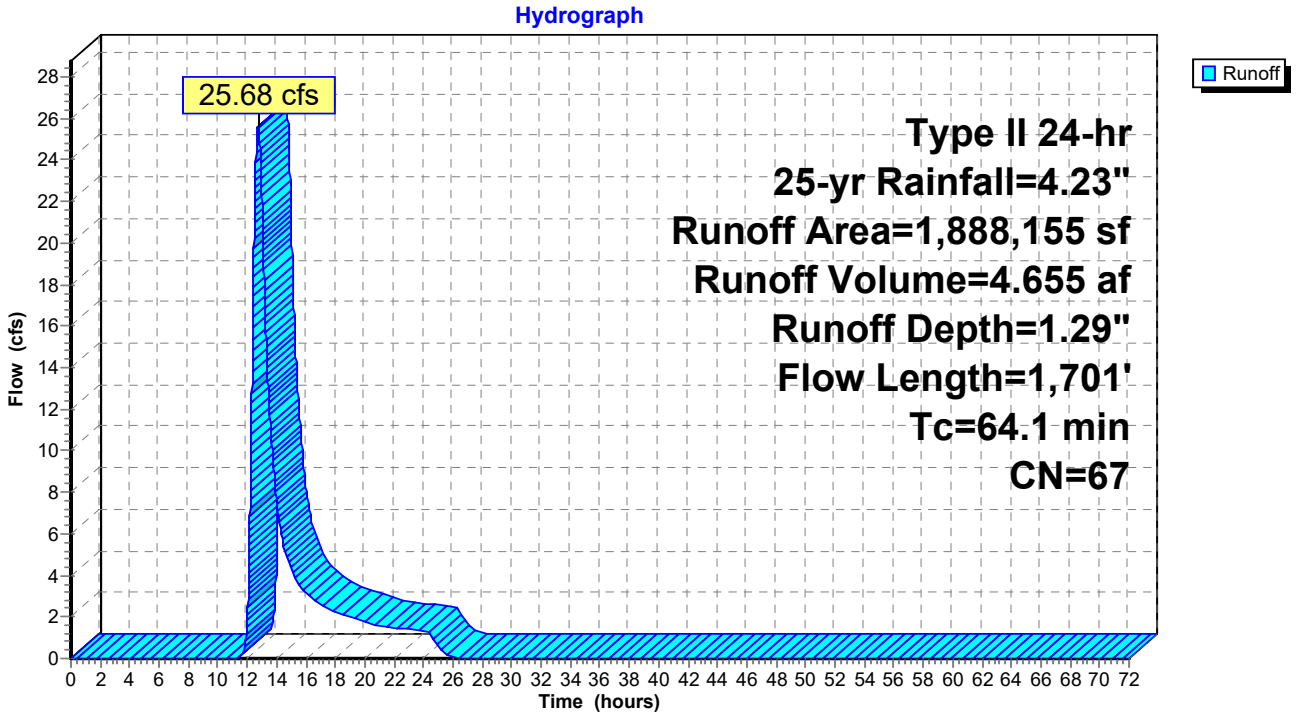
Subcatchment 15S: Stage 2 DA open soils



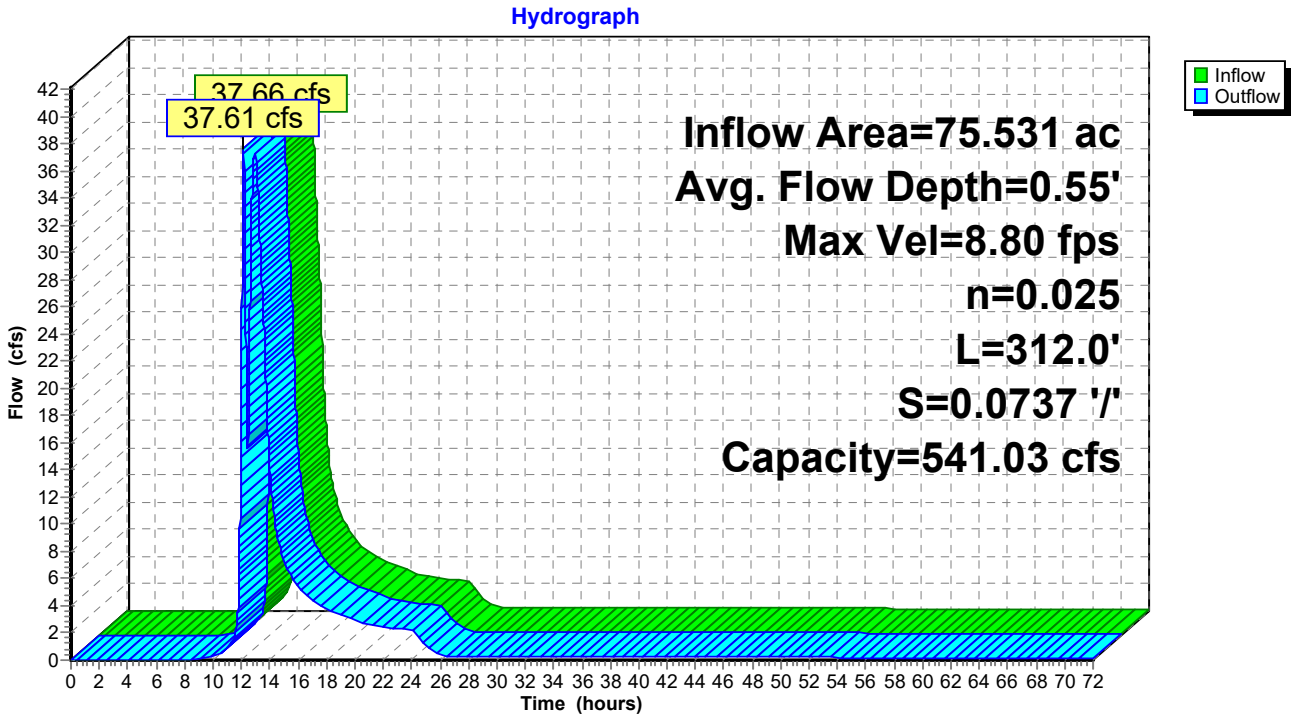
Subcatchment 22S: Stage 3 DA existing



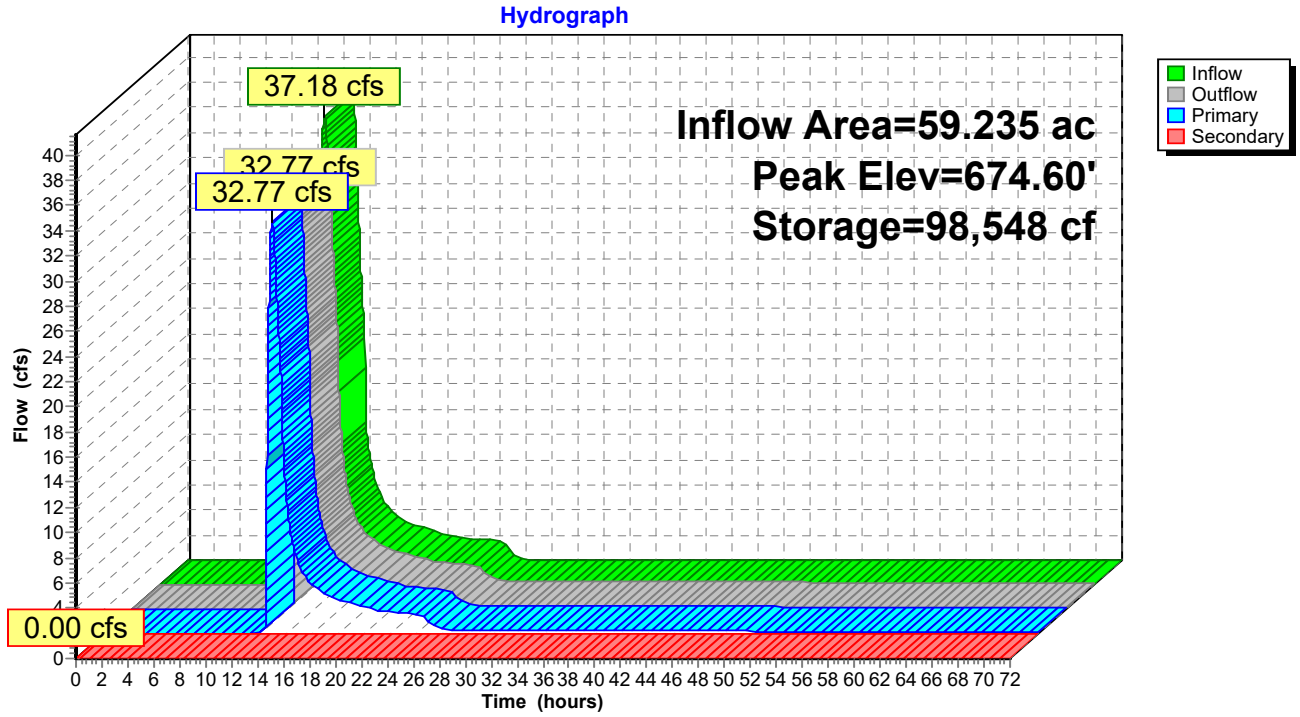
Subcatchment 25S: Stage 1 DA Proposed + Offsite



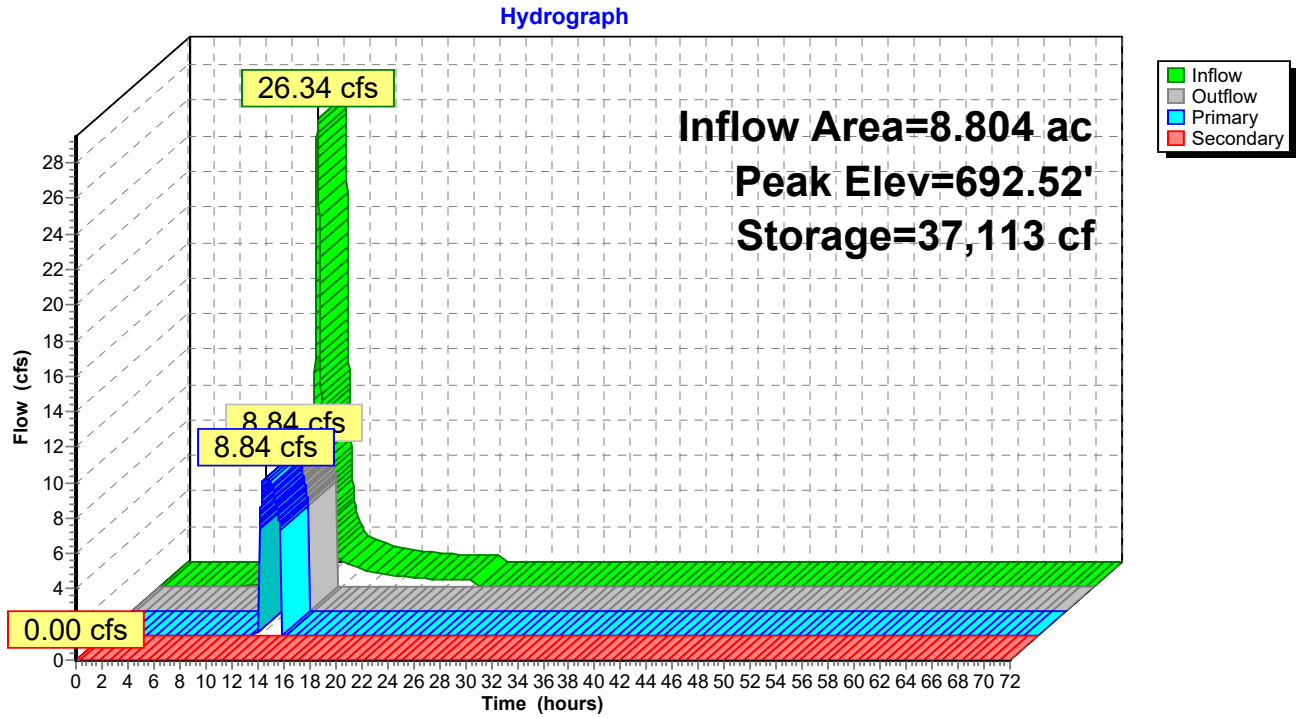
Reach 25R: Swale 3 (Pr. Cond)



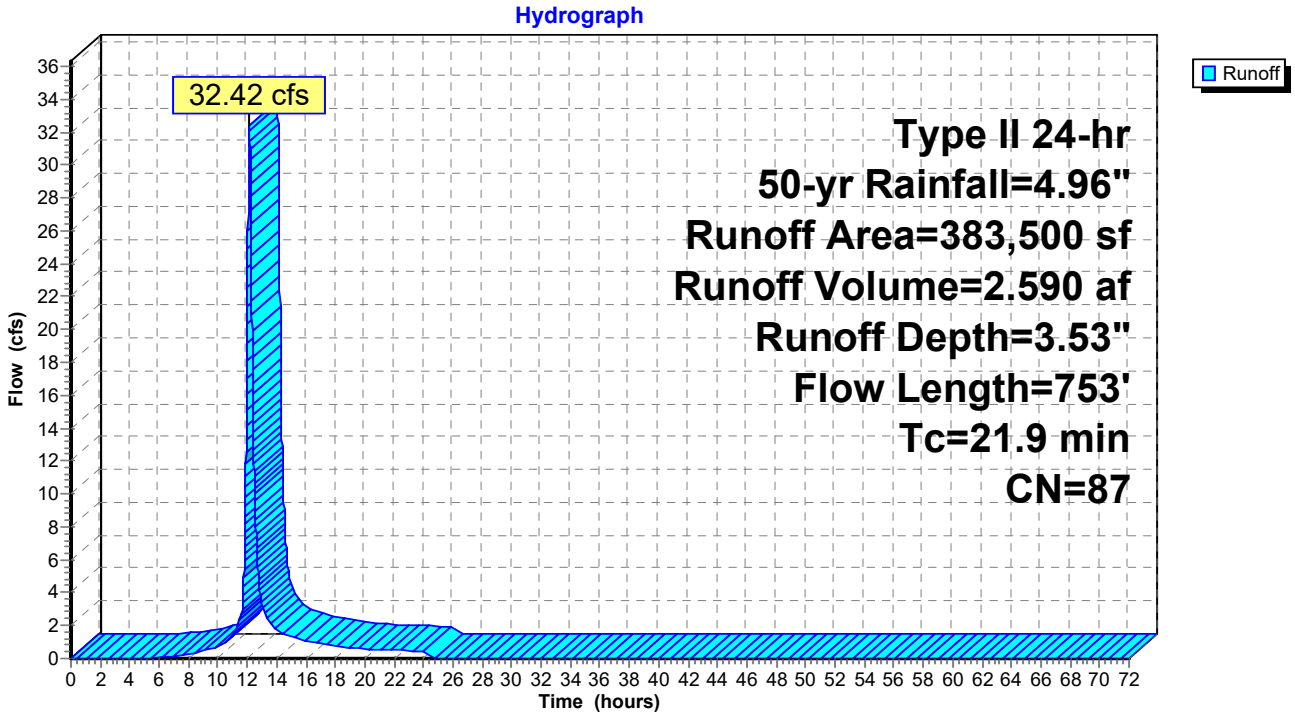
Pond 12P: 200511 Wet Pond



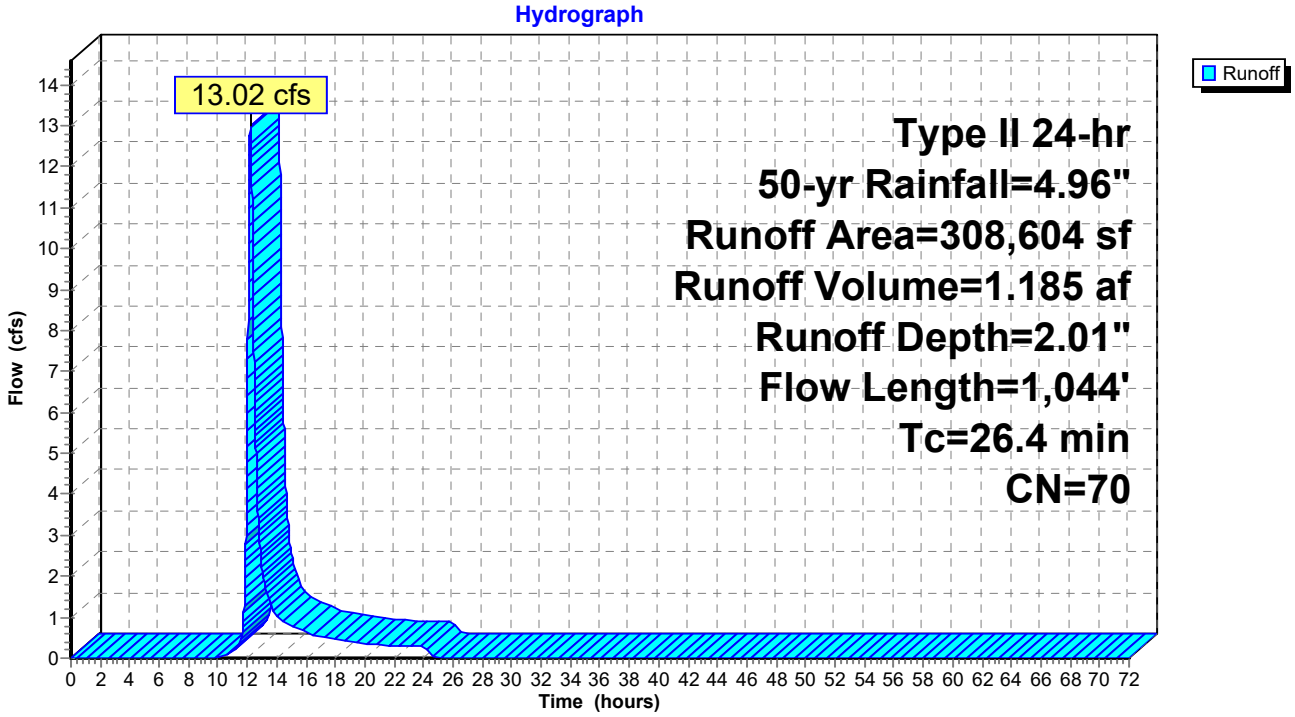
Pond 18P: Sediment Basin



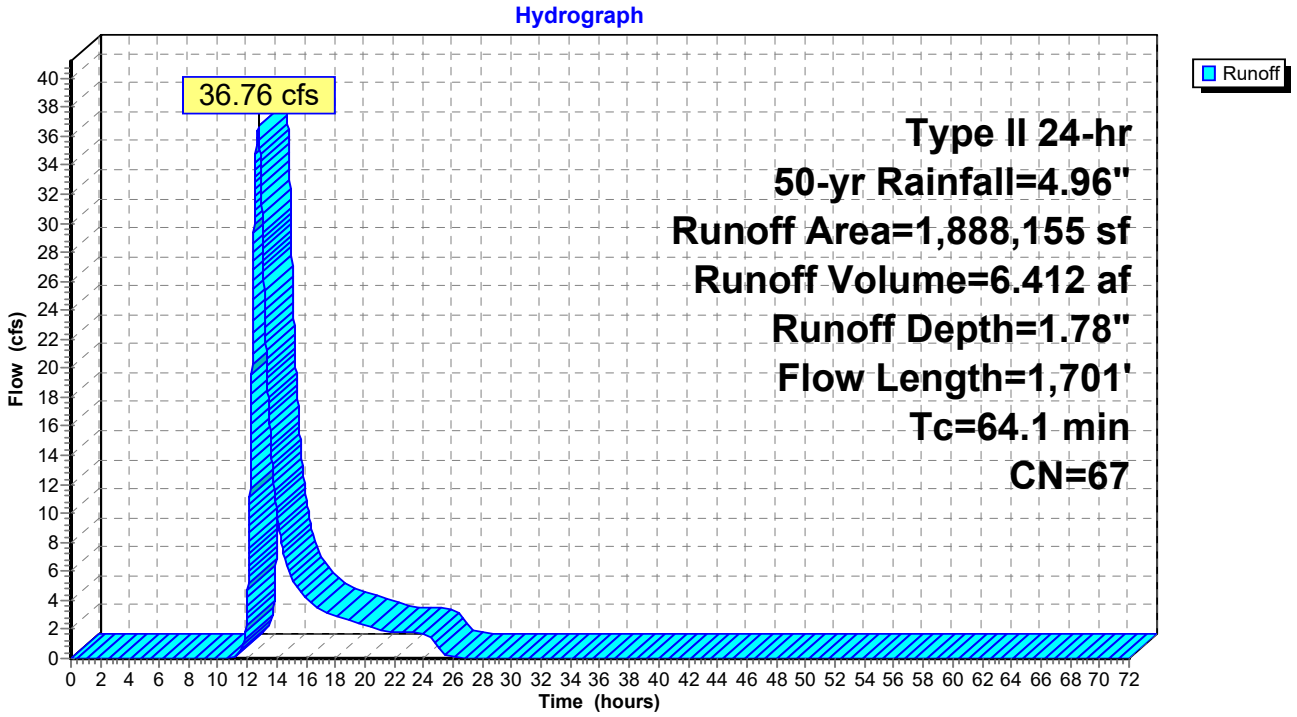
Subcatchment 15S: Stage 2 DA open soils



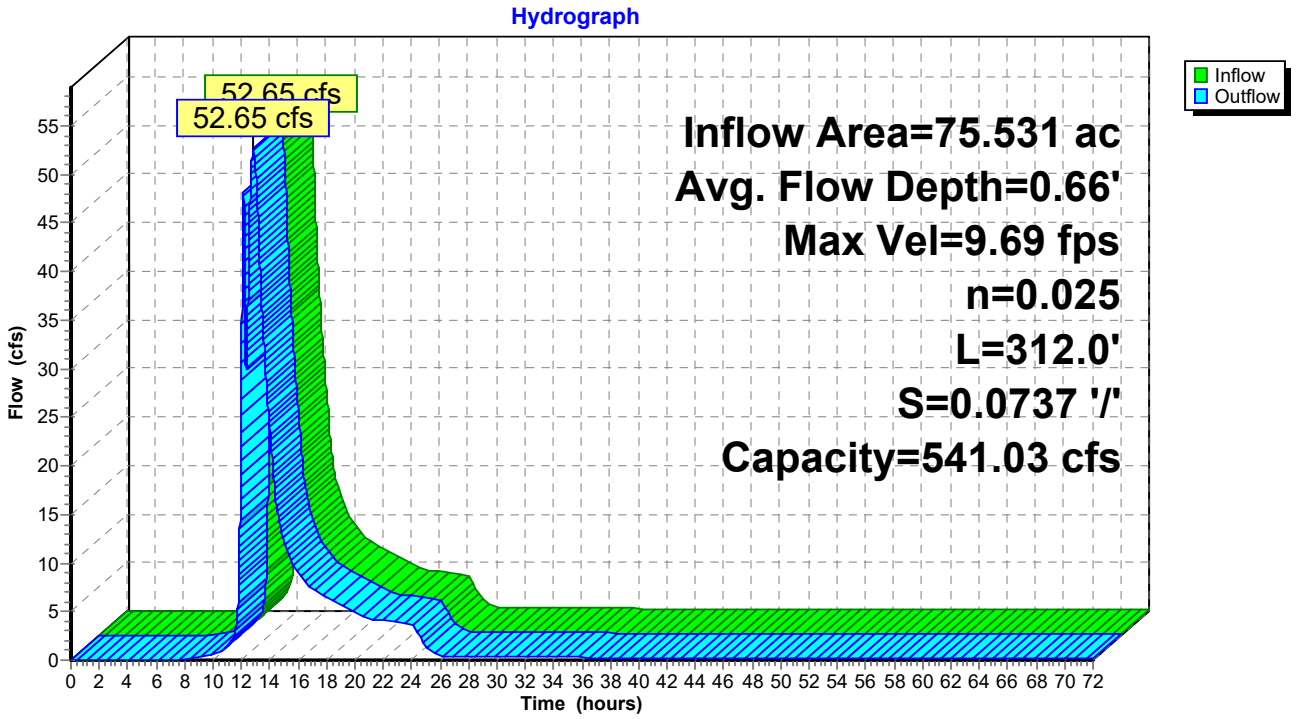
Subcatchment 22S: Stage 3 DA existing



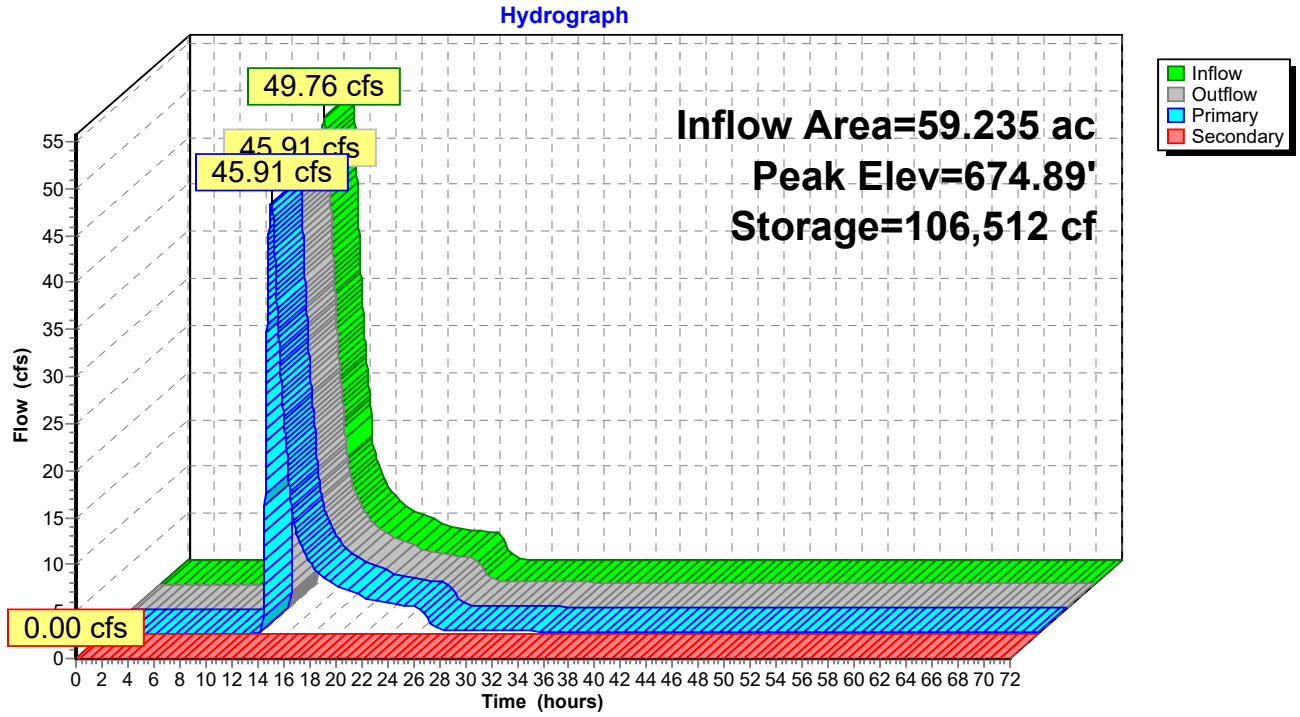
Subcatchment 25S: Stage 1 DA Proposed + Offsite



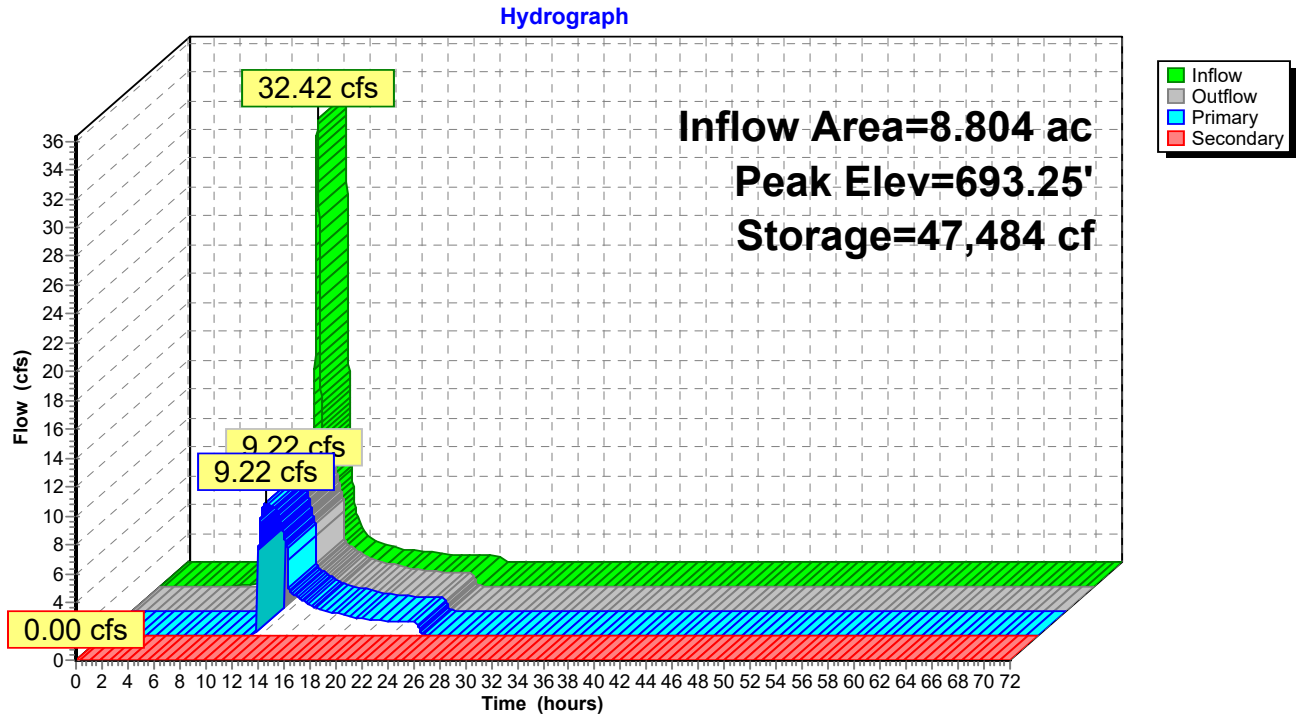
Reach 25R: Swale 3 (Pr. Cond)



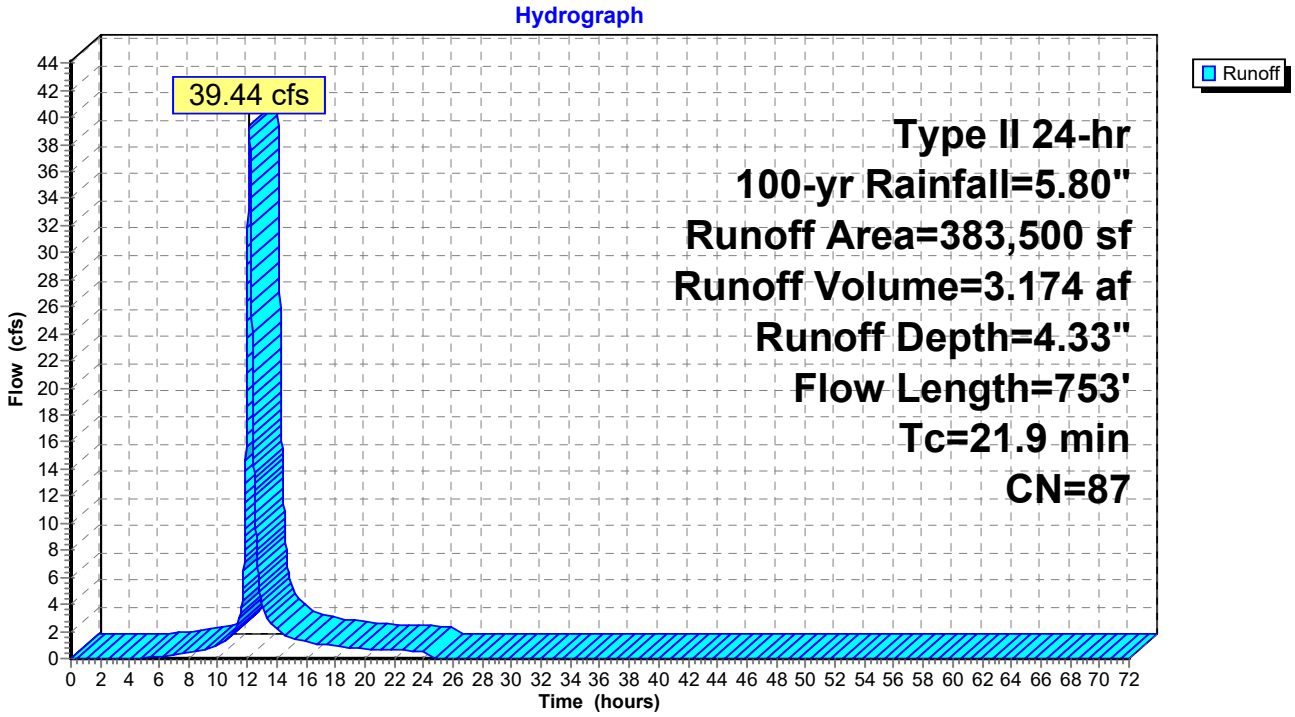
Pond 12P: 200511 Wet Pond



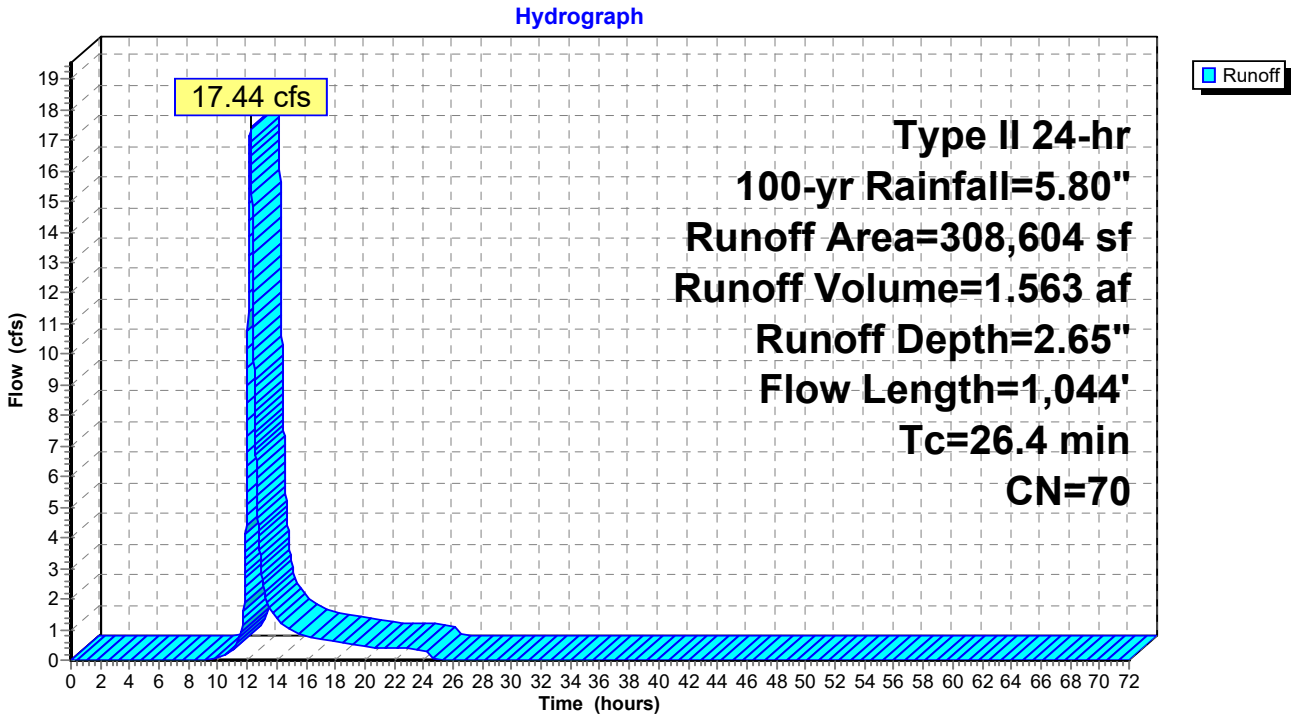
Pond 18P: Sediment Basin



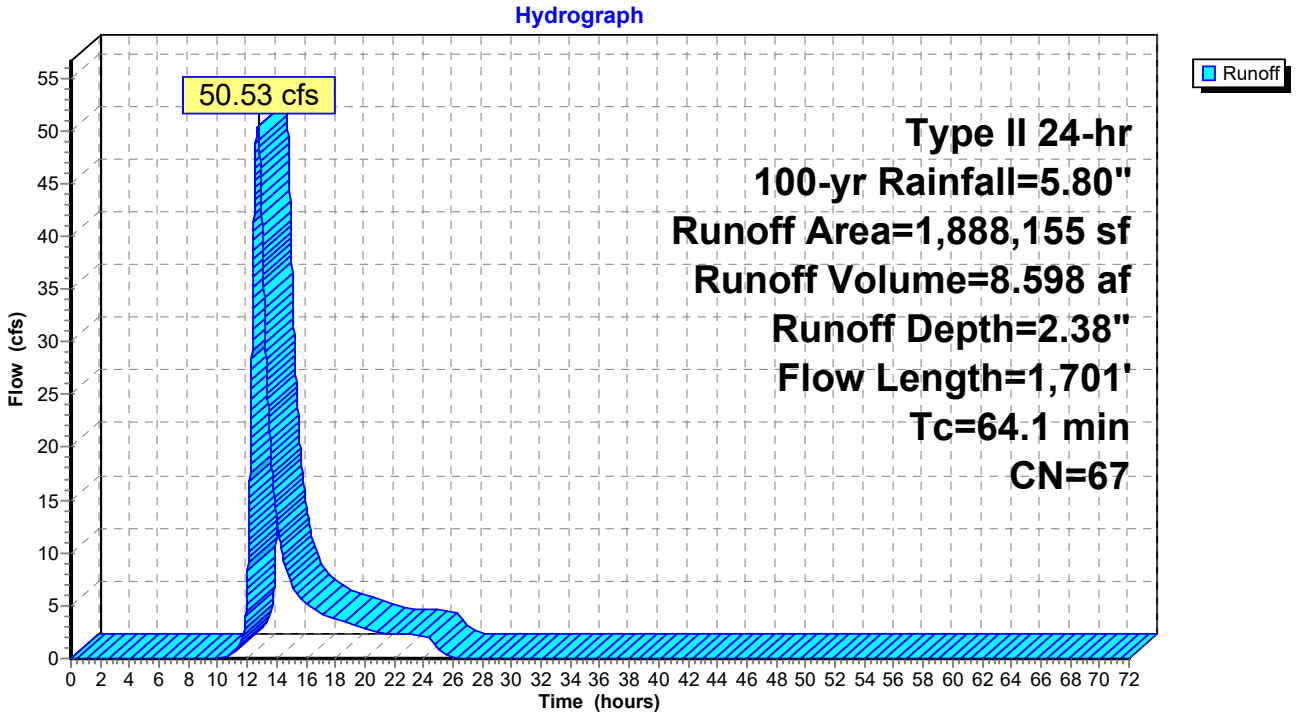
Subcatchment 15S: Stage 2 DA open soils



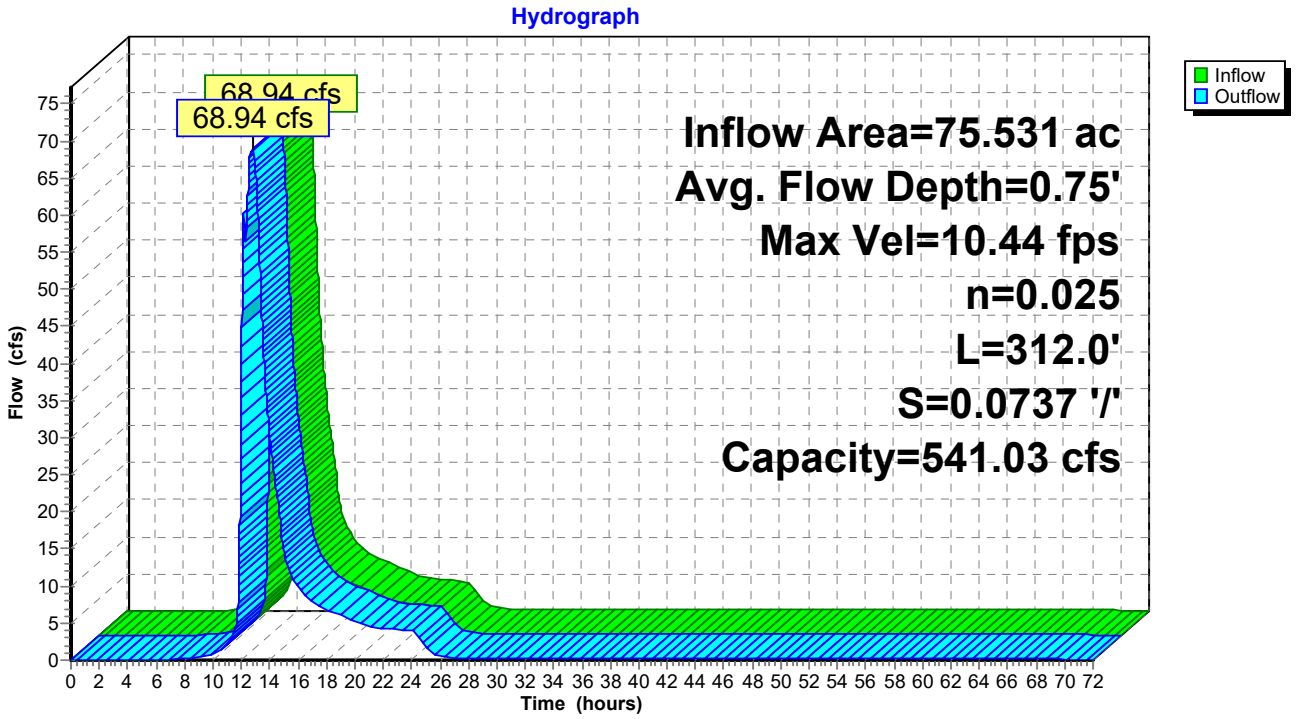
Subcatchment 22S: Stage 3 DA existing



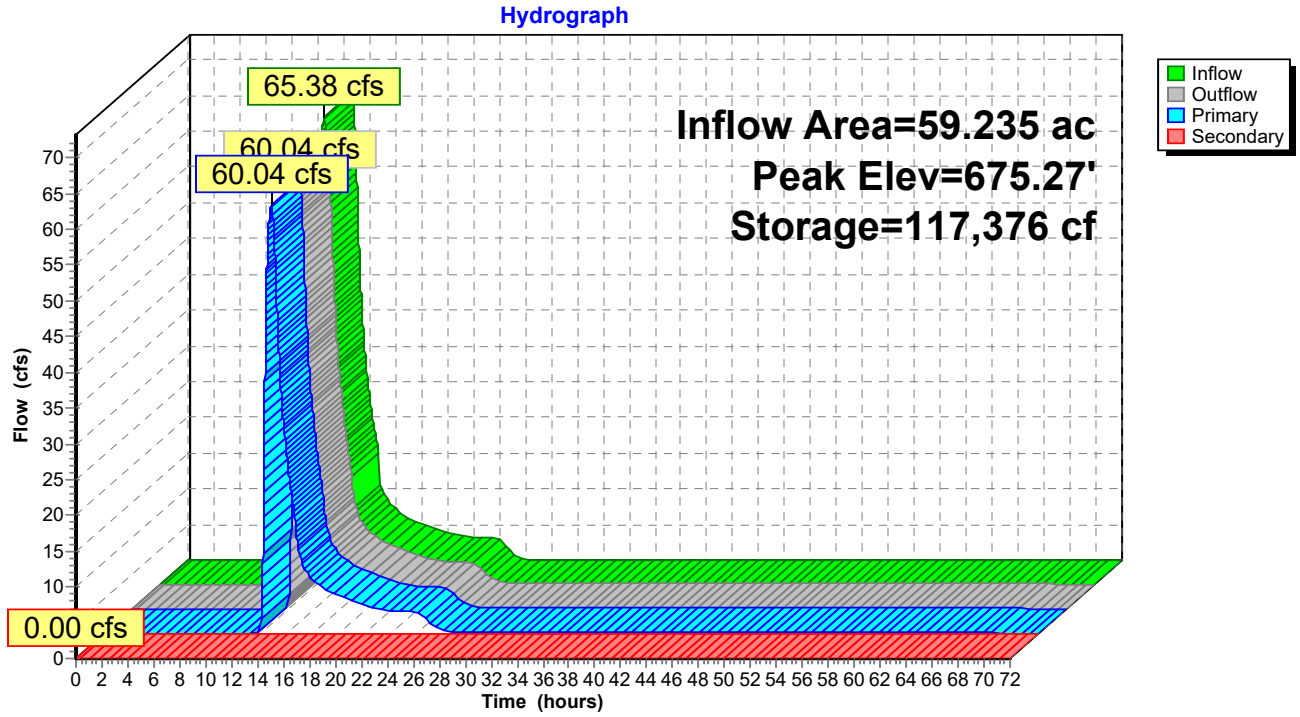
Subcatchment 25S: Stage 1 DA Proposed + Offsite



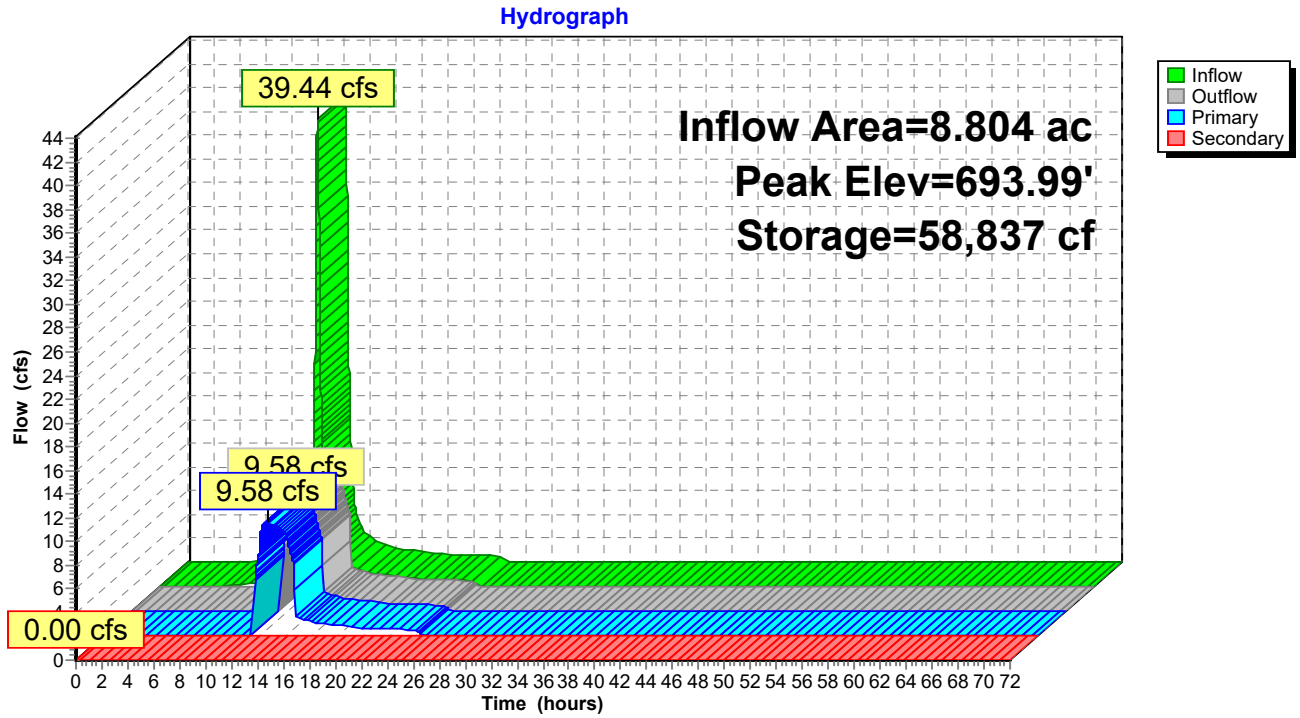
Reach 25R: Swale 3 (Pr. Cond)



Pond 12P: 200511 Wet Pond



Pond 18P: Sediment Basin



TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by H. McMillen Date 6-15-20 Checked by RLZ Date _____
Project Hoag Lane Subdivision Basin # 1
Location Stage 3 Total Area draining to basin (≤50 Ac.) 7.295 Acres

BASIN SIZE DESIGN

1. Sediment storage zone volume = 1,000 cu. ft. x number of disturbed acres (4.16) = 4,160 cu. ft., Top of Zone Elev. 689
2. Dewatering zone volume = 3,600 cu. ft. x number of drainage area acres = 26262 cu. ft., Top of Zone Elev. 694
3. Length to width ratio = 2 : 1
4. A. Cleanout at 50% of sediment storage zone volume, Elev. 688.26
   B. Distance below top of riser 1.74 feet
5. Minimum surface area is larger of 0.01 $Q_{(10)}$ 0.14 or, 0.015 DA = 0.11 use 0.14 acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

6. $Q_{p(10)}$ = 13.61 cfs (Attach runoff computation sheets)

Pipe Spillway (Q_{ps})

7. Min. pipe spillway cap., Q_{ps} = 0.2 x _____ Drainage Area, acres = _____ cfs
   Note: If there is no emergency spillway, then required $Q_{ps} = Q_{p(10)}$ = _____ cfs.
8. H, head = _____ ft. Barrel length = _____ ft
9. Barrel: Diam. _____ inches; Q_{ps} = (Q) _____ x (cor.fac.) _____ = _____ cfs.
10. Riser: Diam. _____ inches; Length _____ ft.; h = _____ ft. Crest Elev. _____
11. Trash Rack: Diameter = _____ inches; H, height = _____ inches

Design per HydroCAD

Emergency Spillway Design

12. Emergency Spillway Flow, $Q_{es} = Q_p - Q_{ps}$ = _____ - _____ = _____ cfs.
13. Width _____ ft.; H_p _____ ft Crest elevation _____; Design High Water Elev. _____
    Entrance channel slope _____ % ; Top of Dam Elev. _____
    Exit channel slope _____ %

ANTI-SEEP COLLAR/SEEPAGE DIAPHRAGM DESIGN

Collars:

14. y = _____ ft.; z = _____ :1; pipe slope = _____ %, L_s = _____ ft.
    Use _____ collars, _____ - _____ inches square; projection = _____ ft.

→ see 5/27/20 Kenney Geotech report for justification of non-usage

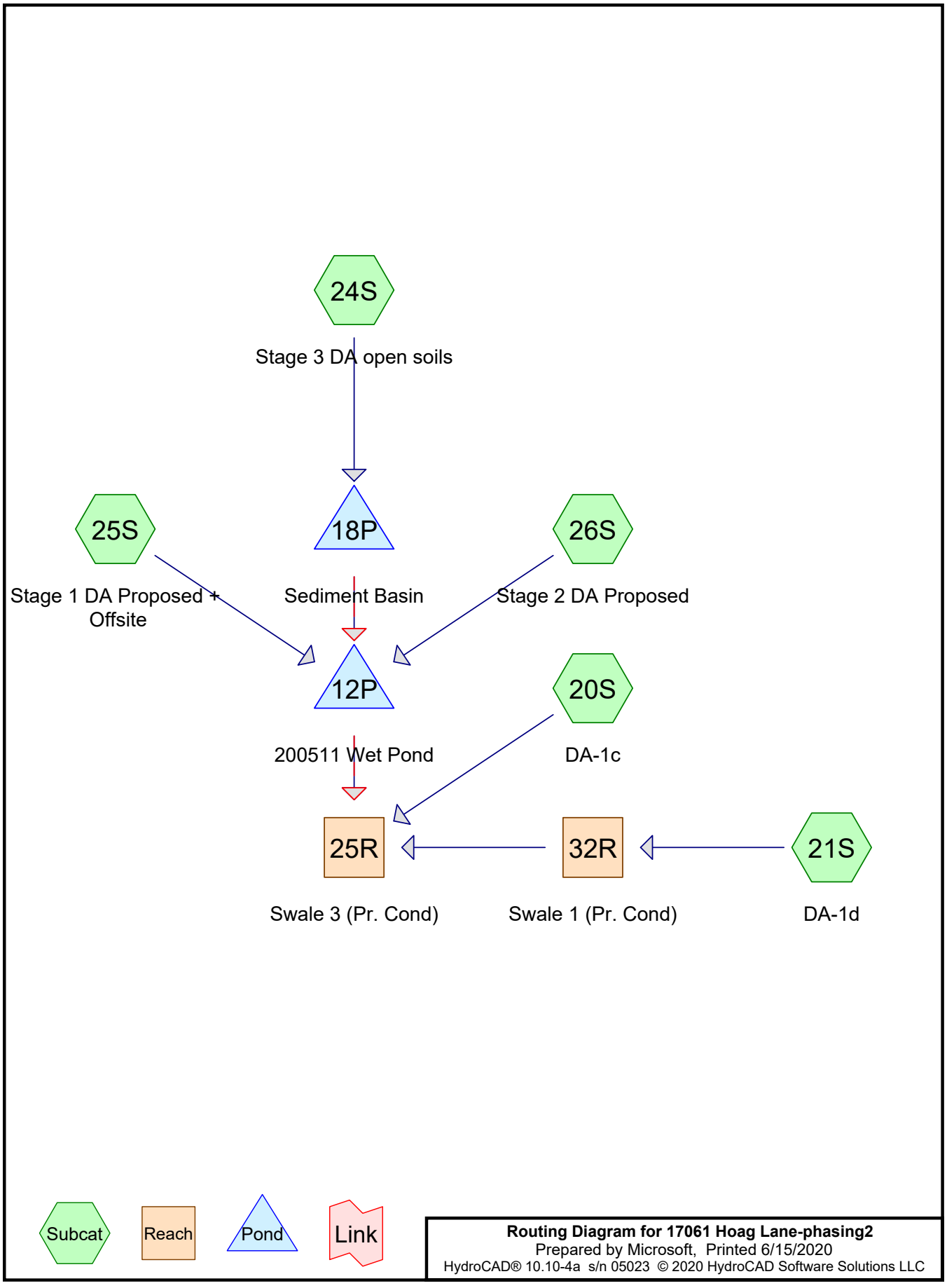
Diaphragms:

_____ width _____ ft. height _____ ft.

DEWATERING ORIFICE SIZING

(Determined from the Dewatering Device Standard)

15. Dewatering orifice diameter = 5.5 inches. Skimmer X or Riser ____ (check one)
16. Design dewatering time 2 days (Min. 2 days required)



Routing Diagram for 17061 Hoag Lane-phasing2
Prepared by Microsoft, Printed 6/15/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 24S: Stage 3 DA open soils

Runoff = 29.21 cfs @ 12.15 hrs, Volume= 2.375 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (ac)	CN	Description
	0.125	55	Woods, Good, HSG B
	2.169	70	Woods, Good, HSG C
	4.160	91	Newly graded area, HSG C
*	0.108	98	Ex House
	0.733	74	>75% Grass cover, Good, HSG C
	7.295	83	Weighted Average
	7.187		98.52% Pervious Area
	0.108		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0750	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.39"
3.4	322	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.7	641	0.0515	2.27		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
22.7	1,063	Total			

Summary for Subcatchment 25S: Stage 1 DA Proposed + Offsite

Runoff = 50.53 cfs @ 12.74 hrs, Volume= 8.598 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (sf)	CN	Description
	205,473	79	1 acre lots, 20% imp, HSG C
	375,052	65	2 acre lots, 12% imp, HSG B
	609,971	55	Woods, Good, HSG B
	383,981	70	Woods, Good, HSG C
	253,130	79	50-75% Grass cover, Fair, HSG C
*	47,480	98	Proposed Site Impervious
*	13,068	98	Permanent Pool of Wet Pond
	1,888,155	67	Weighted Average
	1,741,506		92.23% Pervious Area
	146,649		7.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Summary for Subcatchment 26S: Stage 2 DA Proposed

Runoff = 25.60 cfs @ 12.19 hrs, Volume= 2.213 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
43,604	55	Woods, Good, HSG B
65,157	98	Paved parking, HSG C
9,727	70	Woods, Good, HSG C
211,823	79	50-75% Grass cover, Fair, HSG C
330,311	79	Weighted Average
265,154		80.27% Pervious Area
65,157		19.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.39"
2.7	234	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.7	641	0.0515	2.27		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
25.4	975	Total			

Summary for Pond 12P: 200511 Wet Pond

Inflow Area = 58.224 ac, 8.54% Impervious, Inflow Depth = 2.76" for 100-yr event
Inflow = 66.56 cfs @ 12.61 hrs, Volume= 13.404 af
Outflow = 61.29 cfs @ 12.85 hrs, Volume= 13.271 af, Atten= 8%, Lag= 14.4 min
Primary = 61.29 cfs @ 12.85 hrs, Volume= 13.271 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 4
Starting Elev= 671.00' Surf.Area= 13,672 sf Storage= 30,510 cf
Peak Elev= 675.31' @ 12.85 hrs Surf.Area= 30,074 sf Storage= 118,580 cf (88,070 cf above start)

Plug-Flow detention time= 189.8 min calculated for 12.571 af (94% of inflow)
Center-of-Mass det. time= 139.7 min (1,031.6 - 891.9)

Volume	Invert	Avail.Storage	Storage Description
#1	665.00'	159,782 cf	**Pond (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
665.00	622	0	0
666.00	1,412	1,017	1,017
667.00	2,440	1,926	2,943
668.00	4,748	3,594	6,537
669.00	6,541	5,645	12,182
670.00	8,222	7,382	19,563
671.00	13,672	10,947	30,510
672.00	15,804	14,738	45,248
673.00	18,037	16,921	62,169
674.00	24,162	21,100	83,268
675.00	28,220	26,191	109,459
676.00	34,146	31,183	140,642
676.50	42,414	19,140	159,782

Device	Routing	Invert	Outlet Devices
#1	Primary	665.20'	**24.0" Round Outlet Culvert X 2.00** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 665.20' / 665.00' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	675.50'	**Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 Width (feet) 15.00 25.00
#3	Device 1	671.00'	**2.0" W x 3.0" H Vert. 2"x3" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	675.45'	**24.0" Horiz. Rims X 2.00** C= 0.600 Limited to weir flow at low heads
#5	Device 1	673.45'	**Rectangular Orifice X 2.00, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 1.50 Width (feet) 4.00 4.00 0.00

Primary OutFlow Max=61.30 cfs @ 12.85 hrs HW=675.31' (Free Discharge)
└**1=Outlet Culvert** (Passes 61.30 cfs of 91.33 cfs potential flow)
  ├**3=2"x3" Orifice** (Orifice Controls 0.41 cfs @ 9.85 fps)
  ├**4=Rims** (Controls 0.00 cfs)
  └**5=Rectangular Orifice** (Orifice Controls 60.89 cfs @ 5.07 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=671.00' (Free Discharge)
└**2=Spillway** (Controls 0.00 cfs)

Summary for Pond 18P: Sediment Basin

Inflow Area =	7.295 ac,	1.48% Impervious,	Inflow Depth =	3.91"	for 100-yr event
Inflow =	29.21 cfs @	12.15 hrs,	Volume=	2.375 af	
Outflow =	9.04 cfs @	12.53 hrs,	Volume=	2.594 af,	Atten= 69%, Lag= 22.4 min
Primary =	9.04 cfs @	12.53 hrs,	Volume=	2.594 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 692.90' @ 12.53 hrs Surf.Area= 24,427 sf Storage= 42,510 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 103.3 min (923.2 - 820.0)

Volume	Invert	Avail.Storage	Storage Description
#1	688.00'	18,058 cf	**Sediment Storage Zone (Prismatic)** Listed below (Recalc)
#2	691.00'	57,082 cf	**Dewatering Zone (Prismatic)** Listed below (Recalc)
		75,140 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
688.00	7,846	0	0
689.00	9,013	8,430	8,430
690.00	10,244	9,629	18,058

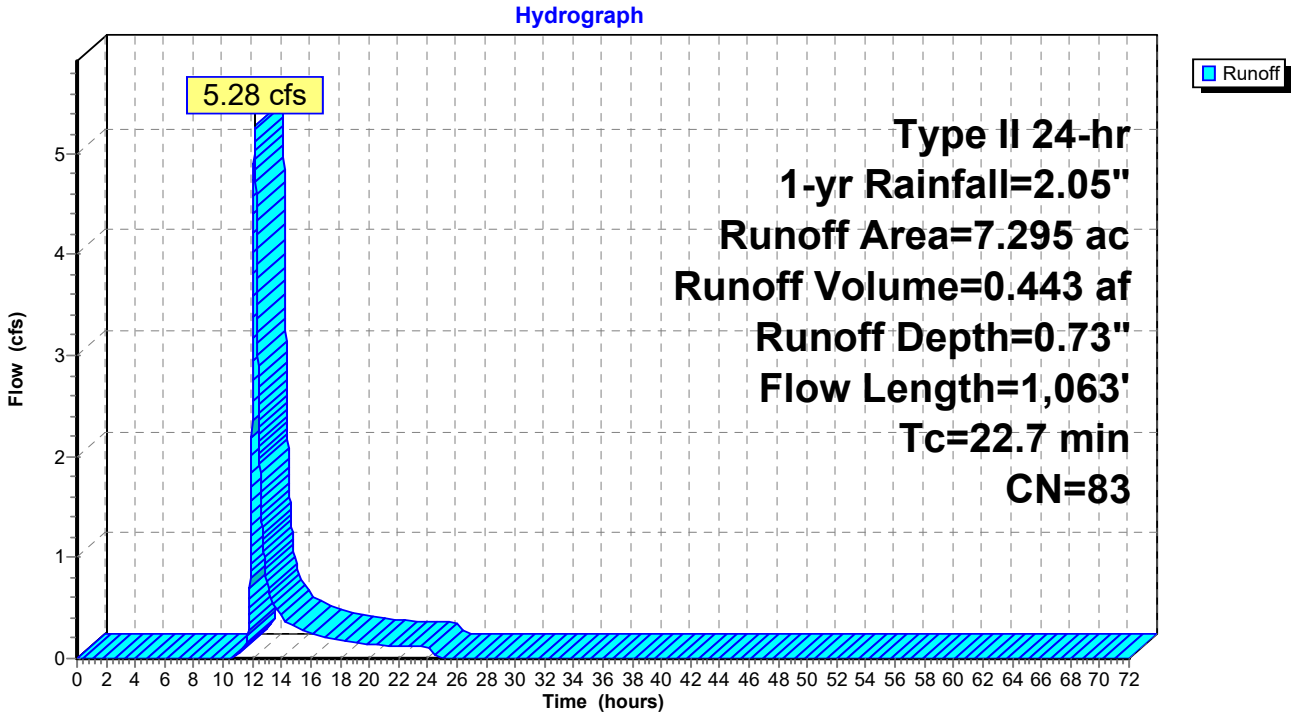
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
691.00	11,539	0	0
692.00	12,898	12,219	12,219
693.00	14,320	13,609	25,828
694.00	15,807	15,064	40,891
695.00	16,575	16,191	57,082

Device	Routing	Invert	Outlet Devices
#1	Primary	684.00'	**12.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 684.00' / 683.00' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	690.00'	**15.0" Horiz. Standpipe** C= 0.600 Limited to weir flow at low heads
#3	Secondary	694.00'	**Emergency Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 10.00 15.00

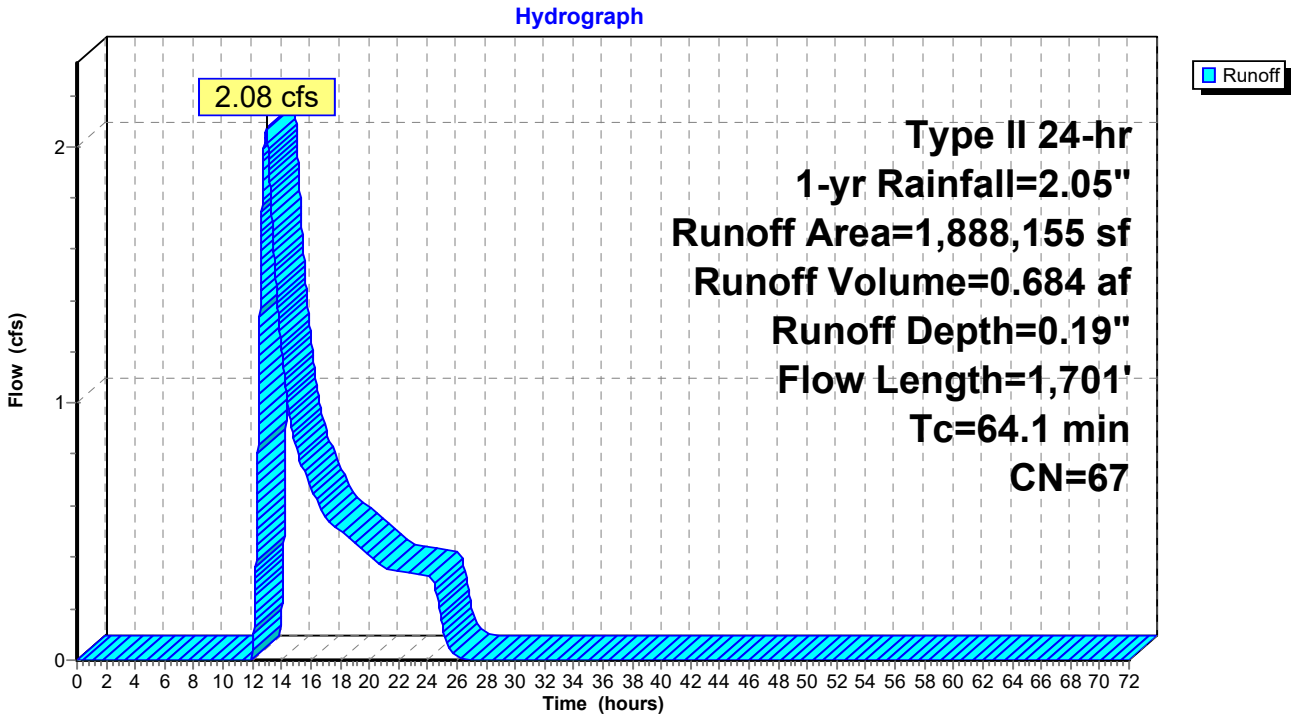
Primary OutFlow Max=9.04 cfs @ 12.53 hrs HW=692.90' (Free Discharge)
└**1=Culvert** (Barrel Controls 9.04 cfs @ 11.51 fps)
└**2=Standpipe** (Passes 9.04 cfs of 10.07 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=688.00' (Free Discharge)
└**3=Emergency Spillway** (Controls 0.00 cfs)

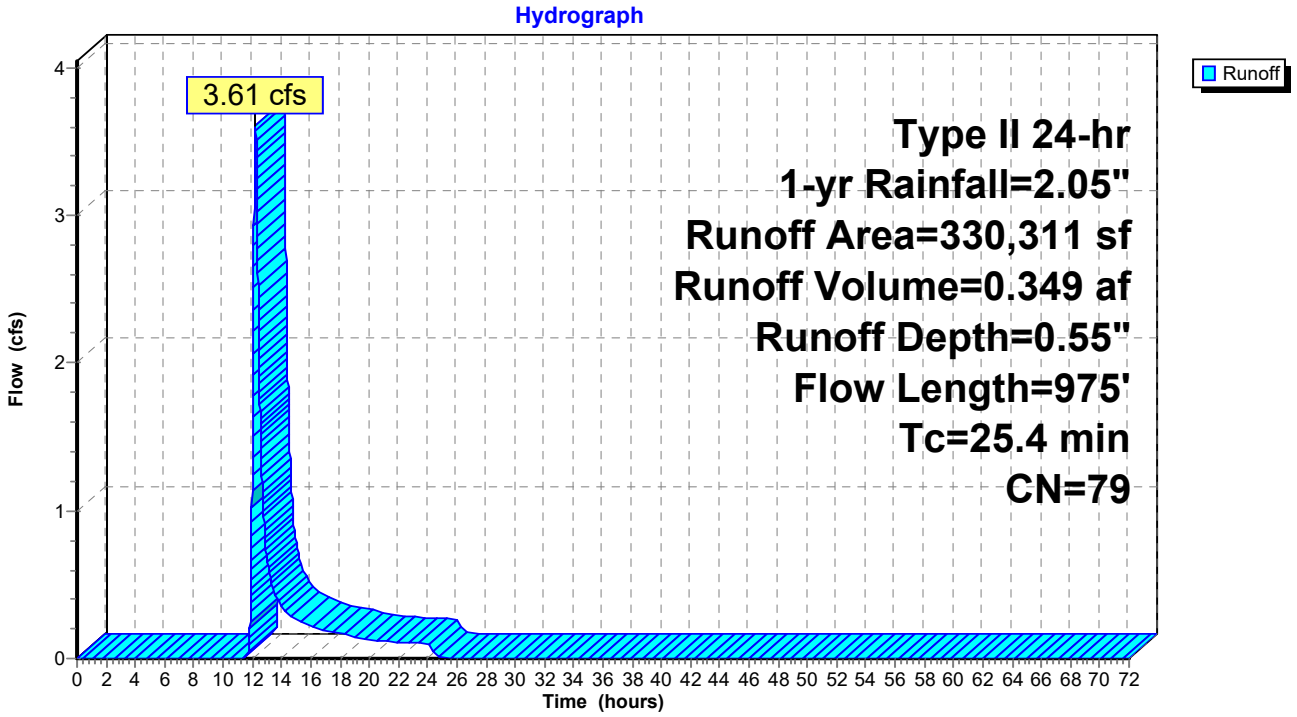
Subcatchment 24S: Stage 3 DA open soils



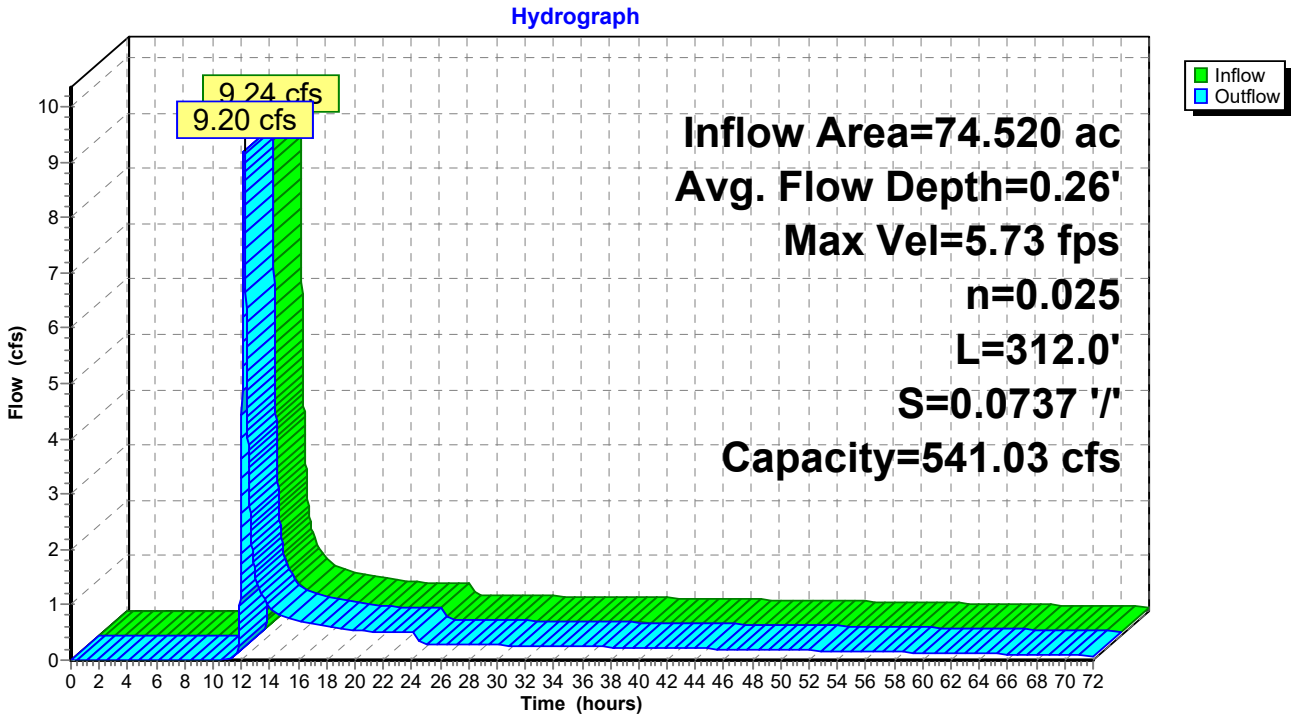
Subcatchment 25S: Stage 1 DA Proposed + Offsite



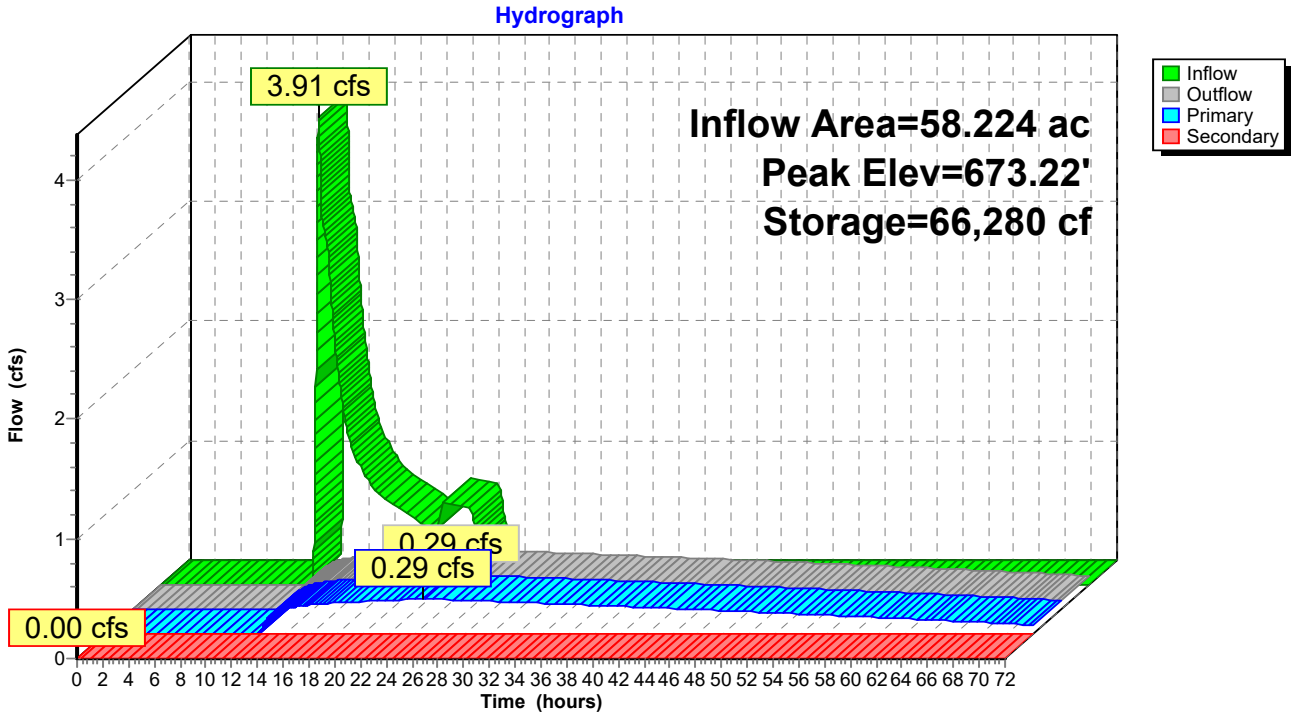
Subcatchment 26S: Stage 2 DA Proposed



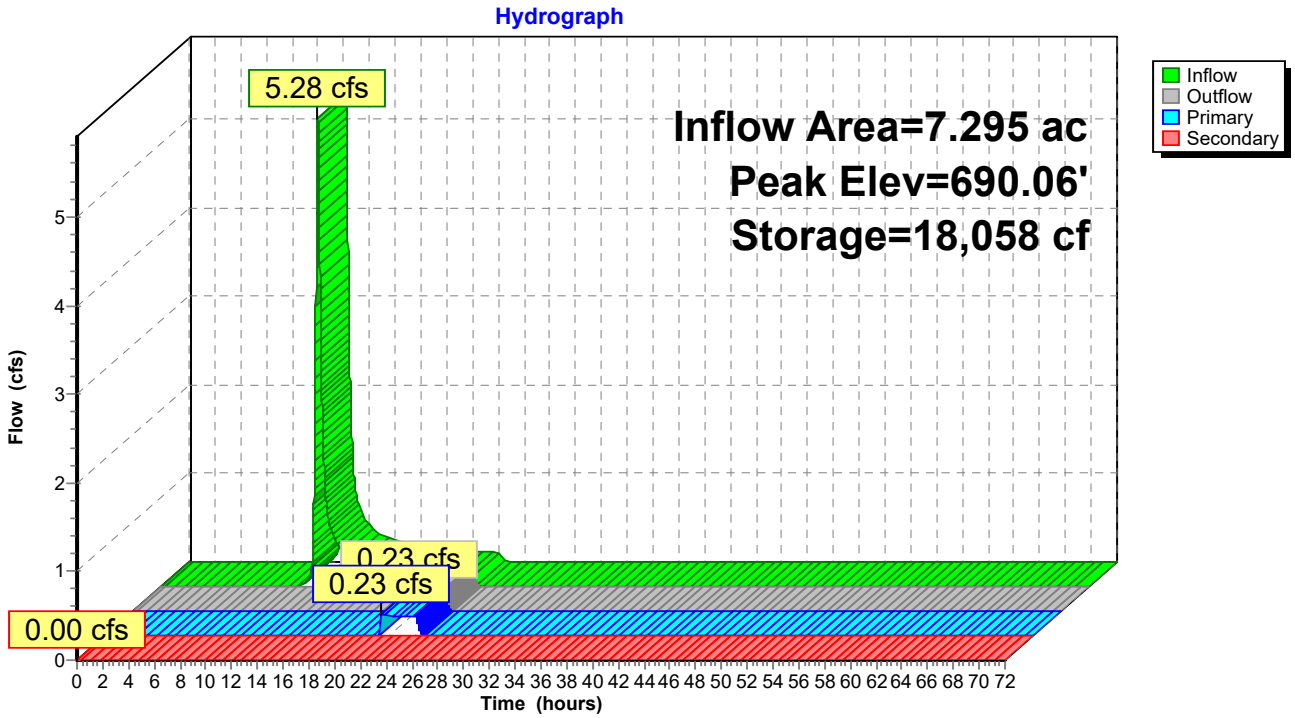
Reach 25R: Swale 3 (Pr. Cond)



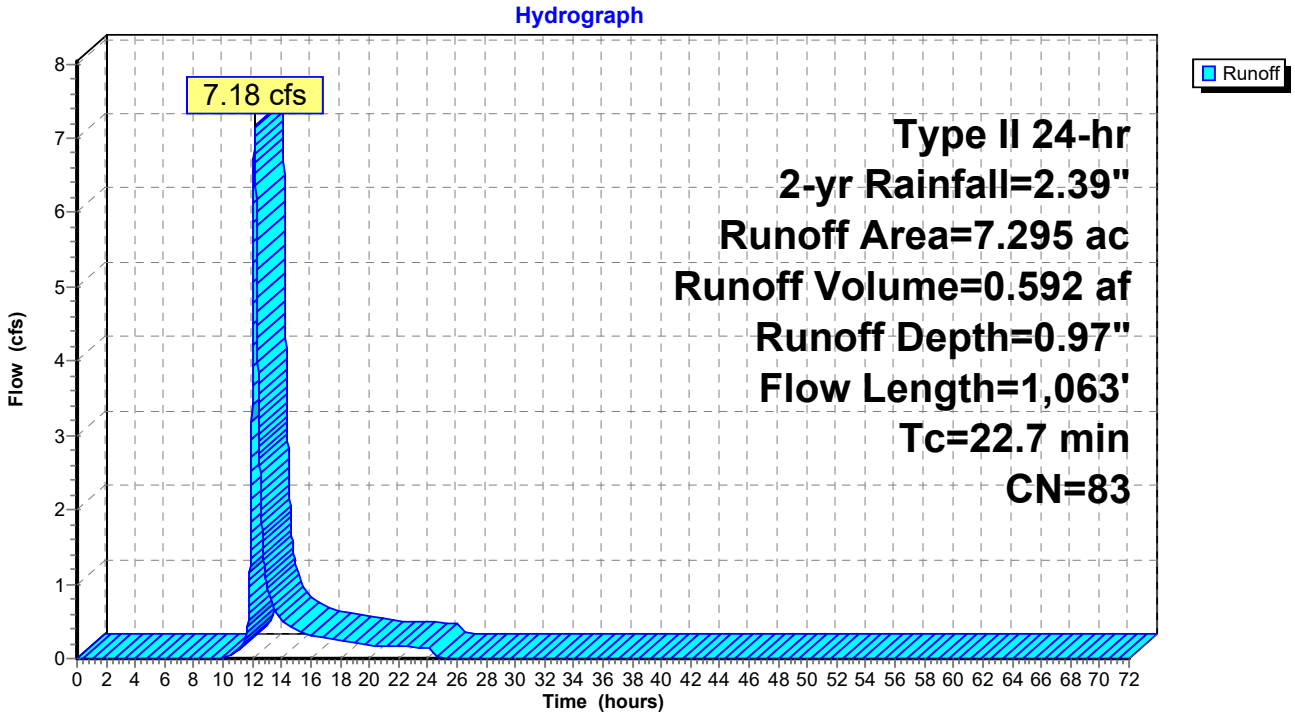
Pond 12P: 200511 Wet Pond



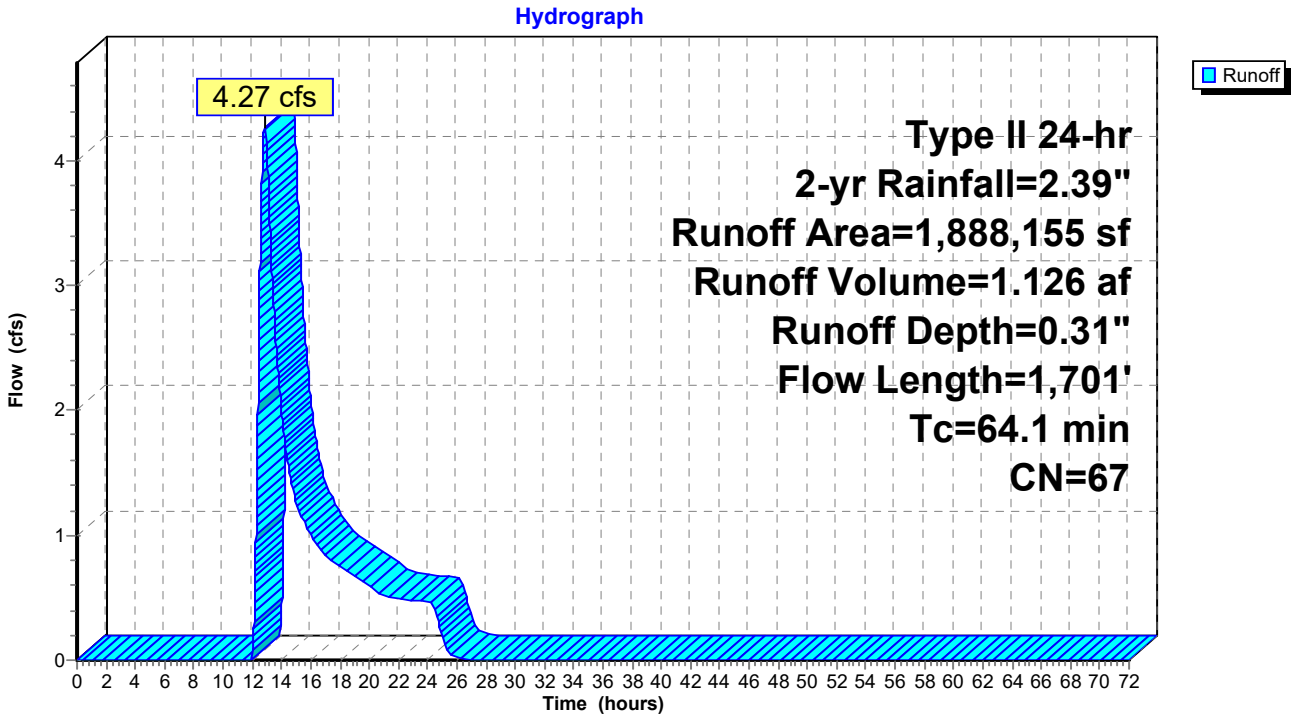
Pond 18P: Sediment Basin



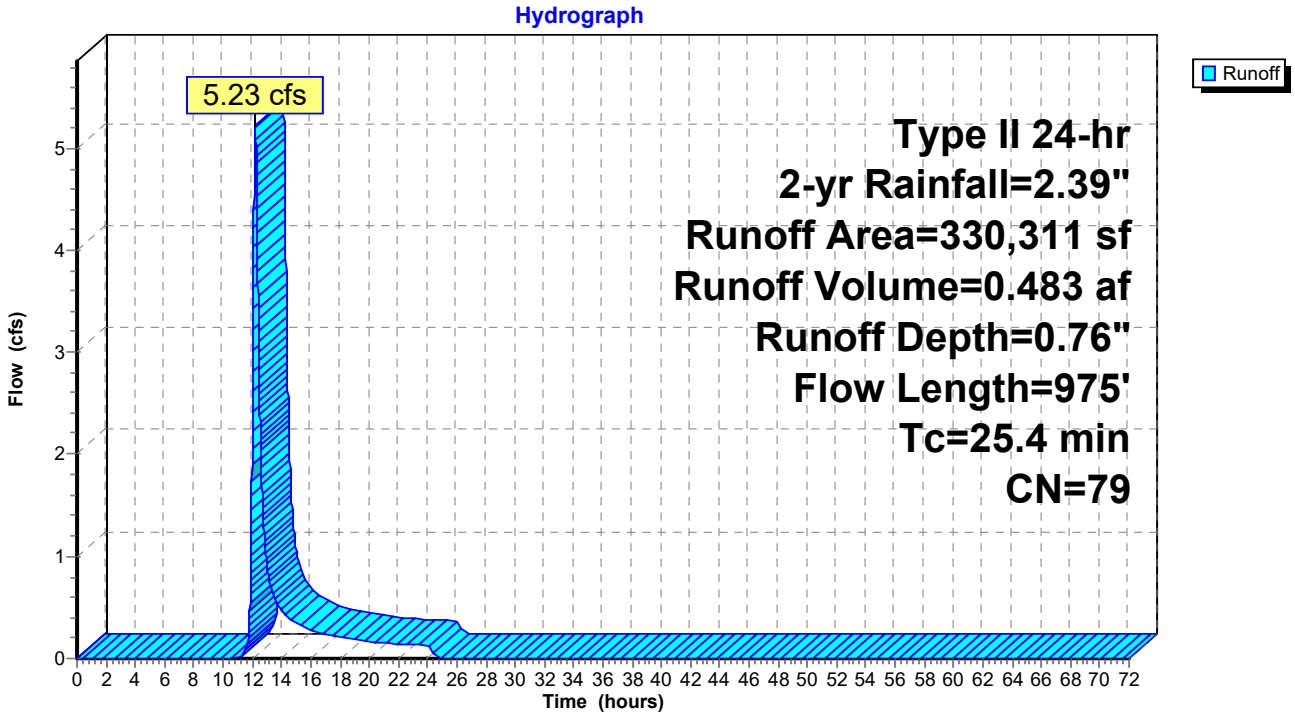
Subcatchment 24S: Stage 3 DA open soils



Subcatchment 25S: Stage 1 DA Proposed + Offsite



Subcatchment 26S: Stage 2 DA Proposed



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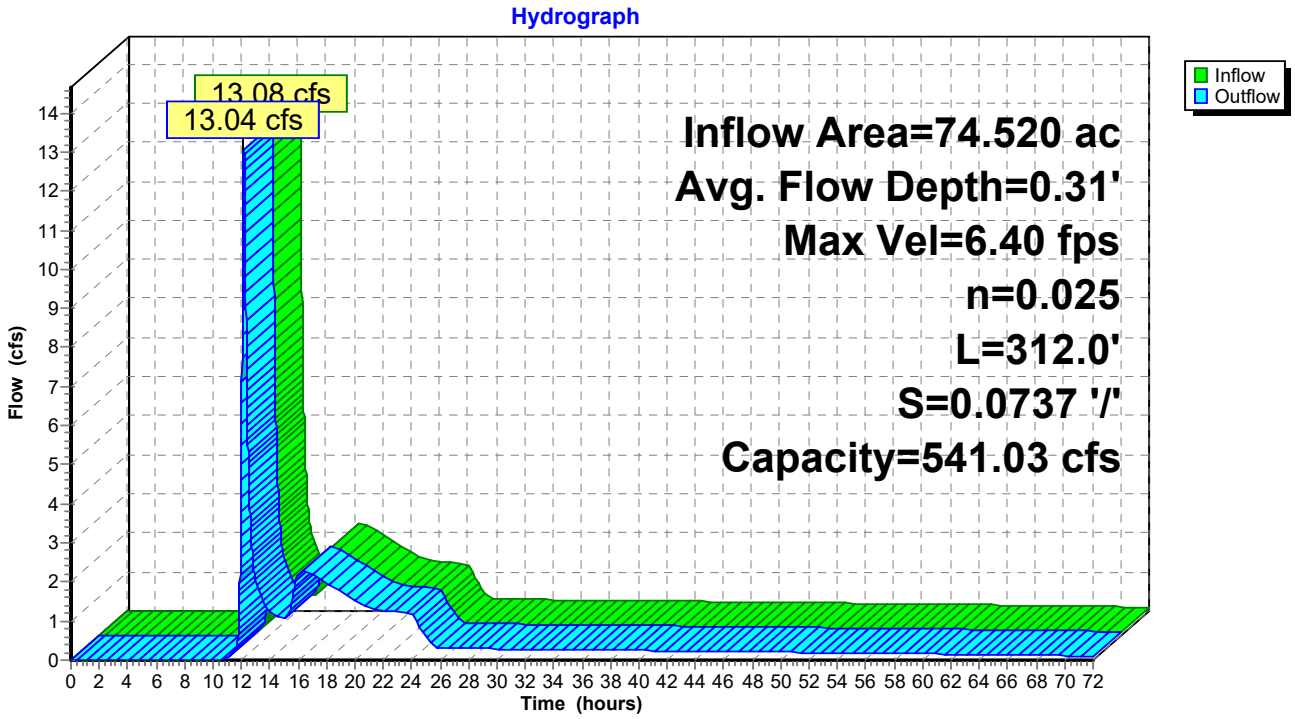
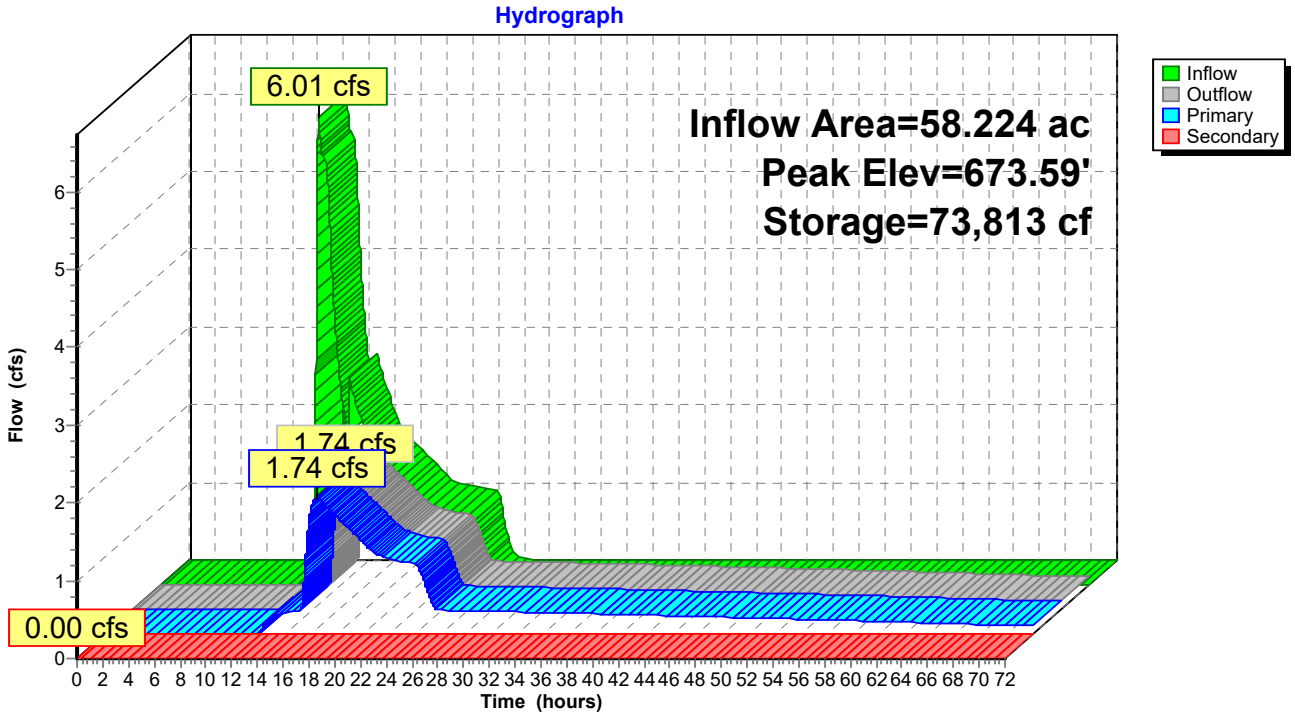
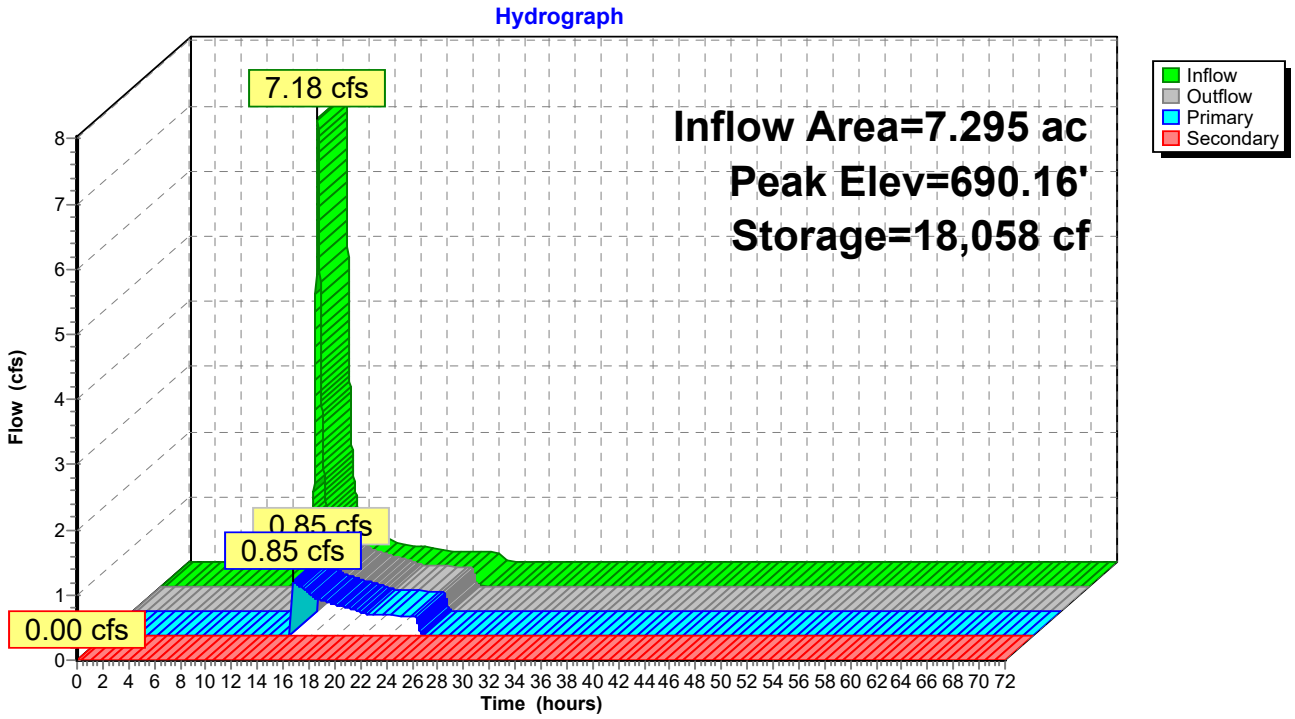


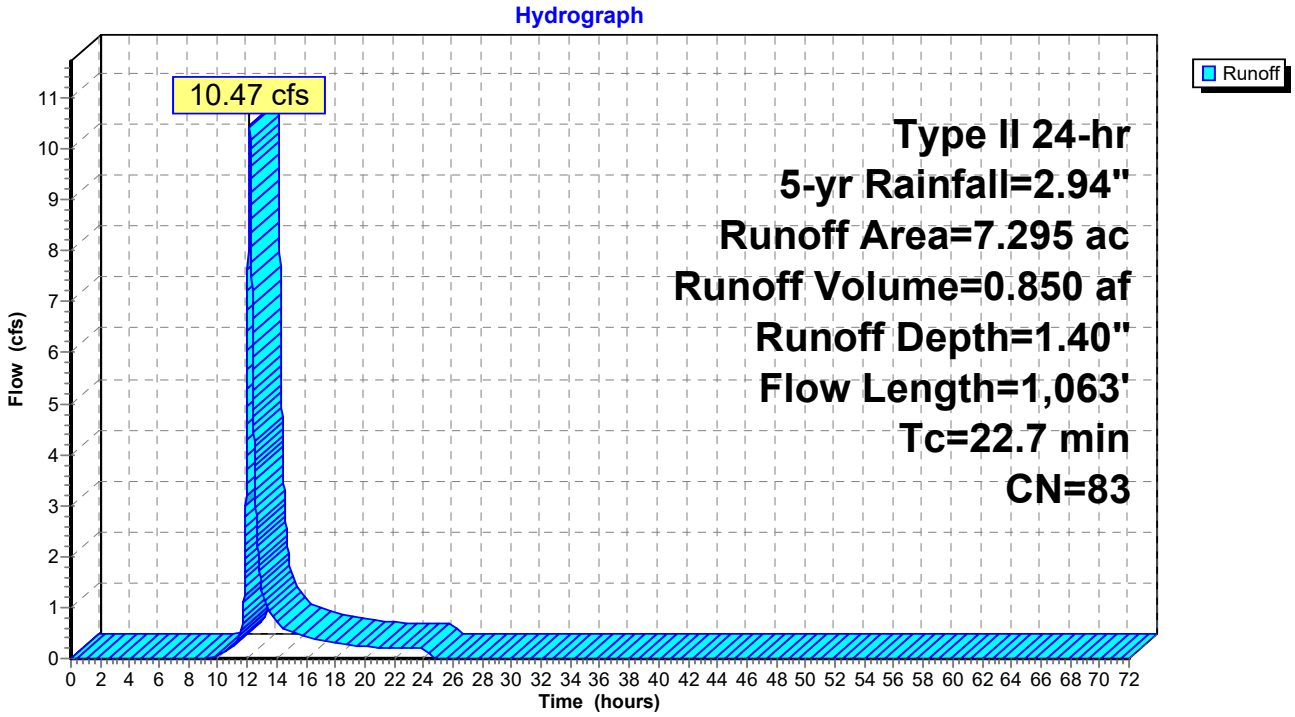
Pond 12P: 200511 Wet Pond



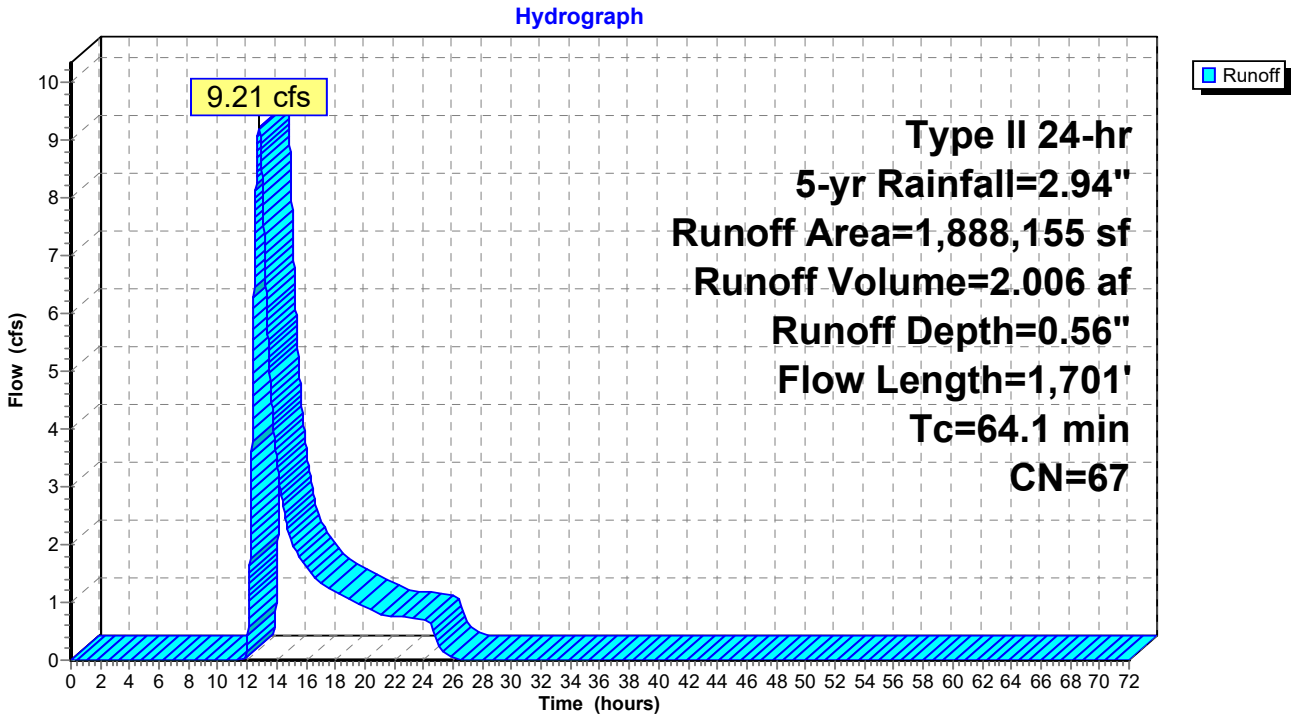
Pond 18P: Sediment Basin



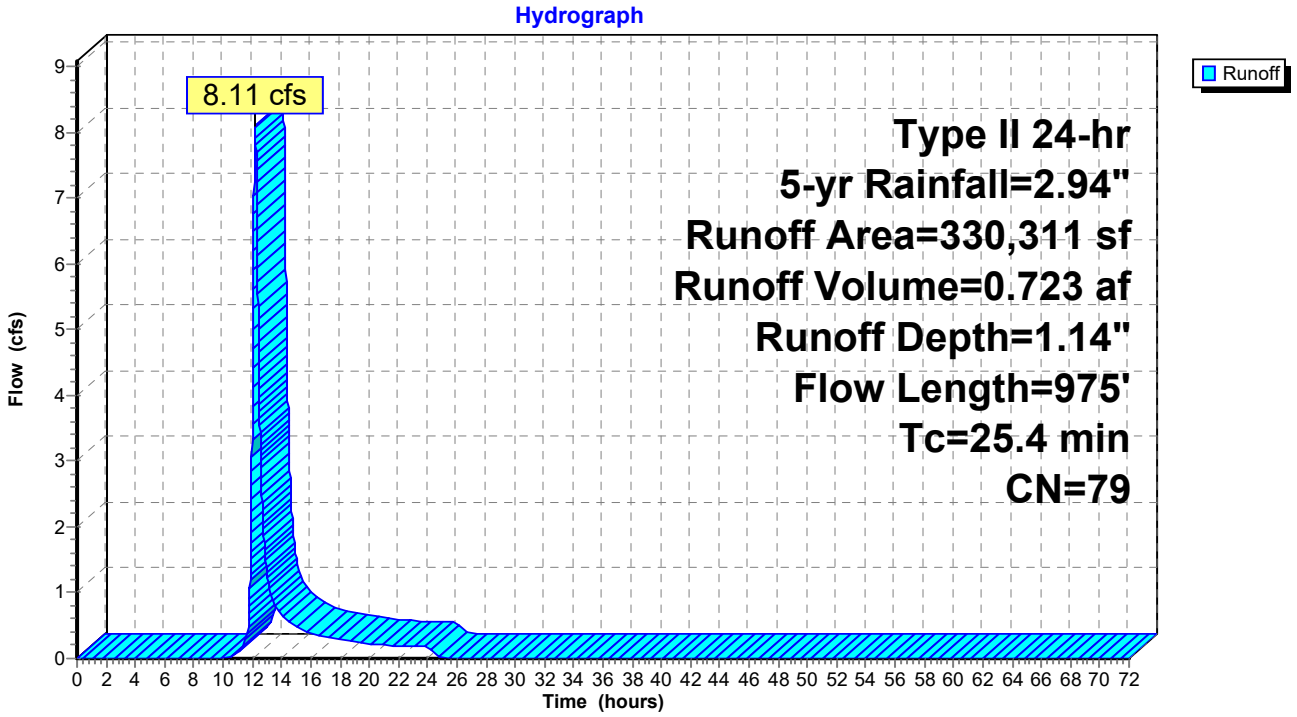
Subcatchment 24S: Stage 3 DA open soils



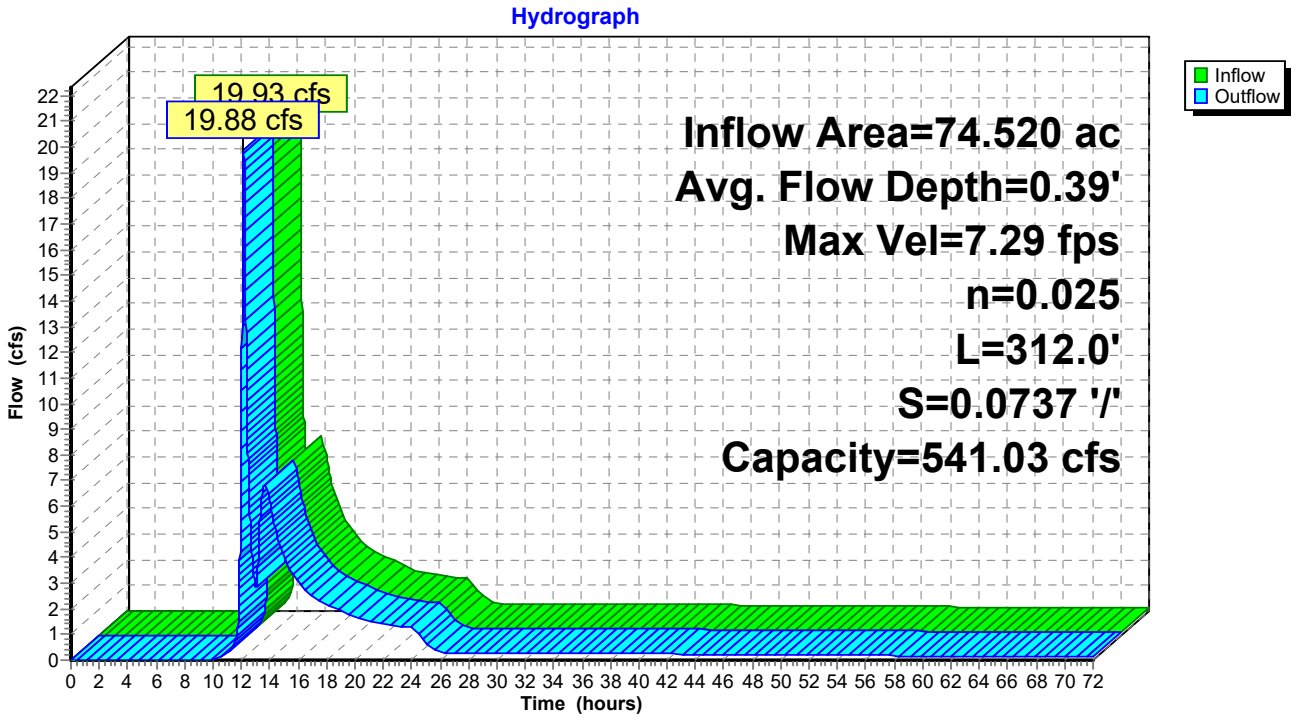
Subcatchment 25S: Stage 1 DA Proposed + Offsite



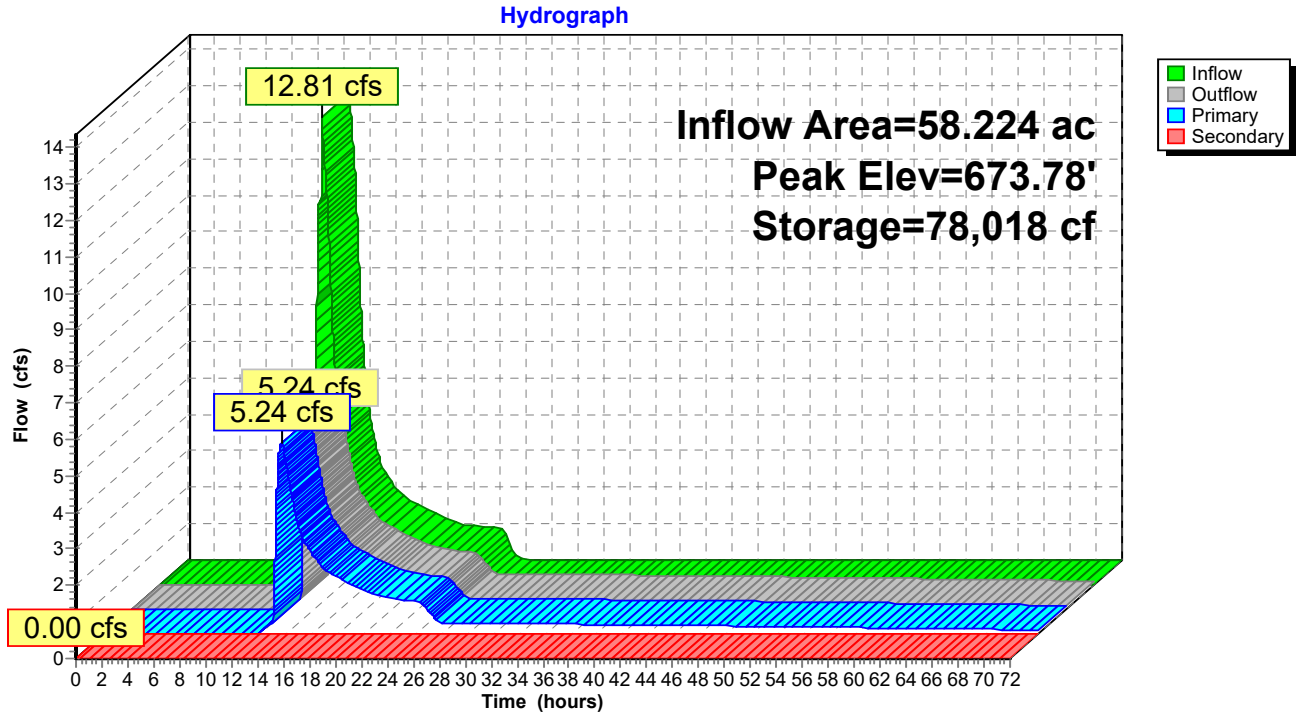
Subcatchment 26S: Stage 2 DA Proposed



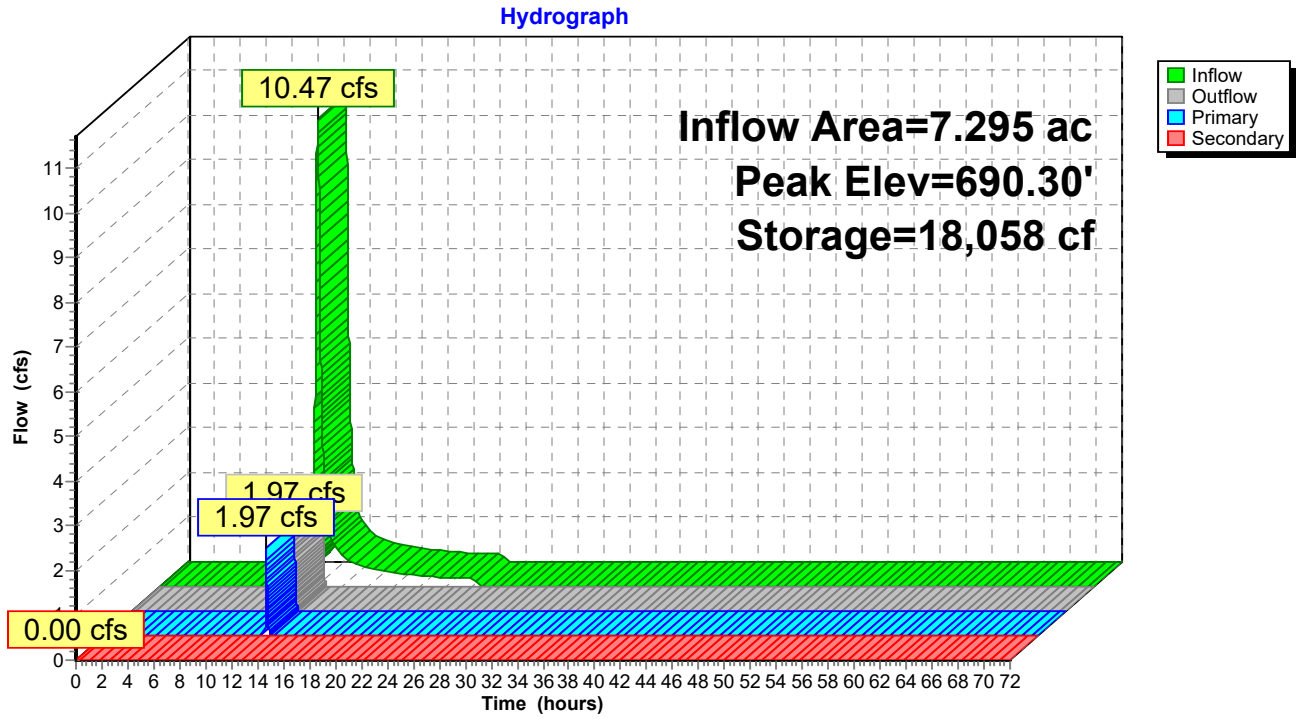
Reach 25R: Swale 3 (Pr. Cond)



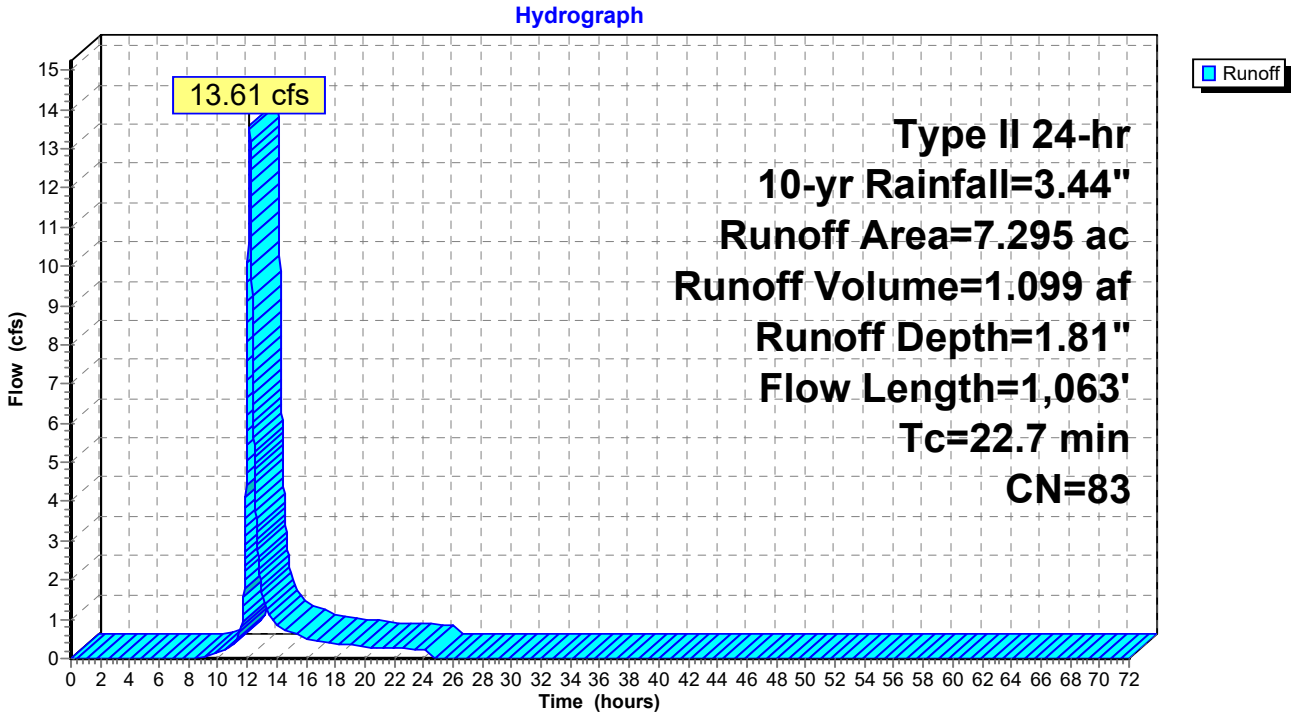
Pond 12P: 200511 Wet Pond



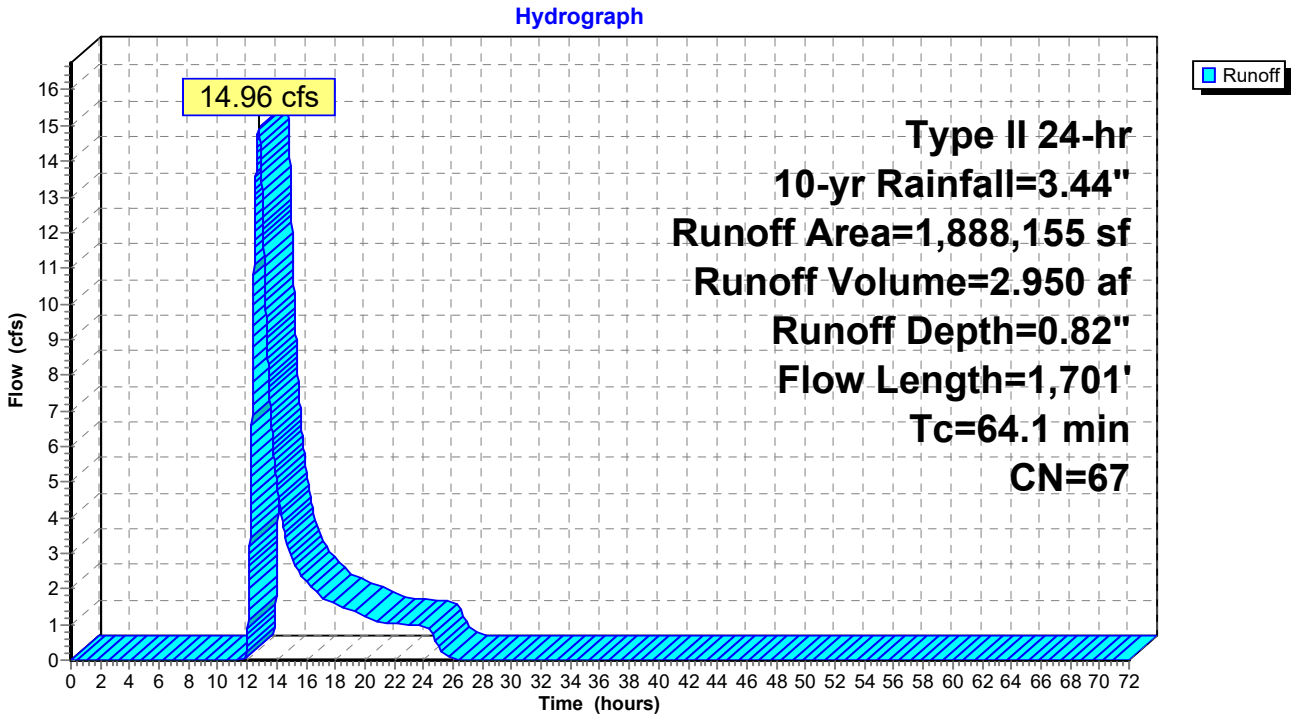
Pond 18P: Sediment Basin



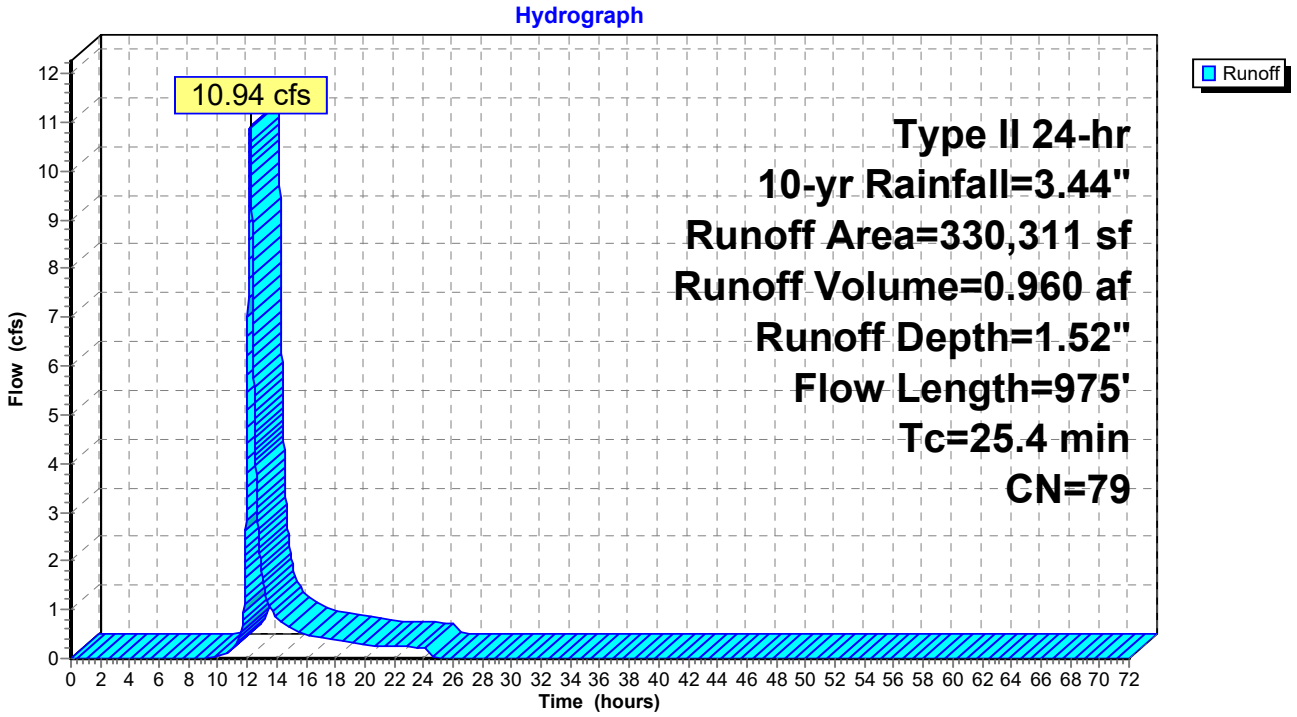
Subcatchment 24S: Stage 3 DA open soils



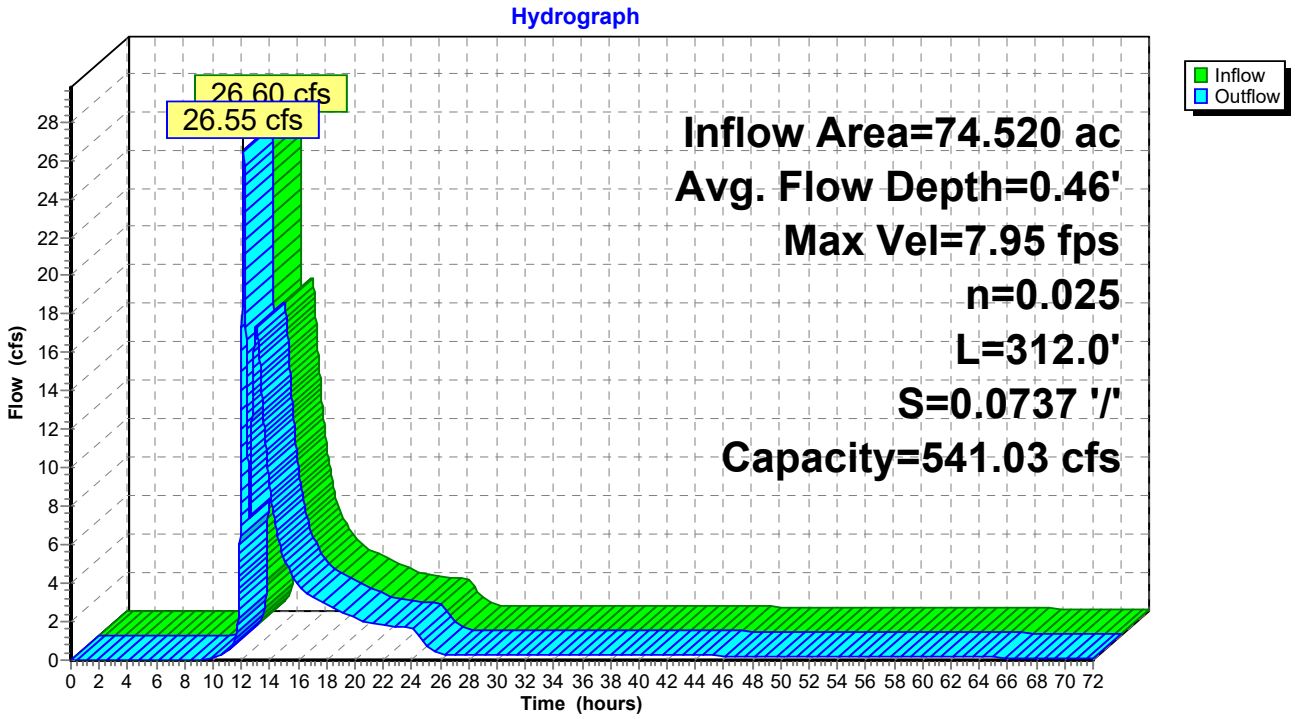
Subcatchment 25S: Stage 1 DA Proposed + Offsite



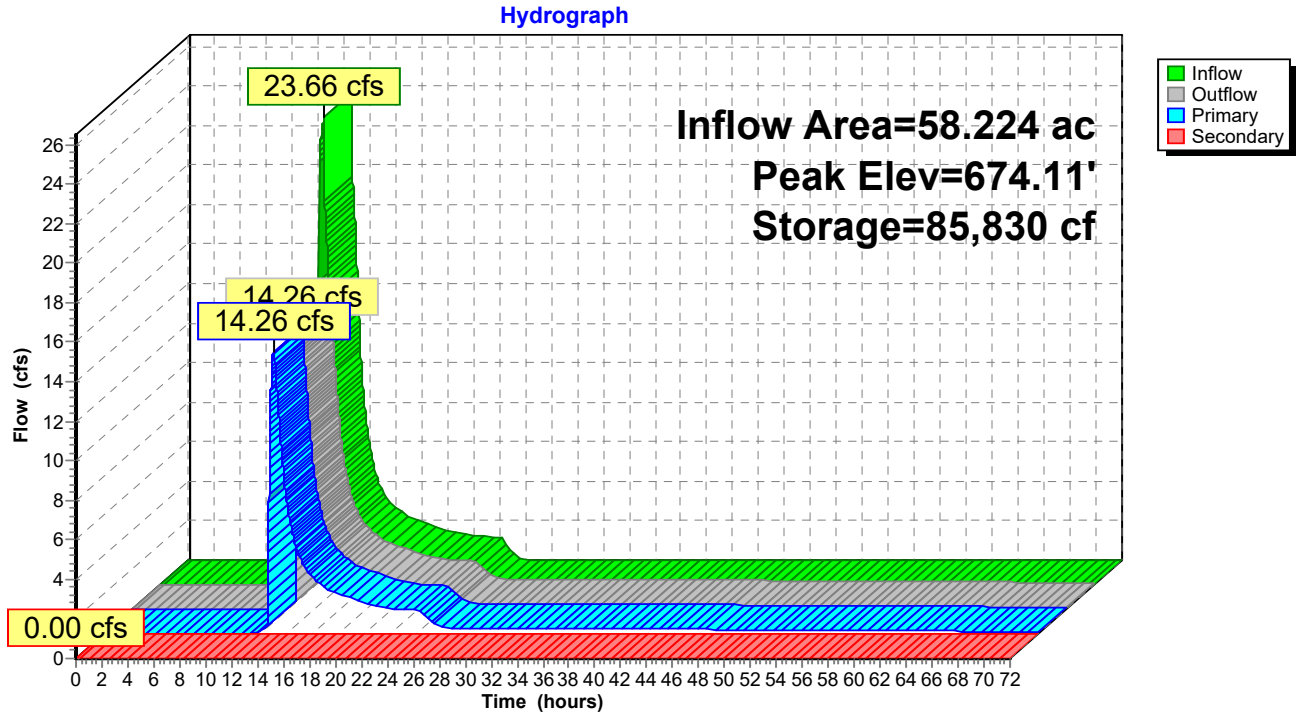
Subcatchment 26S: Stage 2 DA Proposed



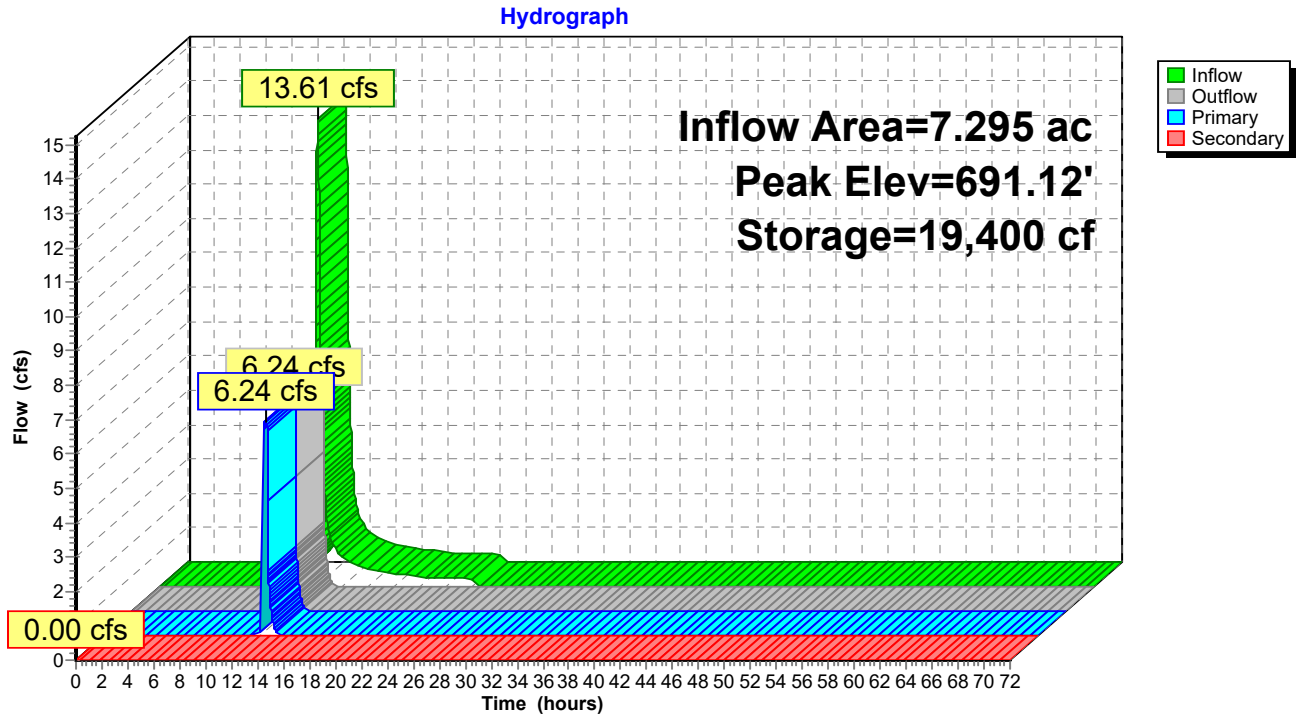
Reach 25R: Swale 3 (Pr. Cond)



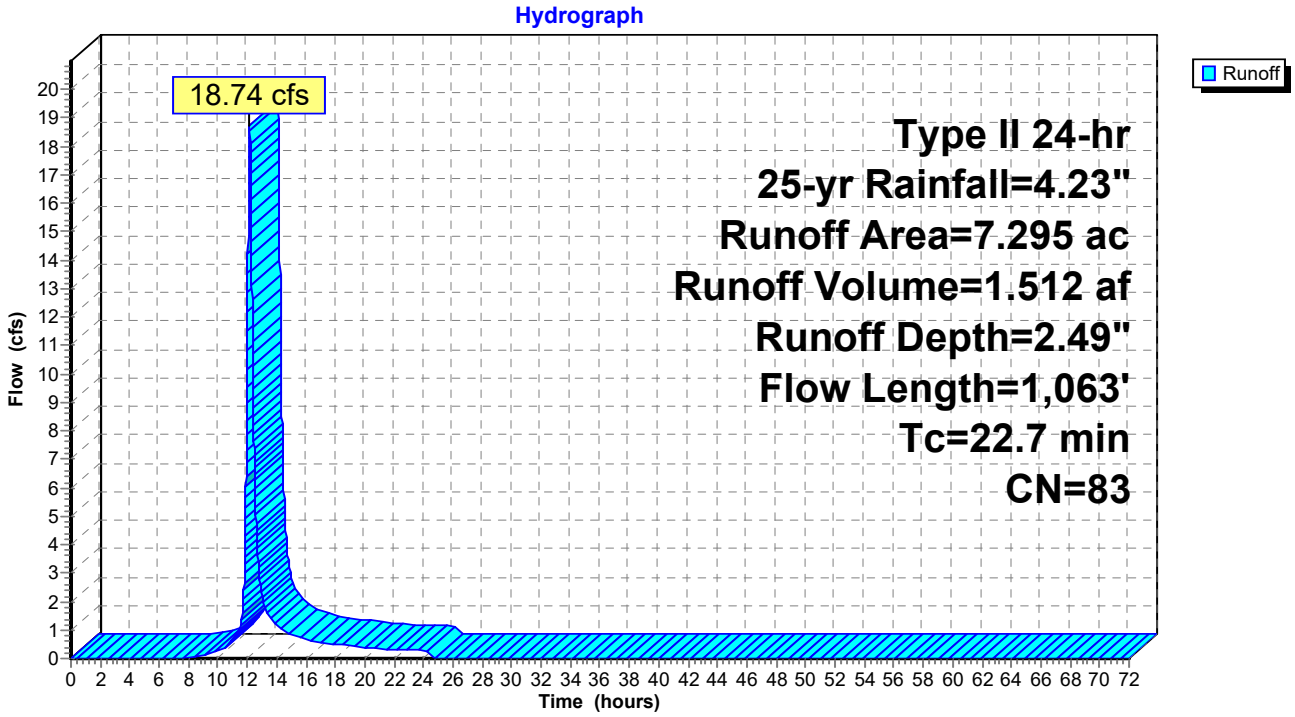
Pond 12P: 200511 Wet Pond



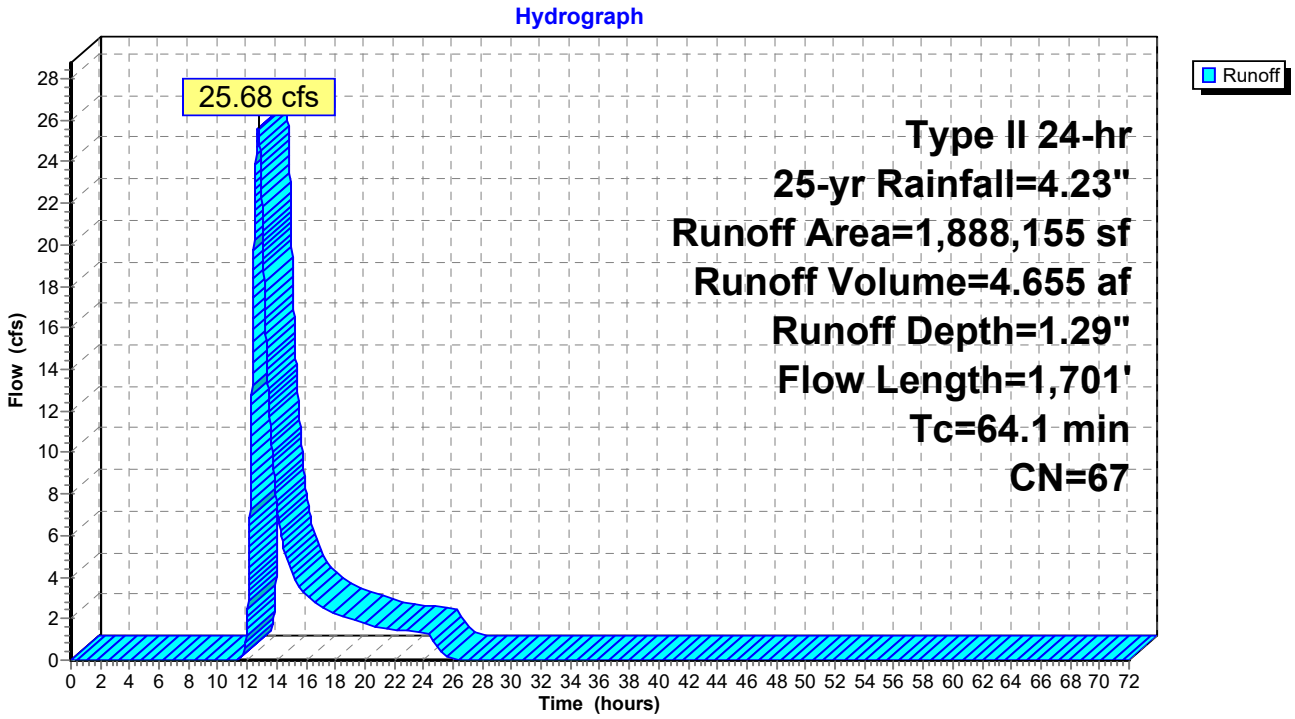
Pond 18P: Sediment Basin



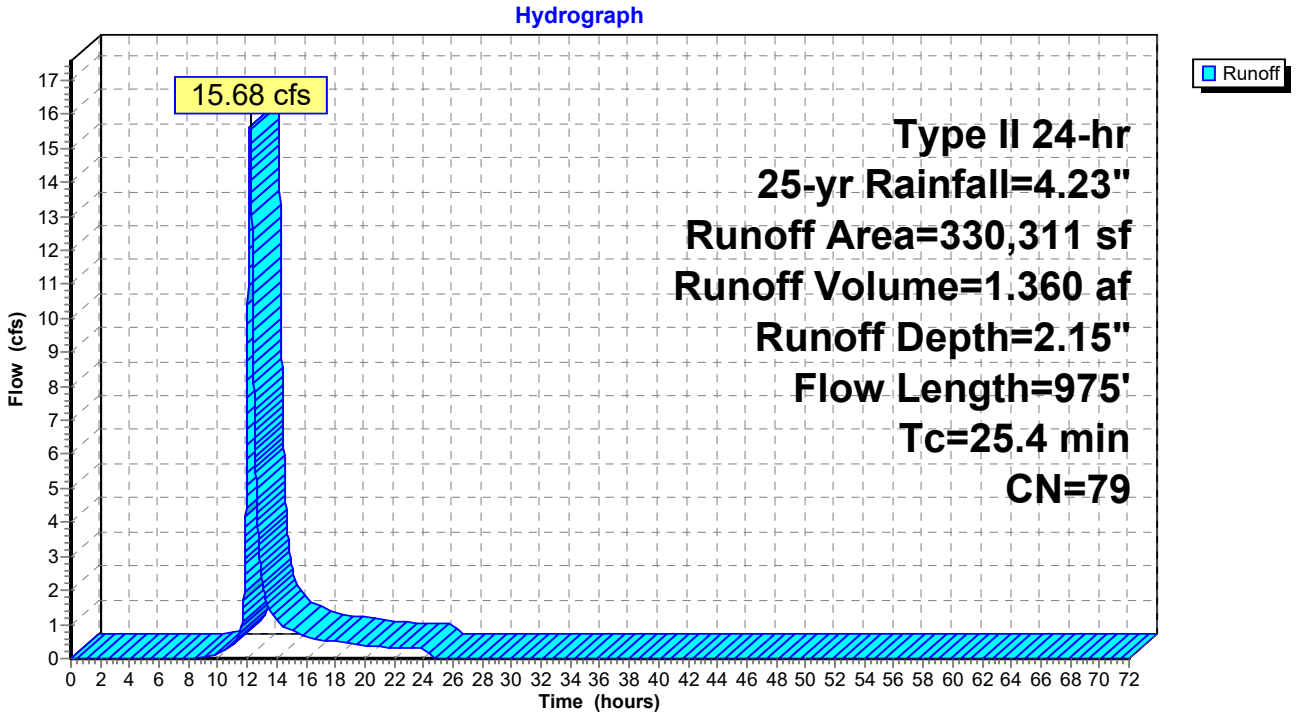
Subcatchment 24S: Stage 3 DA open soils



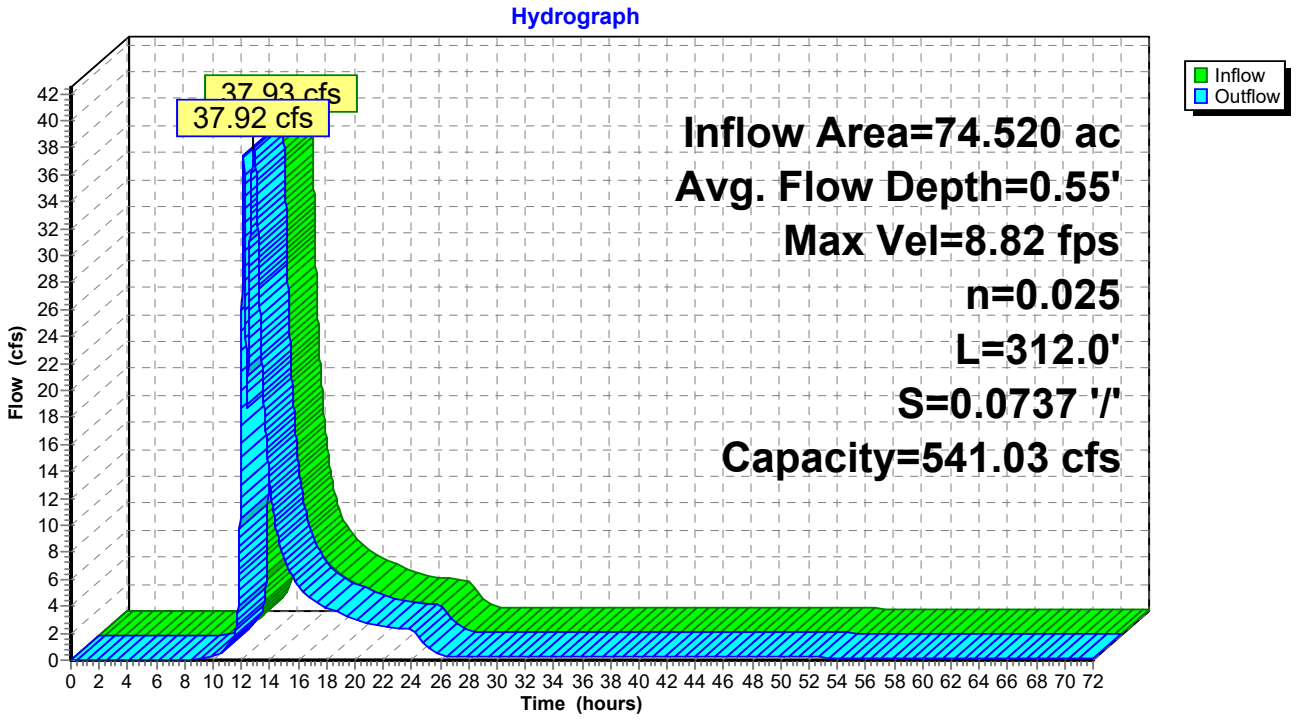
Subcatchment 25S: Stage 1 DA Proposed + Offsite



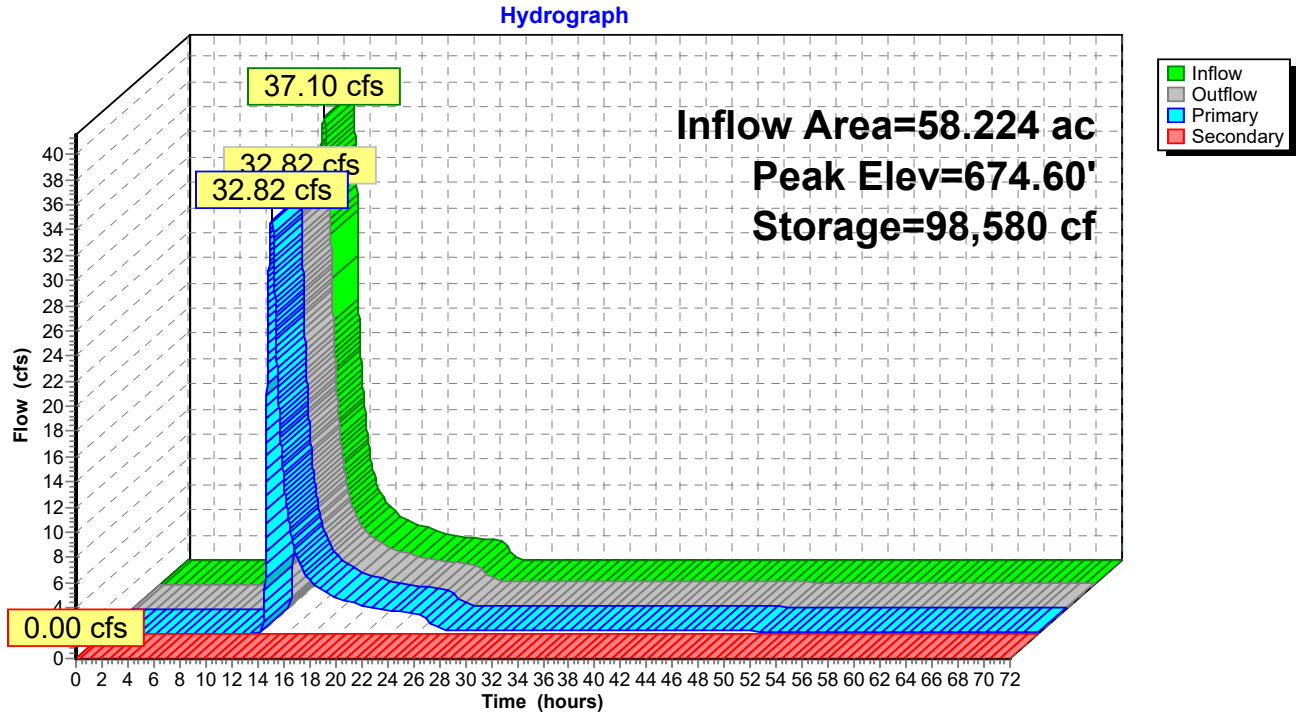
Subcatchment 26S: Stage 2 DA Proposed



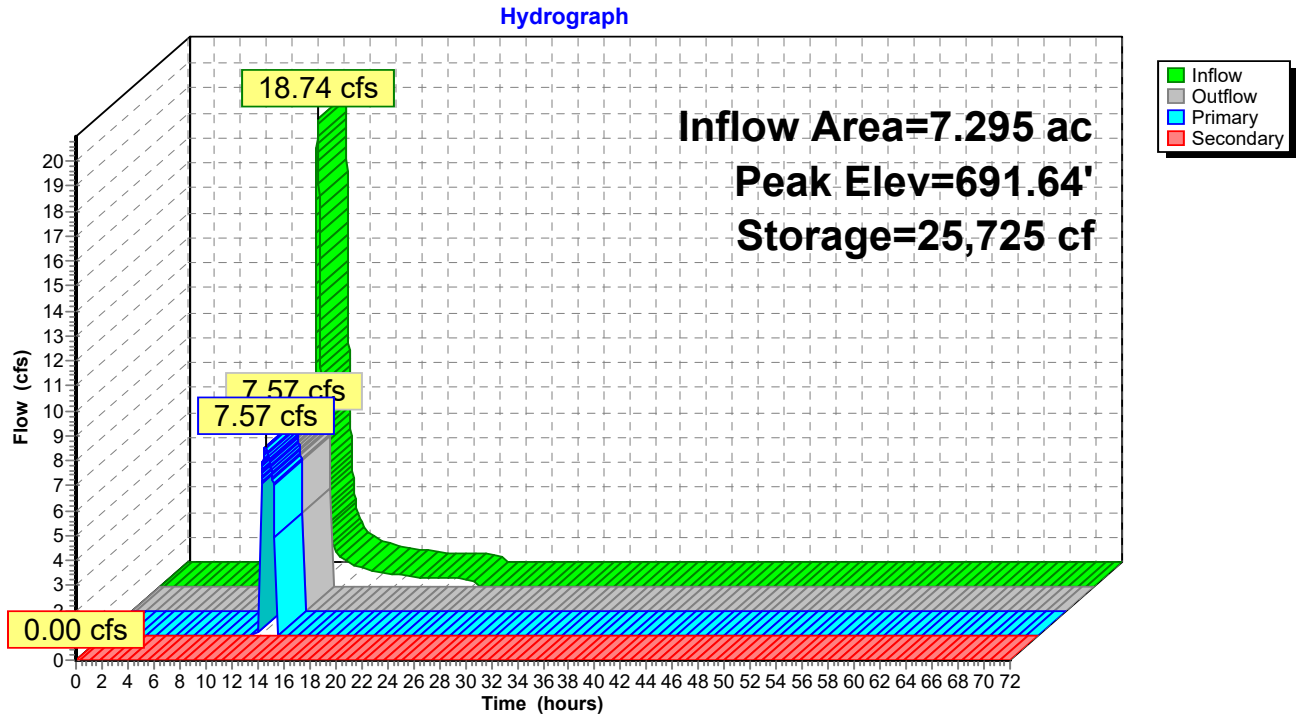
Reach 25R: Swale 3 (Pr. Cond)



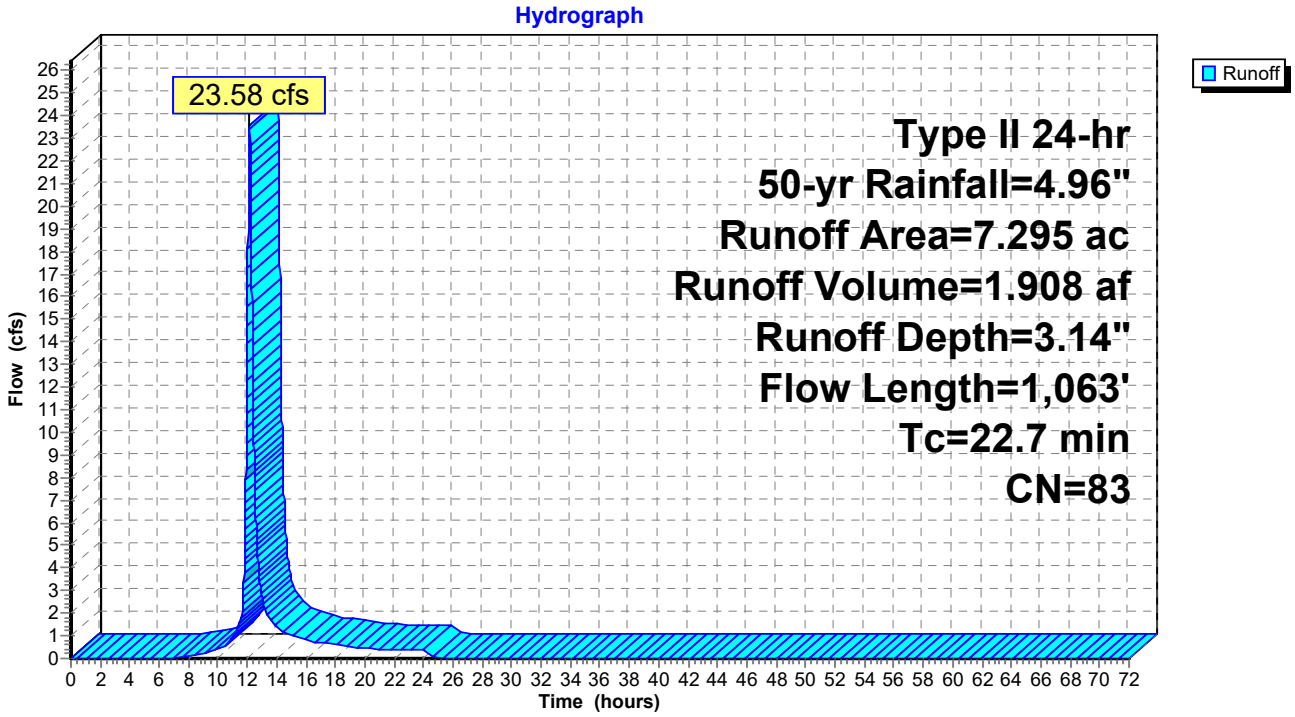
Pond 12P: 200511 Wet Pond



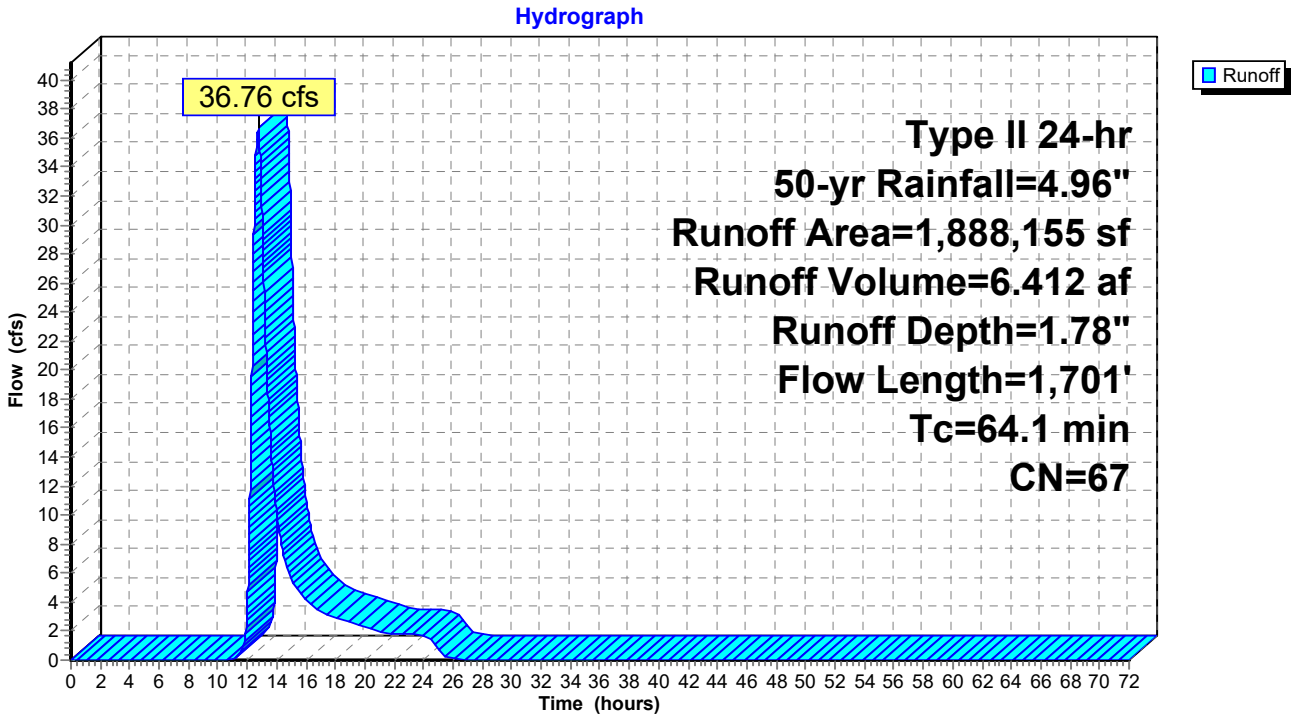
Pond 18P: Sediment Basin



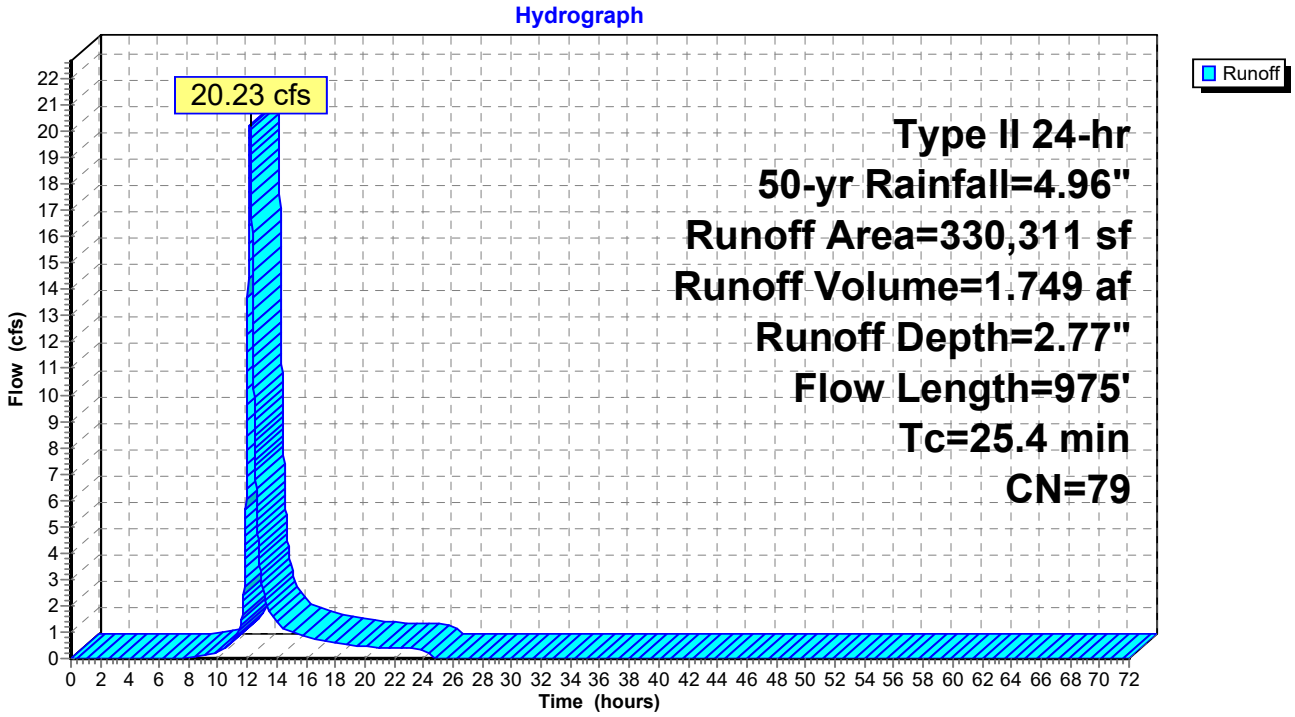
Subcatchment 24S: Stage 3 DA open soils



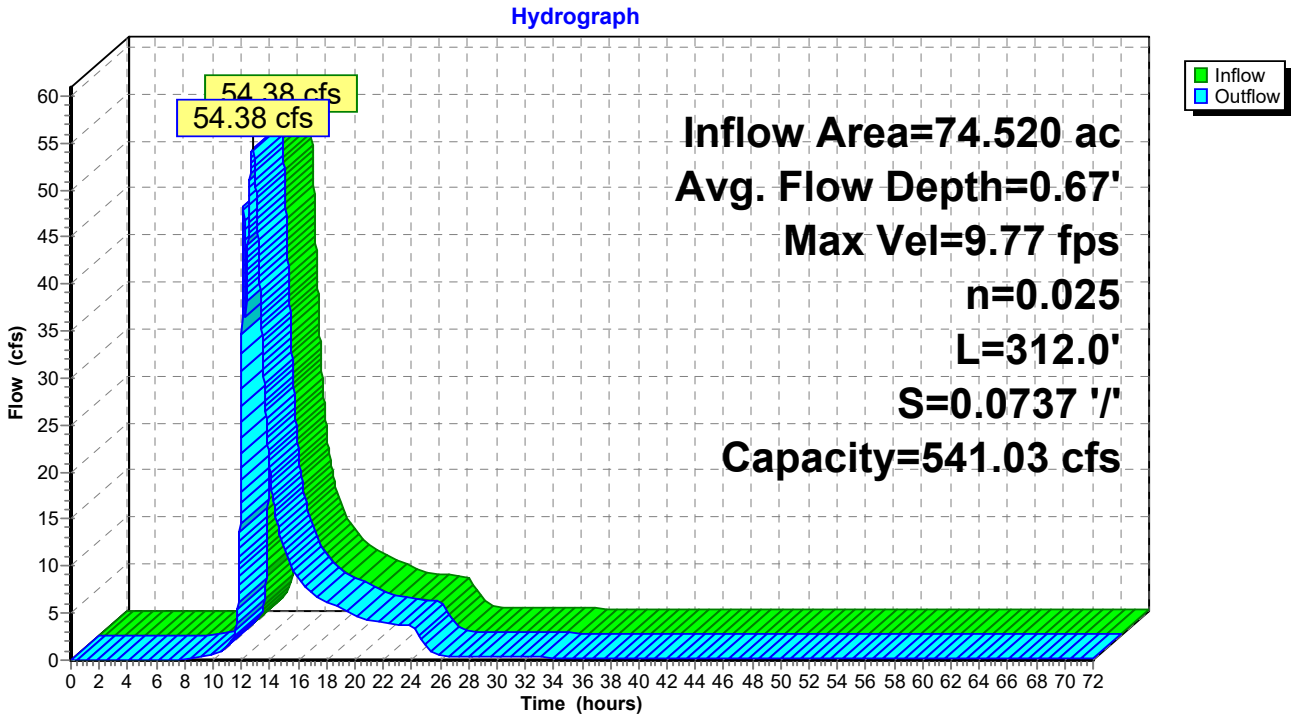
Subcatchment 25S: Stage 1 DA Proposed + Offsite



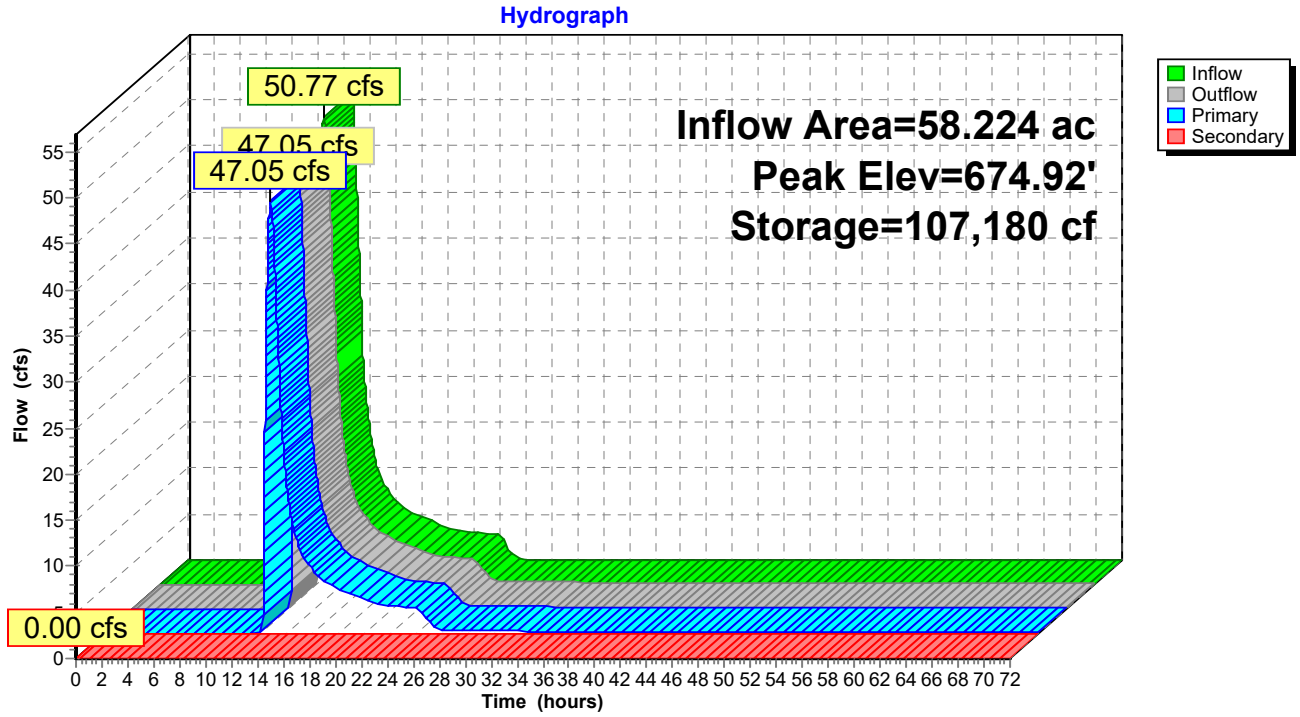
Subcatchment 26S: Stage 2 DA Proposed



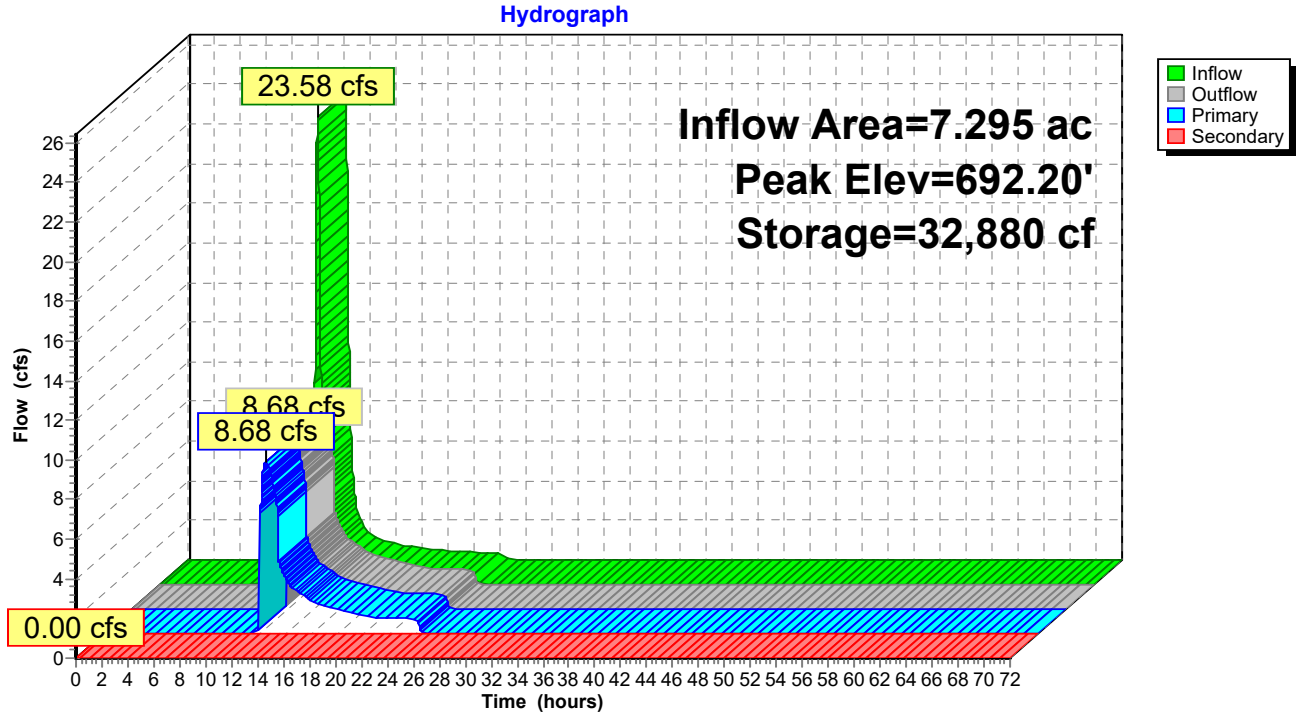
Reach 25R: Swale 3 (Pr. Cond)



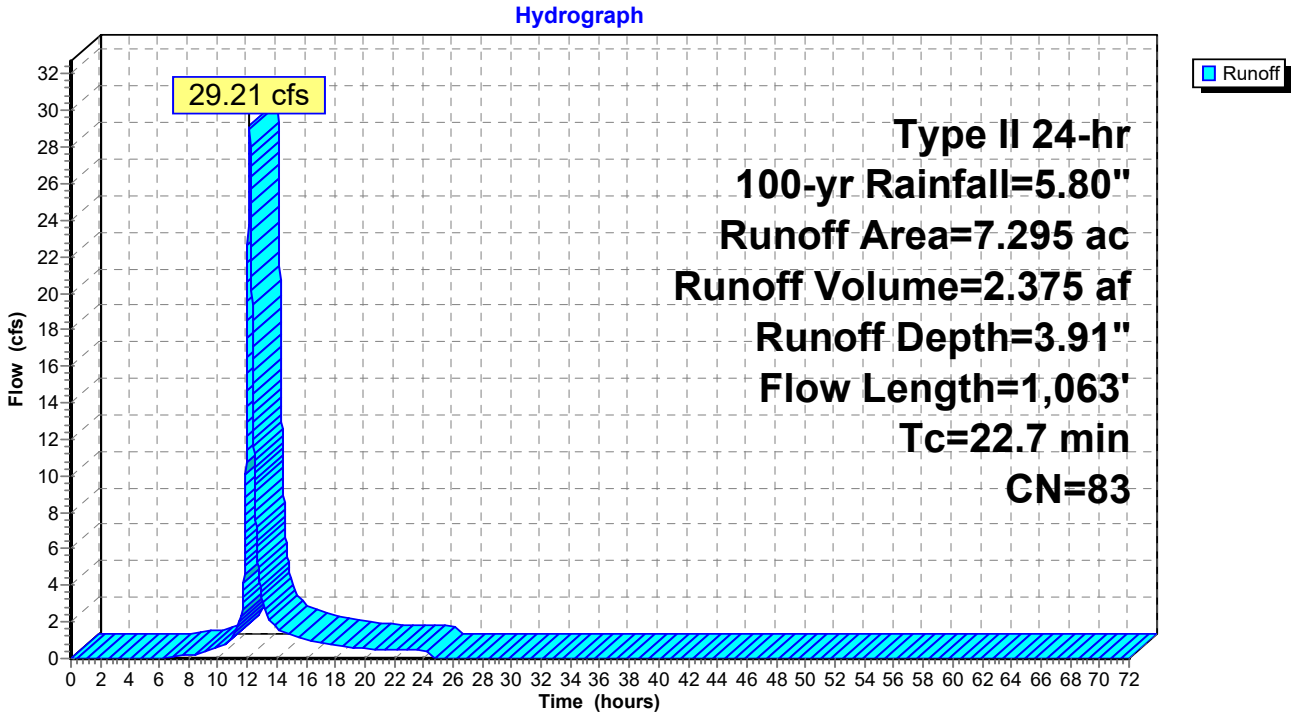
Pond 12P: 200511 Wet Pond



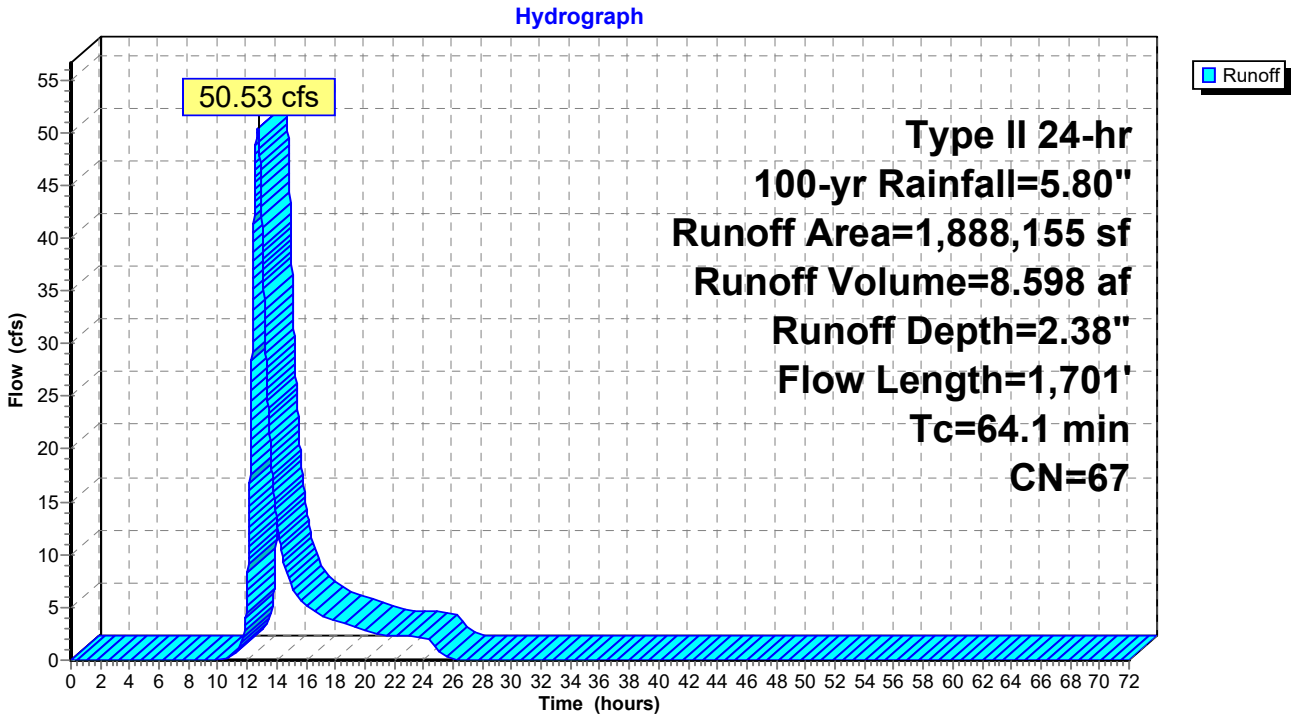
Pond 18P: Sediment Basin



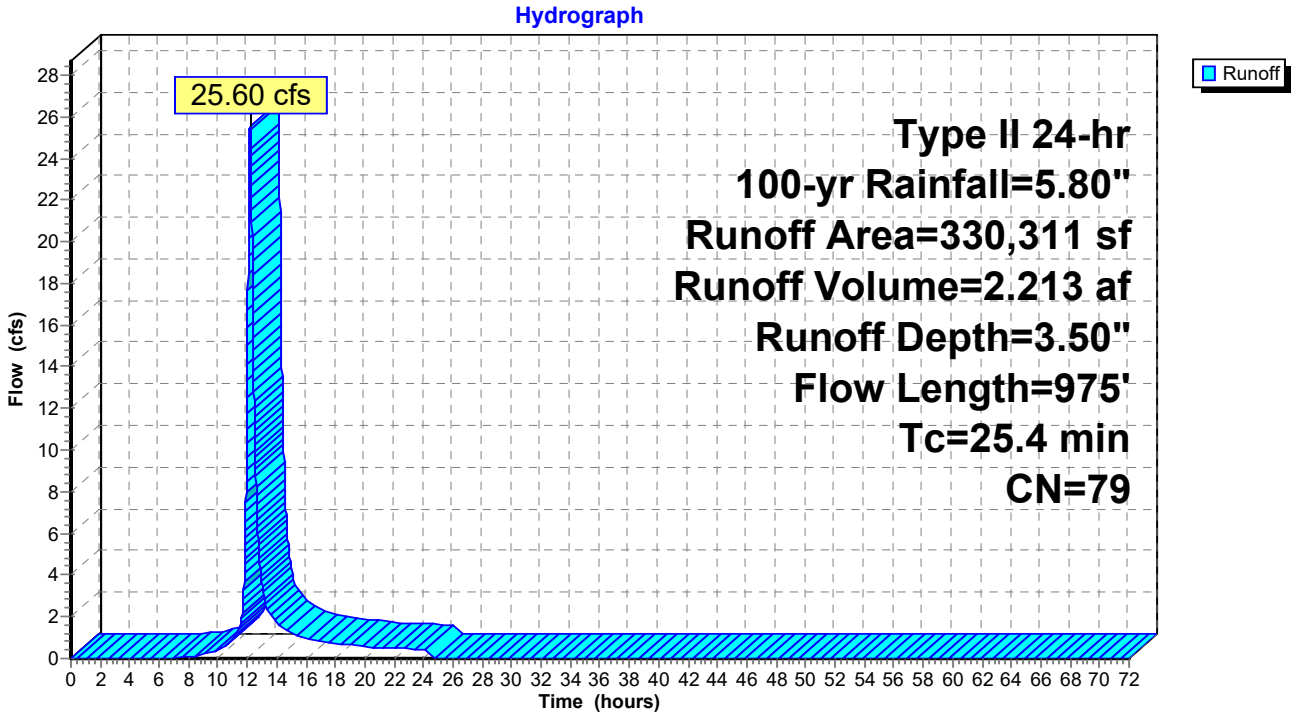
Subcatchment 24S: Stage 3 DA open soils



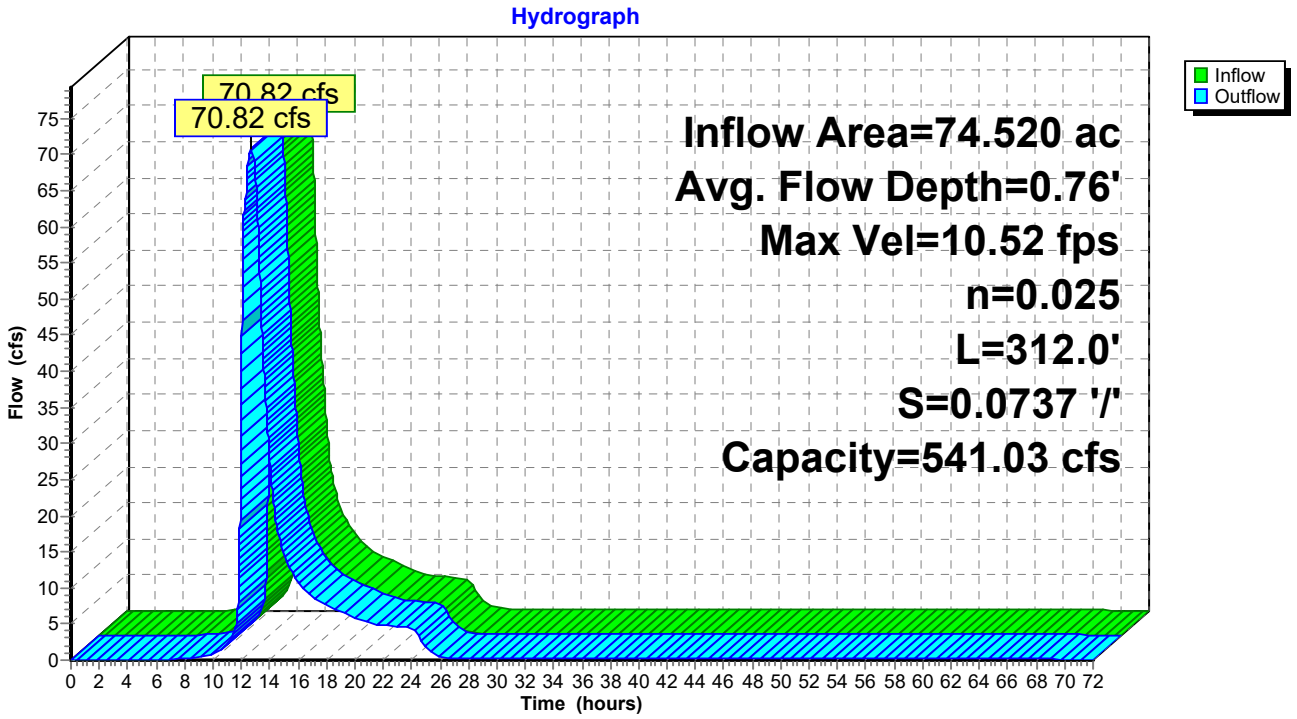
Subcatchment 25S: Stage 1 DA Proposed + Offsite



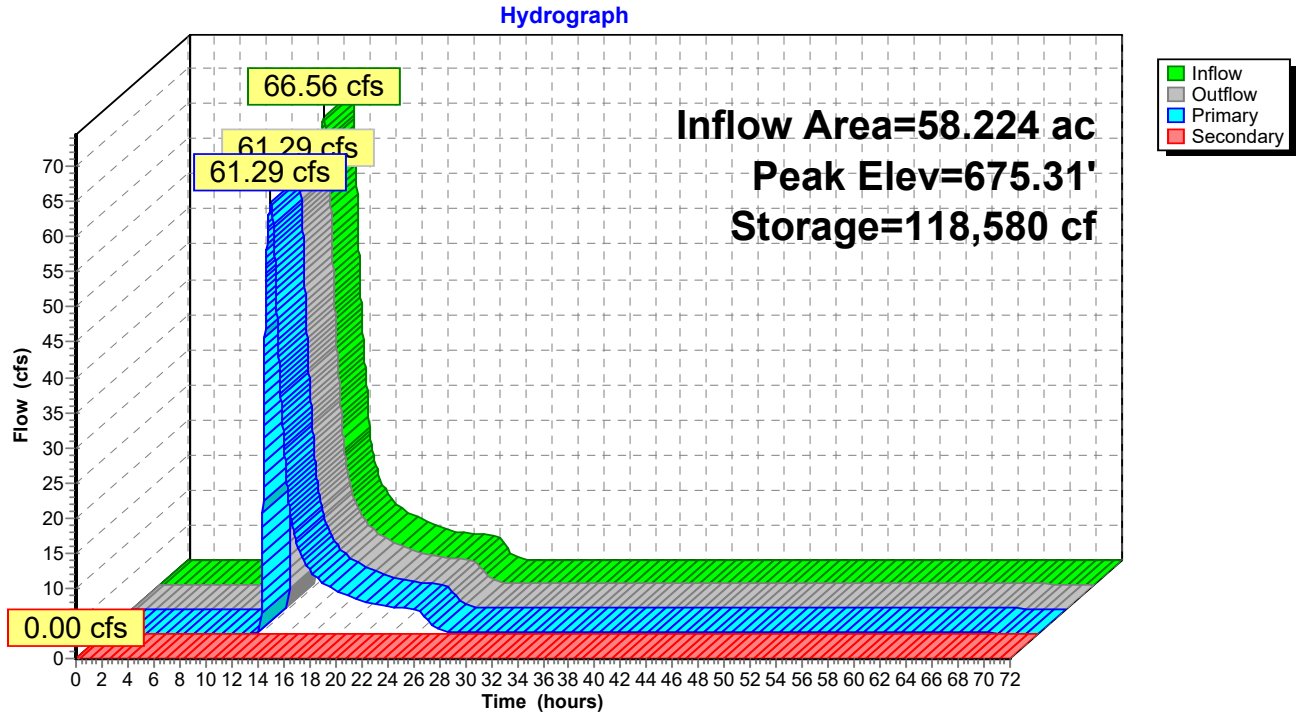
Subcatchment 26S: Stage 2 DA Proposed



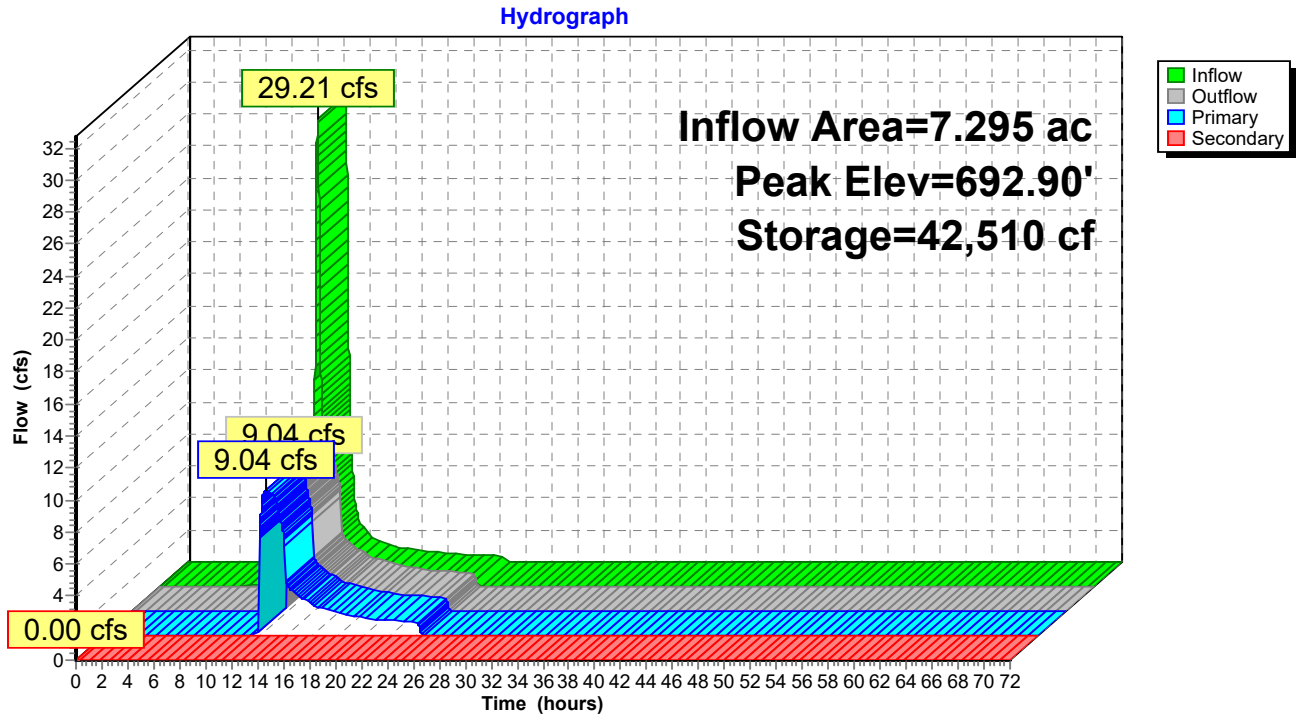
Reach 25R: Swale 3 (Pr. Cond)



Pond 12P: 200511 Wet Pond



Pond 18P: Sediment Basin



APPENDIX U

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

April 6, 2018

Vincent Ryan
Keplinger Freeman Associates
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Re: Hoag Lane Development
County: Onondaga Town/City: Manlius

Dear Mr. Ryan:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities directly at the project site.

Within 3.5 miles of the project site is a documented winter hibernaculum **Northern long-eared bat** (*Myotis septentrionalis*, state and federally listed as Threatened). These bats may travel five miles from documented locations. The main impact of concern for bats is the cutting or removal of potential roost trees. For information about any permit considerations for your project, contact the Permits staff at the NYSDEC Region 7 Office at dep.r7@dec.ny.gov, 315-426-7438. For information about potential impacts of your project on this species and how to avoid, minimize, or mitigate any impacts, contact the Region 7 Wildlife staff at 607-753-3095 ext. 247.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 7 Office, Division of Environmental Permits, as described above.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

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APPENDIX V

Helen Caster

From: Rudy Zona <rzona@rzengineering.com>
Sent: Thursday, April 30, 2020 12:17 PM
To: hcaster@rzengineering.com
Subject: FW: 200323 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Monday, March 23, 2020 3:53 PM
To: Rudy Zona <rzona@rzengineering.com>; Everleth, Jennifer A (DEC) <Jennifer.Everleth@dec.ny.gov>; Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>; Delaney, Kevin (DEC) <kevin.delaney@dec.ny.gov>; 'Scott Freeman' <sf@keplingerfreeman.com>
Subject: RE: 200323 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Rudy,

I reviewed my response to your email from October 2019. I see now that you had stated the height of the dam as 14.5 feet, while Doug had stated 16 feet. It may be helpful to all to have a conference call to clarify the height of the dam so all parties are on the same page.

Thanks,

Jennifer

From: Rudy Zona <rzona@rzengineering.com>
Sent: Monday, March 23, 2020 1:48 PM
To: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>; Everleth, Jennifer A (DEC) <Jennifer.Everleth@dec.ny.gov>; Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>; Delaney, Kevin (DEC) <kevin.delaney@dec.ny.gov>; 'Scott Freeman' <sf@keplingerfreeman.com>
Subject: 200323 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

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It appears that the town and the local residents are not clear regarding your previous response to our inquiry. Maybe our office wasn't either apparently. However, it appears the town engineer and residents are using an elevation that is 20 feet away from our work limits and part of an existing wetland area required to be protected, its outside our work

limits by 20' and proposed as an undisturbed area by our project, to be utilized as their toe of slope. *Engineering Definition : Toe of slope means a point or line of slope **in an excavation or cut** where the lower surface changes to horizontal or **meets the exiting ground slope**.* No work is intended anywhere near the elevation the town considers the toe of slope and our tie in to the existing grade is 662.0 outside the protected wetland area per our grading plan previously submitted (and hasn't changed), not 660 as the town has suggested. I understand you're reviewing the project again but maybe it would be more beneficial to meet or conference call with all parties to ensure there is no misinterpretation of your rulings. We do not want to incorrectly interpret your statements either and would like to make sure we're also clear so that if any design adjustments are required we can make them. It's unfortunate the town has brought this up again after 6 months but our developer and our office would like to make sure our design is appropriate. Thank you again for your input on our project.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

From: Rudy Zona <rzona@rzengineering.com>
Sent: Friday, October 18, 2019 2:23 PM
To: 'Ross, Jennifer E (DEC)' <Jennifer.Ross@dec.ny.gov>; 'Everleth, Jennifer A (DEC)' <Jennifer.Everleth@dec.ny.gov>; 'Murakami, Tatsuhiko V (DEC)' <tatsuhiko.murakami@dec.ny.gov>; 'Choe, Trendon P (DEC)' <Trendon.Choe@dec.ny.gov>; 'Delaney, Kevin (DEC)' <kevin.delaney@dec.ny.gov>; 'Scott Freeman' <sf@keplingerfreeman.com>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Thank you Jenn for your quick response!!! I appreciate the help!

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Friday, October 18, 2019 2:20 PM
To: Rudy Zona <rzona@rzengineering.com>; Everleth, Jennifer A (DEC) <Jennifer.Everleth@dec.ny.gov>; Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>; Delaney, Kevin (DEC) <kevin.delaney@dec.ny.gov>; Scott Freeman <sf@keplingerfreeman.com>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Rudy,

You are correct. It appears this structure would fall under the third exemption criteria highlighted below, so no dam safety permit would be necessary.

Please let me know if you have any other questions.

Best,

Jennifer

Jennifer Ross
Assistant Engineer (Environmental), Dam Safety Section
Division of Water, Bureau of Flood Protection and Dam Safety

New York State Department of Environmental Conservation
625 Broadway 4th floor, Albany, NY 12233-3504
P: (518) 402-8148 | F: (518) 402-9029 | jennifer.ross@dec.ny.gov
www.dec.ny.gov |

From: Rudy Zona <rzona@rzengineering.com>
Sent: Friday, October 18, 2019 1:58 PM
To: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>; Everleth, Jennifer A (DEC) <Jennifer.Everleth@dec.ny.gov>; Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>; Delaney, Kevin (DEC) <kevin.delaney@dec.ny.gov>; Scott Freeman <sf@keplingerfreeman.com>
Subject: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

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Per our conversation this am, we are asking for clarification if dam permitting is required for our proposed Stormwater Management Facility. We have designed the facility as a wet pond with a storage capacity of 3.33 acre feet and a maximum height of 14.5 feet from the top of the embankment to the toe of slope. I have attached our submitted construction drawing which we have shared with the town engineer Doug Miller for his review on behalf of the town. The facility has not been built or approved yet as we are still involved in the review and SEQR process. It is our understanding that you spoke with him yesterday, providing him with guidance that the facility would require dam permitting. We note in our prepared swppp, the following excerpt showing criteria listed as part of the NYSDEC guidance on dam permitting.

Construction, Reconstruction or Repair of Dams and other Impounding Structu

Regulated Activities

A Protection Of Waters Permit is required for:

Constructing, reconstructing, repairing, or modifying dams and water impounding structures that permanently or temporarily impound water as a result of a structure placed overland drainage way or which receive water from an external source such as drainage diversion or pumping of ground water.

Some examples of activities requiring this permit are:

- siting and constructing a new dam or water impounding structure (i.e., concrete, earthen, stone and wooden structures);
- reconstruction or modification (i.e., refacing, anchoring, breaching, or removal of an existing structure);
- repairs or maintenance which may affect the structural integrity or functional capability of a dam or impounding structure.

Exempt Activities

The most common impoundment related activities not needing a Protection of Waters *Permit for a Dam or Other Impoundment Structure* are constructing or repairing a dam or structure used for impounding water that satisfies any one of the following criteria:

- maximum height is 6 feet or less (maximum height is measured as the height from the downstream (outside) toe of the dam at its lowest point to the highest point at the
- maximum impounding capacity is one million gallons or less (maximum impounding capacity is measured as the volume of water impounded when the water level is at t
- maximum height is between 6 feet and 15 feet and the maximum impounding capacity is less than 3 million gallons.

Note: The exempt activities listed only represent exemptions for this section of the Protection of Waters Program. Other DEC permits under other sections of the Protection or under other Articles of the Environmental Conservation Law may be required.

Based on this criteria, we believe we fall under the third highlighted bullet point -----designated as exempt from dam permitting. Please review our attached drawing and the colored sketch highlighting key components of our proposal related to the dam permit exempt status we understand we fall under, per our conversation this morning. If you could please verify we meet this exemption and require no dam permit based on our proposal that would help us provide clear guidance to the town and it's engineer on the subject. If we do not fall under an exempt category based on the attached sketch please let me know so that we can modify our design to ensure we are not classified as a dam requiring permitting. Thank you very much for speaking with me this morning and I look forward to your response.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

Helen Caster

From: Rudy Zona <rzona@rzengineering.com>
Sent: Thursday, April 30, 2020 12:17 PM
To: hcaster@rzengineering.com
Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

-----Original Message-----
From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Wednesday, March 25, 2020 1:55 PM
To: Rudy Zona <rzona@rzengineering.com>; dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: 'Joe Lupia' <lupia7@yahoo.com>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Good afternoon all:

I spoke with Rudy on the phone this afternoon and wanted to summarize our discussion for everyone's records.

I took a look at the drawings and noted that the invert of the outlet pipe is located at an elevation of 664 feet and the top of dam elevation was given as 676.5 feet. So based on my interpretation of the drawings, I had
determined a dam height of 12.5 feet. Rudy added that there is some stone
rip-rap below this pipe down to an elevation of 662 ft, so conservatively
that would put the dam at a height of 14.5 feet. Since the maximum
impoundment and dam height are under 3 million gallons and 15 feet the dam would be exempt from needing a DEC Dam Safety Permit. I have given the exemption below.

NYRCC Part 608.3 Dams
(b) Exceptions.
The requirement of a permit pursuant to subdivision (a) of this section does not apply to the following:
(1) the construction, reconstruction, repair, breach or removal of a dam that has a height less than 15 feet, and a maximum impoundment capacity less than three million gallons;

We also discussed that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event.

Although the dam is below DEC permit thresholds, we always do advise that any dam be designed by a Professional Engineer and that our Guidelines for Design of Dams 1989 be followed as best practice. I would also offer to review any other material that may be developed with regard to the design and specifications for the impoundment if that is desired by any party.

Please feel free to contact me if further clarification is needed.

Best,

Jennifer

-----Original Message-----
From: Rudy Zona <rzona@rzengineering.com>
Sent: Wednesday, March 25, 2020 12:26 PM
To: dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: 'Joe Lupia' <lupia7@yahoo.com>; Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

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Dear Doug,

We have followed up with Ms. Ross and the result of that follow up is a conference call. The DEC has certain terminology and stipulations. We should clarify those as DEC has requested. We hope you as the town engineer will represent your client on the call.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

-----Original Message-----
From: Doug Miller <dougmiller@millerengineers.com>
Sent: Wednesday, March 25, 2020 12:05 PM

To: Rudy Zona <rzona@rzengineering.com>; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: 'Joe Lupia' <lupia7@yahoo.com>; jennifer.ross@dec.ny.gov
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Dear Rudy

Please feel free to follow up with Ms. Ross on your endeavors. Our last correspondence with NYSDEC indicates that the impoundment you propose requires a dam safety permit application as the toe of slope at the outfall has a contour of 660.0 and an adjacent spot elevation of 559.0 as shown on drawing L-200, attached for reference(a height of approximately 17.5 feet on an inclined slope). Elevations are not in adjacent protected federal wetlands as you have suggested but are depicted at the toe of the impoundment slope. Regardless, the impoundment that you propose is a significant change to the overland flow in this area and impounds 3.33 acre feet or 1,085,084 gallons of water. The impoundment structure you are proposing is depicted on drawings to be placed across an existing overland drainage way, there are residential dwellings and Town owned infrastructure immediately downstream of the proposed impoundment. We are recommending to the Town of Manlius that regardless of classification of your proposed impoundment and for safety of local residents, that the design and construction be completed to minimize any catastrophic failure events in the future. Items that need to be addressed include but are not limited to permeability of materials both (existing and proposed), lining materials and slope stability of the final installation, spillway locations being located only native material with non-erosive velocities, keyways, significant antiseep-collar flow length, greater flow capacity for spillways, greater freeboard from maximum impoundment height, special soil testing for borrow material and placement during construction, soil borings along the length of the embankment to ensure no porous soil layers are beneath the embankment, dam break analysis etc. We trust this clarifies your concern. We do not see a need to conference with NYSDEC at this time. Rather, best engineering practices, DEC guidance and requirements of the Town of Manlius Code dictate that the requirements requested by the Town Engineer on this matter be followed. Thank you.

Doug

Douglas A Miller, P.E.
Miller Engineers
Seneca Turnpike; Suite B
Box 311
Manlius, NY 13104
315-558-8417

-----Original Message-----
From: Rudy Zona <rzona@rzengineering.com>
Sent: Monday, March 23, 2020 4:29 PM
To: 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: Doug Miller <dougmiller@millerengineers.com>; 'Joe Lupia' <lupia7@yahoo.com>

Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

I just received an email back from Jenn. She has suggested a conference call to clarify the height of the dam and permitting requirements. Please let me know when you all are available.

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

-----Original Message-----
From: Jamie Sutphen <jsutphen@bsfattorneys.com>
Sent: Monday, March 23, 2020 2:59 PM
To: Rudy Zona <rzona@rzengineering.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: Doug Miller <dougmiller@millerengineers.com>; Joe Lupia <lupia7@yahoo.com>
Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Here is the DEC response.

Jamie L. Sutphen, Esq.
Baldwin, Sutphen & Frateschi, PLLC
126 N. Salina Street Suite 400
Syracuse, New York 13202
Phone: 315- 477-0100
Cell: 315-345-1666*
Fax: 315-477-5071
jsutphen@bsfattorneys.com

*In accordance with the Executive Order of Governor Cuomo, dated March 20,2020, the physical offices of Baldwin, Sutphen & Frateschi, PLLC are closed. I and many of our staff are equipped remotely and we are committed to deliver legal services to our clients during this time of crisis. Do not hesitate to email or call my cell phone.

This electronic message may contain privileged or confidential information.
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_____
In accordance with Internal Revenue Service Circular 230, we inform you that any discussion of a federal tax issue contained in this communication (including any attachments) is not intended or written to be used, and it cannot be used, by any recipient for the purpose of (i) avoiding penalties that may be imposed on the recipient under United States federal tax laws, or (ii) promoting, marketing or recommending to another party any tax-related matters addressed herein.

-----Original Message-----
From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Friday, March 20, 2020 1:52 PM
To: Doug Miller <dougmiller@millerengineers.com>
Cc: Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Doug,

Regardless of the height and impoundment size, Dam Safety would consider this impoundment a dam. Since the dam is over 15 feet in height the impoundment would need to have a maximum impoundment of less than 1 million gallons to be under Dam Safety Permit thresholds.

Since the dam is 16.5 feet in height and 3.33 acre-feet, it would appear that the dam is just over the permit thresholds. Therefore, I do think this impoundment will require a Dam Safety Permit.

Thank you,

Jennifer

Jennifer Ross
Assistant Engineer, Division of Water
State Cell 518-935-8973

-----Original Message-----
From: Doug Miller <dougmiller@millerengineers.com>
Sent: Friday, March 20, 2020 9:10 AM
To: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Cc: Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>
Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

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Im not sure this got through yesterday. Looking for some final clarification. Local residents downstream of the proposed impoundment have expressed concern

-----Original Message-----
From: Doug Miller
Sent: Thursday, March 19, 2020 4:04 PM
To: jennifer.ross@dec.ny.gov
Cc: Murakami, Tatsuhiko V (DEC <tatsuhiko.murakami@dec.ny.gov>; Choe, <trendon.choe@dec.ny.gov>

Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Hello Ms Ross

Miller Engineers represents the Town of Manlius NY. We are reviewing construction drawings for a proposed subdivision in the Town. As part of a stormwater plan we have received the attached information. Can you confirm the attached.

Last fall we had spoken to you and you indicated that the impoundment shown on attached L-200 was considered to be a dam by NYSDEC standards. We have your recent correspondence which now indicates that the impoundment is not a dam. At the Northwest corner of the impoundment local residents indicate elevation 660 at the toe of the slope, top of berm 676.5 (Height 16.5 feet) Impoundment volume 3.33 acre feet, we concur with this information.
Developer is looking to mov e forward with this project and the down stream residents of the area have voiced concern over the impoundment and are looking for clarification as to whether this is a dam and if so what if any dam safety precautions should be taken.

Thanks for your assistance
Doug Miller

Douglas A Miller, P.E.
Miller Engineers
Seneca Turnpike; Suite B
Box 311
Manlius, NY 13104
315-558-8417

-----Original Message-----
From: Vincent Ryan <vr@Keplingerfreeman.com>
Sent: Thursday, March 19, 2020 2:21 PM
To: Doug Miller <dougmiller@millerengineers.com>; Jamie Sutphen <jsutphen@bsfattorneys.com>
Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

-----Original Message-----
From: Rudy Zona <rzona@rzengineering.com>
Sent: Friday, October 18, 2019 1:58 PM
To: 'jennifer.ross@dec.ny.gov' <jennifer.ross@dec.ny.gov>; 'jennifer.everleth@dec.ny.gov' <jennifer.everleth@dec.ny.gov>; 'Murakami, Tatsuhiko V (DEC)' <tatsuhiko.murakami@dec.ny.gov>; 'Choe, Trendon P (DEC)'
<Trendon.Choe@dec.ny.gov>; 'kevin.delaney@dec.ny.gov'
<kevin.delaney@dec.ny.gov>; Scott Freeman <sf@Keplingerfreeman.com>

Subject: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Jenn,

Per our conversation this am, we are asking for clarification if dam permitting is required for our proposed Stormwater Management Facility. We have designed the facility as a wet pond with a storage capacity of 3.33 acre feet and a maximum height of 14.5 feet from the top of the embankment to the toe of slope. I have attached our submitted construction drawing which we have shared with the town engineer Doug Miller for his review on behalf of the town. The facility has not been built or approved yet as we are still involved in the review and SEQR process. It is our understanding that you spoke with him yesterday, providing him with guidance that the facility would require dam permitting. We note in our prepared swppp, the following excerpt showing criteria listed as part of the NYSDEC guidance on dam permitting.

Based on this criteria, we believe we fall under the third highlighted bullet point -----designated as exempt from dam permitting. Please review our attached drawing and the colored sketch highlighting key components of our proposal related to the dam permit exempt status we understand we fall under, per our conversation this morning. If you could please verify we meet this exemption and require no dam permit based on our proposal that would help us provide clear guidance to the town and it's engineer on the subject. If we do not fall under an exempt category based on the attached sketch please let me know so that we can modify our design to ensure we are not classified as a dam requiring permitting. Thank you very much for speaking with me this morning and I look forward to your response.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI

Principal

RZ Engineering, PLLC

6320 Fly Road, Suite 109

East Syracuse, NY 13057

Ph. (315)432-1089

Fax (315)445-7981

APPENDIX W

June 11, 2020

TO: Doug Miller, PE
MS-4 Representative
Town of Manlius
AND
Val Murakami
NYSDEC Region 7
Syracuse, NY 13204

RE: RZE #17061
5-acre Disturbance Permit
Hoag Lane Subdivision
Hoag Lane
Town of Manlius
Onondaga County, NY 13066

NARRATIVE

Hoag Road Properties, LLC proposes to subdivide a 30.40± acre parcel located on Hoag Lane east of Churchill Lane in the Town of Manlius, Onondaga County, NY. Currently existing on the parcel is one residential structure with a mix of forested areas and overgrown vegetated areas throughout. Development will result in 20 single-family homes of with asphalt roadway. Development will also include removal of the existing residential driveway for a new connection off of Hoag Lane for primary access. Proposed development will include approximately 19.85+/- acres of disturbance (managed in 7 smaller stages), above the 5 acres threshold. Therefore, this project will require permission from the NYSDEC to disturb more than 5 acres. This project will also require permission from the regulated MS4. Proposed site improvements within the project will include grading and excavation, general site landscaping, stormwater facilities, and sanitary structures tied into public sewer. A wetland delineation provided by Environmental Resources. LLC in --- has provided limits of the existing wetland, see enclosed report by Environmental Resources. LLC The proposed construction does not propose any disturbance to the existing wetland limits or associated buffer. The purpose of this narrative is to describe the proposed site plan and the proposed staged construction sequence.

Construction of the proposed site will consist of one phase broken down into seven stages to limit the potential for erosion and sedimentation issues during the construction process. The seven stages have been outlined on the contract drawings L-102 through L-108. We anticipate that several stages will include disturbance exceeding 5 acres, however this time of open soils exceeding 5 acres will be limited and short.

(1.) As provided in drawings L-102 through L-108 of the site plan set, we anticipate the site to include approximately 7 stages. Each stage is a guide for erosion control and may require adjustments and alterations based on project schedule and field conditions.
   a. Stage 1 will generally consist of installing the proposed entrance drive, wet pond, the proposed bypass swale and general grading of lots 11 through 14. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this all stages. The anticipated disturbance of this stage will be approximately 6.4± acres with an anticipated duration of 6 weeks.
   b. Stage 2 will generally consist of maintaining the proposed temporary sediment basin, continuance of the proposed road and general grading of lots 4 through 10 and 18-19. The installed road will

be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 7.8± acres with an anticipated duration of 6 weeks.

c. Stage 3 will generally consist of maintaining the proposed sediment basin, continuance of the proposed road and general grading of lots 15 through 17 and 1 through 3. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 4.1± acres with an anticipated duration of 6 weeks.
d. Stage 4 will generally consist of finishing all rough earthwork in non stabilized areas and filling in the temporary sediment basin. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 1.12± acres with an anticipated duration of 7 weeks.
e. Stage 5 will generally consist of installing all row utilizes including storm, sanitary and water. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 3.2± acres with an anticipated duration of 2 weeks.
f. Stage 6 will generally consist of installation of final road grade and base except top course which must be installed within 1 year of project completion. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 3.1± acres with an anticipated duration of 2 weeks.
g. Stage 7 will generally consist of individual lot construction on an as needed basis. Each lot will include individual erosion control measures during construction as outlined on drawing 2/L-108. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of each lot will differ based on the lot size and has an anticipated duration of 3 weeks.

(2.) Individual erosion and sediment control practices for each stage has been provided on drawings L-102 through L-108 of the site plan set.

Please feel free to contact my office with all questions and/or comments.

Very Truly Yours,

Rudy L. Zona, P.E.

6320 Fly Road Suite 109
East Syracuse, NY 13057
Ph: 315.432.1089
rzona@rzengineering.com

APPENDIX X

ENVIRONMENTAL RESOURCES, LLC
CONSULTING SERVICES

June 13, 2019

Mr. Tom Douglas
7241 Kendall Drive, East
East Syracuse, New York 13057

Subject: Wetland Delineation Results, 5280 Hoag Lane Project Site, Town of Manlius, Onondaga County, New York.

Dear Mr. Douglas:

At your request, Environmental Resources, LLC (ERS) conducted a field wetlands delineation and data collection at the above referenced 30± acre project site on May 31, 2019 to determine the on-site limits of state and/or federal jurisdictional wetlands and streams. The sites jurisdictional water resources were identified by the presence of hydrophytic vegetation, hydric soils, and physical indicators of wetland hydrology in accordance with the methodology described in the *1987 Corps of Engineers Wetland Delineation Manual*, the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Regions,* and the New York State Department of Environmental Conservation *Wetland Delineation Manual.*

RESULTS

As shown on the attached survey map, the results of our investigation and data collection has determined that the study area supports a 745± linear foot (0.24± acres) intermittent stream channel in the west portion of the project site that enters the sites south property line, conveying surface waters northwest before existing the sites west boundary line. This intermittent stream channel has a low profile, and varies in width from 18" to 30" wide.

A second water resource was identified as a 0.10± acre ground water seep wetland that occurs at the west end of the site's north boundary line. This wetland discharges ground water to the surface, which then flows east before converging into the sites intermittent stream channel.

Remaining areas of the site are confirmed to be undulating site uplands that are dominated by upland vegetation, and exhibit no hydric soil characteristics or evidence of wetland hydrology.

REGULATORY GUIDANCE

The result of our investigation has determined that the site does not support New York State Department of Environmental Conservation regulated wetlands or streams.

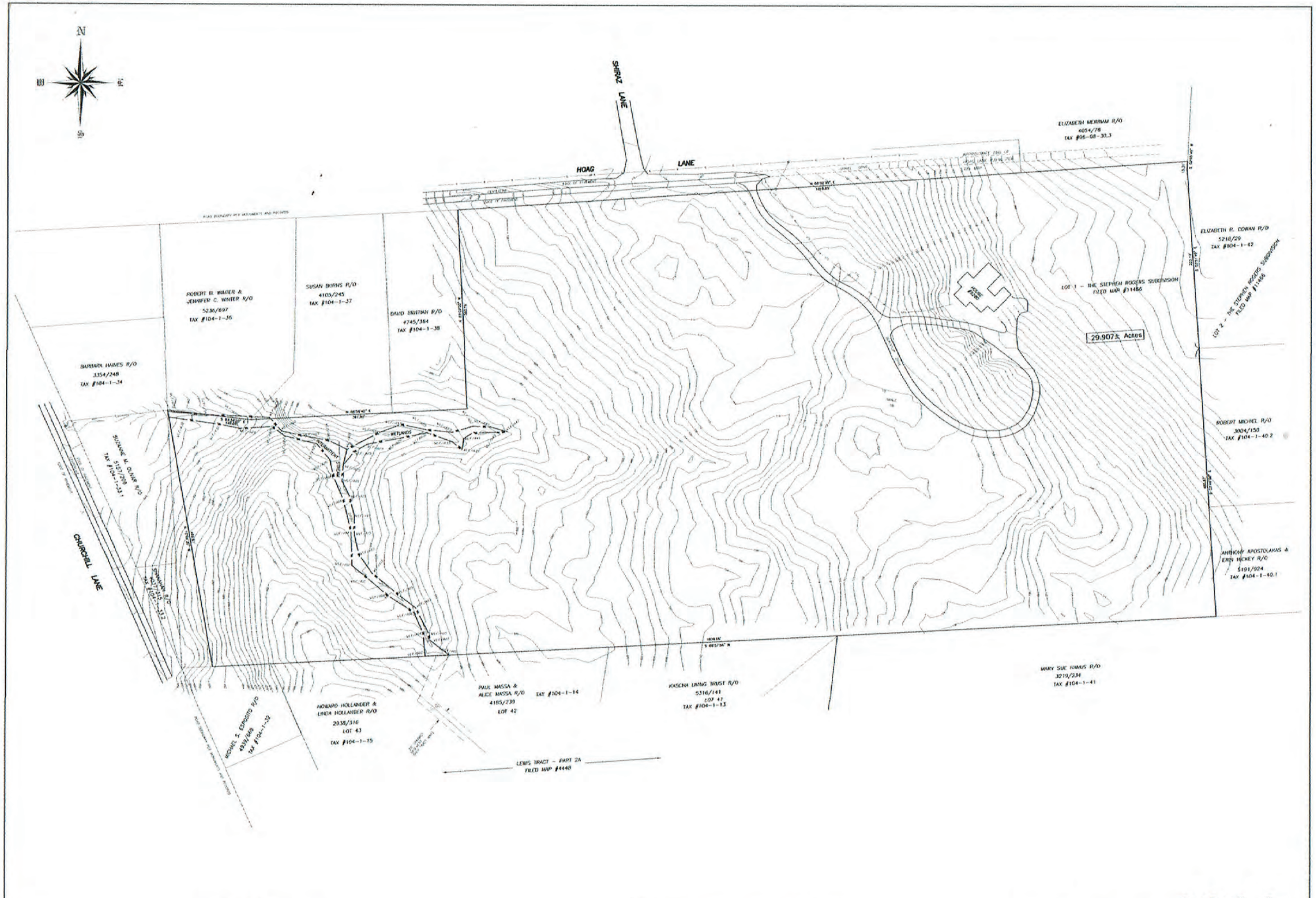
The sites delineated intermittent stream channel and ground water seep wetland are federal jurisdictional water resources regulated by Section 404 of the *Clean Water Act* under the jurisdiction of the U.S. Army Corps of Engineers (Buffalo District). The discharge of fill material into jurisdictional wetland areas and/or disturbance to stream channels will require a pre-construction notification and permit issuance from USACE.

This determination letter represents the conclusions of Environmental Resources, LLC based on existing site conditions. Feel free to contact me should you have any questions.

Sincerely,
Environmental Resources, LLC

Gene Pellett
Professional Wetlands Scientist

Attachment.



UTILITY NOTE

This passage has not physically located the underground utilities. Underground utility locations may have been determined from visible evidence, available public maps and/or maps prepared by others and markings established by independent locators or utility companies. There is no guarantee as to the accuracy or completeness of such data, nor is there any guarantee that all utilities are shown. Actual locations of underground utilities in the vicinity of any proposed construction shall be verified prior to commencing excavation, demolition or construction.

WETLAND NOTES:

- WETLANDS WERE DELINEATED BY ENVIRONMENTAL RESOURCES, LLC ON MAY 31, 2019
- INTERMITTENT STREAM: LENGTH 745 L.F., AREA 0.24± ACRES.
- WETLAND AREA 0.10± ACRES

MAP REVISIONS		
No.	Date	Revision

WETLAND LOCATION MAP

LANDS OF HOAG ROAD PROPERTIES, LLC

TOWN OF MANLIUS

ONONDAGA COUNTY, NEW YORK

SURVEY AND MAP PREPARED BY:
SeGUIN LAND SURVEYING, P.L.L.C.
Forrest L. SeGuin, L.S.
4197 ERIE ROAD, CHITTENANGO, N.Y. 13037
PHONE (315)283-1842 FAX (315)687-0002

SCALE: 1" = 50'

DATE: 6/11/2019

August 7, 2020

Doug Miller

Miller Engineers

PO Box 422

Manlius, NY 130104

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: Woodland Hills Summary of Outstanding Engineering Issues

Dear Mr. Miller,

Our office has reviewed your Engineering comments related to the Hoag Lane dated July 28, 2020**.** Below is our response to each comment received**.** Responses to your comments are listed below correlating to each item in your letter by number, letter or bullet.

HOAG LANE CLUSTER DEVELOPMENT

SECTION 1: OVERLYING GENERAL COMMENTS, Pages 1-3 (17 comments)

- Bullet 1: Previously answered by the Sutphen letter dated 6/15/20 items 1)-#1, 10) and Kenney Geotech report dated 5/18/20 pg. 2. Surface runoff from the subject site does not flow uphill to the basin on Muirfield Drive.
- Bullet 2: This comment assumes alternative facts. Project team had trees cut prior to March 31st ,2019 deadline. Town of Manlius provided permission on March 7th with verbal confirmation between Jamie Sutphen and team counsel, Thomas Blair
- Bullet 3: Previously answered 6/15/20 Sutphen Letter item 10. Surface runoff from the subject site does not travel uphill to facilities on Muirfield Drive. Additionally, no relief from RRv is requested and this comment is not supported by actual calculations set forth in the SWPPP per pages 522 and 523 of the SWPPP pdf documents. No requirement within NYS Stormwater Design manual regarding runoff volume. No precedent or other requirements for reduction of runoff volume provided by the town after RZE request per email dated 4/10/20 item #5.
- Bullet 4: This comment assumes alternative facts not supported by actual calculations set forth in the SWPPP.
- Bullet 5: Question assumes alternate facts not shown on L-100 or within any Kenney Geotechnical reports.
- Bullet 6: Specifications indicated are L-800 and L-801 are typical specifications provided for all projects.
- Bullet 7: Comment assumes alternative facts not supported by Environmental Resources (Wetland Consultant). Report was not required to be provided to ACOE per Environmental Resources. Refer to **Appendix #1**: Email from Gene Pellet, dated August 9th, 2020.
- Bullet 8: Performance criteria provided on drawings as noted in the Kenney Geotechnical Report.

- Bullet 9: Question assumes alternative facts not shown on drawings L-200 and L-202. No house footings are proposed on fill. Other fill areas are to be installed in accordance with Kenney Geotechnical' s recommendations and drawings L102-108.
- Bullet 10: All necessary documentation is required to be provided on site per SWPPP requirements.
- Bullet 11: Question assumes alternative facts we are not aware of any discrepancies between Plans and SWPPP. Any discrepancies should be specifically outlined.
- Bullet 12: Construction will occur within timeframes permissible by town code.
- Bullet 13: Additional information provided per request of the town engineer
- Bullet 14: A narrative was provided with the 6/15/20 submission to the town of Manlius.
- Bullet 15: Question assumes alternative facts, Boring 4 and 9 are the same and marked on drawing L-100.
- Bullet 16: Question assumes alternative facts not outlined in NYS Education and licensing laws. Landscape architects can stamp drawings.
- Bullet 17: Agreed.

SECTION 2: June 15th Correspondence to Jamie Sutphen, Pages 3-5 (16 comments)

Constructability

1. Previously answered.
    a. Question assumes alternative facts not shown in any Kenney Geotechnical report or on drawing L-100.
    b. Time of exposure of non-vegetative soils was previously provided on drawings L-102 thru L-108.
    c. Existing site slopes were previously provided on drawings L-100, L-200 and L-201.
    d. This comment assumes alternative facts not supported by any available mapping, topography, evidence or calculations set forth in the SWPPP. Surface runoff from the subject site does not flow uphill to facilities on Muirfield Drive.
2. Project will comply with all applicable statute and regulations
3. Question assumes alternative facts not shown on L-400
4. Subjective conclusion not supported by other projects in the Town of Manlius or Onondaga County
5. Question assumes alternative facts an email from Jennifer Ross NYSDEC dated 3/23/20 confirms this is not a dam.
    a. Borings provided with all data on L-100 and within SWPPP pdf document page 137.
    b. Materials of construction are outlined in the Kenney Geotechnical report dated 5/27/20
    c. Question assumes alternative facts not shown on drawing L-502.
6. Question assumes alternative facts not shown in the drawing set. This is a subjective conclusion not indicated on the drawings.
    a. Question assumes alternative facts not shown on drawings L-101 thru L-108 and drawing L-503. Other requests and confirmations not experienced by home builders or contractors building in Central New York.
    b. Question assumes alternative facts not reflected on L-100. Reports provided prior to July 1st. June 18th material was delivered to Town.

c. Agreed.

Technical Issues

1. OK
    a. NYSDEC definition can be found in Blue Book.
    b. Refer to drawings L-101 thru L-108.
    c. Inspections are required for all sites that disturb more an acre of land in NYS in accordance with the general permit.
    d. This comment assumes alternative facts not shown in details on L-108 and information on L-101.
    e. This comment assumes an alternative set of facts not supported by information provided on L-100.
2. OK
3. This comment assumes alternative facts and is not supported by calculations and information provided in the SWPPP in appendix G.
4. This comment assumes alternative facts and not supported by calculations and information provided in the SWPPP specifically in appendices C, D and E.
5. This comment assumes alternative facts not shown on L-200 or L-600
6. This comment is subjective and has been confirmed by the 1994 Onondaga County Policy on low pressure sewers and direct comment from WEP.
7. This comment assumes alternative facts not supported by the 3/23/20 email correspondence from Jennifer Ross at NYSDEC, the SWMF is not a dam.
    a. OK
    b. See Section 2 Item 5.a above.
    c. Ok
    d. This comment assumes an alternate set of facts not supported by drawings L-200, L-300 and L-502.
    e. This comment assumes alternative facts not supported by L-100.
    f. Repeat: See 7.b above
    g. See drawings L-200 and L-300 for minimum required and actual design width.
    h. Ok
    i. This comment assumes alternative facts not supported by L-100.
    j. This comment assumes alternative facts not supported by L-200, L-300, L-502, SWPPP appendix F and detail 15/L-500.
    k. This comment is subjective and is not supported by the submitted SWPPP
8. Agreed
9. Stabilize “slope” correction. Note 29 is shown on plans. Plants note shown on L-401. Believed note was sufficient at time. Road grades are compliant with town of Manlius specifications.
10. Repeat: See overlying general comment, first bullet point. Surface water from the subject site will not flow uphill to Muirfield Drive. Peak rate of mitigated runoff has been reduced by the SWMF. See appendix O of the SWPPP.

SECTION 3: June 15th Correspondence to Joseph Lupia, (email) Pages 5-6 (3 comments)

1. This comment assumes alternative facts and the county’s policy from 1994 is clear.

2. Details shown for full soil restoration are shown on L-108 and described soil restoration notes on L-101. All soil restoration will follow guidance provided by NYSDEC.
3. This comment is common knowledge and all stormwater management structures in NYS are designed to these criteria.

SECTION 4: June 15th Correspondence to Joseph Lupia: Earthwork Summary, Page 6 (1 comments)

- Attachments B & D are present, they are identified on the map pages. Additional earthwork calculations for stages 3 through 7 were not received prior to submission due to a disagreement on the viability of showing these numbers. Total area would not match the 2 stages provided because of additional stages 3-7 not calculated. Chris Kenney states "oversized cobbles and boulders are routinely screened and managed on site during earthwork. Based on the present subsurface information we do not believe that the over-sized material will create a significant reduction in material available for earthwork. Screened oversized materials will either be put to a beneficial use on site (ornamental use or use in areas requiring heavy particles for erosion control) or will be removed from the site."

SECTION 5: May 18th Correspondence Kenney Geotechnical Engineering, Page 7 (1 comments)

- This comment assumes an alternative set of facts not supported by drawing L-100. Test pit information has been identified on L-100 as TPS-# (additional Boring test Results). Latitude and Longitude was provided by Forrest Seguin/Kenney Geotechnical and identified in table on L-100. No slopes proposed are greater than 3:1 H: V. Chris Kenney repeats comment Section 4.

SECTION 6: May 27th Correspondence Kenney Geotechnical Engineering, Page 7 (1 comments)

- This comment assumes alternative facts and as previously noted, the SWMF is not a dam but an earthen berm, as indicated by NYSDEC representative Jennifer Ross's email dated 3/26/20. The remainder of the comment also assumes alternative facts not supported by information presented in the SWPPP for the project and analysis by Kenney Geotechnical reports. Additionally, adjacent homes on both Hoag Ln and on Churchill Court are higher than contour 676, according to available topography, which is the top of the SWMF.

SECTION 7: June 15th letter to Town of Manlius Engineer, Page 7-12 (Approx. 85 comments)

Additional Comments

1. This comment states common knowledge for all SWMF designed and constructed in NYS.
2. Repeat: See Technical Issues 7.e for response.
3. Kenney Reports do not show Lat/Long. As previously noted, these were surveyed and provided separately on L-100.
4. Agreed.
5. This comment assumes alternative facts not supported by details on L-108 for compost amendments around house and noted in soil restoration table on L-101. All soil restoration will be in accordance with NYSDEC guidance.

6. Agreed, the applicant has inquired about staging vs phasing in January 3rd response letter.
7. Repeat: See overlying general comment, Bullet point 4
8. Repeat: See Section 5 above for response.
9. Previous comment letter January 3rd asked for architectural samples/renderings not architectural issues/standards. Drawing was brought to December 2017 Public Hearing to show public and Board examples of previous work. This drawing will remain in the drawing set for future review by others and actual house information will be submitted during the building permit process. For Grinder pumps, repeat comment, see Technical Issues, Item 6.

General

1. Town has not communicated what Offset plan should be. During our March 19th Phone call with the town engineer and attorney, Town representative stated we did not need to provide an offset plan at this time.
2. During our March 19th Phone call with the town engineer and attorney, Town representatives stated we did not need to provide district formation at this time.
3. Agreed.
4. Agreed.
5. This comment assumes alternative facts not supported by information provided on L-100.
6. This comment assumes alternative facts not supported by information such as boring logs identified on L-100 and soil requirements identified on L-101.
7. During our March 19th Phone call with the town engineer and attorney, Town representatives stated we did not need to provide district formation at this time.
8. Agreed.
9. Agreed.
10. Repeat: See Technical Issues, Item 6.
11. Repeat: see Additional Comments #9.
12. Repeat: See Overlying Comments, Bullet #2 for response.
13. OK
14. Agreed.
15. Agreed.
16. Agreed.
17. Agreed.
18. This comment assumes alternative facts. All pertinent information to conduct review were provided on June 17th. An issue was identified over the course of the following weeks with the electronic submission only and was corrected on July 1st.
19. Drawings revised as a set. No individual revisions dates shown on drawings for changes. Submission date was used for consistency on all drawings and submitted materials.
20. This comment assumes alternative facts, the SWMF is not a dam per Jennifer Ross's 3/26/20 email. All pertinent required information is provided in the SWPPP and on the drawings.
21. Agreed.
22. Agreed.
23. This comment assumes alternative facts, SWPPP dated and submitted to the town (hard copy) 06/15/2020 not July 1st.

24. Repeat: See Section 7, Additional Comments #5. Detail shown for compost on L-108 and additional information provided on L-101.
25. This comment assumes alternative facts not supported by drawings labeled as site plans in SWPPP which match current site plans. Some drawings exist in SWPPP from previous consultant's work and correlate to past site plans used in compilation of previous work products.
26. Repeat: see Additional Comments #9.
27. Agreed.
28. Repeat: see technical issues #3.
29. Agreed.

SWPPP

1. This comment assumes alternative facts not supported by page 137 of the SWPPP pdf document (sheet L-100).
2. This comment is subjective and is not supported by calculations within the SWPPP and presented on page 7 of the document.
3. This comment is subjective and is not supported by information provided on the submitted drawings or within Appendix L of the SWPPP.
4. This comment assumes alternative facts not supported by the SWPPP or drawings L-101 thru L-108 and L-800. KFA obtained clarification from the NYSDEC's Matt Kazmierski on how to proceed as noted on drawings.
5. Repeat: See General Comments #24 for response.
6. This comment assumes alternative facts and is not supported by information provided on drawings L-200 and L-101 thru L-108.
7. Repeat: See Section 7, Additional Comments #5. Detail shown for compost on L-108 and additional information provided on L-101.
8. This comment assumes alternative facts associated with possible future ongoing maintenance of soils possibly years after decompaction and have no place on contract drawings.
9. This comment is subjective and valuable information from the NYS Blue Book is provided here for quick reference.
10. The HOA is created and filed with NYS after the tract map is filed with Onondaga County.
11. This information matches drawings L-102 thru L-108 and Tobin information is a computer-generated estimate. These numbers are within any reasonable tolerance.
12. The HOA is created and filed with NYS after the tract map is filed with Onondaga County.
13. This comment assumes alternative facts and the owner is identified on page 31 of the SWPPP pdf copy.
14. This comment assumes alternative facts as all erosion control is the responsibility of the owner as noted on the contract drawings and within the SWPPP.
15. This comment assumes alternative facts not supported by drawings L-101 thru L-108.
16. This comment assumes alternative facts not supported by drawing L-100 presented as page 137 of the SWPPP pdf copy.
17. This comment is subjective and more detailed information on soils is presented on L-100.
18. This comment assumes alternative facts and refers to field notes utilized in testing from October of 2017 and is reflective of the site as presented at the time.

19. This comment is irrelevant, every and all soil testing is provided for completeness.
20. This comment assumes alternative facts and is not supported by information provided on L-100. In addition, this refers to field notes prepared by another engineering consultant and is reflective of the site as presented at the time. NYS Education Law prevents our office or any other office to alter other Professional Engineering Company work products without permission.
21. This comment assumes alternative facts not supported by drawing L-100.
22. Chris Kenney states "This comment assumes alternative facts, the term is California Bearing Ratio. The California Bearing Ratio (CBR) test is a penetration test used to evaluate the subgrade strength of roads and pavements. The results of these tests are used to determine the thickness of pavements and base course. This is the most widely used method for design of flexible pavement and aggregate roads. Kenney Geotechnical has tested the site soil in the laboratory and determined its CBR value was 5, and recommended that this value be used for design, and for reference during construction when determining the acceptability of subgrade."
23. This comment assumes alternative facts not supported by drawing L-100 which, as previously mentioned, is provided as page 137 of the SWPPP pdf copy.
24. This comment assumes alternative facts and all construction access is provided on drawings L-101 thru L-108. No haul roads are proposed within this project.
25. This question is subjective ……L-503 provides a detailed procedure for soil construction, compaction and placement. In addition, a town field representative and Kenney Geotechnical will be on site to make a determination.
26. OK
27. Repeat: See SWPPP #4 for response.
28. This comment is subjective and two locations are sufficient. No standards or regulations exist in NYS for this requirement.
29. Repeat: refer to SWPPP response #18 above
30. Repeat: refer to overlying general comments, bullet #15 above
31. All compaction will be monitored by Kenney Geotechnical and placed in accordance with their project recommendations.
32. This question assumes alternative facts. TPS-5 was performed with a backhoe and the results for TPS-5 are provided on L-100 along with the results for Boring B-1 which is located a few feet away. No bedrock was found during any on site testing.
33. This comment refers to other consultant's work products. See General Comment #25 and SWPPP comment #20 above.
34. This comment is subjective and provides basis of design rationale for our sediment basin designs and will remain in the report.
35. OK applicant will provide.
36. This comment assumes alternative facts not supported by information provided in the SWPPP and on the drawings. Repeat comment see Technical Issues Item 7.J above.
37. In accordance with town requests for earthwork balance, Phase I earthwork balances using all areas shown.
38. This comment assumes alternative facts as no haul roads are shown.
39. This comment is subjective and all lots provide positive drainage away from foundations and structures.

- This comment is subjective and assumes alternative facts as all SWPPP's typically prepared provide reference materials, standard forms and information from DEC's literature.
- This comment assumes alternative facts and asks for subjective analyses and data not typically analyzed. See previous comments. Surface runoff does not flow uphill to facilities on Muirfield Drive.
- This request assumes alternative facts not supported by typical engineering practice, typical TR-55 technical analysis and the SWPPP prepared for the project. The request suggests drawing an arbitrary watershed boundary not based on topography, mapping, field conditions or survey data and therefore, cannot provide an accurate assessment of the site watershed. Analysis by our office follows accepted engineer practice and standard methodology outlined in the Stormwater Design manual.
- Miller Engineer's has not provided any basis for these calculations and based on previous comments by Miller Engineer's, assumes alternative facts and methods not in compliance with definitions, accepted standards and good engineering design and practice. Based on their comment above, the results are based on several alternative assumptions not consistent with established engineering analysis, not based on standard watershed delineation, topography, land contouring or field conditions. These alternative assumptions would cause inflated runoff rates which would violate established engineering watershed analysis parameters and not accurately estimate required peak runoff rates. Our analysis complies with all accepted engineering practice, definitions and analysis methods, including those presented in the NYS Stormwater Design Manual.
- This comment assumes alternative facts not consistent with available mapping, topography or the project plans. RZE has provided the required volumes as outlined in the Stormwater Design manual.
- This comment assumes alternative facts and is not consistent with previous requests noted by town personnel. See Overlying Comments, Bullet #1.

DRAWINGS

Cover Sheet

1. OK.
2. Ok.

L-100

1. This comment assumes alternative facts and is not supported by information presented on L-100.
2. Agreed.
3. Repeat: See L-100, #1 for response.
4. Agreed.
5. This information will be provided within the building permit application.
6. Agreed.
7. Typical boring methodology has been provided.
8. Agreed.
9. Agreed.

10. Agreed.
11. This comment assumes alternative facts and L-100 is provided on page 139 of the SWPPP pdf.
12. Note 10 reference was removed and an updated plan was delivered to Town on 7/30/2020.
13. This comment assumes alternative facts as the project team had trees cut prior to March 31st, 2019 deadline. Town provided permission on March 7th with verbal confirmation between Jamie Sutphen and team counsel, Thomas Blair.
14. Repeat: see response to L-100, #11.
15. This comment assumes alternative facts. Boring B-9 was requested by Town Engineer from Meeting with Town because B-4 did not go deep enough for Town Engineer. Boring was reconducted to Engineer meeting comment.
16. Repeat: see response to L-100, #13 above
17. Repeat: see response to L-100, #12 above.
18. Repeat: see response to L-100, #13 above.

L-101

1. This comment assumes alternative facts, the SWMF is not a Dam. Chris Kenney states " No blow counts are missing from B-9. Standard penetration testing was performed in the till at a depth of 8 feet and at a depth of 13 feet. Logs B-6 and B-7 do indicate high blow counts at the depth you note. The Standard Penetration Testing sampling has a relatively small opening (less than 2") so elevated blow counts are sometimes caused by the sampler hitting cobbles or boulders."
2. Agreed.
3. This comment assumes alternative facts and is not supported by information provided within the SWPPP Appendix M, page 529 and information provided on L-100
4. The above ground wall structure does not impact the below ground spring.
5. Agreed.
6. Agreed. Easements are shown. Labels shall be added.
7. This comment assumes alternative facts and is not supported by supplementary information on L-200 and L-400 depicting "forever wild" areas.
8. A new easement will be provided between lots 5 and 6.
9. This comment assumes alternative facts contrary to what is shown on L-401.
10. Applicable easements will be granted.
11. Round symbol located near property line is an Iron Pipe Found based upon the site survey. Symbol shall be removed from the plan.
12. Repeat: See Section 3, #2 for response
13. Repeat: See Section 3, #2 for response.

L-102

1. This comment is subjective and is not supported by information already provided in the SWPPP and on L-502. This SWMF is not a dam and no special report is required.
2. This comment assumes alternative facts not supported by the drawings.
3. Agreed.
4. This comment is subjective and asks the applicant to project arbitrary future timeframes and environmental events. The anticipated schedule is provided on drawing L-102 to the best of our knowledge.

5. The construction of the site will occur as weather permits, in accordance with NYDEC regulations, the project SWPPP and testing requirements outlined within the construction documents.
6. This comment is not supported by traditional construction documentation procedures, the report is referenced within the drawings.
7. Repeat: see Overlying Comments, Bullet #1 and other similar responses
8. Agreed.
9. Agreed.
10. Agreed.
11. REPEAT see drawing L-102, #7 above
12. Agreed.
13. Construction means and methodologies are left to JK Tobin to be overseen by Kenney Geotechnical and the town's field engineer.
14. This comment assumes alternative facts, the SWMF is not a dam. JK Tobin will use GPS navigated equipment to develop the site in accordance with the construction drawings. In addition, an as-built drawing prepared by a licensed land surveyor will be provided per the SWPPP document.
15. Repeat: See L-102, #14 for response.
16. Agreed
17. This comment assumes alternative facts and is not supported by information provided on drawings L-101 thru L-108. Refer to specification section 31 2301 located on drawing L503, section 3.1, B quality CONTROL TESTING DURING CONSTRUCTION.
18. Construction necessities provided by JK Tobin will be stored in the designated area on L-101 thru L-108. The area is deemed adequate and was provided by JK Tobin.
19. Agreed
20. Agreed
21. Agreed.
22. Repeat: See L-102 #18 for response.
23. This comment is subjective and information is provided where necessary.
24. Agreed.
25. This comment assumes alternative facts not supported by DEC correspondence, the SWMF is not a dam and all required information is presented on drawing L-200 and L-502.
26. This comment assumes alternative facts not supported by Drawing L-105.
27. Repeat: See Section 3 #2 for response
28. Repeat: See Section 3 #2 for response
29. Repeat: See L-101 #4 for response
30. This comment assumes alternative facts not shown on L-200 or any other drawings. Construction fencing and no work in general is proposed for this area.
31. Repeat: See Section 3 #2 for response
32. Repeat: See Section 3 #2 for response

L-103

1. Agreed
2. Repeat: See L-102, #15 for response

3. Repeat: See L-102, #4 for response
4. Agreed
5. Repeat: See L-102, #17 for response
6. Repeat: See L-102, #18 for response
7. Agreed
8. Agreed
9. This comment assumes alternative facts not supported by information provided in Appendix N of the SWPPP.
10. Agreed.
11. Agreed. Note shall be added to the drawing stating 'Wood chips to be utilized for erosion control mulch or to be added to topsoil' based discussion with sitework contractor.
12. Repeat: See L-102, #9 for response
13. Agreed
14. Repeat: See L-102, #21 for response
15. Repeat: See L-102, #22 for response
16. Repeat: See L-102, #23 for response
17. Repeat: See L-102, #24 for response
18. Repeat: See L-102, #25 for response
19. Repeat: See L-102, #26 for response
20. Repeat: See L-102, #27 for response
21. Repeat: See L-102, #28 for response
22. Repeat: See L-102, #29 for response
23. Repeat: See L-102, #30 for response
24. Repeat: See L-102, #31 for response
25. Repeat: See L-102, #32 for response

L-104

1. Agreed
2. Repeat: See Section 3 #2 for response.
3. Repeat: See L-102, #15 for response
4. Repeat: See L-102, #4 for response
5. Agreed
6. Repeat: See L-102, #17 for response
7. Repeat: See L-102, #18 for response
8. Agreed
9. This comment assumes alternative facts not supported by information provided on L-103 and L-104.
10. This comment assumes alternative facts not supported by information provided on L-103 and L-104.
11. Repeat: See L-102, #21 for response
12. Repeat: See L-102, #22 for response
13. Repeat: See L-102, #23 for response
14. Repeat: See L-102, #24 for response
15. Repeat: See L-102, #25 for response

16. Repeat: See L-102, #26 for response
17. Repeat: See L-102, #27 for response
18. Repeat: See L-102, #28 for response
19. Repeat: See L-102, #29 for response
20. Repeat: See L-102, #30 for response
21. Repeat: See L-102, #31 for response
22. Repeat: See L-102, #32 for response

L-105

1. Repeat: See L-102, #21 for response
2. Repeat: See L-102, #22 for response
3. Repeat: See L-102, #23 for response
4. Repeat: See L-102, #24 for response
5. Repeat: See L-102, #25 for response
6. Repeat: See L-102, #26 for response
7. Repeat: See L-102, #27 for response
8. Repeat: See L-102, #28 for response
9. Repeat: See L-102, #29 for response
10. Repeat: See L-102, #30 for response
11. Elevations shown are existing site survey spot elevations. No construction work is to occur in this area.
12. Text to be removed from plans.
13. Repeat: See L-102, #31 for response
14. Check Dams installed on L-104 (Stage 3) shall be turned on within drawing L-105 (Stage4)
15. Repeat: See L-102, #32 for response

L-106

1. Repeat: See L-102, #21 for response
2. Repeat: See L-102, #22 for response
3. Repeat: See L-102, #23 for response
4. Repeat: See L-102, #24 for response
5. Repeat: See L-102, #25 for response
6. Repeat: See L-102, #26 for response
7. Repeat: See L-102, #27 for response
8. Repeat: See L-102, #29 for response
9. Repeat: See L-102, #30 for response
10. Comment appears to reference engineers #11 on drawing L-105.
11. Repeat: See L-102, #31 for response
12. Repeat: See L-102, #32 for response
13. Entrance Monument Sign plan view is shown on L-106. Entrance Monument Sign detail is shown on drawing L-400. Entrance Monument Sign detail was added to the set as directed by the planning board.

14. KFA to remove extraneous text.
15. Agreed. Plan shall be updated to include a drainage easement which is extended from the lot 5 drainage easement to accommodate the proposed drainage swale. Check Dam to remain as shown.

L-107

1. Repeat: See L-102, #21 for response
2. Repeat: See L-102, #22 for response
3. Repeat: See L-102, #23 for response
4. Repeat: See L-102, #24 for response
5. Repeat: See L-102, #25 for response
6. Repeat: See L-102, #26 for response
7. Repeat: See L-102, #27 for response
8. Repeat: See L-102, #29 for response
9. Repeat: See L-102, #30 for response
10. Repeat: See L-106, #10 for response
11. Repeat: See L-102, #31 for response
12. Repeat: See L-102, #32 for response
13. Comment appears to reference engineers #13 on drawing L-106.
14. This comment assumes alternative facts not supported by drawing L-107.
15. Comment appears to reference engineers #15 on drawing L-106.

L-108

1. Repeat: See L-102, #21 for response
2. Repeat: See L-102, #22 for response
3. Repeat: See L-102, #23 for response
4. Repeat: See L-102, #24 for response
5. Repeat: See L-102, #25 for response
6. Repeat: See L-102, #26 for response
7. Repeat: See L-102, #27 for response
8. Repeat: See L-102, #29 for response
9. Repeat: See L-102, #30 for response
10. Repeat: See L-106, #10 for response
11. Repeat: See L-102, #31 for response
12. Repeat: See L-102, #32 for response
13. Repeat: See L-107, #13 for response
14. This comment assumes alternative facts not supported by drawing L-107.
15. Repeat: See L-107, #15 for response

L-200

1. Repeat: See overlying general comment, Bullet point 5 for response
2. Repeat: See overlying general comment, Bullet point 5 for response

3. Design team requested a detailed response as noted within previous comment letter. Response not provided.
4. This comment is subjective. Note 5 notifies all parties the surveyor will need to provide final easement drawings.

L-201

1. This drawing refers to information on required setbacks, sideline offsets and slopes required in the town code. This drawing is not intended to designate building envelopes.
2. L-201 reflects conformity with the town code.

L-202

1. This information will be provided within the building permit application. The comment also assumes alternative facts mentioned in past comment letters overstating the magnitude of the fills required under foundations and municipally owned infrastructure. "Significant Fill" under footings or infrastructure is not supported by the information presented on drawing L-202.

L-203

1. Drawing L-203 does not exist.

L-300

1. This comment assumes alternative facts and no calculations are necessary for a force main that only runs uphill and has no high points. Closed system interior pumps will be built in accordance with manufacturers requirements.
2. This comment assumes alternative facts. Sanitary Manhole #3 includes a 92-degree pipe bend. This was confirmed by a review of the AutoCAD drawing file.
3. Agreed.
4. This comment assumes alternative facts. All trees have not been removed from the property.
5. Agreed.
6. This comment assumes alternative facts and is not supported by the Onondaga County policy on low pressure sewers from 1994 or other similar projects in the county.
7. This comment assumes alternate facts, no open cuts are proposed for Hoag Lane
8. Repeat: See L-300, #'s 1 and 6 for response.
9. Agreed
10. Repeat: See L-101 #10 for response.
11. This comment assumes alternative facts not supported by information provided in Appendix P of the SWPPP and drawing L-504.
12. Repeat: See L-504, #1 for response.
13. This comment assumes alternative facts not supported by information provided on L-300.
14. RZE has strategically placed this to assist with runoff entering the swale from offsite upgradient areas.

L-400

1. This comment assumes alternative facts not supported by information provided on L-401. Refer to planting key notes text schedule which includes a note regarding the jute mesh detail 6/L-500.
2. Agreed
3. This comment assumes alternative facts not shown on the drawings. No stone dust walkways are proposed. Stone dust walkways were discussed during early planning board meetings. The board did not want design team to include stone dust walkways on plans.
4. There are not any fencing requirements by the NYSDEC or within the Town of Manlius. Planning board requested the fencing.
5. Repeat: See L-400, #3 for response.
6. Dimensions will be added to Monument Entry Sign per Town Code. Review comment is in contradiction with comment #13, Drawing L-106 which calls for the removal of the detail from the set.
7. Review comment is in contradiction with comment #13, Drawing L-106 which calls for the removal of the detail from the set. Location and dimensions of sign shall be updated to comply with Town Code.
8. Repeat: See L-201 #1 for response.
9. An easement has been added between lots 5 & 6
10. This comment assumes alternative facts and easements are provided where needed.
11. Ok

L-401

1. Repeat: See SWPPP, Last Bullet for response.
2. Disagree. Planting plan shows (2) street trees per lot (Manlius Code), front entry sign plantings (Manlius Board Request), wet pond planting (NYSDEC requirement) and lawn/swale stabilization (NYSDEC requirements). Each home will be custom and planted by homeowner after house construction.
3. Agreed. A PLANTING SCHEDULE NOTE shall be added to the drawings which states 'All non-paved areas within housing lots will be stabilized with seeded or sodded lawns by homeowner excluding mulched plant bed areas.'
4. Repeat: See SWPPP, Last Bullet for response.
5. This comment assumes alternate facts not supported by information provided on Drawing L-401.
6. All of the 20 proposed homes will be custom homes and have a customized footprint. Each home will have landscaping to meet the needs of the individual homeowners.
7. Repeat: See L-108, #13 for response.

L-500

1. Agreed. There are (2) 8/L-500 and (2) 8/L-500 references located on drawings L-106 and L-107 which shall be removed.
2. Repeat: See L-102, #17 for response
3. Agreed
4. Agreed

5. Agreed. A note shall be added to detail 10/L-500 (Asphalt Apron @ Inlet – Plan View) which states' NOTE; REFER TO KICK UP GUTTER DETAIL 4/L-503 FOR SECTION VIEW OF KICK UP GUTTER.'
6. This comment assumes alternative facts not supported by information provided on drawing L-502.
7. Agreed
8. Agreed
9. This comment assumes alternative facts not supported by information provided on drawing L-108.
10. Repeat: See L-500, #2 for response

L-501

1. Agreed
2. Agreed
3. Agreed
4. This comment assumes alternative facts not supported by information provided on drawings L-200, L-300 and L-502.
5. Repeat: See overlying general comment, Bullet point 5 for response
6. Agreed
7. Repeat: See L-102, #1 for response
8. Repeat: See L-400, #5 for response
9. Agreed
10. Agreed
11. Agreed
12. This comment is subjective and the information is provided per OCDOH guidance.
13. KFA
14. This comment assumes alternative facts. The project does not propose to dedicate any grinder pumps to the town.

L-502

1. This comment assumes alternative facts and is not supported by drawings Town Engineering previously requested. It is also not supported by information provided on Drawing L-502, the drawing is not a sketch, is to scale, shows existing grades, provides adequate detail and presents wetland limits clearly.

L-503

1. Agreed. Footer drains are not shown. Footer drain detail was removed from previous submission.
2. Subjective comment no supported by evidentiary matter.
3. Specifications are provided on L-503 which were provided by the Town of Manlius DPW, enhanced by the design team and supplemented by an earlier request.
4. This comment is subjective and not supported by information provided on drawing L-503 and the town DPW. Road detail was obtained from Town of Manlius. Information was added to the detail provided to provide further guidance for the contractor.

5. JK Tobin has over 50 years' experience with similar sitework, the project manager assigned to this project has over 30 years' experience and no licensing is required.
6. Repeat: See Drawing L-102, #23 for response

L-504

1. This comment assumes alternative facts not supported by the information provided in Appendix P of the SWPPP, page 575 of the pdf document, and drawing L-504, on this temporary structure to only be used during phases 1-4.

L-600

1. This comment assumes alternative facts regarding the magnitude of 7-10-foot cuts and fills on site and is not supported by information provided on drawings L-600, L-200 and L-202.

L-700 thru L-705

1. Acceptable

L-800

1. Specification Section 31 2301 is <u>not</u> missing in its entirety. It is located on drawing L-503 entitled Excavation. Backfilling and Filling Details. A note is located within drawing L-800 which states that Section 31 2301 is located on drawing L-503. Relevant specification sections are included within the drawing set.

L-801

2. Repeat: See L-800, #1 for response

L-900

1. This drawing was submitted by the applicant in response to town engineering comment of 6/15/20 Constructability #5 and will remain a part of all applicant submissions for possible future review by others.

L-901

1. Repeat: See June 15, 2020 letter to Town of Manlius Engineer, #9 for response.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

Appendix A: Gene Pellet Email Response, dated August 9th, 2020

Vincent Ryan

From: Scott Freeman
Sent: Sunday, August 9, 2020 3:51 PM
To: Rudy Zona; Vincent Ryan
Subject: Fwd: 5280 Hoag Lane

Sent from my Verizon, Samsung Galaxy smartphone
Get Outlook for Android

From: Gene Pellett <gpellett@rochester.rr.com>
Sent: Sunday, August 9, 2020 11:51:09 AM
To: Scott Freeman <sf@Keplingerfreeman.com>
Subject: RE: 5280 Hoag Lane

Scott,

Will the boulder wall be set on the ground surface, or will the bottom boulders be placed in an excavated trench?

If you plan to place the boulders on the ground surface, there is no reason to contact USACE as that activity is not regulated as you are "filling" (placing the boulders in) on site uplands. USACE only regulates the discharge of fill into surface waters and wetlands. Placing the boulders in the uplands is outside of the regulated wetlands. The wetland will not be effected as the ground water seep will continue to flow into the wetland due its depressional position on the landscape.

The USACE is very slow with all permits and jurisdictional determinations due to Covid-19. I would just tell the town that USACE regulations only pertain to the discharge of fill into surface waters and wetlands. You are placing the boulders in uplands which are not regulated.

Hope this helps. Let me know if you have any questions or need more.

Thanks,
Gene

Sent from Mail for Windows 10

From: Scott Freeman
Sent: Thursday, August 6, 2020 11:32 AM
To: Gene Pellett
Subject: Re: 5280 Hoag Lane

Site Grading Plan

Scott Freeman RLA

MILLER
ENGINEERS

RECEIVED
JUL 28 2020
By

July 28, 2020

Mr. Joseph Lupia
Town of Manlius Planning Board Chairman
Town of Manlius, NY
301 Brooklea Drive
Fayetteville, NY 13066

Subj: Hoag Lane Woodland Hills

Dear Mr. Lupia

Please find outlined below response and review comments to the Hoag Lane Woodland Hills project received by our office on July 2, 2020. We apologize for the format of our correspondence, the applicant when requested for a word document to assist us to coordinate comments did not provide this information. We have included the referenced documents in the enclosed binder and numbered are responses to match the items in each document for you to follow. We have reviewed the following data:

- **June 15th Correspondence to Jamie Sutphen**
- **June 15, 2020 Correspondence to Joseph Lupia: E-Mail Correspondence**
- **June 15, 2020 Correspondence to Joseph Lupia: Earthwork Summary**
- **May 18, 2020 Correspondence Kenney Geotechnical Engineering Services to Tom Douglas**
- **May 27, 2020 Correspondence Kenney Geotechnical Berm Stability Evaluation to Tom Douglas**
- **June 15, 2020 Letter to Town of Manlius Engineer**
- **SWPPP**
- **Drawings: Title Sheet – Drawing 901 (33 drawings)**

Overlying General Comments

- Currently, we are not able to provide a positive recommendation to the request for a waiver from NYS Stormwater regulations for a 5-acre disturbance variance. We recommend standard stormwater requirements for the site as it is in an environmental sensitive area with the

Muirfield Drive drainage basin and due to the large earth moving operation with soils depicted as having high silt content by the applicant. Detail site specific plans on using on site soils susceptible of losing strength and requiring frost cover protection (outlined in the Kenney Geotechnical Report dated 5/18/20) are not addressed in the proposed scope of work by the applicant.

- The site is not being developed as a conservation/cluster development. Much of the site has been cleared prior to Planning Board approval and significant earthwork volumes (60,000 cubic yards cut and 40,000 cubic yards fill) are proposed. That relates to approximately 6,000 truck trips minimum on site. Cuts and fills average four feet. We recommend justification for significant earthwork and mass clearing for a conservation/cluster development. In addition, the applicant indicates over 8,000 cubic yards of structural fill material will be required for the project site. This does not include compost soil amendment that will be required for soil decompaction requirements of NYSDEC.
- Site storm drainage does not take into consideration the only outlet for the discharge point for the watershed is karst geology associated with the Muirfield Drive Retention Basin. Although peak flow may be attenuated in the current proposal, overall runoff volumes increase, and the Owner is seeking relief for the minimum RRv due to poor percolation. Most percolation tests conducted on site (although they are very limited) produce relatively good percolation rates and no indication of high groundwater table. We recommend runoff volumes from the site meet pre-development volumes due to the limited capacity of the Muirfield Drive Retention Basin.
- Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area, details follow in our project assessment. The developed area should be separated from all from undeveloped/undisturbed areas.
- Based upon the recent test pit excavations, we feel rock may be present on site. TPS-5 encountered shale at 3 feet in an area where 4 feet of cut is proposed. TPS-8 was only excavated to a depth of 3 feet and photographs may indicate the presence of bedrock. Borings B-6 and B-7 indicate significant resistant at 7.5 to 8.5 feet of depth and may be indications of bedrock. B-1 and TPS-5 are in direct conflict with each other. Specified borrow material may not be available on the project site to meet the contours shown for the site.
- Project specifications provided on drawings 800 and 801 appear incomplete with missing data and a lack of coordination with reports and drawings provided by the applicant
- Provide US Army Corps of Engineers verification and database inclusion of the delineated wetlands on the project site. USACOE indicate they have no confirmed record of the delineation.
- The on-site fill that is excavated and proposed to be used as backfill under the roads and utilities must have a stringent quality control program to ensure proper compaction, to allow for inspections and confirm all locations of the required performance testing. GPS coordination will be required for the work. It is recommended that a separate plan be prepared, as a field guidance, to outline how rocks encountered over 2 inches in size will be removed from the backfill (as dictated by the Kenney Geotechnical Report), the type of roller to be used on site for compaction, mitigation efforts to be used to control the soil water content to obtain optimum moisture content for compaction, etc. Strict adherence to the plan will be required to prevent future settlement of structures, roads and utilities.
- No on site backfill material is to be placed under house footings, catch basins, or manholes as shown on the plans. These are to be placed on undisturbed soil as the project details indicate. Standard industry practice. Drawings require modifications to match this on-site requirement as depicted by the applicant.

- On-site construction supervision should have access to all pertinent documents to include, but not limited to, the geologic report, Stormwater Pollution Prevention Plan, and any other referenced documents shown on the drawings and in the specifications. On-site inspection agencies will require the same.
- Discrepancies found on the drawings or between the drawings, SWPPP or geologic report, are to be brought to the Town's attention for resolution immediately.
- Maintaining dust control, traffic through the neighborhoods, noise (equipment back-up horns that can be heard as equipment is operated) and maintenance of storm water mitigation efforts will be critical during all phases of construction. It is advisable to employ noise meters on the project site.
- Drawings L-202, L-502, L-504, L-900, L-901 are all new drawings and are erroneously marked as resubmission drawings.
- Five Acre Waiver Request: The request for a waiver for disturbance of over 5 acres of soil is not approved at this time.
- Boring B-9 missing appears missing from the Drawing Set
- Provide detail and reason for drawings stamped by professional engineer to be noted as utilized for stormwater and sanitary design. This is odd and may not be acceptable to state education board
- Deposits and security for full time construction observation will be developed for the project accordingly

June 15th Correspondence to Jamie Sutphen

Constructability

1. Review of the current submission does not allow for a recommendation of approval of a 5-acre disturbance waiver to NYSDEC. Following comments on the project substantiate this request include but are not limited to:
    a. Depth to rock
    b. Time of exposure of non-vegetative soils
    c. Existing site slopes
    d. Sensitivity of the Muirfield karst topography retention facility
2. The project has its own unique characteristics and is required to meet current 2020 regulations federal, state and local
3. Exact locations with lot setbacks should be considered for the project. Geotechnical Engineering reports will be required from the Codes Officer in Manlius prior to any home construction and shall be confirmed by the applicant prior to any approvals
4. Cuts and fills remain extensive throughout the site. Contrary to conditions of a conservation/cluster development
5. The impoundment/Dam requires additional information as outlined below in this review. Including but not limited to
    a. Borings with properly labeled longitude, latitude and elevation data
    b. Materials of construction labeled on construction drawings
    c. Clear cross sections developed and drawn to scale

6. The entire 19 site to be developed as shown will be completely removed of any existing vegetation and all grades in the development will be part of an extensive cut and fill operation. This does not appear to confirm to the philosophy of keeping the natural features of the project site
    a. Information for soil compaction not provided on sheet L-503 as stated. No description of soil to be used nor any detail on test descriptions to be used for roads, utilities nor basements
        i. Waiver not recommended for approval at this time
        ii. Drawing L-503 notes that 7 of the 20 houses proposed require fill below the basement (Building lots 3,10,11,12,13,19, &20). Please confirm that OCWA and National Grid are aware of the cut and fill nature of the project site. We understand that special means and methods will most likely be required for this site. Work which will be financed by the owner/applicant who has authority for site means and methods of the fill operation
    b. Kenney reports dated 5/18/20 and5/27/20 were received by the Town with your July 1, 2020 submission. No latitude, longitude nor elevation data has been supplied by any of the field investigation work completed by the applicants. All Town of Manlius stormwater facilities are compliant with the regulations of which they were constructed to at the time of construction. MS Ross indicates that the impoundment/dam should be constructed in accordance with dam regulations but also states that a dam permit is not required from her office. The Town will require a person of the Town's choosing at developers' expense to on site at all times to ensure the soil movement and compaction is done properly.
    c. Project cost/securities will be required for the project

Technical Issues

1. Thought should be given to limit site stripping and grading
    a. Clear definition as to the applicant's definition of 80% coverage/density should be provided
    b. We are unable to find this information for all facilities on the drawings. Information does not appear to be included in the current SWPPP of July 1, 2020
    c. Bi-weekly SWPPP inspections are recommended throughout the duration of the project due to the complexity and sensitivity of the site
    d. Site soil restoration shall include compost amendment along all haul roads on the site and from 5-25 feet around all proposed houses and structures. This needs to be depicted on the drawings. Deep ripping of soils per NYSDEC is acceptable at other locations on the site
    e. Please depict on the drawings the longitude, latitude and elevation of your investigative activities
2. An updated SWPPP has been presented and is under review herewith
3. Regarding Water Quality Volume, we feel this is currently acceptable. However, changes in the watershed characteristics noted through additional comments above could impact this number.
4. SWPPP remains inadequate and does not represent required stormwater mitigation properly for the project site

5. Drawing L-600 still shows a proposed storm pipe at over 13 feet deep.
6. Planning Board to consider use of grinder pumps as an alternative means of sewage disposal
7. Impoundment/Dam
    a. Agreed
    b. Drawings included for the impoundment do not include any materials of construction nor placement and compaction data requirements see dam comments
    c. We leave this to your Geotech engineer, see dam comments
    d. Seep collars need to be depicted on the drawings in plan and profile not only as a detail on sheet L-500
    e. Please indicate locations of all investigative work including longitude, latitude and elevation
    f. Drawings do not indicate materials of construction do not include any materials of construction nor placement and compaction data requirements see dam comments. Sections shown on drawing L-502 appear incomplete and do not show existing ground elevations nor locations and data on borings.
    g. Please confirm that the maintenance bench is 14 feet wide as shown on drawing L-400, not 12 feet as described in your memo
    h. Agreed
    i. As requested, numerous times, please provide latitude, longitude and elevations for your investigative work. Not included on sheet L-100
    j. There does not appear to be adequate energy dissipation for the outlet
    k. See comments under SWPPP review section of this correspondence
8. Agreed
9. Note for lot 3 is confusing – "Homeowner/Developer to install plant material to stabilize plants". Note 29 is note included in the lot 3 notes Plantings if required should be shown on the drawings. Road grades at lots 11,12,15,16,17 & 18 remain problematic
10. Mitigation of increased volume requires the applicant to address this issue due to the sensitivity of the Muirfield Basin

June 15, 2020 Correspondence to Joseph Lupia: E-Mail Correspondence

1. Correspondence from Chris Deitmen OCDWEP: We concur with Mr. Deitman's statements. However, the Planning Board may wish to way the merits of the use of grinder pump stations in this instance. Under cluster development procedures, the Planning Board can rule on this item. Grinder pump stations in the Town of Manlius are an anomaly. Approval of use of grinder pump stations will nearly double the application of grinders in the Town of Manlius
2. Correspondence from NYS Department of Environmental Conservation Matthew J Kazmierski: Our office has followed up with Mr. Kazmierski. He indicates that the use of amended soil for restoration of a 5-acre disturbance is required. He also indicates that deep ripping on a portion of the site may be acceptable to NYSDEC. Mr. Kazmierski also indicates that full decompaction including compost amendment of soils will be required by NYSDEC regulation for heavy traffic areas on site (especially in a zone 5-25 feet around buildings, haul roads, soil storage areas and temporary sedimentation ponds. Should the applicant propose to continue pursuit of a 5-acre waiver detailed plans for decompaction and soil amendment will be required including specific

details and locations of on-site activities required to meet or exceed regulations for the site. To date there has not been a receipt of these details. Mr. Kazmierski indicates a willingness to work with the Town and applicant in this endeavor.

3. Correspondence from Jennifer Ross NYS Department of Environmental Conservation: Ms. Ross indicates that the on-site dam is exempt from NYSDEC permitting. She also advises that the dam be designed by a professional engineer and that guidelines for design of dams 1989 be followed. We have reached out to the applicant and advised the applicant that the dam needs to be designed as a dam and as a minimum meet the guidelines for dam construction in the NYSDEC design manual

June 15, 2020 Correspondence to Joseph Lupia: Earthwork Summary

Information provided by the applicant in this correspondence indicates Stage 1 and Stage 2 summaries which direct attention to drawings L-102 and L-103. The drawing set indicates a 7-stage project, drawings L-102: Stage 1, L-103: Stage 2, L-104: Stage 3, L-105: Stage 4, L-106: Stage 5, L-107: Stage 6 and L-108 stage 7. The earthwork summary should be coordinated for each phase of the work. The detail provided from the site excavation reports do not appear to compensate for topsoil removal (by others?), soil expansion nor soil compression.

Work areas for the 2-stage proposal provided by JK Tobin/Kepplinger Freeman in this correspondence indicate work areas as follow:

- Stage 1 Attachment C: Area disturbed 6.1 Acres
- Stage 2 Attachment E: Area disturbed 7.7 Acres
- Summary Attachment A: Area disturbed 17.2 Acres

It appears that the total area disturbed does not match the summaries for the two-stage operation proposed by JK Tobin/Kepplinger Freeman in this exercise. Also, it appears that attachments B and D may be missing from the submission. Definition for terms in the submission should also be provided for print outs i.e.: Bank Cut Expanded Cut and Bank Fill. It appears that 107,807 cubic yards of material will be moved, stored, placed and compacted on the project site. This does not appear to include topsoil stripping, storage, movement (piles shown to be moved in the 7-stage proposal) or placement

Kenney Geotechnical Report indicates that there are gravels, cobbles and boulders beneath a thin layer of topsoil and that if this soil is to be used on site as engineering soils that all particles greater than 2 inches must be removed prior to use. This significantly has an impact on the earthwork numbers provided within this correspondence and needs to be addressed by the applicant. Additionally, the removed material will need to be disposed of properly. See John P Stopen document for additional site-specific comments

May 18, 2020 Correspondence Kenney Geotechnical Engineering Services to Tom Douglas

The findings of the Kenney Geotechnical Engineering services Report shall be incorporated and placed on the drawings. It appears that a screening operation may be required for the work as particles over 2" in size are noted to be removed from any engineered soils along with any organic materials. Many of the test pits indicate cobbles and boulders in the proposed borrow material apparently confirming the need for screened material. If test pits are intended to be used for on site engineering data for example: as road/utility subbase confirmation or structural documentation for basement subgrades, then latitude and longitude locations will be required. The report indicates that the dominant on-site till may be susceptible to saturation and freezing and as such temporary drainage swales, stabilized haul roads and protective layers of stone may be required for the project site. Permanent slopes shall be no greater than 3 horizontal:1 vertical unless reinforced with geosynthetic materials some areas of the proposed dam appear to exceed these criteria and shall be confirmed by the applicant for additional detail. See John P Stopen document for additional site-specific comments

May 27, 2020 Correspondence Kenney Geotechnical Berm Stability Evaluation to Tom Douglas

This correspondence appears to be a berm stability evaluation. We strongly recommend preparing a design report for the proposed dam documenting hydrology, water levels for analyses, spillway sizing, downstream safety, earthwork requirements and all structural aspects. At full level, the dam will hold back an impoundment of over 1,000,000 gallons and the water level will be higher than the homes downstream. See John P Stopen document for additional site-specific comments for design and constructability comments for the proposed dam.

June 15, 2020 Letter to Town of Manlius Engineer

Additional Comments

1. NYSDEC Jennifer Ross indicates that a dam permit is not required at this time. However, she indicates that the dam should be designed in accordance with NYSDEC dam guidelines
2. Longitude latitude and elevation surveyed/GPS data has not been provided to confirm
3. Kenney Geotechnical reports do not include specific location of the work with latitude and longitude information
4. Agreed
5. In accordance with NYSDEC guidelines and Mr. Kazmierski's input. Compost amended soils will be required on site. Correspondence from NYS Department of Environmental Conservation Matthew J Kazmierski: Our office has followed up with Mr. Kazmierski. He indicates that the use of amended soil for restoration of a 5-acre disturbance is required. He also indicates that deep ripping on a portion of the site may be acceptable to NYSDEC. Mr. Kazmierski also indicates that full decompaction including compost amendment of soils will be required by NYSDEC regulation for heavy traffic areas on site (especially in a zone 5-25 feet around buildings, haul roads, soil storage areas and temporary sedimentation ponds. Should the applicant propose to continue pursuit of a 5-acre waiver detailed plans for decompaction and soil amendment will be required including specific details and locations of on-site activities required

to meet or exceed regulations for the site. To date there has not been a receipt of these details. Mr. Kazmierski indicates a willingness to work with the Town and applicant in this endeavor.

6. No direction has been provided by the Town Engineer for phasing nor staging plans. All work to be completed in accordance with NYSDEC stormwater guidelines. The phasing/staging plans have been submitted by the applicant to seek a 5-acre waiver variance from stormwater regulations
7. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
8. The findings of the most recent Kenney Geotechnical Report dated May 18, 2020 shall be incorporated into the drawings
9. Drawing L-901 shows photos of 9 homes apparently built by Thomas Allen Homes and does not include any specifics pertaining to sample architecture. On numerous occasions architectural issues have been discussed by the developer with the planning board and the public. The developer has indicated that there would be architectural standards for the subdivision. To that end it has been discussed to provide details on architectural issues/standards. Items to be submitted generally should include but are not limited to landscaping requirements & restrictions, number of garages (attached or detached), building materials, color schemes, roofing materials, lighting, proposed setbacks and lot coverages. This drawing is dated December 2017, this drawing has not been a part of any previous submission.

Correspondence from Chris Deitmen OCDWEP: We concur with Mr. Deitman's statements. However, the Planning Board may wish to way the merits of the use of grinder pump stations in this instance. Under cluster development procedures, the Planning Board can rule on this item. Grinder pump stations in the Town of Manlius are an anomaly. Approval of use of grinder pump stations will nearly double the application of grinders in the Town of Manlius

General

1. Capacity does not appear to be an issue for the project site, and we concur. However, the Meadowbrook Limestone WWTP is under consent order and an acceptable offset plan is required for this project
2. District formation will be required for the proposed project. We are unaware of any required clarification on this topic, please advise of any necessary information need by you at this time
3. We are in receipt of the Reports you reference
4. Various information has been received for geotechnical reporting and is addressed by our responses herewith
5. Information requested for longitude, latitude and elevation remains absent for boring logs provided to the Town of Manlius for work completed to date
6. Plans require updates to include recent site findings from Kenney Geotechnical Services reports of 5/18/20 and 5/28/20. Also, requirements for soil decompaction and amendment requirements
7. District formation has not been initiated. It appears acceptable that formation can be completed prior to initiation of the work
8. Agreed
9. Survey has been received

10. Correspondence from Chris Deitmen OCDWEP: We concur with Mr. Deitman's statements. However, the Planning Board may wish to way the merits of the use of grinder pump stations in this instance. Under cluster development procedures, the Planning Board can rule on this item. Grinder pump stations in the Town of Manlius are an anomaly. Approval of use of grinder pump stations will nearly double the application of grinders in the Town of Manlius
11. Drawing L-901 shows photos of 9 homes apparently built by Thomas Allen Homes and does not include any specifics pertaining to sample architecture. On numerous occasions architectural issues have been discussed by the developer with the planning board and the public. The developer has indicated that there would be architectural standards for the subdivision. To that end it has been discussed to provide details on architectural issues/standards. Items to be submitted generally should include but are not limited to landscaping requirements & restrictions, number of garages (attached or detached), building materials, color schemes, roofing materials, lighting, proposed setbacks and lot coverages. This drawing is dated December 2017, this drawing has not been a part of any previous submission.
12. This project site has recently had all trees removed/cut on the site. The project SWPPP clearly states that vegetative plantings will be included as part of stormwater remediation. It is strongly recommended to the Town Planning Board that site specific landscape plans be developed for each proposed home site and be enforced as a part of any certificate of occupancy to comply and assist with stormwater reduction on the project site as depicted in the SWPPP. The request of the applicant for cluster development allows the Town Planning Board to request and review these environmental enhancement plans
13. Please refer to the Town of Manlius Town Code for the requirement of Land Marking Monuments.
14. Agreed
15. The Town will develop costs and schedules for securities in conjunction with the developer
16. The Town will develop costs and schedules for securities in conjunction with the developer
17. The Town will develop costs and schedules for securities in conjunction with the developer
18. All drawings have been received according to the project cover sheet of July 1, 2020
19. Revisions appear on drawings, however not all drawings appear to have been revised in this sequence. There are new drawings in this submission that do not appear to be revised drawings
20. Engineering design report for a dam conforming to NYS Dam regulations remains absent
21. Agreed
22. Agreed
23. SWPPP now dated 7/1/2020 accepted by owner 6/15/20 and certified by engineer on 6/15/20
24. Compost will be required on site. Please confirm how basement spoils will be incorporated into grading plans as this does not appear to have been addressed by JK Tobin takeoffs and requests for the 5-acre stormwater waiver.
25. Many drawings in the SWPPP do not mirror the current project. The documents should be consistent and work together as such
26. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
27. Agreed
28. Regarding Water Quality Volume, we feel this is currently acceptable. However, changes in the watershed characteristics noted above could impact this number.

29. Agreed

SWPPP

1. Appendix A no latitude longitude or elevations are depicted on soil testing locations
2. Page 7 confirm offsite 31 acres on site 27 acres for stormwater calcs
3. Page 13 Green Practices appear contrary on the drawings to what is depicted in the SWPPP
    a. No trees proposed outside of 2 per lot. Drawings for the project indicate that all trees and vegetation is to be removed from the project site
    b. No conservation of natural areas inside the area of home building. All areas are shown stripped of all vegetation and regraded without any landscape plans or vegetative materials discussed in the SWPPP
    c. No roof top disconnections can be taken credit for as they do not currently exist
4. Page 13 & 14 Soil Restoration Requirements
    a. Shrubs and deep-rooted trees are required
5. Soil decompaction and amendment is required and shall be depicted on construction drawings
6. Page 15 Show where no clearing can be completed on the site on contract drawings. Provide proposed covenants for the project including requirements documented in the SWPPP
7. Page 15 SWPPP indicates 3" of compost over all sub soil. Confirm a decompaction program for the site as part of 5-acre waiver
8. Page 16 Document requires ground cover with deep roots. Confirm in a landscaping plan
9. Page 16 Appendix I appears to be a regurgitation of NYSDEC Stormwater standards additionally many items do not match the current drawing plans of 2020
10. Page 16 soil restoration locations required in HOA documents, please provide
11. Page 16 indicates stage 2 work to be 7.8 acres, information provided by the applicant from JK Tobin indicates 7.68 acres
12. Page 23 Provide proposed maintenance agreement for HOA along with projection of annual costs of the same
13. Page 24 Who is referenced as owner, provide description
14. Page 26 dust control monitoring costs to be paid by the applicant
15. Page 27 Place notes on the drawings that all on site haul trucks to be tarped on site per SWPPP
16. Page 65 no longitude latitude nor elevations coordinated nor noted on PT 1,2,3,4 and DH 1,2,3,4,5 logs
17. Page 65 soils can expect to have up to 20% rock fragments
18. Page 69 drawing of the site does not match current project. Drawings to be updated for the current project details
19. Page 71/72 Kenney testing of 1/18/18 appears to be clearly outside of project boundaries, please advise of significance to project or remove from the requested approvals
20. Page 73 Drawing does not match any current construction drawings
21. Page 74 Kenney logs of 1/11/17 do not have longitude, latitude or elevations of testing provided
22. Page 76 Please provide detail and insight as to definition of Road Construction California Bearing Basis 5
23. Table may be required in the SWPPP for longitude, latitude and elevations of all geotechnical test results

24. Page 91 show locations of all haul roads on site and indicate methods for stabilization as required in SWPPP and Kenney Geotechnical recommendations
25. Page 92 Majority of the site requires 95% compaction to modified proctor. Please provide a detailed mapping of locations that will only require the minimum 90% compaction of modified proctor
26. Page 9 summary table 50-year storm should be 73.12 cfs
27. Page 15 References compost and is not necessary in all areas. Indicate areas of compost in SWPPP
28. 2 or 4 dust monitoring stations. We recommend 4.
29. page 69 mapping shows old site layout. Revise to current design
30. Which is correct, B-4 or B-9
31. Page 11 90% compaction for pond, Page 93 95% compaction for pond
32. Page 99 Why is TPS-5 only 7 feet deep (rock encountered?)
33. Page 119 mapping shows old site layout. Revise to current design
34. Appendix T page 603 to 630. Only an example from NYSDEC. Do not include in report.
35. Appendix T page 632 - include watershed maps to verify calculations for sediment basin for Phase 2 and Phase 3
36. There is no energy dissipation structure at the pond outlet which has discharge velocities over 6 fps, which will lead to downstream erosion.
37. Phase 1 should only include Construction Access, Construction Staging Area, Access to wet pond area, borrow pit for embankment, wet pond construction and swales. Lot 12-14 should be included in a separate phase.
38. Haul roads require compost.
39. Lots are still lower than the road in some areas

Many portions of the submitted SWPPP are not site specific. Many are resubmissions of NYSDEC white papers and guidelines. Several other parts of the SWPPP include drawings from past submissions of the project. The intention of a SWPPP is to be site specific for the project to be undertaken so as not to produce confusion for the public, contractors, developers and Town officials. Review and care are recommended to develop a SWPPP for this project that is site specific.

We did not review the individual storm pipe calculations at this time due to what we feel are discrepancies in the watershed sub-areas/land use calculations. Individual storm pipe calculations will be reviewed later when watershed issues are addressed. We did review the Water Quality Volume and Runoff Reduction Volume. We also calculated the overall runoff volume as the outlet to this watershed is karst geology with limit downstream storage. This is important relative to impacts upon the Muirfield Drive retention area.

The watershed does not have the correct boundaries for developed site. It also does not include the correct land use areas. Attached are RZ Engineering's proposed watershed and our determination based upon proposed current grading. Additionally, (as we have always felt) the 2.6 acres of woods behind the existing house should be a separate and distinct sub-watershed, not part of the developed area. IN our calculations, we broke this area out. We feel 2.6 acres of watershed is a significant size, and in our designs, we would always try to focus on the developed area as single entity to ensure the calculations are best represented. The Tc route along with the weighted runoff coefficient of the upstream woods areas offers misleading calculations relative to the developed area.

We offer the following calculations in runoff rates prior to incorporation of the stormwater pond.

RZ Engineering 1-yr=12.93 cfs, 2-yr=19.26, 5-yr.=31.12, 10-yr.=43.25, 25-yr=64.57, 50-yr=86.03, 100-yr.=112.03

Our Calculations 1-yr=18.23 cfs, 2-yr=26.06, 5-yr.=40.46, 10-yr.=55.04, 25-yr=80.46, 50-yr=105.75, 100-yr.=136.48

We find a significant increase in peak runoff under proposed conditions. This will impact the stage-storage-discharge rates of the stormwater pond.

Regarding Water Quality Volume, we feel this is currently acceptable. However, changes in the watershed characteristics noted above could impact this number.

Regarding Runoff Reduction Volume, RZ Engineering is only providing the minimum, stating the site is limited by ground water. Based upon our review, the only soils information relative to limited soil infiltration was the deep hole percolation testing performed by Kenney in the stormwater pond area and PH-2 near the entrance. There is limited testing though. However, we feel more than the minimum should be provided based upon limited capacity of the watershed and the Muirfield Drive retention area.

Additionally, the project will increase total runoff volume in the watershed by 1.48 acre-feet. This could be an issue downstream as the storage volume of the Muirfield Drive retention area is currently 0.48 acre-feet with an unknown infiltration capacity. This increase runoff volume could severely impact the capacity the Muirfield Drive retention area even though water is released gradually from the stormwater pond. This watershed is not typical of the design criteria of the New York State Stormwater Guidelines and special considerations need to be in place to ensure the integrity of the existing stormwater system. We would strongly suggest incorporating rain gardens for each home as well as implementing bioretention areas within the developed site.

DRAWINGS

Cover Sheet

1. Deputy Supervisor is Karen Green
2. The new sheet labeled L-801 should be included on the cover sheet

Drawing L-100

1. Please correlate exact locations of test pits, borings and deep hole investigations to GPS locations on all plans and detailed sections and reports. This is extremely important for verification, layout and performance criteria details specified for the project during construction activity.
2. Agreed
3. Boring locations are not technically correct no latitude, longitude or elevations are depicted
4. Survey received

5. Finished floor elevations depicted on L200, L-300, L-400 and L-401. As the location of the home may dictate floor elevations side rear and front setbacks for house envelopes on the site appear desirable as a function of the cluster development
6. Agreed
7. Wood blocking for the interior of the boring is unacceptable. Properly designed pipe bracing specific to securing the pipe inside the casing is required for this application
8. Agreed
9. Agreed
10. Agreed
11. Does not match L-100 in the SWPPP
12. Note ten is on the drawings but not in the project notes
13. Note 7 is erroneous. The Town never approved removal of any trees on the project site. This note should be removed from the project drawings
14. Drawing L-100 in SWPPP does not match the Drawing L-100 in the drawing set
15. Boring Test Result table
    a. Boring B-9 was not requested by Town Engineer
16. Existing Conditions & Removal/Demolition Notes:
    i. Note 7 "4" caliper or larger plant material was cut down as of March 2019. Approved by Town on March 7th, 2019" Is a false statement and shall be removed from drawings as such. No approvals for this work were granted by the Town of Manlius
17. On the north and southside of the pond has a note "10", the notes in the key only go up to "9"
18. Note 7 should be taken off the plan. It is not only not true, but has no impact on subdivision approval

Drawing L-101

1. Boring information remains confusing. Detailed drawings and designs for the Dam may elevate this concern. Blow counts for borings, B-9 is missing from this submission. Borings B-6 and B-7 have large blow counts indicative of hard materials at a depth of 5-6 feet. Please explain
2. OCF shall be set in pace by surveyor with meets and bounds prior to any on site work
3. L-101 no longer is included in the SWPPP please explain. Perc tests are not taken in area of proposed pond nor have they been taken at the finish invert elevation of the pond which appears to be in the range of el 664-665
4. Please confirm with ACOE that the wall does not impact upstream gradient of the wetland that it is proposed to isolate from the project site
5. Agreed
6. All storm water easements shall be identified on this plan
7. The dotted line on the back of lots 21, 4 and 5 has no description and has no need to be on this plan
8. Provide access to the easement on the back of lots 5,6,7,8,9 and 10
9. Pond access for maintenance will require a backhoe with a minimum reach of 12-15 feet and will also require access around the entire site along with a dump truck confirm that the easement is wide enough for trucks to get to the pond and turn around
10. Easements, shall include the Town

11. Some type of structure is shown on lot 12, what is it
12. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
13. Notes for topsoiling need to also address decompaction efforts

Drawing L-102

1. Dam Basin details and cross sections are confusing. A detailed design document for the Dam including conformance to NYS Dam regulations in a report completed by a dam engineer is required
2. Stockpile notes contradict public discussions and drawings
3. Project has 7 Phases or Stages as depicted on numerous drawings
4. Project appears to be a minimum of at least 6 years as proposed in tables labeled construction staging and construction staging notes. These tables have foot notes that the schedules may be impacted "subject to environmental events". Please provide a more realistic schedule incorporating anticipated environmental events
5. Staging plan does not consider winter shutdowns and securing site environmentally. This has also been an area of concern in the Kenney Geotechnical earthwork memorandum
6. Requirements of the Kenney Geotechnical report of 5/27/20 shall be incorporated into the drawings
7. Five-acre waiver is a function of the local MS4 community; Town of Manlius and is not approved at this time
8. Remove the asphalt note from this drawing. Remove note D in construction staging notes. Final wear course for roads is required within one year of base & binder installation per Town of Manlius
9. All required erosion control required for all phases of the work
10. We understand that the developer retracts his statement for a two-year warranty of his work
11. Five-acre waiver is a function of the local MS4 community; Town of Manlius and is not approved at this time
12. Agreed
13. Information provided but is unclear how it coordinates with all phasing. Additionally, it does not speak to topsoil removal and removal of all material 2" and greater. Disposal of material 2" and greater and loss of assumed borrow material which affects current grades shown across the site. Accommodations for stockpile of material is required by the applicant for the phasing plan approvals. JK Tobin cuts and fills do not appear to match requirements of the Kenney Geotechnical report. Spoils of unusable gravels, cobbles and boulders will be required of the submission. Additional methods of soil stabilization may be required for hall roads, wet conditions and cold weather conditions
14. GPS coordination of all work is required. Dam work GPS coordination depiction in an engineering design report is critical
15. Details on locations using GPS or actual dimensions remain missing
16. agreed

17. Testing requirement scheduling is not indicative of potential on site activities. The Earthwork Field testing frequency shall be modified to meet the requirements of the Kenney Geotechnical Report for Earthwork the Kenney Geotechnical Report for earthwork provides a suggested frequency which shall be incorporated into the drawings
18. Please show what equipment will be placed in the staging area
19. Agreed
20. Agreed
21. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
22. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
23. All report information shall be incorporated into construction drawings
24. Remove note 4 from Earthwork and field-testing notice
25. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
26. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
27. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
28. Asphalt drive in proximity of House 5280 will require decompaction and compost amendment per requirements of NYSDEC
29. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
30. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
31. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
32. Notes for topsoiling need to also address decompactions efforts

Drawing L-103

1. Agreed
2. Details on locations using GPS or actual dimensions remain missing
3. Project appears to be a minimum of at least 6 years as proposed in tables labeled construction staging and construction staging notes. These tables have foot notes that the schedules may be impacted "subject to environmental events". Please provide a more realistic schedule incorporating anticipated environmental events
4. Agreed
5. Testing requirement scheduling is not indicative of potential on site activities. The Earthwork Field testing frequency shall be modified to meet the requirements of the Kenney Geotechnical Report for Earthwork the Kenney Geotechnical Report for earthwork provides a suggested frequency which shall be incorporated into the drawings

6. Please show what equipment will be placed in the staging area
7. Agreed
8. Agreed and are under review in the SWPPP section of our comments
9. Please confirm with plan documentation on the drawings
10. Geotechnical information is under review via this correspondence
11. Drawings indicate different use of wood chips as use with topsoil. Please confirm if to be used as mulch and erosion material and depict same in drawings and the SWPPP
12. All required erosion control required for all phases of the work
13. Agreed
14. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
15. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
16. All report information shall be incorporated into construction drawings
17. Remove note 4 from Earthwork and field-testing notice
18. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
19. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
20. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
21. Asphalt drive in proximity of House 5280 will require decompaction and compost amendment per requirements of NYSDEC
22. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
23. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
24. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
25. Notes for topsoiling need to also address decompaction efforts

Drawing L-104

1. Agreed
2. Basis for cut and fill work appears to contradict Kenney Geotechnical report information provided by the applicant. Additional decompaction using compost material will be required for the site
3. Details on locations using GPS or actual dimensions remain missing
4. Project appears to be a minimum of at least 6 years as proposed in tables labeled construction staging and construction staging notes. These tables have foot notes that the schedules may be impacted "subject to environmental events". Please provide a more realistic schedule incorporating anticipated environmental events

5. Agreed
6. Testing requirement scheduling is not indicative of potential on site activities. The Earthwork Field testing frequency shall be modified to meet the requirements of the Kenney Geotechnical Report for Earthwork the Kenney Geotechnical Report for earthwork provides a suggested frequency which shall be incorporated into the drawings
7. Please show what equipment will be placed in the staging area
8. Agreed
9. Basin remains missing
10. Grading plans do not appear to have been coordinated with the Kenney Geotechnical reports nor the information provided by your proposed contractor JK Tobin
11. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
12. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
13. All report information shall be incorporated into construction drawings
14. Remove note 4 from Earthwork and field-testing notice
15. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
16. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
17. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
18. Asphalt drive in proximity of House 5280 will require decompaction and compost amendment per requirements of NYSDEC
19. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
20. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
21. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
22. Notes for topsoiling need to also address decompaction efforts

Drawing L-105

1. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
2. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
3. All report information shall be incorporated into construction drawings
4. Remove note 4 from Earthwork and field-testing notice
5. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report

6. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
7. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
8. Asphalt drive in proximity of House 5280 will require decompaction and compost amendment per requirements of NYSDEC
9. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
10. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
11. Lot 21 has several elevation spot marks please confirm
12. Lot 21 has note remove asphalt, no asphalt visible please confirm
13. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
14. No check dams shown on the drawings as required in previous phase/stage of the work
15. Notes for topsoiling need to also address decompaction efforts

Drawing L-106

1. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
2. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
3. All report information shall be incorporated into construction drawings
4. Remove note 4 from Earthwork and field-testing notice
5. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
6. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
7. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
8. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
9. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
10. Lot 21 has several elevation spot marks please confirm
11. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
12. Notes for topsoiling need to also address decompaction efforts

13. This is the first plan to show the subdivision sign, Planning Board will not be approving the location or design, it should be taken off of all plans
14. Stormwater easement is written on lots 3 and 14 but is not identified where they are located
15. Based on the design, it appears that a stormwater easement should also be placed on lot 4 please confirm. Also, drawings depict a single rock check dam on lot 4.

Drawing L-107

1. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
2. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
3. All report information shall be incorporated into construction drawings
4. Remove note 4 from Earthwork and field-testing notice
5. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
6. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
7. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
8. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
9. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
10. Lot 21 has several elevation spot marks please confirm
11. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
12. Notes for topsoiling need to also address decompaction efforts
13. This is the first plan to show the subdivision sign, Planning Board will not be approving the location or design, it should be taken off of all plans
14. Stormwater easement is written on lots 3 and 14 but is not identified where they are located
15. Based on the design, it appears that a stormwater easement should also be placed on lot 4 please confirm. Also, drawings depict a single rock check dam on lot 4.

Drawing L-108

1. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
2. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
3. All report information shall be incorporated into construction drawings
4. Remove note 4 from Earthwork and field-testing notice

5. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
6. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
7. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
8. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
9. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
10. Lot 21 has several elevation spot marks please confirm
11. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
12. Notes for topsoiling need to also address decompaction efforts
13. This is the first plan to show the subdivision sign, Planning Board will not be approving the location or design, it should be taken off of all plans
14. Stormwater easement is written on lots 3 and 14 but is not identified where they are located
15. Based on the design, it appears that a stormwater easement should also be placed on lot 4 please confirm. Also, drawings depict a single rock check dam on lot 4.

Drawing L-200

1. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
2. The dams are shown on some but not all drawings. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
3. Unclear of any clarifications. Please provide the detail requested
4. Note 5 appears meaningless

Drawing L-201 (New Drawing)

1. Most of the outside lot building envelopes are incorrect, they encroach on forever wild areas and easement areas
2. Not apparent what this drawing is for nor what it represents

Drawing L-202 (New Drawing)

Plan does not appear to be needed. The final location of the homes may be totally different than what is shown. If all are to be spec homes it might work, but if they sell the lots the homeowner may want to locate the house in a different position on the lot. Building envelopes should be provided with proper setbacks as required from property lines and specific lot features such as easements and ROW's

Drawing L-203 (New Drawing)

Plan does not appear to be needed. The final location of the homes may be totally different than what is shown. If all are to be spec homes it might work, but if they sell the lots the homeowner may want to locate the house in a different position on the lot. Building envelopes should be provided with proper setbacks as required from property lines and specific lot features such as easements and ROW's. Drawing appears to confirm the need for geotechnical engineering reports for each of the homes proposed within fills. Work would be better delineated using building envelopes as has been past practice in the Town of Manlius

Drawing L-300

1. We rely on RZ Engineering to provide calculations to support this statement. Additionally, accommodations shall be made for odor control to be provided by each homeowner on a grinder pump system if the planning board agrees to move forward with a grinder pump system in the is project
2. Manhole 3 may still appear to have a greater than 90-degree bend. Please confirm
3. Agreed also will require coordination with any proposed building permits
4. Plantings including trees are a major part of the project SWPPP. It is of concern that all trees have been removed from the site by the developer in spite of a request to cluster and promote use of the existing characteristics and features of the project site
5. Agreed
6. Grinder pumps inside of homes is not preferred and has been problematic in local applications
7. No open cut along Hoag Lane
8. Odor control for grinder pumps will be required for the project if grinder pumps are approved for the project site
9. Agreed
10. Easements are required in place for the work. Please clarify any additional insight if required by the design team
11. Please provide detail on operational characteristics of this device (Agri-Drain: we do not have any such applications within the Town of Manlius.
12. Lot 3 now identifies where the stormwater easement is approximately, but it appears that there should also be one on lots 1 & 2. Confirm stormwater flows in these areas
13. Lot 14 still does not identify the easement area
14. Confirm need for check dam in the back of lot 4

Drawing L-400

1. Jute mesh limits are not depicted on the drawings
2. Agreed
3. Stone dust walkways were discussed at previous public meetings. Removal of the walkways should be considered by planning board as part of cluster development approvals
4. There are no Town requirements for the fencing referenced. We are unfamiliar with NYSHD pool code please provide a reference and include the same on the drawings if required

5. There are no Town requirements for the fencing referenced. We are unfamiliar with NYSHD pool code please provide a reference and include the same on the drawings if required
6. Dimensions and location of monument signs shall conform to Town code for the same
7. Dimensions and location of monument signs shall conform to Town code for the same
8. Apparent proposed building envelopes encroach forever wild areas on lots21,4,5,6,7,8,9,1012,13 and 14 and are unacceptable
9. Drainage easement behind lots 5,6,7,8,9, and 10 are inaccessible and require at least to access points from the proposed street area
10. 20-foot drainage easement on lot 13 appears missing
11. Drainage easements shown on lots 13 & 14 should extend the distance of the entire lots
12. Deed restrictions for forever wild areas, easements and additional HOA restrictions shall be provided for legal review

Drawing L-401

1. Rain gardens and bioretention facilities will assist to reduce run off volume and are suggested to be incorporated into final design calculations
2. The plantings plan is somewhat confusing and not knowing exactly where the homes may go the plan may bring dramatic change to the plan. Please provide a detailed plan showing location of all plantings
3. Locations of seeded and sodded lawns requires detail locations on the drawings and clarification of where they are used
4. Rain gardens and bioretention areas may be beneficial to reducing volume flow to the Muirfield Drive area and should be considered by the applicant
5. A detailed drawing to scale is required for the dam area. Please coordinate all plantings in accordance with NYS Dam regulations
6. Landscaping plans shall be submitted by the applicant to meet requirements of the project SWPPP as presented by the applicant. Also, as a function of cluster development and a five-acre waiver this information will be required prior to approval of the project
7. The planning board advises that they do not intend to approve a project sign currently. The sign will be approved by the Town Codes Officer once a final project approval is received

Drawing L-500

1. Detail 8 and 9 have been deleted, however 8 appears on several pages of the staging plans
2. Requirements of the Kenney Report shall be incorporated into all drawings and specifications
3. Agreed
4. Agreed
5. Please coordinate this detail
6. Wet pond details missing/removed from drawing
7. Agreed
8. Agreed
9. Please confirm
10. Work to be coordinated with Kenney Geotechnical report within the construction drawings

Drawing L-501

1. Agreed
2. Agreed
3. Agreed
4. Pond/Dam area requires easement access
5. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
6. Agreed
7. Agreed. However, the dam needs further detail and a dam specific report completed by a dam professional engineer
8. Provide correct information for fencing proposed by the applicant where needed
9. Agreed
10. Hydrant details are a function of approval by OCWA
11. Agreed
12. This detail is not required for planning board approval
13. Town of Manlius does not have a code for fence posts
14. Town will not accept ownership or maintenance of grinder pumps. Remove detail 7 L-501

Drawing L-502 (New Drawing)

1. Drawing 502 is a completely new drawing. Please confirm where original Drawing L-502 has disappeared to. As a new drawing the revision box is not a true statement of the work Stormwater profiles in lieu of previous submissions of Pond & wall Profiles and earthwork. This is marked erroneously with revision dates and should be noted as a new drawing. Scale and detail are lacking for this new drawing. No existing grade elevations, no coordination of borings or notation of soil types, no materials of construction, no mention of soil plantings. Wetland limits are confusing. Sketch is confusing for construction drawings and lacks detail for the same. Drawing as submitted is unacceptable for construction and approval purposes.

Drawing L-503

1. Footer drain details are a function of building permit procedures
2. Fill locations may change due to impacts that do not appear to have coordinated with the Kenney Geotechnical Reports
3. Please provide specifics on your required clarification request
4. Road details require additional details for construction approval
5. Please provide professional design credentials for JK Tobin Construction referenced in the plans
6. Geotechnical data from Kenney Geotechnical shall be incorporated into all drawings and specifications

DrawingL-504 (New Drawing)

1. Please provide working details, maintenance and longevity of the proposed Agri Drain System

Drawing L-600

Cuts and fills of 7-10 feet appear throughout the profiles. Some storm piping remains and depths of 7-13 feet below finished grade and is unacceptable. The site is not being developed as a conservation/cluster development.

Drawing L-700

1. Acceptable

Drawing L-701 Conventional Site Preparation Plan

1. Acceptable

Drawing L-702 Conventional SWPPP Plan

1. Acceptable

Drawing L-703 Conventional Grading & Drainage Plan

1. Acceptable

Drawing L-704 Conventional Utilities Plan

1. Acceptable

Drawing L-705 Conventional Layout Plan

1. Acceptable

Drawing L-800

Many specification sections appear to be missing parts of there text i.e. General, Submittals, Products, Materials etc. Specification sections reference other specifications absent from this submission. Section 31 2301 is missing in its entirety as are many others. Specification sections do not appear to have been coordinated with reports and drawings provided by the applicant

Drawing L-801 (New Drawing)

Many specification sections appear to be missing parts of there text i.e. General, Submittals, Products, Materials etc. Specification sections reference other specifications absent from this submission. Section 31 2301 is missing in its entirety as are many others. Specification sections do not appear to have been coordinated with reports and drawings provided by the applicant

Drawing L-900 Wet Pond Comparisons (New Drawing)

Drawing L-900 shows 14 photos and a schematic of a grading and drainage plan for 21 housing lots. The photos appear to be an attempt to document drainage facilities within the Town of Manlius. At least 6 of the photos are not a part of the Town of Manlius NY. Photo 5 L-900; 6 L-900;4-8 L-900; 5-8 L-900; 6-8 L-900; 6-8 L-900; all are photos of the neighboring municipality of the Village of Manlius of which the Town has no jurisdiction. Of the remaining 8 photos depicted on sheet L-900, 2 L-900; 3 L-900; 4 L-900;

2-8 L-900; 3-8 L-900 predate stormwater regulations mandated by NYSDEC in 2000. Thus, the drawing 1 L-900 is the only site developed since 2000 regulations and subsequent updates have been made. A copy of the project SWPPP addressing concerns is available at the Town of Manlius. Additionally, drainage documentation for the Mallards Landing subdivision is available for review. Drawing L-900 is not a drawing required for subdivision approval and should be removed from the project submission. This drawing is dated December 2017, this drawing has not been a part of any previous submission

Drawing L-901 Sample Architecture (New Drawing)

Drawing L-901 shows photos of 9 homes apparently built by Thomas Allen Homes and dose not include any specifics pertaining to sample architecture. On numerous occasions architectural issues have been discussed by the developer with the planning board and the public. The developer has indicated that there would be architectural standards for the subdivision. To that end it has been discussed to provide details on architectural issues/standards. Items to be submitted generally should include but are not limited to landscaping requirements & restrictions, number of garages (attached or detached), building materials, color schemes, roofing materials, lighting, proposed setbacks and lot coverages. This drawing is dated December 2017, this drawing has not been a part of any previous submission

Please contact me at 315-558-8417 with any questions you may have.

Very Truly Yours,

Douglas A Miller, P.E.

MILLER ENGINEERS

Attachment: John P. Stopen Peer Review of Impoundment "Dam" and QA/QC Measures Hoag Lane-Woodland Hills Manlius, NY

JOHN P. STOPEN ENGINEERING, LLP

PRINCIPALS: JAMES F. KAPLAN, P.E. / JAMES P. STEWART, Ph.D., P.E. / ROBERT J. COSSELMAN, P.E. / MATTHEW W. McKEE, P.E.
ASSOCIATES: ERIK A. NELSON, P.E. / JASON P. THORPE, P.E.

July 27, 2020

via email to: dougmiller@millerengineers.com
Miller Engineers
131 W. Seneca St.
Suite B, Box 311
Manlius, NY 13104

ATTN: Mr. Doug Miller, P.E.

RE: Peer Review of impoundment "Dam"
and QA/QC Measures
Hoag Lane – Woodland Hills
Manlius, New York
#220164.00

Dear Mr. Miller:

As you requested and approved with respect to our July 7 Letter of Engagement, we agreed to review project documents for:

1. Geotechnical assessment of the storm water impoundment area "Dam"

2. Review of the QA/QC measures for earthwork

3. Respond to your questions with respect to other aspects of this project

We reviewed these documents:

1. Kepplinger Freeman Contract Documents L-000 to L-901 dated 6/15/2020

2. Kenny Geotechnical Services reports dated May 18 and 27, 2020

3. SWPP by RZ Engineering dated 6/15/2020

4. Hoag Lane Cluster Development Response Letter to Town of Manlius Engineer Letter by Kepplinger Freeman Associates dated June 15, 2020

5. Woodland Hills Summary of Outstanding Engineering Issues by Kepplinger Freeman Associates dated June 15, 2020

6. Wetland Report by Environmental Resources, LLC dated June 13, 2020

7. Woodland Hills Earthwork Summary by Kepplinger Freeman Associates dated June 15, 2020

Based on our review, we have these comments:

1. The L-700 Series Sheets by Kepplinger Freeman were not reviewed because we understand they were included for comparison purposes for others , and not intended for construction.

2. The 7-stage 21-lot hillside earthwork construction has many individual cut-and-fill area components.

3. Successful earthwork construction will require more than average care because of potentially moisture-sensitive soils and number of different cut-and-fill component areas while also meeting the SWPP requirements for each of the 7 stages.

4. Earthwork inspection will be required to document proper placement of structural fill in each of the variable component areas.

5. GPS or other detailed survey methods should be considered for Inspector(s) to adequately orient observations (in x-y-z coordinates) with respect to work shown on drawings. Otherwise it will be nearly impossible for inspectors to orient themselves.

6. In our opinion, full-time earthwork inspection should be considered to observe and document pertinent earthwork observations. We would expect that significant daily changes to the grades will occur.

7. We recommend preparing a Design Report for the dam documenting hydrology, water levels for analyses, spillway sizing, downstream safety, earthwork requirements, and all structural aspects. At full level, the dam will hold back an impoundment of over 1,000,000 gallons and the water level will be higher than the homes downstream.

8. Dam design should be stamped by the Engineer responsible for the design of all aspects of the dam.

9. Calculations in Kenney Geotechnical Services (KGS) dated May 27 should be scrutinized for Rapid Drawdown analyses wherein it appears that downstream slope was evaluated instead of the upstream slope.

10. Other KGS calculations should be included in, and explained better in the Design Report.

11. Consider providing a concrete water bar, or weir, for dam impoundment discharge.

12. Provide calculations for anti-seep collars through berm and hillside storm pipes.

13. Dimension bottom width of trench or detail 6/L-500. It appears 2-ft-wide, but calculations use 6-ft-wide, that is not consistent with contours or Plans.

14. Check if storm flows will be contained in SI1 to CBI System by Buildings 12, 13, 14, or if grade could be elevated to avoid this.

15. Scrutinize KGS May 18 report for third bullet point on page 3. Need to remove particles larger than 2 inches for structural fill. Seems like this could be a hardship for earthwork execution.

16. Define special procedures required for preparing subgrade and compacting soils on slopes or hillsides.

17. Identify and address concerns with water infiltration into bedrock from impounded water behind dam, if any. Is a liner required for the pond.

Thank you for this opportunity to be of service to Miller Engineers. Please contact me if you have questions or require additional service.

Sincerely,

JOHN P. STOPEN ENGINEERING, LLP

James P. Stewart

JAMES P. STEWART, Ph.D., P.E.
Partner, Geotechnical Engineer

JPS/jlw

EH/JPS/jlw

Vaughn Lang

From: Ginny Wood
Sent: Monday, August 17, 2020 2:56 PM
To: Vaughn Lang
Subject: FW: FOIL Requests

-----Original Message-----
From: Witzel, Debi
Sent: Monday, August 17, 2020 2:13 PM
To: Ginny Wood <gwood@langlaw.com>
Cc: Jamie Sutphen <jsutphen@bsfattorneys.com>; Doug Miller Engineer <dougmiller@millerengineers.com>
Subject: FOIL Requests

Dear Mr. Lang,

I am in receipt of your Freedom of Information Law (FOIL) request regarding;

- Karst Topography Map of the Town of Manlius to include but not limited to the area encompassing 5280 Hoag Lane.
- Files pertaining to the installation and engineering of the catch basins at the terminus of Churchill Court in the Town of Manlius.

Please be advised that after a diligent search of our records we found we have no records for the above listed items.

Thank you
Debi Witzel
Deputy Town Clerk

23 September 2019

Doug Miller, P.E.
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Manlius, NY 13104
Miller Engineers
315-682-0028 | dougmiller@millerengineers.com
www.Millerengineers.com

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PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: Hoag Lane Cluster Development

Response letter to Town of Manlius Engineer Letter

Dear Mr. Miller,

Our office has reviewed your Engineering comments related to the Hoag Lane dated on **July 18th, 2019** and received on **July 26th, 2019.** Below is our response to each comment received**.** Your comments are listed below followed by the design team response in bold italics.

HOAG LANE CLUSTER DEVELOPMENT

Reviewed Documents: Miller Engineers received updated drawing set dated 6/14/19 and an updated project SWPPP dated 7/11/19. The following is a preliminary review of the 6/14/19 and 7/11/19 submission package. No updates to traffic studies have been received.

1) SWPPP

a) The SWPPP dated 7/11/19 and associated stormwater runoff calculations are not acceptable. The following items are inconsistent with an acceptable plan.

RESPONSE: Due to several redesigns of the basin, most recently due to the delineation of wetlands, the calculations have been revised. The runoff calculations provided with this submission represent accurate representations of watersheds and their hydraulic characteristics in accordance with typical NYSDEC analysis requirements.

b) Comparison of the pre-development runoff and post-development runoff does not indicate a significant increase prior to treatment. Typically increases are substantial for new land development and these calculations should be confirmed.

RESPONSE: Per the table provided on page 6 of the narrative within the SWPPP Report, there are increases of approximately 8% to 20% for the overall combined watershed and 8% to 250% for the disturbed watershed PRDA-1a, see Appendices C and D. We would anticipate that these increases would be consistent with new land development.

c) Flow Rates from DA-1b should be the same for pre-development and post-development as this area remains unchanged.

RESPONSE: Due to delineated wetlands, drainage area boundaries in post development scenarios are different. Flow rates from DA1-b are different due to the relocation of the

drainage area boundary between areas 1a and 1b and the addition of impervious surfaces located within DA1-b (mainly the houses on lots 4-10). Flow rates have been updated on tables within the SWPPP on pages 5 and 6, see Appendix C & D.

d) Based upon our calculations, the inclusion of the conservation area woods with the developed site in watershed PRDA-1a offers a misleading underestimate of the site runoff due to longer time of concentration associated with the upper conservation woods area. If the PRDA-1a is broken into two sub-watersheds, developed and undisturbed, we calculate the resultant runoff is 10 to 15 percent higher than those represented within the current model. We recommend PRDA-1a be broken into two sub-watersheds to better represent the actual runoff from the site.

RESPONSE: Again, due to wetland delineation, watersheds have been updated. Due to the soil spoil berm some offsite wooded area is rerouted toward the rear of lots 5-11. Areas to the rear of the existing lot 21 and adjacent lots 3 and 4, including portions of undisturbed woods upstream from the site development are included within our updated DA1-a watershed. These areas continue to run through the site under both pre and post development conditions. These areas ultimately drain to the delineated wetlands/ stream within DA-1. Dividing the watershed into developed and undeveloped areas would inaccurately represent the watershed's peak flow at the watershed's discharge point since the true hydraulically most distant point used to begin the Tc (the point used in our analysis within the wooded area east of lot 21) would not be utilized in the analysis of the entire area (only in the offsite portion). The ultimate discharge point for this watershed accepts runoff from both developed and undeveloped areas both on and offsite. Attempting to divide these areas arbitrarily will not accurately depict peak discharge rates or times from this watershed to the delineated stream and wetlands adjacent to the proposed stormwater management facility. Therefore, SWPPP Figures 4 and 5 have been updated to reflect this.

The upland wooded areas and offsite portions at the rear of lots 5 and 6 arrive at several points to the developed site. A loosely defined drainageway flows close to the southern property boundary in an east to west direction. The watershed for this drainageway (DA1-b), ultimately discharges to the delineated wetlands/ stream and also includes upstream undeveloped areas offsite. Again, the Tc is defined as the hydraulically most distant point from the discharge point. Dividing up the watershed would, in our opinion, severely misrepresent the peak discharge at the downstream discharge point, making the basis for the stormwater BMP design inconsistent with the TR-55 model intent. Therefore, we have updated the SWPPP and analysis to reflect watersheds as outlined in the SWPPP Figures 4 and 5.

When keeping in mind that the time of concentration is defined as the hydrologically most distant point of the watershed to a point of interest within the watershed, we feel our current analysis accurately represents both watershed DA1-a and DA1. We have incorporated your office's suggestion and we have begun the Tc from a point inside the site to be conservative in our analysis. We also believe the current analysis now allows a more conservative design of the Stormwater Management Facility which will share the same discharge point as combined DA-1, the delineated wetlands/ stream.

e) We are unsure why there is a separate watershed model for the stormwater management area. This should be incorporated with a single proposed watershed model.

RESPONSE: As part of the revisions made with this submission, we have not provided a separate watershed for the stormwater management model. The blue triangle node within HydroCAD (12P) is the pond node where all storage and outlet proposed measures are defined. Blue node 12P represents the SWMF located within DA-1 and pond 11P is presented to show available volumes within the forebays but has no watersheds routed to it (it's only purpose is to show volumes). We have four watersheds delineated - DA's 1a thru 1d since all watersheds ultimately combine and drain to the northwest corner of the parcel. Two watersheds are shown flowing to the proposed SWMF (DA1-a and DA1-b). One is onsite area that is located west of the SWMF on the other side of the delineated wetland DA1-c and bypasses the SWMF. One is area collected by the adjacent subdivision to the south and discharges to the subject site at the rear of the Massa property (DA1-d). This area creates the recently delineated wetlands/stream and also bypasses the SWMF. There is a final area that located at the very western edge of the property on the western side of the existing elevated land feature. This area is untouched and drains to the west offsite. Because it is unaffected by the development it is not analyzed in the SWPPP.

f) Review of runoff curve number for land use for watershed EXDA-1a appears to be incorrect. Approximately 50 percent of the woods with "C" soils within the proposed development should be considered brush in good condition resulting in a CN of 65. This will lower the overall pre- development runoff from the site.

RESPONSE: We do not concur with this statement since brush cover does not typically contain tree cover. As has been noted by several of the local residents and the town itself, the area is heavily wooded and several conservation areas have been provided based on that premise. The portion we anticipate the engineer is referring to still contains areas of tree cover as evident from aerial photography and site reconnaissance. However, in an effort to be conservative, we have provided this update per the engineer's request.

g) The stormwater management area detail elevations on the plans do not match the watershed models in the SWPPP.

RESPONSE: Elevations in the plans have been updated to match the SWPPP.

h) There is significant slope and elevation difference between the forebays and wet pond. Erosion control measures re-grading should be incorporated to keep this area stabile

RESPONSE: There is a proposed minimum 15ft maintenance bench around the pond and forebays provided at accessible and mowable slopes. Slopes within the pond and forebays are 4:1, which are greater than what are typical mowable lawn slopes. Furthermore, the forebays will be filled with approximately 3 feet water for pretreatment to elevation 676. The slopes within the active storage of the wet pond at 4:1, which are less steep than a typical mowable slope of 3:1. There are proposed erosion measures proposed on the spillways of the forebays that discharge to the main basin.

i) Modeling in Appendix F is extremely difficult to follow as labels on catch basins are missing and the subareas are difficult to read.

RESPONSE: Appendix F has been updated to reflect the correct information and labels. In addition, a larger 24x36 print of the watershed areas has been provided in Appendix S.

j) Will 5 acres or more be disturbed at once? The NOI states "No". A phasing/stabilization plan should be provided if this is the case. This may be difficult to accomplish with 23 acres of disturbance planned.

RESPONSE: NOI has been updated. A Phasing/ Stabilization Plan (L-102 Staging Plan) has been provided to indicate the level of disturbance throughout each stage of the project. We anticipate disturbing more than 5 ac on one or more of the construction stages and will obtain permission from the NYSDEC to disturb this additional area when it is required.

k) Portions of lots 12, 13 and 14 do appear to drain to the street storm sewer. The elevation difference is over 10 feet lower than the road.

RESPONSE: Site grading and storm sewers have been updated on L-200 Grading & Drainage.

l) The Tc Route for PRDA-1a does not appear to be shown on Figure 5. Please clarify.

RESPONSE: Tc has been provided on Figure 5.

m) The storage volume of the pond above fill elevations should be indicated to determine if a NYSDEC Dam Permit is necessary.

RESPONSE: Reference to Pond Dam information has been provided in Section 6.0 (page 7) of the updated SWPPP report. No dam permits are required for this project. The maximum height of the embankment is 12.5 feet (toe of slope elevation 664 +/- and top of berm elevation 676.5). The interior of the SWMF also has a bottom elevation of 664+/- (with a 6 foot permanent pool of water at 670 and a maximum full depth of 11 feet at 675+/-) and top of berm elevation at 676.5 +/-. Stormwater depths will not be more than 6 feet for longer than 72 hours per DEC standards and dam permits are not required for structures with depths of less than 13 feet.

n) Details of pond drainage structure/pond cross sections should be shown in the SWPPP.

RESPONSE: Details have been provided in Appendix P of the SWPPP report and within the details of the project plans (L-200,L-500, L-501, L-600)

o) We have many additional comments which are minor in nature compared to those listed above which may be satisfied upon appropriate responses to the current comments.

RESPONSE: Understood.

2) General

a) A geotechnical report has been included. Critical data in this report shall included but shall not be limited to the following:

a. Depth to rock (especially as it relates to cuts and fills across the site for public utilities).

RESPONSE: No rock was encountered during geotechnical testing or field test pits performed by Tobin Construction and Kenney Geotechnical. Boring locations shown on Site Preparation Plan L-100.

b. QA/QC requirements, plan & implementation strategies for controlled structural fills across the site for utility, road and building construction

RESPONSE: Kenney Geotechnical will be onsite to review compaction testing for right of way road fill and utilities back fill. Refer to site specifications Section 31 2300 and Kenney Geotechnical Testing proposal dated September 17th, 2019.

c. Monetary securities should be set in place for any and all utilities anticipated to be dedicated to the Town of Manlius. Special consideration shall be given for utilities to be placed in all cut and fill areas suggest use of the Town of Manlius Highway permit application for this use, attached herewith.

RESPONSE: Applicant will be providing the necessary bonds or letters of credit for all publicly dedicated utilities. Team requests a meeting with town to discuss.

b) Two trees per building lot shall be shown on each proposed building lot per town code.

RESPONSE: Landscape Architect to amend planting plan to show (2) trees per building lot. Refer to Plan L-401 Planting Plan.

c) Land marking monuments shall be shown on the drawings and associated monetary deposits for the same shall be placed in escrow by the developer.

RESPONSE: Notes to be added to the layout plan for property corner monuments. Applicant requests meeting with town for clarification of future report.

d) Site Preparation

a. Site work drawings indicate significant earth moving activities on the project site. Work plans are requested to provide mitigation detail for the following (both conventional and cluster plans).

RESPONSE: All erosion control measures will be installed prior to construction. Staging drawings have been provided on Drawing L-102 Staging Plan.

i. Sewer, water, gas, electric, cable are located in cut and fill areas requiring detailed work plan criteria for compliance to structural fills prior to approval.

RESPONSE: All cutting, filling, and backfilling shall comply with materials shown on plans, details, and specifications. Geotechnical specialist provided work plan criteria for compliance of structural fill areas. Specialist has provided criteria and credentials to Town of Manlius prior to construction. Refer to Kenney Geotechnical proposal dated September 17th, 2019.

ii. Roads are in cut & fill areas requiring detailed work plan criteria for compliance to structural fills prior to approval.

RESPONSE: Geotechnical specialist shall provide work plan criteria for compliance of structural fill areas. Specialist has provided criteria and credentials to Town of Manlius prior to construction. Submittals will be provided for review by Town as well as all testing results for material compaction. Refer to Kenney Geotechnical proposal dated September 17th, 2019.

iii. Earthwork operation over the 30 +/- acre site requires work plan criteria for dust, noise and heavy equipment operation mitigation.

RESPONSE: Total disturbance area is approximately 20.89 acres. In response to the board's concern and your office's request, a dust control plan has been provided within the SWPPP and drawing L-101 SWPPP Plan. After coordination with the contractor and in conjunction with the NYSDEC Standards for Erosion and Sediment Control, we have included the plan within Section 12.1 of our updated SWPPP and on drawing L-102.

iv. Plan to include details on phasing of construction, anticipated time lines, hours of operation, regulatory compliance limits and proposed mitigation alternatives for air, storm water, noise, view shed aesthetics and construction traffic.

RESPONSE: Refer to plan entitled L-101 SWPPP Plan and L-102 Staging Plan.

v. Site appears to be proposed as one phase site work for all earth moving activities please confirm and provide proposed project oversite for all environmental concerns during construction activity. NYSDEC approval will be required for this scope of work with Town concurrence.

RESPONSE: Refer to plan entitled L-101 SWPPP Plan and L-102 Staging Plan.

vi. A plan with detailed specifications and proposed security has to be developed that explains how the new or moved earth will be compacted and/or stabilized to ensure that Town infrastructure and homes being constructed will be safe.

RESPONSE: Refer to specifications section 31 2300. Developer requests a meeting with Town of Manlius to detail security requirements. Refer to Kenney Geotechnical proposal dated September 17th, 2019.

e) Traffic study should be updated/amended to meet the needs of the current site conditions.

RESPONSE: While the previous Traffic Impact Study was performed for more residential lots than are currently proposed which resulted in a conservative conclusion, the TIS has been updated and included in this submission.

f) Additional Onondaga County Planning comments are attached herewith.

RESPONSE: Understood.

3) Cluster Plan

a) Promotion of integrated site design that is considerate to the natural features and topography of the project site.

RESPONSE: Project Team has taken into consideration all natural features and topography on the site. Several environmental reports were conducted such as a wetland survey and geotechnical report to identify sensitive areas. These areas are protected in the proposed plan. The proposed plan impacts established areas of brush/shrubland that are dominated by invasive species such as buckthorn, Norway maple, and callery pear.

b) Protection of environmentally sensitive areas of the development site, as well as permanently preserving important natural open space features.

RESPONSE: Project Team has taken into consideration all natural features and topography on the site. Several environmental reports were conducted such as a wetland survey and geotechnical report to identify sensitive areas. These areas are protected in the proposed plan. The proposed HOA includes protections for green space at property edges to provide a buffer and natural edge for surrounding neighbors. The proposed plan impacts established areas of brush/shrubland that are dominated by invasive species such as buckthorn, Norway maple, and callery pear.

c) Minimization of non-point source pollution through reducing the area of impervious surfaces on site.

RESPONSE: Proposed plan has consistently reduced the area of impervious surface during each iteration that has been submitted to the Planning Board. The minimum surface required to provide safe driving widths per Town of Manlius code and building lot access have been provided. Potential owners will be encouraged to utilize permeable surfaces for hardscapes. Owners will be provided a list of approved materials.

d) Encourage saving costs on infrastructure and maintenance through practices such as decreasing the area that needs to be paved and the decreasing distance that utilities need to be run.

RESPONSE: Proposed plan has minimized the area needed to for paving and utilities based on the proposed number of lots.

e) the primary purpose is to create more area for open space, and less ground disturbance – this is not obvious from the cluster plan submitted.

RESPONSE: The proposed plan protects approx. 30% of the total existing green space within an HOA easement. Additional existing forested areas will be preserved during construction. The proposed plan impacts established areas of brush/shrubland that are dominated by invasive species such as buckthorn, Norway maple, and callery pear.

f) mitigation of onsite delineated wetlands.

RESPONSE: Proposed plans do not impact designated federal wetlands identified onsite.

g) Basis of cluster plan (R-3 zoning) shall be noted on the plans.

RESPONSE: R-3 Zoning is indicated on sheet L-300 that was utilized to establish lot size.

h) In light of the use of cluster development; strong consideration should be given to the following
a) Architectural review for each proposed dwelling
b) Landscape Architecture review for each proposed dwelling

RESPONSE: Understood.

4) Sewers

a) On approvable sewer off set plan shall be developed for the project site in accordance with OCDWEP standard procedures

RESPONSE: Understood.

b) Clear and distinct demarcation of public and private sewer locations shall be depicted on the drawings.

RESPONSE: Utility Plan (L-300) notes (Note 7 & 8) that all laterals are owned by the corresponding homeowner. All sewers within the rights of way and within sewer easments will be public. Other sewers and equipment will be privately owned. Upon approval, a map, plan and report will be made available for petition to the town.

c) Force main demarcation of public private shall include a manhole with double valves for long term maintenance issues.

RESPONSE: Additional Details have been added to Drawings L-501 and L-600 to show connections to existing manholes and connections between public sewers and private laterals. As is typical with all municipal sewer systems, laterals are owned by the private homeowner and mains are are dedicated to the municipality. A map, plan and report along with documentation for petition to the town will be provided once the subdivision has gone through the final SEQR & site plan process.

d) Force mains shall include flushing port locations and manholes. We are unsure why sanitary manholes are proved for each sanitary force main connection. Flushing port locations and manholes should be strategically located.

RESPONSE: Sanitary Plan (L-300 Utility Plan) has been updated to show the correct sanitary connections. Force main flushing ports and manhole details have been added to Drawing L-501 and L-600.

e) Sanitary laterals should not be directly connect to manholes.

RESPONSE: We agree and Sanitary Plan (L-300 Utility Plan) has been updated to show the correct sanitary lateral connections.

f) It appears some gravity sewers may be labeled as force main.

RESPONSE: We agree and Sanitary Plan and Notes (L-300 Utility Plan) has been updated to indicate which properties are subject to a gravity or force main system.

g) Any and all proposed easements shall be shown on drawings

RESPONSE: All proposed easements have been indicated on L-300 Layout Plan.

5) Dust Control Plan

a) Location of Monitoring points

RESPONSE: Monitoring Points have been identified on L-101. Locations have also been identified in SWPPP Section 12.1 Dust Control Plan.

b) Record keeping of meteorological data

RESPONSE: Record keeping of meteorological data has been recommended in SWPPP Section 12.1 Dust Control Plan.

c) Quality Assurance/Quality Control Plan

RESPONSE: Quality Assurance/ Quality Control Plan has been outlined in the SWPPP Section 12.1 Dust Control Plan.

d) Identification of the qualified individual who has prepared the plan

RESPONSE: RZ Engineering, PLLC developed the SWPPP. The Principal at RZ Engineering is a Licensed P.E. in New York State, Certified Professional in Erosion and Sediment Control, Certified Professional in Stormwater Quality and a Certified Erosion, Sediment and Stormwater Inspector all recognized by national certification firm - Envirocert.

e) Action levels, corrective action, and stop work levels

RESPONSE: Action levels, corrective action, and stop work levels have been identified in the SWPPP Section 12.1 Dust Control Plan.

f) Description of particulate monitoring techniques and frequency, instrumentation and analytical methods

RESPONSE: Description of particulate monitoring techniques and frequency, instrumentation and analytical methods have been identified in the SWPPP Section 12.1 Dust Control Plan.

g) Description of dust suppression techniques to be employed during on site activities

RESPONSE: Description of suppression methods has been provided in SWPPP Section 12.1 Dust Control Plan.

6) Water

a) Water main design and construction will be performed by OCWA. Details of the water main should be removed from the plans.

RESPONSE: Water main design has been removed along with details regarding water main. Team will coordinate with OCWA.

b) The routing of the proposed water main as shown indicates multiple street crossings. This is not acceptable.

RESPONSE: Water main design has been removed along with details regarding water main. Team will coordinate with OCWA.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

To: Town of Manlius Planning Board

From: DA Miller, P.E.

Subject: Hoag Lane Cluster Development

Date: July 18, 2019

Miller Engineers received updated drawing set dated 6/14/19 and an updated project SWPPP dated 7/11/19. The following is a preliminary review of the 6/14/19 and 7/11/19 submission package. No updates to traffic studies have been received.

SWPPP

The SWPPP dated 7/11/19 and associated stormwater runoff calculations are not acceptable. The following items are inconsistent with an acceptable plan.

- Comparison of the pre-development runoff and post-development runoff does not indicate a significant increase prior to treatment. Typically increases are substantial for new land development and these calculations should be confirmed.
- Flow Rates from DA-1b should be the same for pre-development and post-development as this area remains unchanged.
- Based upon our calculations, the inclusion of the conservation area woods with the developed site in watershed PRDA-1a offers a misleading underestimate of the site runoff due to longer time of concentration associated with the upper conservation woods area. If the PRDA-1a is broken into two sub-watersheds, developed and undisturbed, we calculate the resultant runoff is 10 to 15 percent higher than those represented within the current model. We recommend PRDA-1a be broken into two sub-watersheds to better represent the actual runoff from the site.
- We are unsure why there is a separate watershed model for the stormwater management area. This should be incorporated with a single proposed watershed model.
- Review of runoff curve number for land use for watershed EXDA-1a appears to be incorrect. Approximately 50 percent of the woods with "C" soils within the proposed development should be considered brush in good condition resulting in a CN of 65. This will lower the overall pre-development runoff from the site.
- The stormwater management area detail elevations on the plans do not match the watershed models in the SWPPP.
- There is significant slope and elevation difference between the forebays and wet pond. Erosion control measures re-grading should be incorporated to keep this area stabile

- Modeling in Appendix F is extremely difficult to follow as labels on catch basins are missing and the subareas are difficult to read.
- Will 5 acres or more be disturbed at once? The NOI states "No". A phasing/stabilization plan should be provided if this is the case. This may be difficult to accomplish with 23 acres of disturbance planned.
- Portions of lots 12, 13 and 14 do appear to drain to the street storm sewer. The elevation difference is over 10 feet lower than the road.
- The Tc Route for PRDA-1a does not appear to be shown on Figure 5. Please clarify.
- The storage volume of the pond above fill elevations should be indicated to determine if a NYSDEC Dam Permit is necessary.
- Details of pond drainage structure/pond cross sections should be shown in the SWPPP.
- We have many additional comments which are minor in nature compared to those listed above which may be satisfied upon appropriate responses to the current comments.

General

- A geotechnical report has been included. Critical data in this report shall included but shall not be limited to the following:
    - Depth to rock (especially as it relates to cuts and fills across the site for public utilities).
    - QA/QC requirements, plan & implementation strategies for controlled structural fills across the site for utility, road and building construction
    - Monetary securities should be set in place for any and all utilities anticipated to be dedicated to the Town of Manlius. Special consideration shall be given for utilities to be placed in all cut and fill areas suggest use of the Town of Manlius Highway permit application for this use, attached herewith.
- Two trees per building lot shall be shown on each proposed building lot per town code
- Land marking monuments shall be shown on the drawings and associated monetary deposits for the same shall be placed in escrow by the developer
- Site Preparation
    - Site work drawings indicate significant earth moving activities on the project site. Work plans are requested to provide mitigation detail for the following (both conventional and cluster plans)
        - Sewer, water, gas, electric, cable are located in cut and fill areas requiring detailed work plan criteria for compliance to structural fills prior to approval
        - Roads are in cut & fill areas requiring detailed work plan criteria for compliance to structural fills prior to approval
        - Earthwork operation over the 30 +/- acre site requires work plan criteria for dust, noise and heavy equipment operation mitigation
        - Plan to include details on phasing of construction, anticipated time lines, hours of operation, regulatory compliance limits and proposed mitigation alternatives for air, storm water, noise, view shed aesthetics and construction traffic
        - Site appears to be proposed as one phase site work for all earth moving activities please confirm and provide proposed project oversite for all

environmental concerns during construction activity. NYSDEC approval will be required for this scope of work with Town concurrence
        - A plan with detailed specifications and proposed security has to be developed that explains how the new or moved earth will be compacted and/or stabilized to ensure that Town infrastructure and homes being constructed will be safe
- Traffic study should be updated/amended to meet the needs of the current site conditions
- Additional Onondaga County Planning comments are attached herewith

Cluster Plan

- The proposed cluster development plan appears to adequately address the following items
    - Promotion of integrated site design that is considerate to the natural features and topography of the project site
    - Protection of environmentally sensitive areas of the development site, as well as permanently preserving important natural open space features
    - Minimization of non-point source pollution through reducing the area of impervious surfaces on site
    - Encourage saving costs on infrastructure and maintenance through practices such as decreasing the area that needs to be paved and the decreasing distance that utilities need to be run
    - the primary purpose is to create more area for open space, and less ground disturbance – this is not obvious from the cluster plan submitted
    - mitigation of on site deliniated wetlands
    - Basis of cluster plan (R-3 zoning) shall be noted on the plans
    - In light of the use of cluster development; strong consideration should be given to the following
        - Architectural review for each proposed dwelling
        - Landscape Architecture review for each proposed dwelling

Sewers

- On approvable sewer off set plan shall be developed for the project site in accordance with OCDWEP standard procedures
- Clear and distinct demarcation of public and private sewer locations shall be depicted on the drawings.
- Force main demarcation of public private shall include a manhole with double valves for long term maintenance issues.
- Force mains shall include flushing port locations and manholes. We are unsure why sanitary manholes are proved for each sanitary force main connection. Flushing port locations and manholes should be strategically located.
- Sanitary laterals should not be directly connect to manholes.
- It appears some gravity sewers may be labeled as force main.
- Any and all proposed easements shall be shown on drawings.

Dust Control Plan

- As a minimum the plan shall include the following:
    - Location of Monitoring points
    - Record keeping of meteorological data
    - Quality Assurance/Quality Control Plan
    - Identification of the qualified individual who has prepared the plan
    - Action levels, corrective action, and stop work levels
    - Description of particulate monitoring techniques and frequency, instrumentation and analytical methods
    - Description of dust suppression techniques to be employed during on site activities

Water

- Water main design and construction will be performed by OCWA. Details of the water main should be removed from the plans.
- The routing of the proposed water main as shown indicates multiple street crossings. This is not acceptable.

15th June 2020

Joesph Lupia
Town of Manlius Planning Board Chairperson
(315) 477-0100 / Fax (315) 477-5071
301 Brooklea Drive
Fayetteville, NY 13066
Tel. 315-637-3414

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: **Woodland Hills Earthwork Summary**

Dear Chairman Lupia and Planning Board Members,

Please refer to the attached earthwork calculations performed by Tobin Construction utilizing Earthworks Elements. Tobin construction has reviewed this project very closely with our design team, has performed several earthwork calculations for the site and is confident that the site will be able to balance.

A. **TOTAL SITE SUMMARY** - Site Excavation Report for the entire site, attachments A and B, show a cut of 39,308 cubic yards and a fill of 53,929 cubic yards with an import of 14,620 cubic yards which is ideal for a sitework contractor. Soil testing will be required for the use and placement of the 2,480 cubic yards required to construct the fill sections of the proposed right of way. According to Tobin Construction the on site soil materials will balance and import of fill material will not be required for general filling. The import quantity of 14,620 cubic yards will accounted for as follows by the items listed below:

   1 - Road pavement and driveway subbase materials, basement excavation – 3240 cubic yards

   2 – Driveway and subbase material – 740 cubic yards

   3 – Road Underdrain - 320 cubic yards

   4 – Basements– 9,300 cubic yards

   5 – Pipe voids and pipe bedding – 900 cubic yards

   14,500+/- cubic yards total

B. **STAGE 1 SITE SUMMARY** – Site Excavation Report for Stage 1 construction (drawing L-102) , attachments B and C, show a cut of 18603 cubic yards and a fill of 17,413 cubic yards. A surplus of 1189 cubic yards will be utilized to as fill during Stage 2 construction.

C. **STAGE 2 SITE SUMMARY** - Site Excavation Report for Stage 2 construction (drawing L-103), attachments E and F, show a cut of 16,779.8 cubic yards and a fill of 15,298.9 cubic yards. A surplus of 1480.9 cubic yards will be utilized to as fill during Stage 3 construction.

On-site material will be utilized within the right of way fill areas, utilities backfilling and fill below basement slabs based in accordance with project testing specifications and field testing which will be coordinated with the Town of Manlius selected testing agency. According to the earthwork material evaluation and berm stability evaluations performed by Kenney Geotechnical Engineering Services the on-site borrow material which meets the testing criteria can be utilized for fill within the right of way and constructing the embankment.

The earthwork operations will occur within the areas shown on the staged site plans (drawings L-102, L-103, L-104, L-105, L-106, L-107, and L-108. The stockpile areas shown within the staged drawings for stockpiled materials is sufficient based on or experience with similar project.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

Attachment 'A' - Total Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 09:01 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

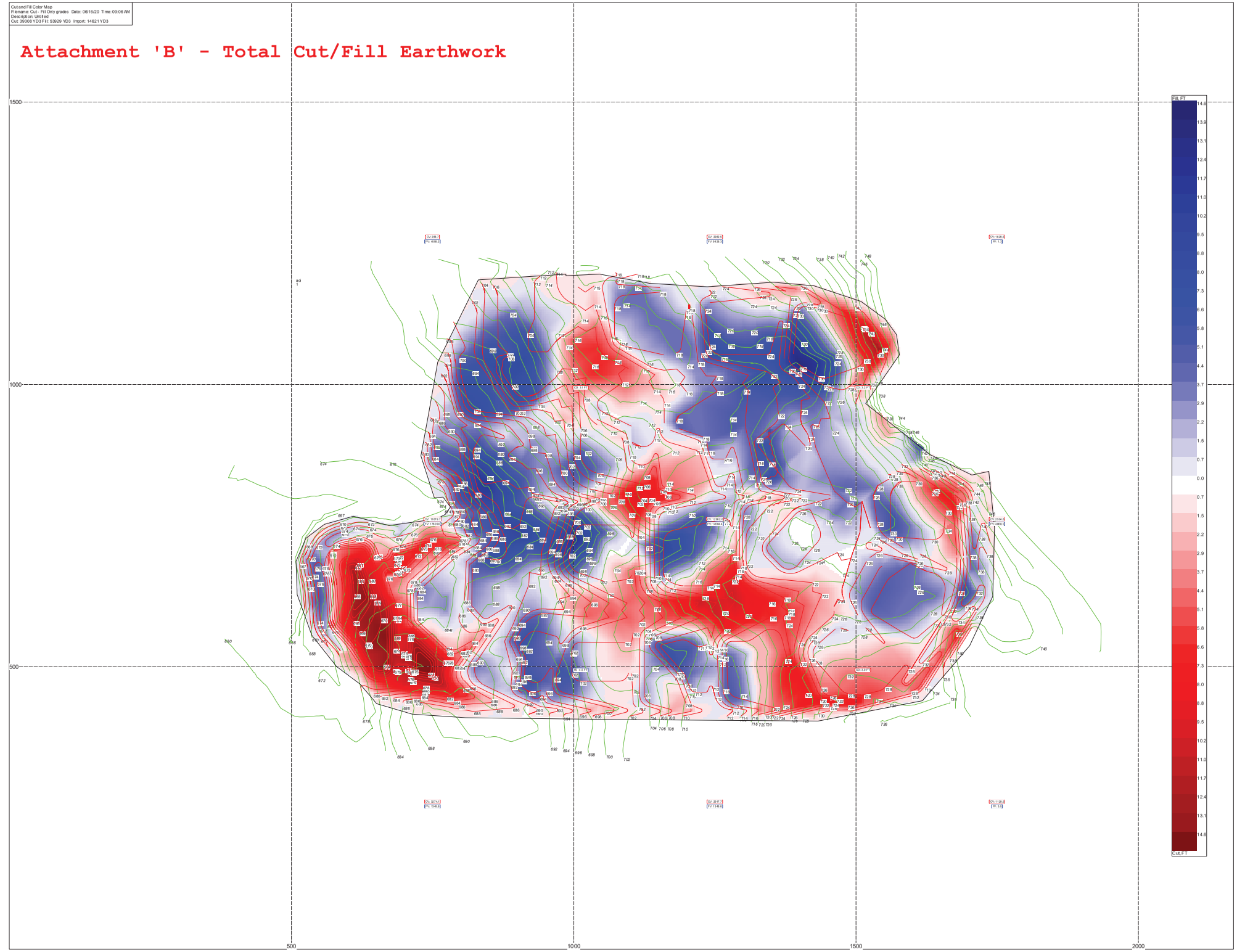
Soil Expansion: 0%
Soil Compression: 0%
Import Soil Compression: 0%

Cut Area: 306228.0 FT2
Fill Area: 439531.0 FT2
Work Area: 751864.0 FT2

Bank Cut:	39308.2 YD3
Expanded Cut:	39308.2 YD3
Bank Fill:	53929.1 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Import:	14620.9 YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 09:06 AM
Description: Untitled
Cut: 38308 YD3 Fill: 53929 YD3 Import: 14621 YD3

Attachment 'B' - Total Cut/Fill Earthwork



Attachment 'C' - Stage 1 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 08:18 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

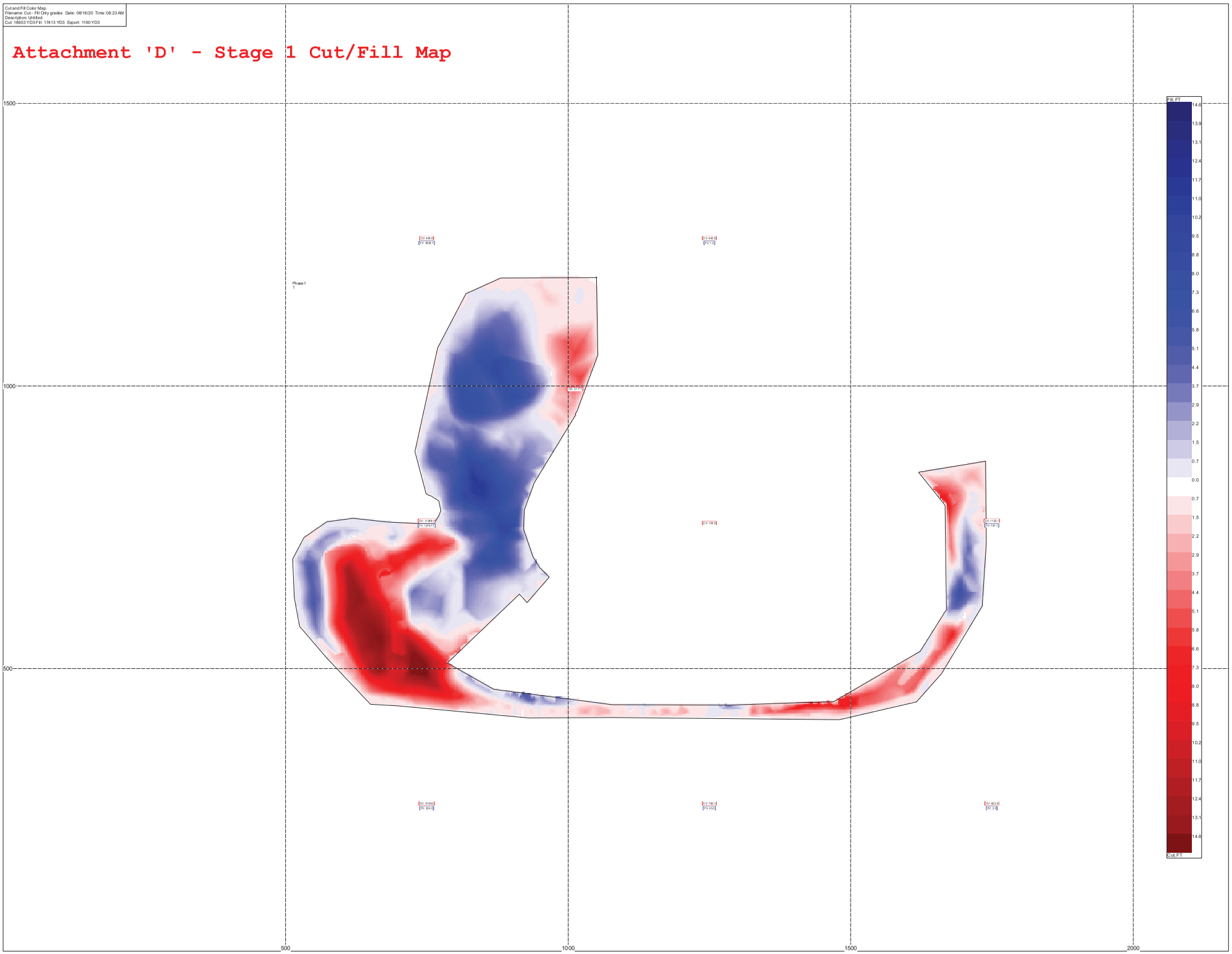
Soil Expansion: 0%
Soil Compression: 0%
Import Soil Compression: 0%

Cut Area: 127234.0 FT2
Fill Area: 139320.0 FT2
Work Area: 267171.0 FT2

Bank Cut:	18603.2 YD3
Expanded Cut:	18603.2 YD3
Bank Fill:	17413.3 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Export:	1189.9 YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 08:23 AM
Description: Untitled
Cut: 18603 YD3 Fill: 17413 YD3 Export: 1190 YD3

Attachment 'D' - Stage 1 Cut/Fill Map



Attachment 'E' - Stage 2 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 10:22 AM

Job Filename: EW1
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

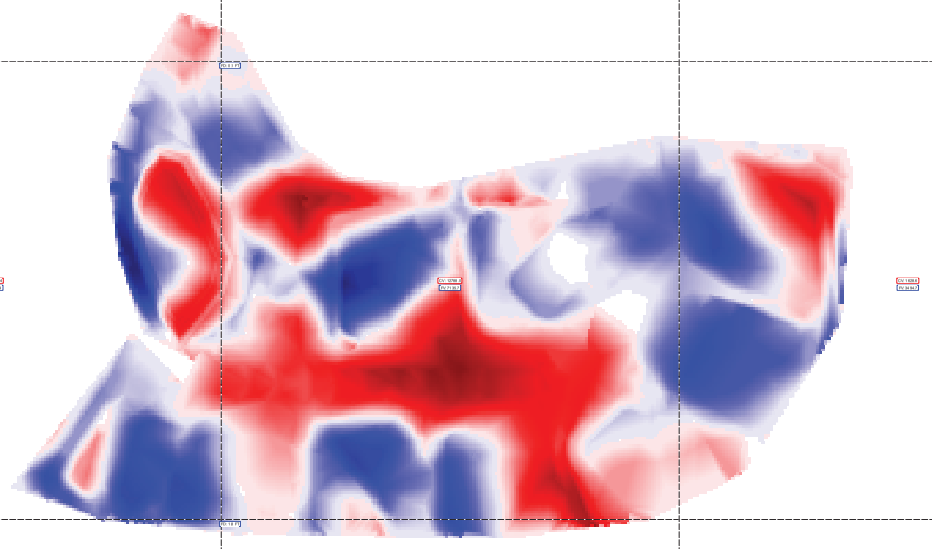
Soil Expansion: 0%
Soil Compression: 0%
Import Soil Compression: 0%

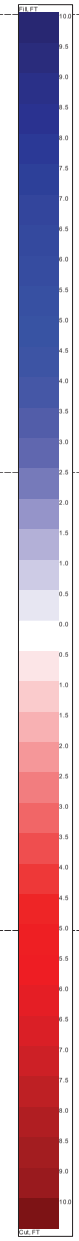
Cut Area: 156400.0 FT2
Fill Area: 174060.0 FT2
Work Area: 334776.0 FT2

Bank Cut:	16779.8 YD3
Expanded Cut:	16779.8 YD3
Bank Fill:	15298.9 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Export:	1480.9 YD3

Cut and Fill Color Map
Filename: EW1 Date: 06/16/20 Time: 10:21 AM
Description: Untitled
Cut: 16780 YD3 Fill: 15299 YD3 Export: 1481 YD3

Attachment 'F' - Stage 2 Cut/Fill Map





Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 18, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Earthwork Material Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed additional subsurface investigation at the Woodland Hills project site. The purpose of the additional subsurface investigation was to provide evaluate the engineering characteristics of on site materials to determine if they are suitable for use during earthwork. The scope of the additional investigation included eight test pits (designated as TP-1 through TP-8) and laboratory testing. This report presents the results of the test pit investigation and laboratory testing and provides quality assurance/quality control recommendations for earthwork.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Subsurface investigation was performed at the locations designated on mapping prepared by Keplinger Freeman Associates Landscape Architecture (see attached). Test pits were excavated by J. K. Tobin Construction.

Subsurface Conditions Encountered- Test Pits

In general the test pits encountered glacial till consisting of stiff to hard reddish brown sandy clay with gravel, cobbles and boulders beneath a thin layer of topsoil. Topsoil ranged from 12 inches to 23 inches in thickness at the test pit locations.

Differing subsurface conditions were encountered at location TP-6. At this location, silty gravel with sand was encountered beneath approximately one foot of topsoil and extended to a depth of three feet, where highly weathered grey shale was encountered. The shale was brittle and could be excavated to a depth of five feet.

Test pit logs are attached to this report.

Laboratory Testing

Bulk samples were obtained from the test pits and tested in our Syracuse laboratory. Testing performed included:

- Moisture- Density Relationship Testing (Modified Effort) (ASTM D-1557)
- Natural Moisture Content (ASTM D 2216)
- Particle Size Analysis with Hydrometer (ASTM D-422)
- Atterberg Limits (ASTM D4318)

Test results are attached. Results are summarized in the following table:

Sample ID	Description	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Max. Dry Density (pcf)	Optimum Moisture Content (%)	Fines (%)
TPS-1	Red-brown Till	9	21	15	6	-	-	57
TPS-2	Red-brown Till	10	22	15	7	-	-	53
TPS-3	Red-brown Till	11	21	14	7	-	-	56
TPS-4	Red-brown Till	10	23	19	4	-	-	54
TPS-5	Red-brown Till	10	-	-	-	136.2	7.2	57
TPS-6 TOP	Silty Gravel	35	-	-	-	104.4	17.5	38
TPS-6 BOTTOM	Weathered Shale	23	-	-	-	110.6	16.2	14
TPS-7	Red-brown Till	10	-	-	-	137.3	7.2	59
TPS-8	Sandy Silt w/ Gravel	20	-	-	0	122.3	11.9	55

Analysis and Recommendations

The on site soils are suitable for re-use during earthwork provided that they are properly managed during construction. The till has a significant silt content and will lose strength if disturbed by saturation or freezing. Completed lifts of earthwork should be sealed with a smoothdrum roller at the end of each work day.

Earthwork must be performed using methods that will result in a stable excavations and fills. Typical temporary earthwork measures such as temporary drainage swales, stabilized haul roads, and the use of protective layers of crushed stone can be employed at this site. It is recommended that earthwork is observed by geotechnical personnel to ensure that all organic material is removed from the structural and pavement areas. Additional recommendations are as follows:

- Strip existing topsoil, roots and organics from all areas that will receive new construction to establish subgrade.
- Proof-roll exposed subgrade with a fully loaded dump truck, or accepted alternative equipment, under the observation of geotechnical personnel. Areas that rut, weave, or deflect should be over-excavated and replaced with compacted structural fill (see below for structural fill characteristic requirements).
- Utilize engineered fill to raise site grades to the desired elevation. On site soil can be used as engineered fill provided that particles larger than 2 inches are removed and the material is placed, compacted, and maintained as described herein.
- Field moisture contents for engineered fill should be maintained within 2 percentage points of the optimum moisture content established by laboratory testing to provide adequate compaction. All fill should be placed in level lifts having a loose thickness no greater than 12 inches and should be compacted to at least the following minimum percentages of the Modified Proctor (ASTM D-1557) maximum dry density:

    - Below footings: 95%
    - Beneath slab-on-grade or pavements: 95%
    - Utility trench backfill: 95%
    - Beneath landscape areas: 90%
    - Beneath sidewalks and exterior slabs: 95%
    - Structural berms: 95%

    In-place density testing should be performed at a frequency of one test per 500 square feet per lift in open areas and one test per 25 feet per lift in trenches.
- If the structure is to be constructed during the winter months, or if the building interiors will be subjected to freezing temperatures after footer construction, adequate frost cover and protection must be provided. Earthwork cannot be performed with frozen material.
- Permanent slopes should be graded no steeper than 3 horizontal: 1 vertical unless reinforced with geosynthetic materials.

In utility trenches, or other confined areas, small compaction equipment may be necessary such as a vibratory plate, jumping jack or walk-behind vibratory roller. In-place density testing should be performed at a frequency of one test per 25 feet per lift in trenches. Utility trench fill should be placed in level lifts no greater than 8 inches in thickness and should be compacted to at least 95%the Modified Proctor (ASTM D-1557) maximum dry density. Adequate frost cover and protection must be provided during winter weather construction. Earthwork cannot be performed with frozen material.

Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
Kenney Geotechnical Engineering Services PLLC

Christopher Kenney

Christopher M. Kenney, P.E.
President

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
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TEST PIT NUMBER TPS-1

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 676 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.5					674.5
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED AT 5-10 FEET
5.0					
7.5	GB 1	MC = 9% LL = 21 PL = 15 Fines = 57%			
10.0					10.0 666.0



Bottom of test pit at 10.0 feet.

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TEST PIT NUMBER TPS-2

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 674 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.5					672.5
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 10% LL = 22 PL = 15 Fines = 53%			
10.0					10.0 664.0



Bottom of test pit at 10.0 feet.

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TEST PIT NUMBER TPS-3

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 680 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					679.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 11% LL = 21 PL = 14 Fines = 56%			
10.0					10.0 670.0



Bottom of test pit at 10.0 feet.

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Kenney Geotechnical Engineering Services, PLLC
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TEST PIT NUMBER TPS-4

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 681 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					680.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 10% LL = 23 PL = 19 Fines = 54%			
10.0					671.0



Bottom of test pit at 10.0 feet.

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TEST PIT NUMBER TPS-5

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 716 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					715.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
5.0					
7.0		MC = 10% Fines = 57%			709.0
					Bottom of test pit at 7.0 feet.



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TEST PIT NUMBER TPS-6

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 704 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0						
			ML		(ML) TOPSOIL	
					1.0	703.0
			GM		(GM) BROWN SILTY GRAVEL WITH SAND, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED. BULK SAMPLE RETRIEVED	
		MC = 35% Fines = 38%				
2.5						
					3.0	701.0
					GREY/OLIVE HIGHLY WEATHERED SHALE, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED BULK SAMPLE RETRIEVED	
		MC = 23% Fines = 14%				
5.0					5.0	699.0

Bottom of test pit at 5.0 feet.



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TEST PIT NUMBER TPS-7

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 722 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					721.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE WAS OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
5.0					
7.0		MC = 10% Fines = 59%			715.0
					Bottom of test pit at 7.0 feet.



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TEST PIT NUMBER TPS-8

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 683 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0			ML		(ML) TOPSOIL	
					1.0	682.0
			ML		(ML) BROWN SANDY SILT WITH CLAY AND GRAVEL, MOIST	
					NO GROUNDWATER SEEPAGE WAS OBSERVED	
2.5					BULK SAMPLE RETRIEVED	
		MC = 20% Fines = 55%			3.0	680.0
					Bottom of test pit at 3.0 feet.	



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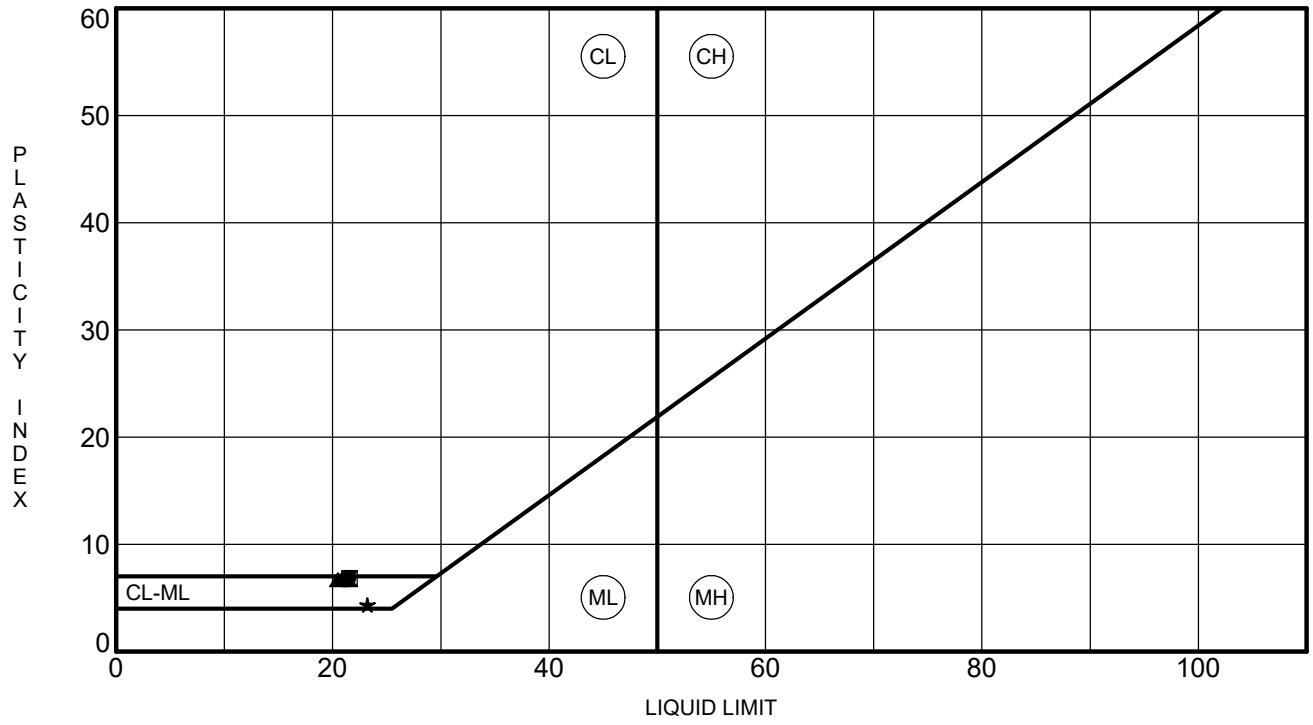
ATTERBERG LIMITS' RESULTS

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**TPS-1**	**7.5**	**21**	**15**	**6**	**57**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
⊠	**TPS-2**	**7.5**	**22**	**15**	**7**	**53**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
▲	**TPS-3**	**7.5**	**21**	**14**	**7**	**56**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
★	**TPS-4**	**7.5**	**23**	**19**	**4**	**54**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**

ATTERBERG LIMITS - GINT STD US LAB.GDT - 5/11/20 13:11 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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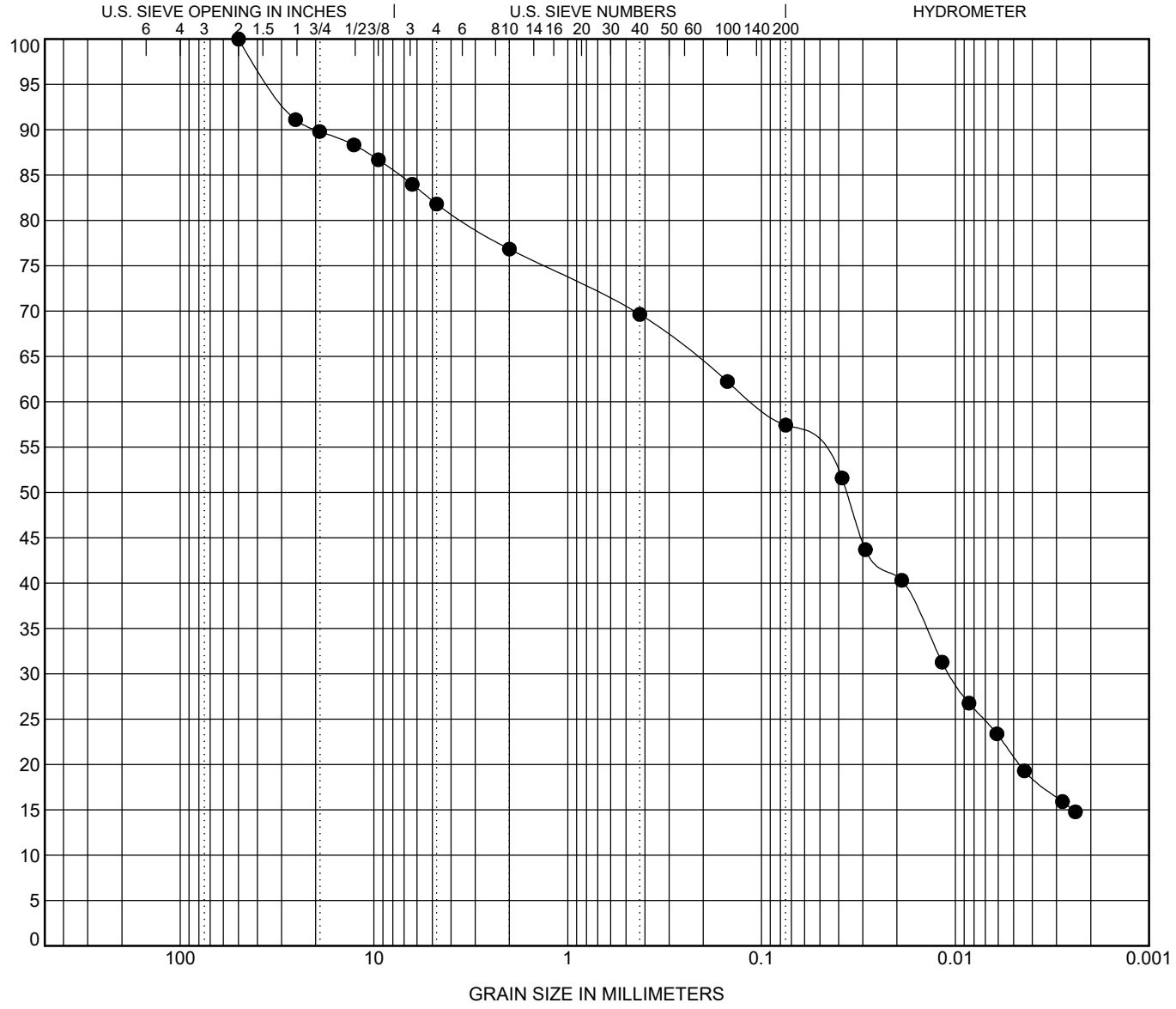
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-1	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**15**	**6**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-1	7.5	**50**	**0.109**	**0.011**		**18.2**	**24.4**	**36.5**	**20.9**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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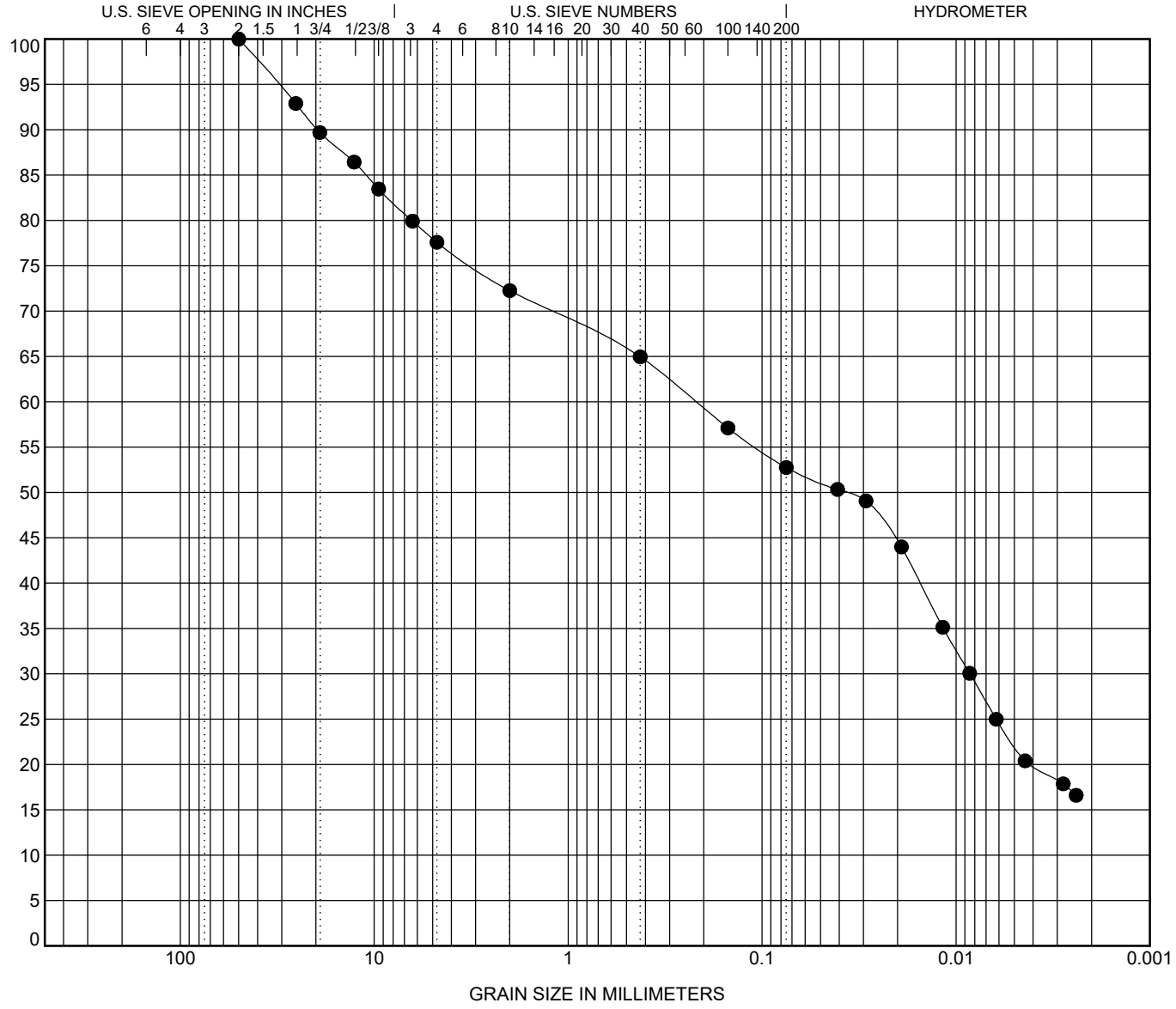
CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-2	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**22**	**15**	**7**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-2	7.5	**50**	**0.22**	**0.008**		**22.4**	**24.8**	**30.6**	**22.1**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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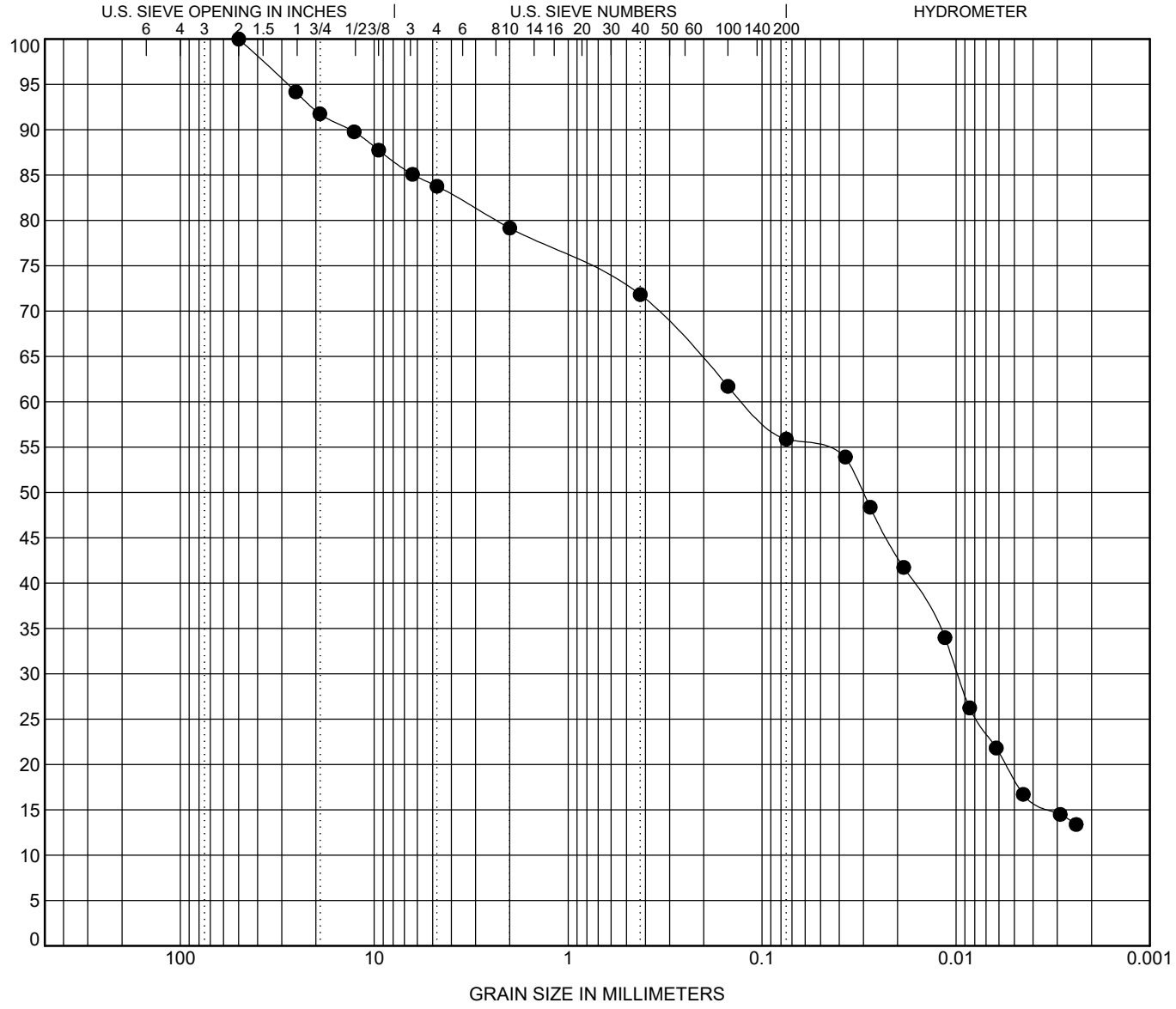
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-3	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**14**	**7**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-3	7.5	**50**	**0.123**	**0.01**		**16.2**	**27.9**	**37.5**	**18.4**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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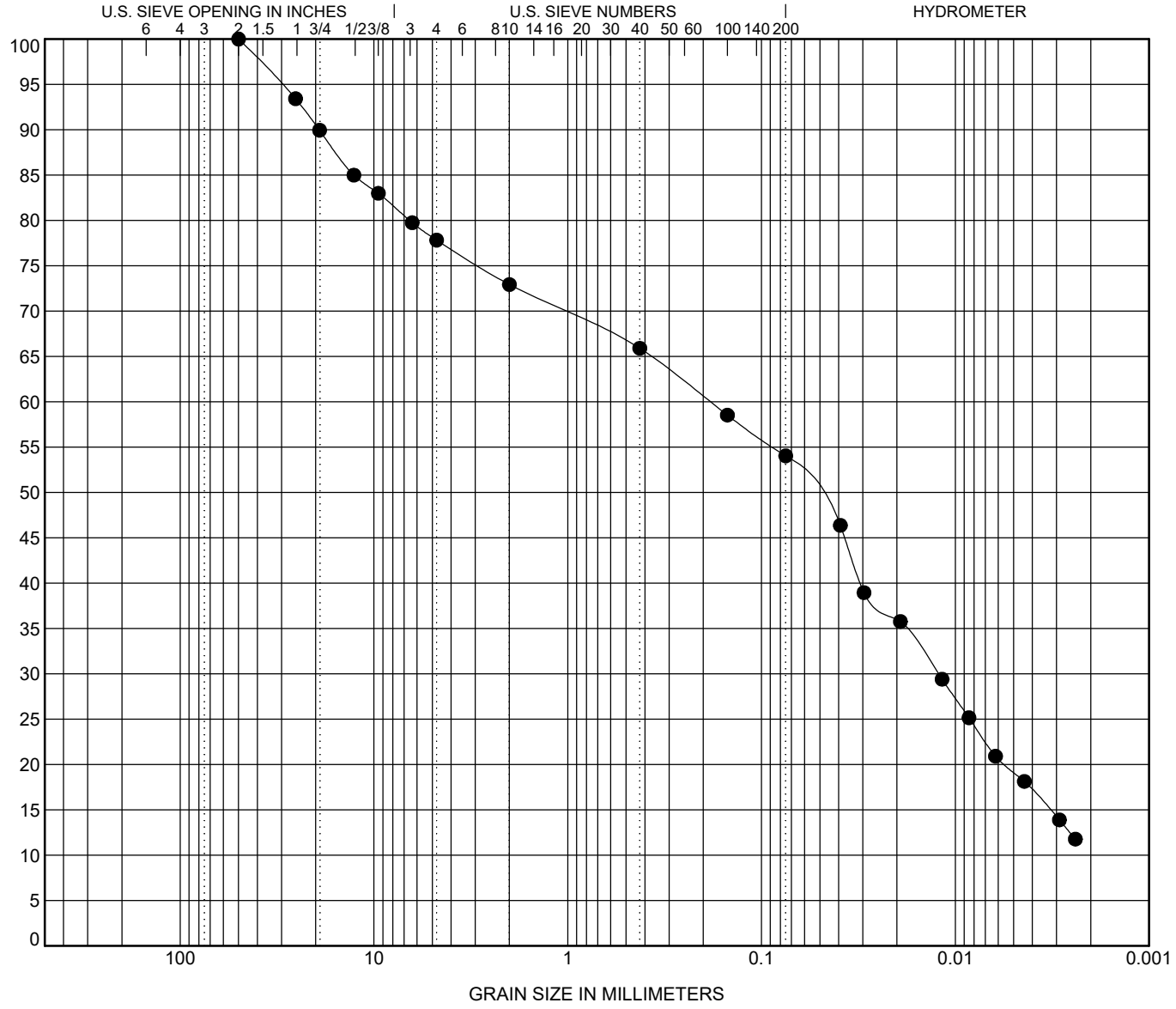
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-4	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**23**	**19**	**4**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-4	7.5	**50**	**0.185**	**0.012**		**22.2**	**23.8**	**34.9**	**19.2**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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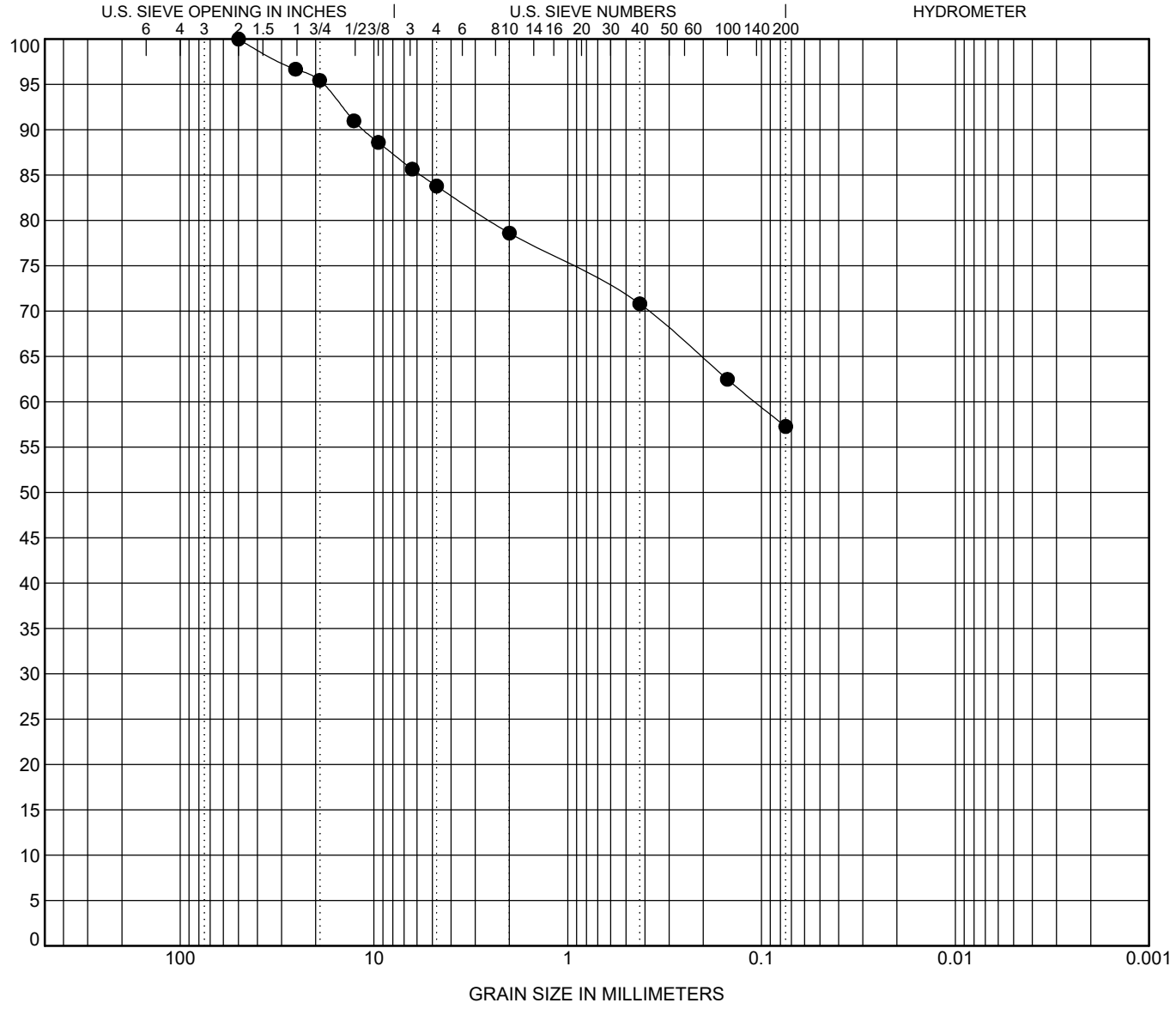
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-5	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TPS-5**	**7.0**	**50**	**0.108**			**16.2**	**26.5**	**57.3**	
⊠									
▲									
★									
⊙									

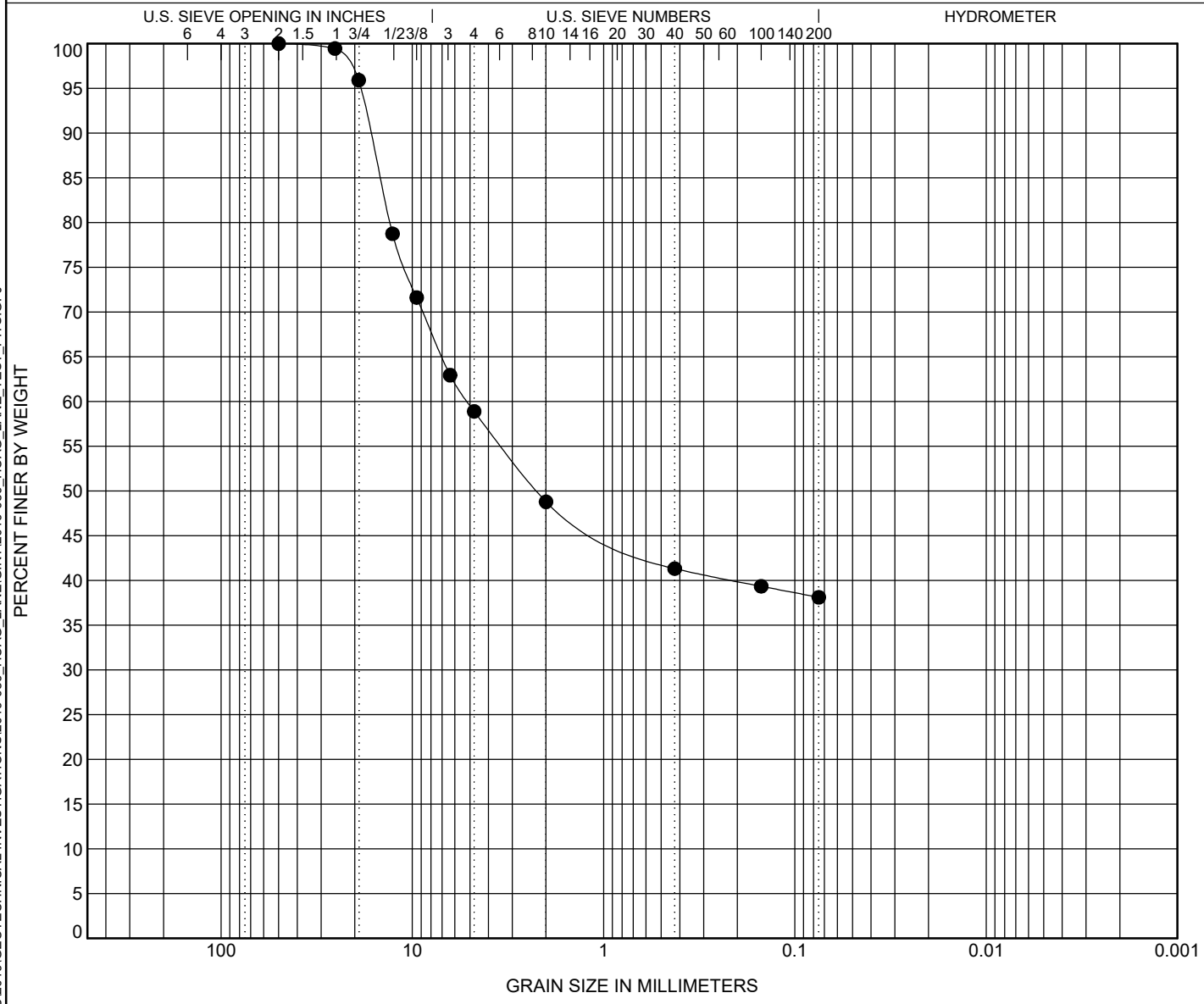
GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	2.0	**BROWN SILTY GRAVEL WITH SAND**					
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Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-6	2.0	**50**	**5.144**			**41.1**	**20.8**	**38.1**	
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GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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GRAIN SIZE DISTRIBUTION

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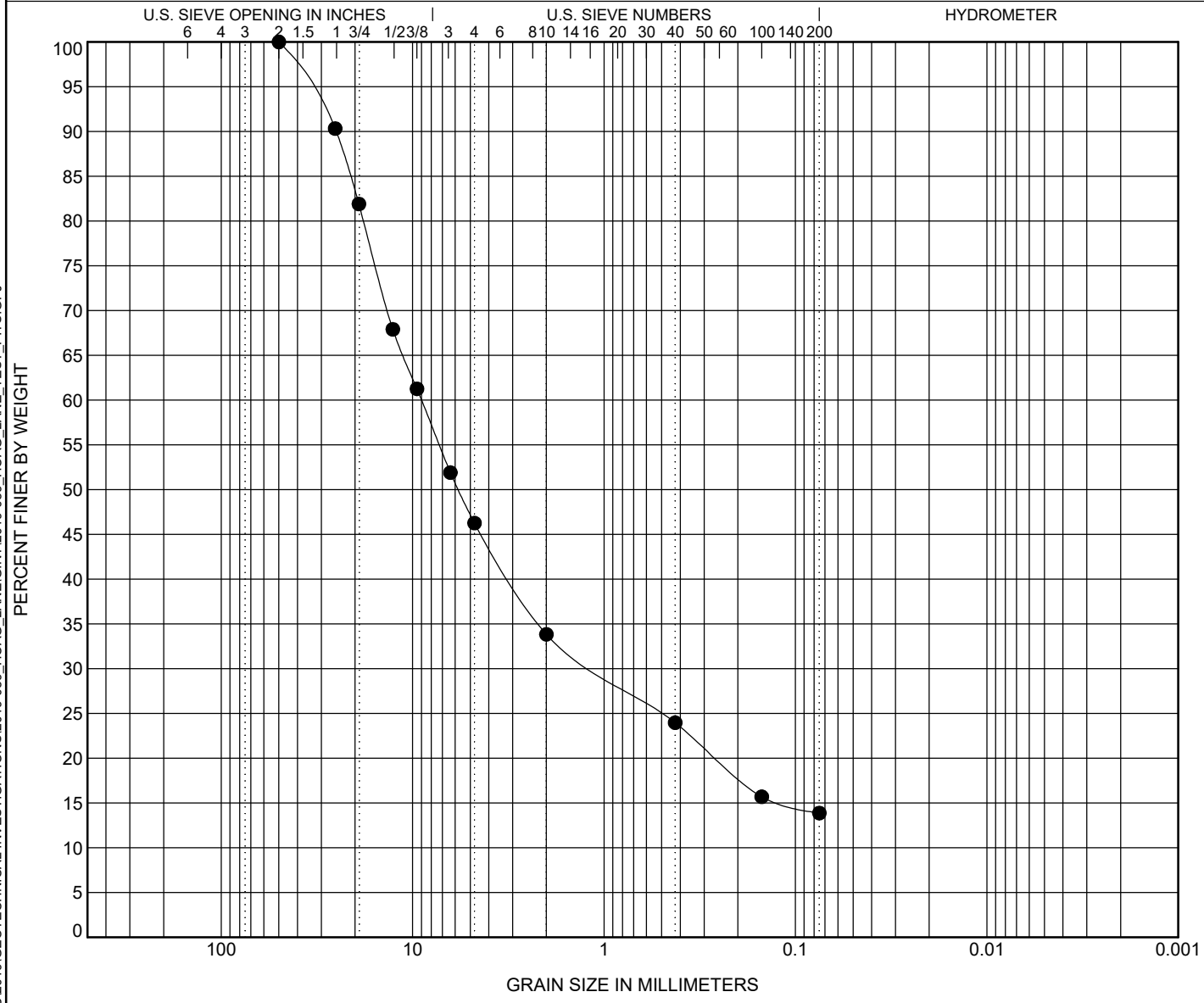
PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	4.0	**GREY/OLIVE HIGHLY WEATHERED SHALE**					
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⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TPS-6**	**4.0**	**50**	**9.001**	**1.096**		**53.7**	**32.4**	**13.9**	
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GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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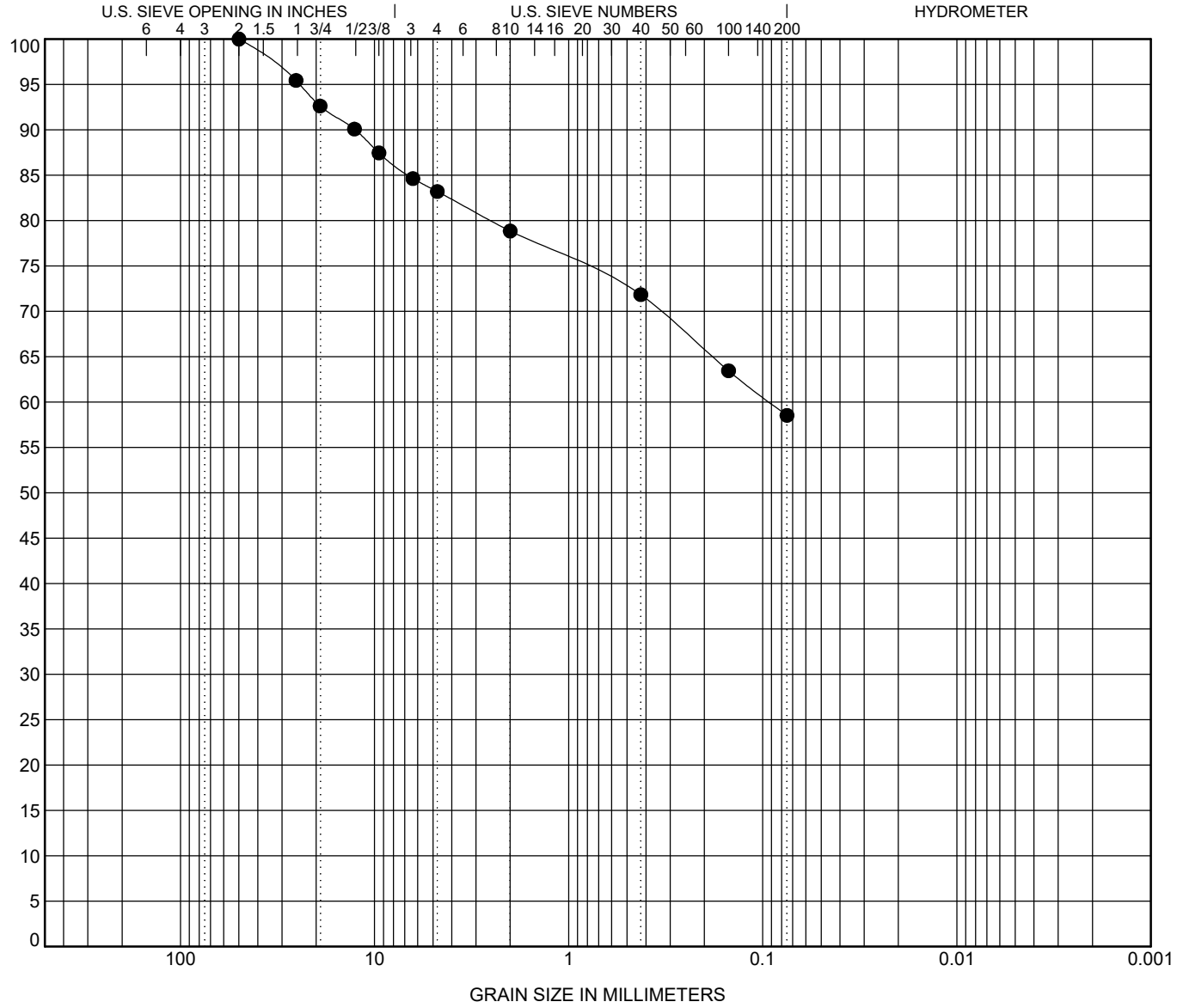

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	TPS-7	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠								
▲								
★								
⊙								

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TPS-7	7.0	**50**	**0.092**			**16.8**	**24.7**	**58.5**	
⊠										
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GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

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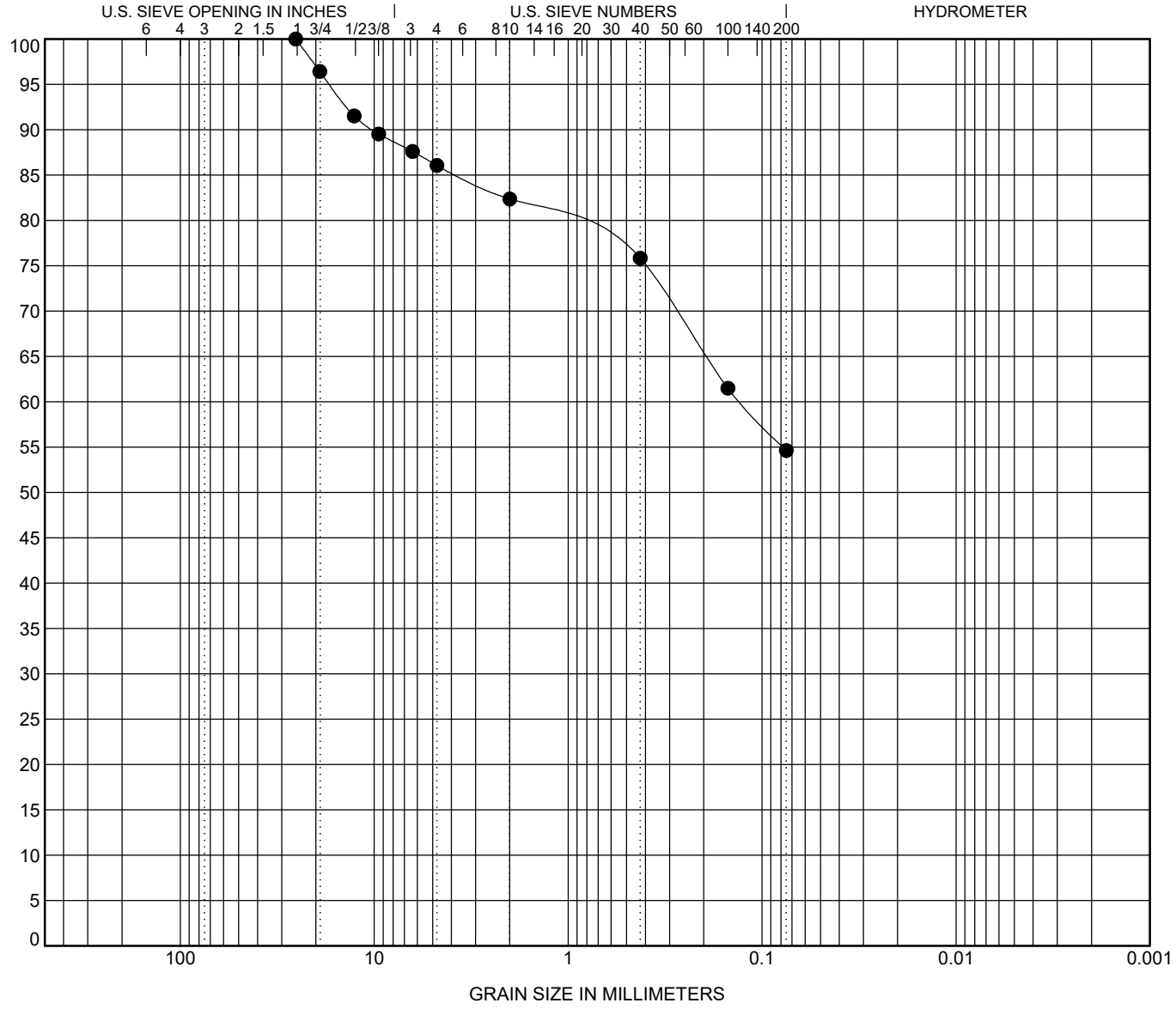
PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	TPS-8	3.0	**BROWN SANDY SILT WITH CLAY AND GRAVEL**					
⊠								
▲								
★								
⊙								

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TPS-8	3.0	**25.4**	**0.129**			**13.9**	**31.4**	**54.6**	
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GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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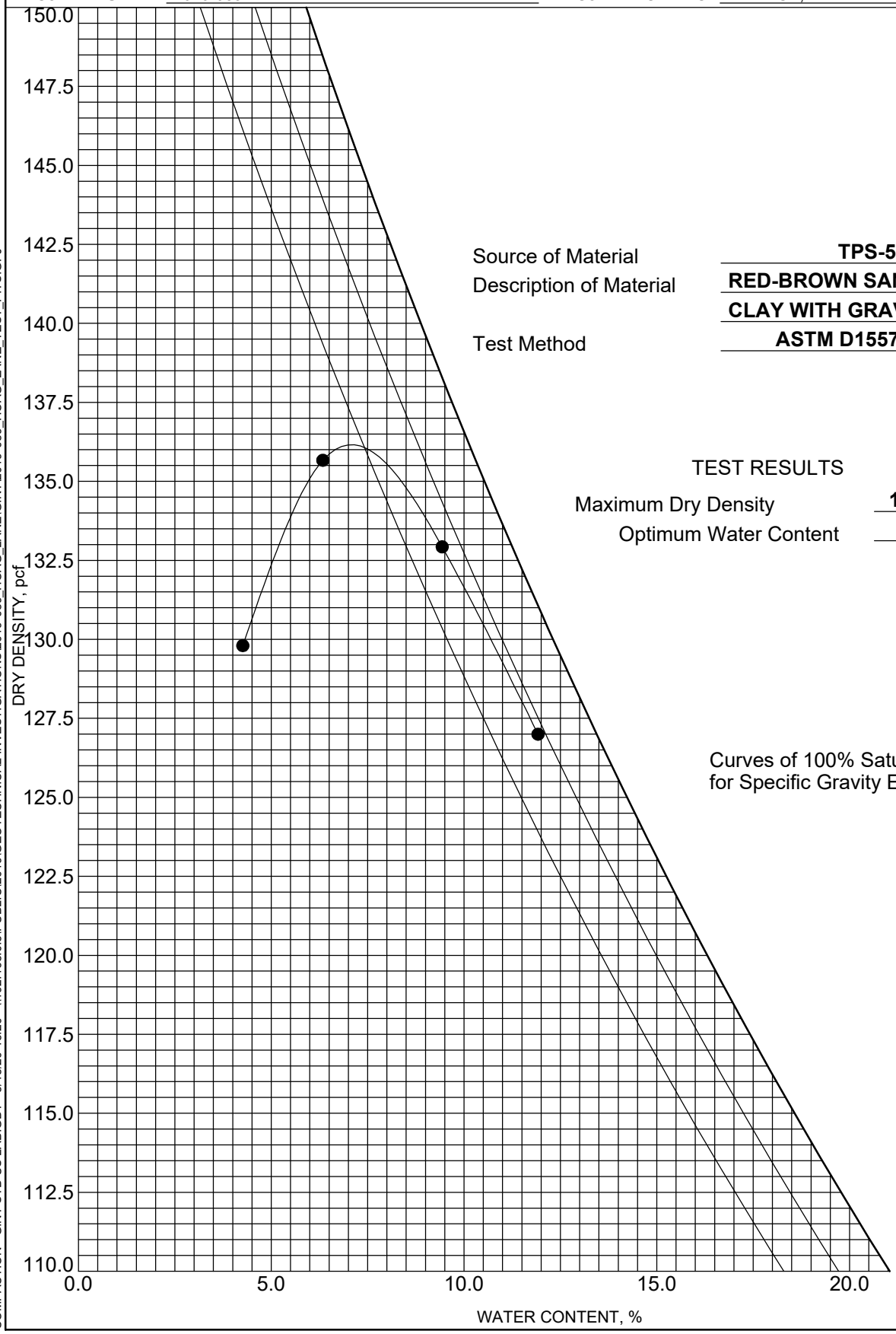
MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-5 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **136.2** **PCF**
Optimum Water Content: **7.2** **%**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:20 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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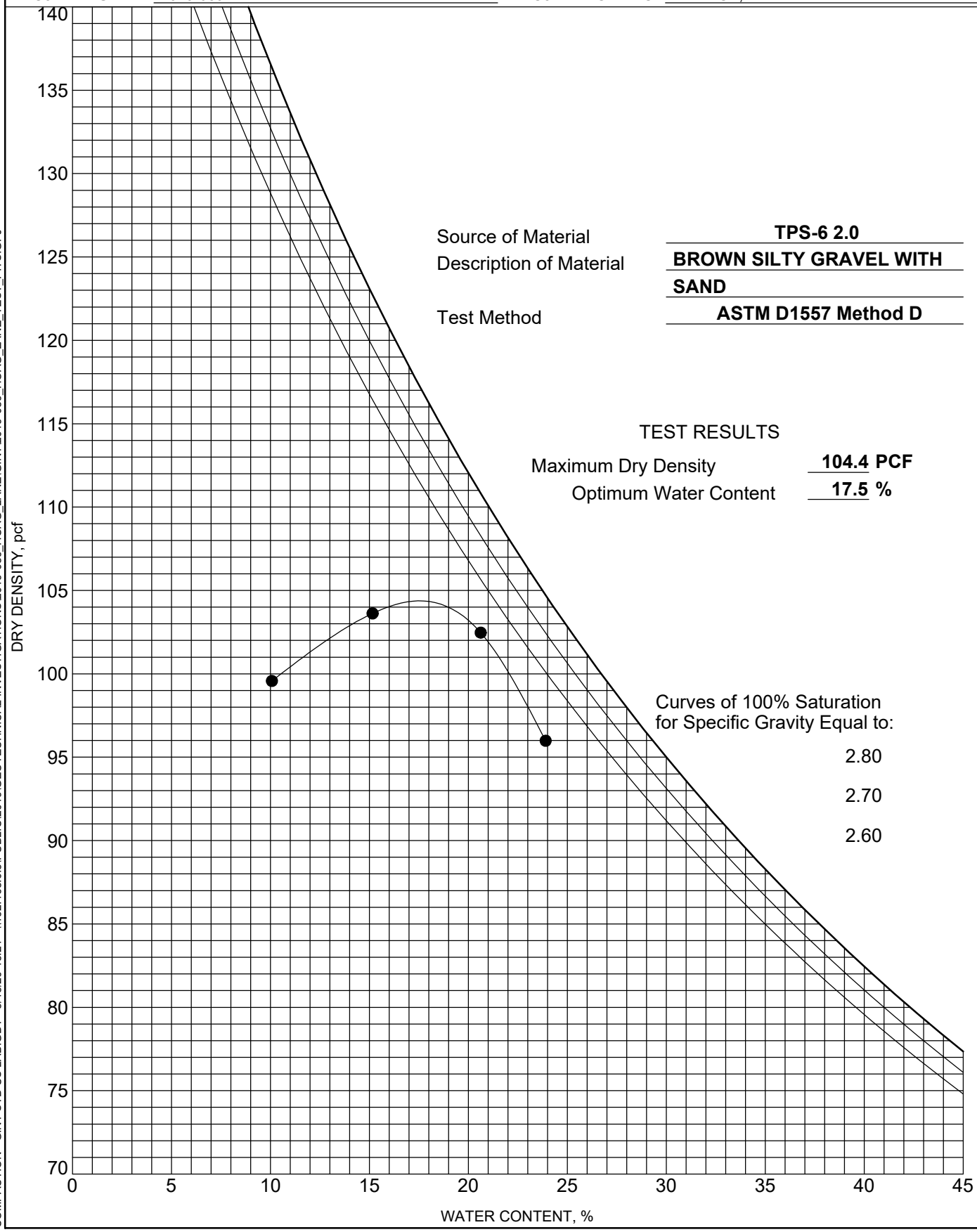
MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-6 2.0**
Description of Material: **BROWN SILTY GRAVEL WITH SAND**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **104.4** PCF
Optimum Water Content: **17.5** %

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:21 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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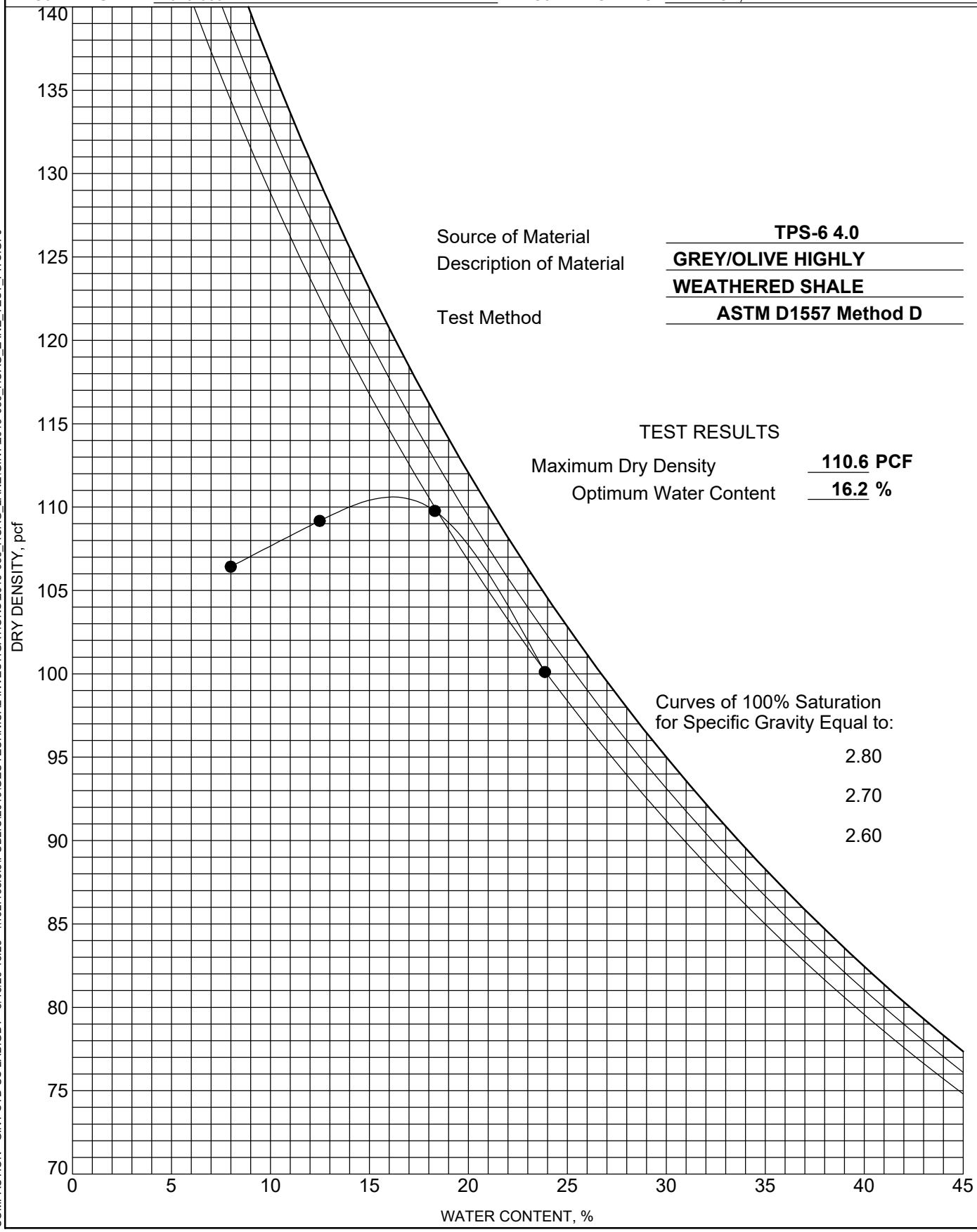
Syracuse, NY 13209
315-638-2706

MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-6 4.0**
Description of Material: **GREY/OLIVE HIGHLY WEATHERED SHALE**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **110.6** PCF
Optimum Water Content: **16.2** %

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:23 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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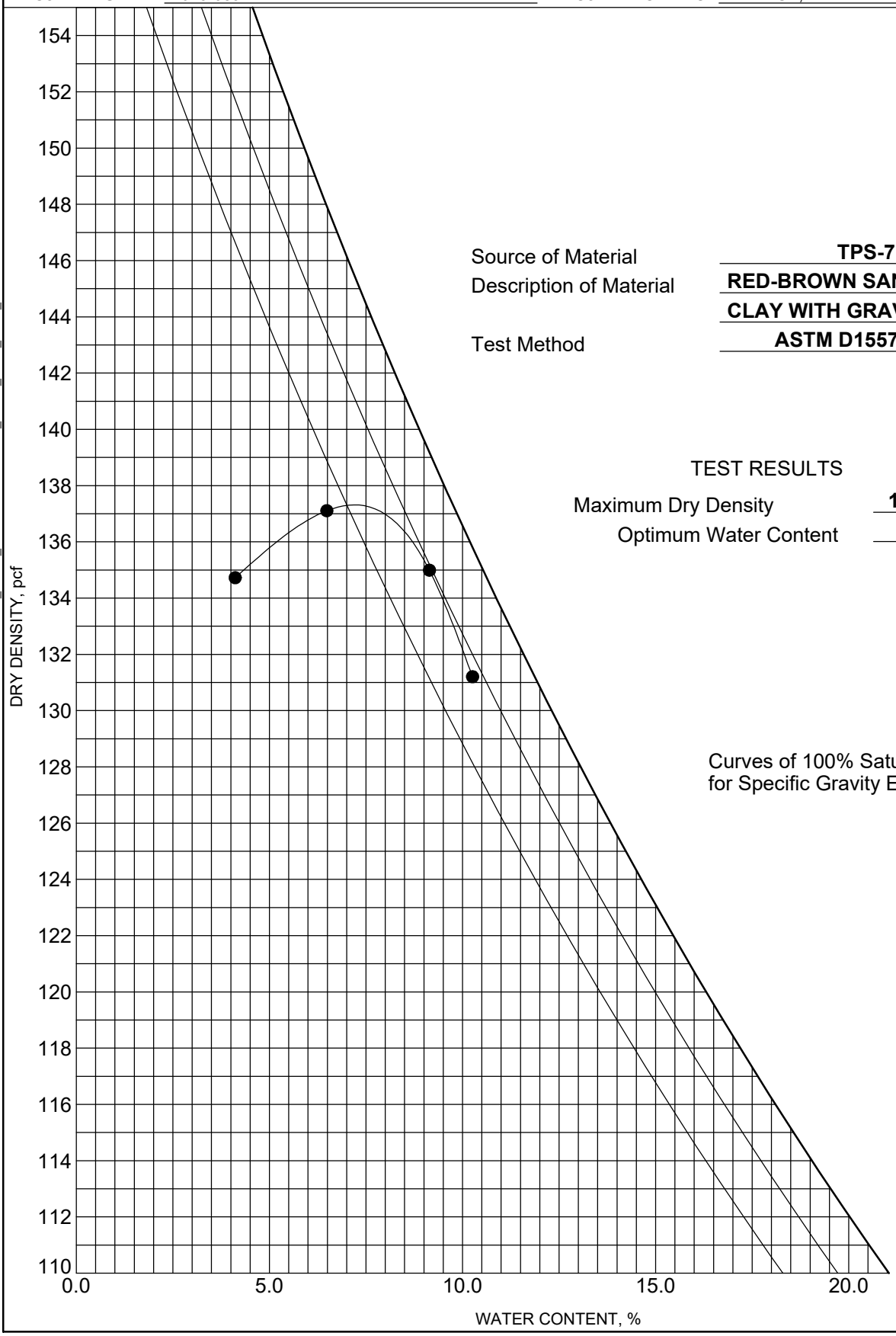
MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-7 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **137.3** PCF
Optimum Water Content: **7.2** %

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:23 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

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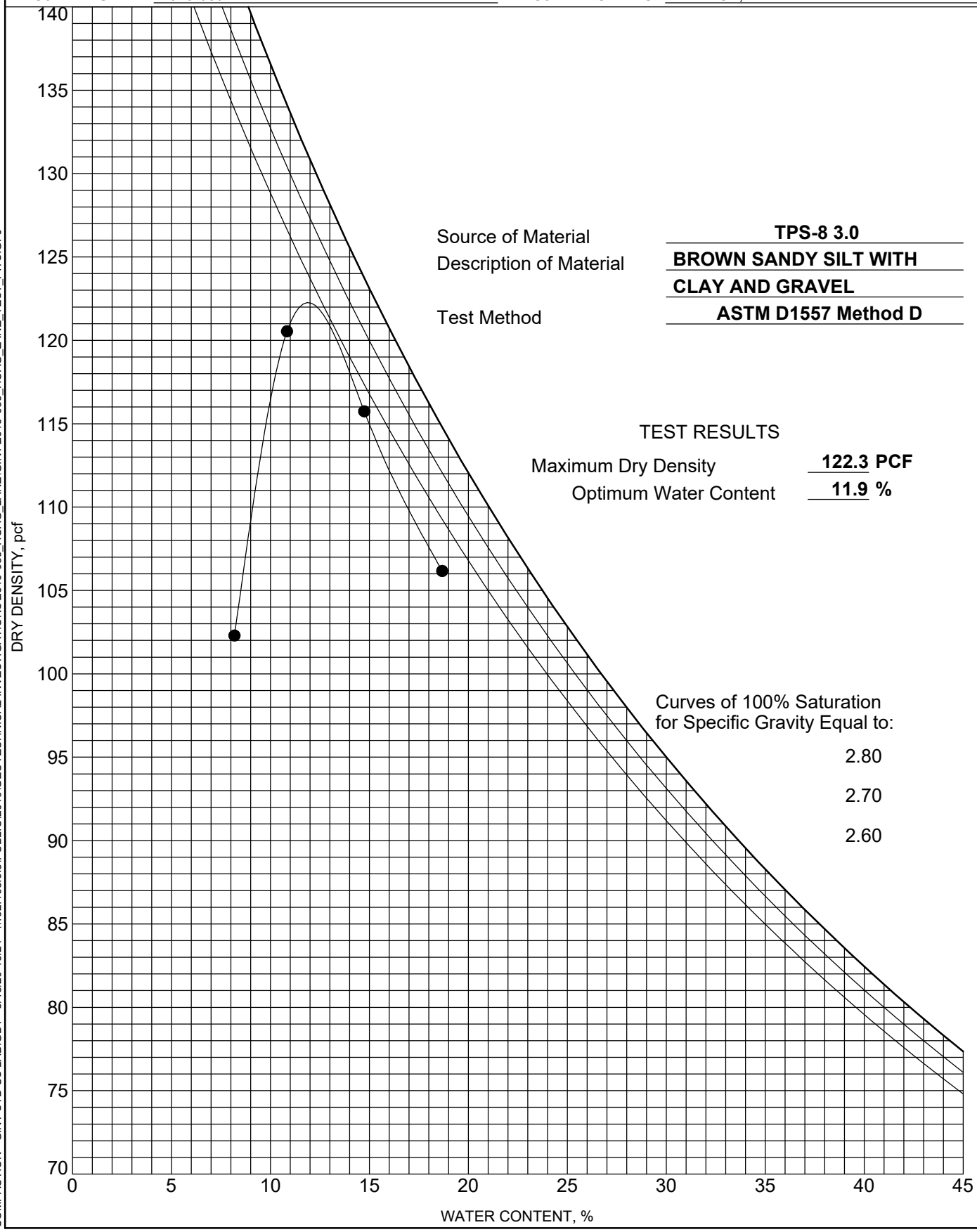


Source of Material: **TPS-8 3.0**
Description of Material: **BROWN SANDY SILT WITH CLAY AND GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **122.3** PCF
Optimum Water Content: **11.9** %

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:24 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

PERCOLATION TEST RESULTS

X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14' - SANDY SILTY CLAY	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PT-1	674.00	664.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-2	672.00	662.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-3	677.00	667.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-4	680.00	662.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-5	715.00	709.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-6	705.00	700.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOBIN.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS

B -1 0"-6" TOPSOIL 6"-24" SILTY CLAY 24"-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -2 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -3 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -4 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -5 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -6 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B -7 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -8 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR		UD	UNDERDRAIN			PEA GRAVEL DIAPHRAGM/STONE SHOULDER
+377.7		SPOT ELEVATION	EX SAN	S	SANITARY PIPE-GRAVITY			OUTLET PROTECTION
	HP/LP	HIGH / LOW POINT		FM 3" LPS	SANITARY PIPE-LOW PRESSURE		6' 10' 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	PT-2	PERCOLATION TEST PIT	E/T		OVERHEAD ELECTRIC		3' 15' 10'	OUTLET PROTECTION FOR 8"- 12" PIPE
	B-#	DEEP HOLE	E		UNDERGROUND ELECTRIC		X Y 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		FENCE	T		TELEPHONE			TRAFFIC SIGN
		UTILITY POLE		ST MH	STORM STRUCTURE		SF	SILT FENCE
W	W	WATER LINE						EROSION CONTROL BLANKET
		FIRE HYDRANT		DI	INLET			
EX ST	ST	STORM PIPE		CB MH	CATCH BASIN/MANHOLE			
		TREE		CO	CLEAN OUT			
		SHRUB			SANITARY MANHOLE			
	QUANTITY PLANT TYPE	PLANT KEY			ASPHALT PAVEMENT-DRIVEWAY			
		VEGETATION			ASPHALT PAVEMENT-ROAD			

X-HOAG-LEGEND

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE. MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. THE STUMPS, TREES AND SMALLER VEGETATION REMAINS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.

2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.

8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.

9. U.F.P.O. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.

10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.

11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.

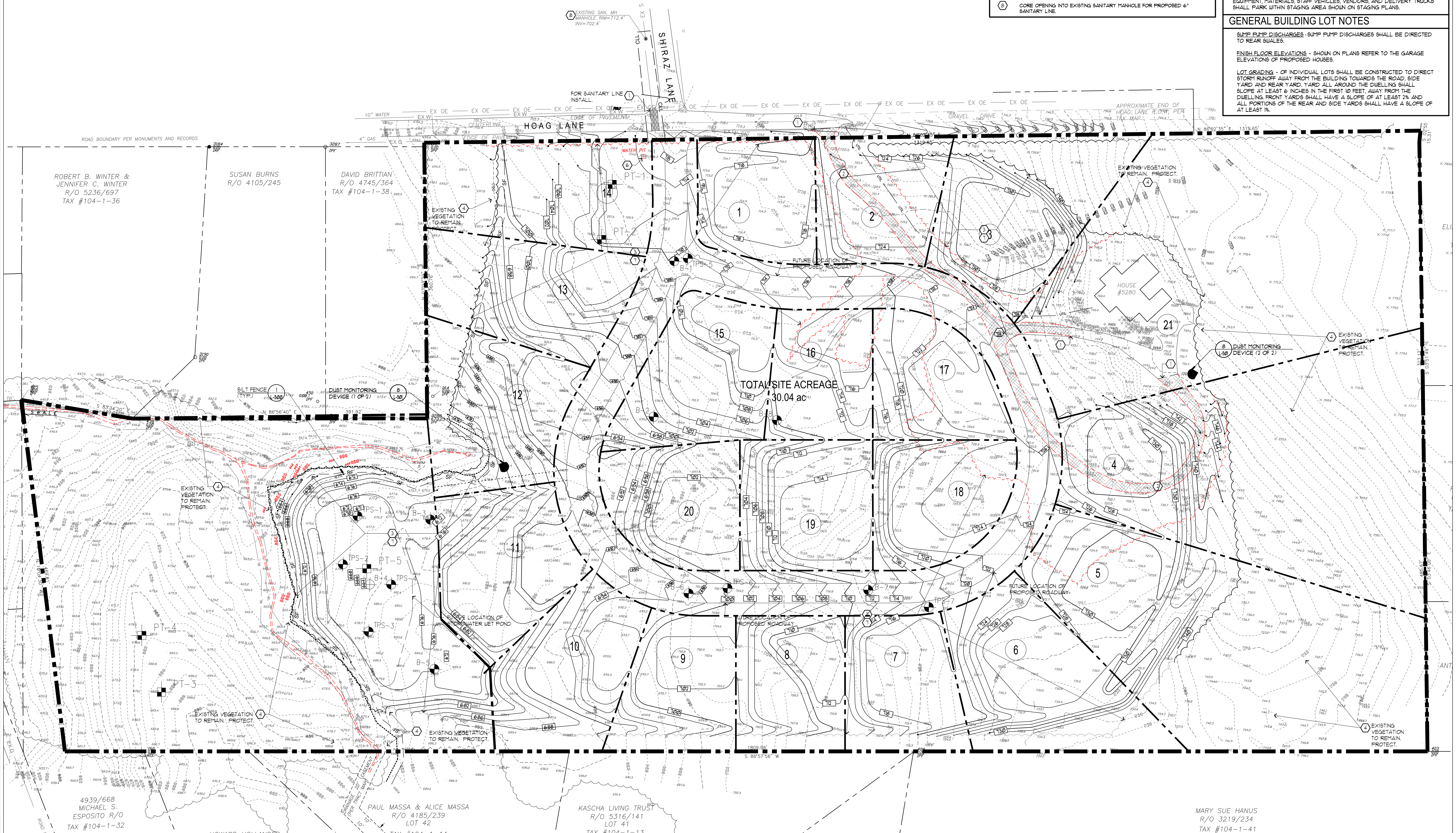
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 L-100 **SITE PREPARATION PLAN**

0 50 100 150 SCALE IN FEET N

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK RUDY L. ZONA 079543 LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	10/23/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/28/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/08/19	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	06/04/19	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/02/19	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	09/23/19	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	12/18/19				

⚠ - Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Plotted By:
Date Plotted:
Drawing File:

Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 27, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Berm Stability Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed a geotechnical evaluation of the proposed berms to be constructed for stormwater management features at the referenced site. The purpose of our analysis was to evaluate the stability of the berms under anticipated loading conditions. This report presents the results of our evaluation and provides output from stability analyses.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Analysis Scenarios

The proposed berms are illustrated on drawings prepared by Keplinger Freeman Associates Landscape Architecture (see attached). It was assumed for the purposes of our analysis that the berms would be constructed to the lines and grades indicated on the design drawings using on-site material with the engineering characteristics described in our previously submitted Hoag Lane Earthwork Report.

The engineering characteristics of the on-site materials, when recompacted in accordance with our recommendations, are well suited for berm construction. The recompacted glacial till exhibited good undrained shear strength (greater than 2500 pounds per square foot) and low permeability (less than 1 x 10-6 cm/sec). It should be noted that the in-situ glacial till exhibited even higher strength and also had low permeability. Topsoil and organic matter, up to approximately 24 inches in thickness at the berm area, will be removed from beneath the berm footprint during construction.

The recompacted till will be in direct contact with the in-situ till. The interface between the two materials will be scarified to promote bonding and prevent the creation of a seepage interface. Seepage rates through the berm are anticipated to be very low based on the engineering characteristics of the in-situ glacial till and recompacted on-site materials. Therefore it is our opinion that a keyway at the base of the berm is not necessary.

The maximum slopes illustrated on the drawings are a 33% exterior berm grade, 20% interior berm grade, and a maximum berm height of 12 feet. We assumed water levels in the berm at flood stage were 1 foot below the crest. Water depth at typical service conditions is 6 feet.

Our analysis utilized the geotechnical evaluation guidelines presented in the NYSDEC Dam Design publication as requested by the Town of Manlius. Common geotechnical practice was also employed. The following evaluations were performed:

- Bearing Pressure and Settlement
- Sliding
- Soil Piping
- Slope Stability:
    - Water at Flood Level
    - Rapid Drawdown
    - Seismic Event

The analyses modeled the highest berm to be constructed (west slope of westernmost stormwater management feature). Soil used in berm construction was assumed to be the on site glacial till, a low plasticity sandy clay with gravel. The assumed geotechnical strength parameters are summarized in the following table.

Material	Condition	Unit Weight (pcf)	Cohesion (psf)	Internal Friction (degrees)
Recompacted Till (Engineered Fill)	Short Term	140	1000	0
	Long Term	140	100	32
Undisturbed Glacial Till	Short Term	145	2500	0
	Long Term	145	350	34

For seismic analysis, a ground acceleration factor of 0.05 was utilized.

Results

The geotechnical evaluations performed indicate the berm will remain stable under the modeled service scenarios. The following table summarizes evaluation results. Full output is attached for reference.

Scenario	Condition	Calculated Minimum Factor of Safety	Result
Service Condition with Full Pool	Short Term	9.4	Acceptable
Service Condition with Full Pool	Long Term	2.9	Acceptable
Flood Stage	Short Term	9.4	Acceptable
Flood Stage	Long Term	2.7	Acceptable
Rapid Drawdown after Flood Stage	Short Term	8.7	Acceptable
Rapid Drawdown after Flood Stage	Long Term	2.7	Acceptable
Earthquake	Short Term	2.3	Acceptable

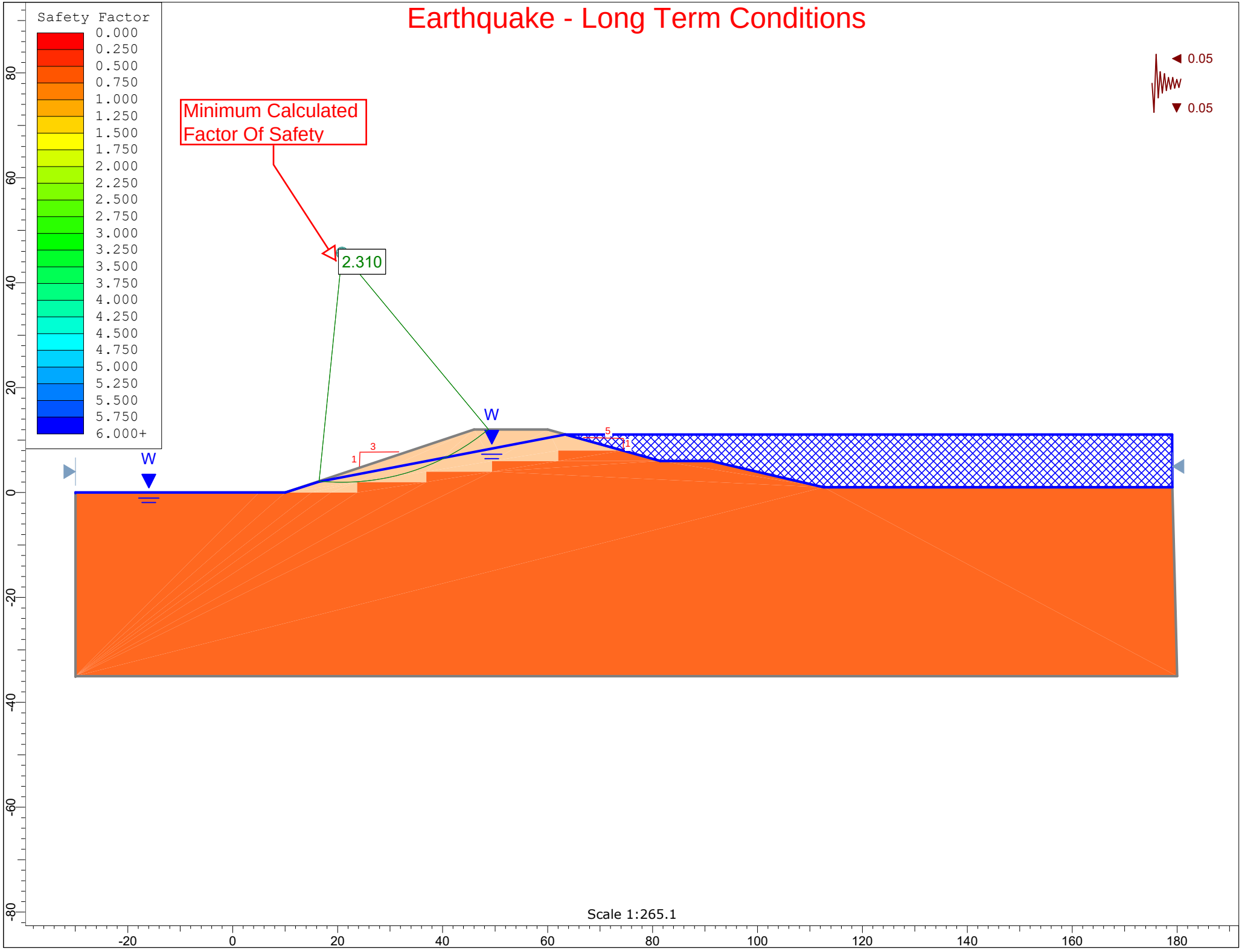
Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
KENNEY GEOTECHNICAL ENGINEERING SERVICES PLLC

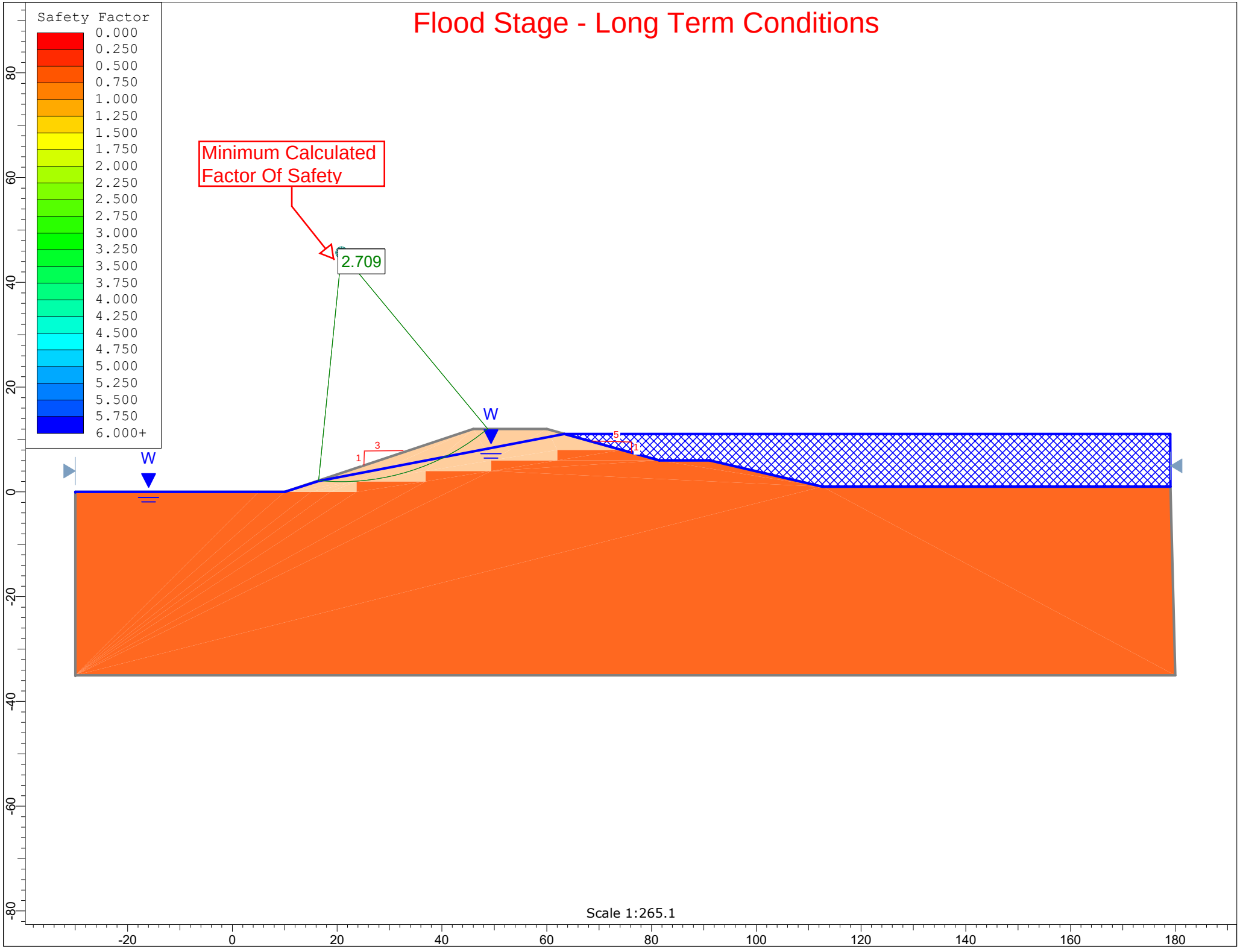
Christopher Kenney

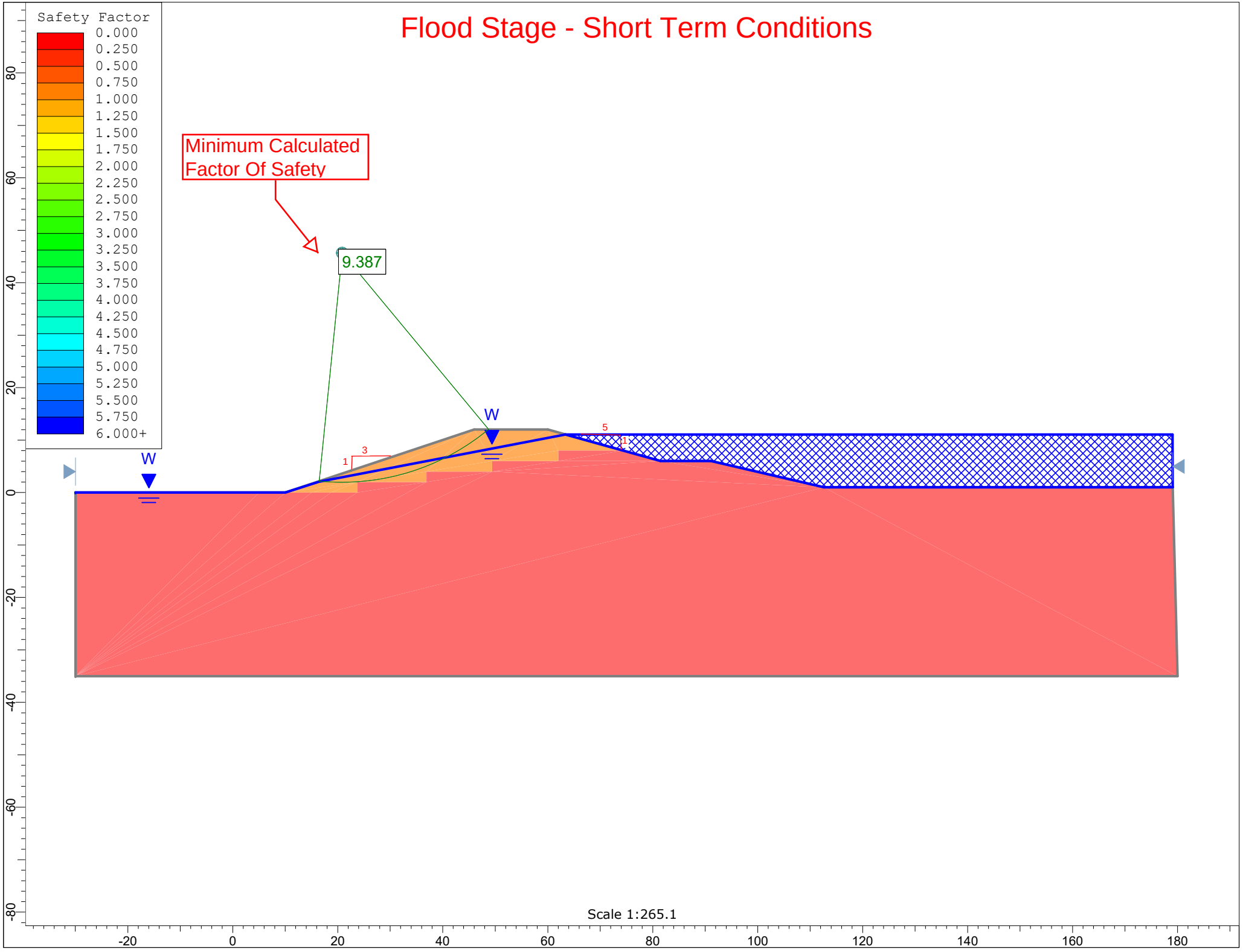
Christopher M. Kenney, P.E.
President

Earthquake - Long Term Conditions

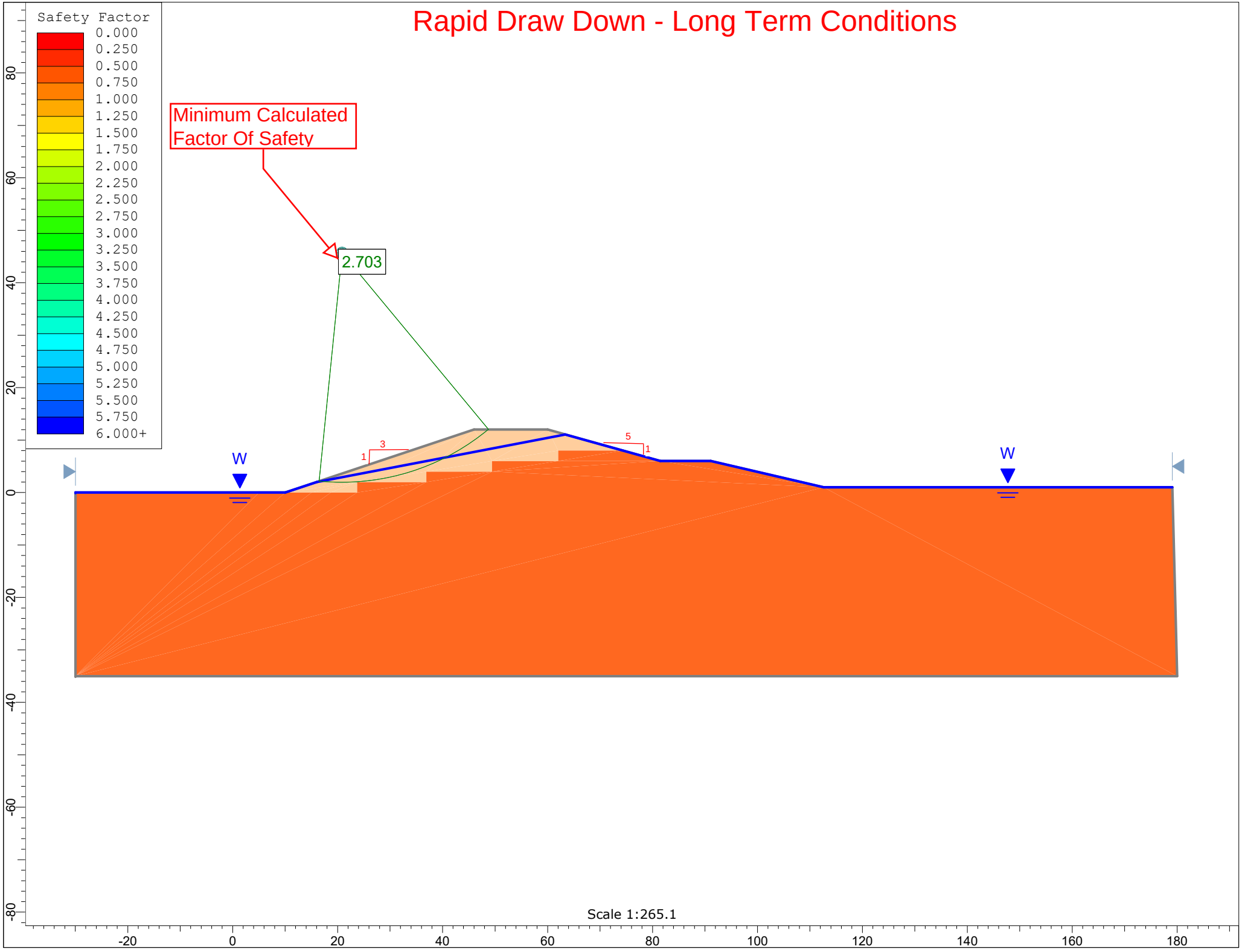


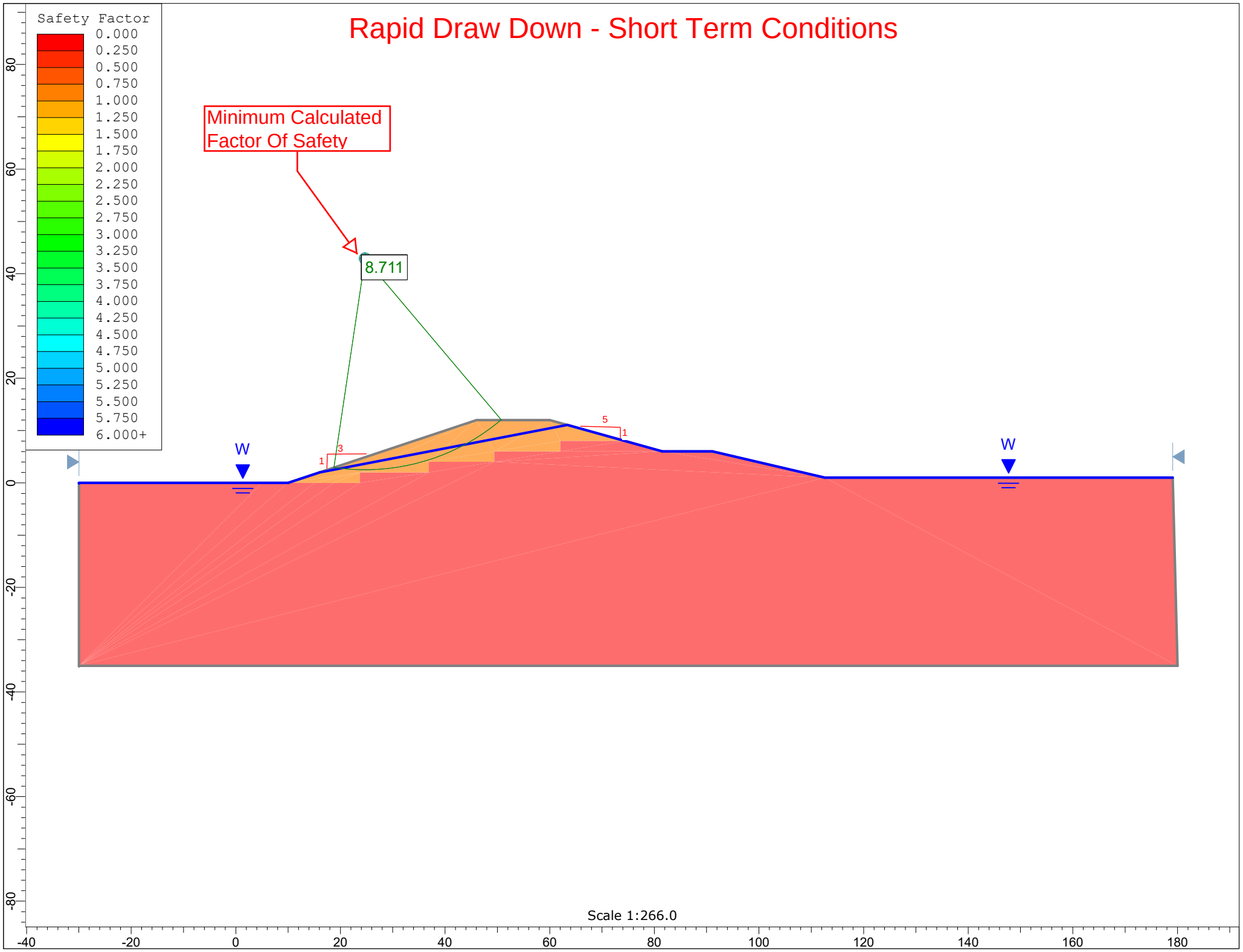
Flood Stage - Long Term Conditions



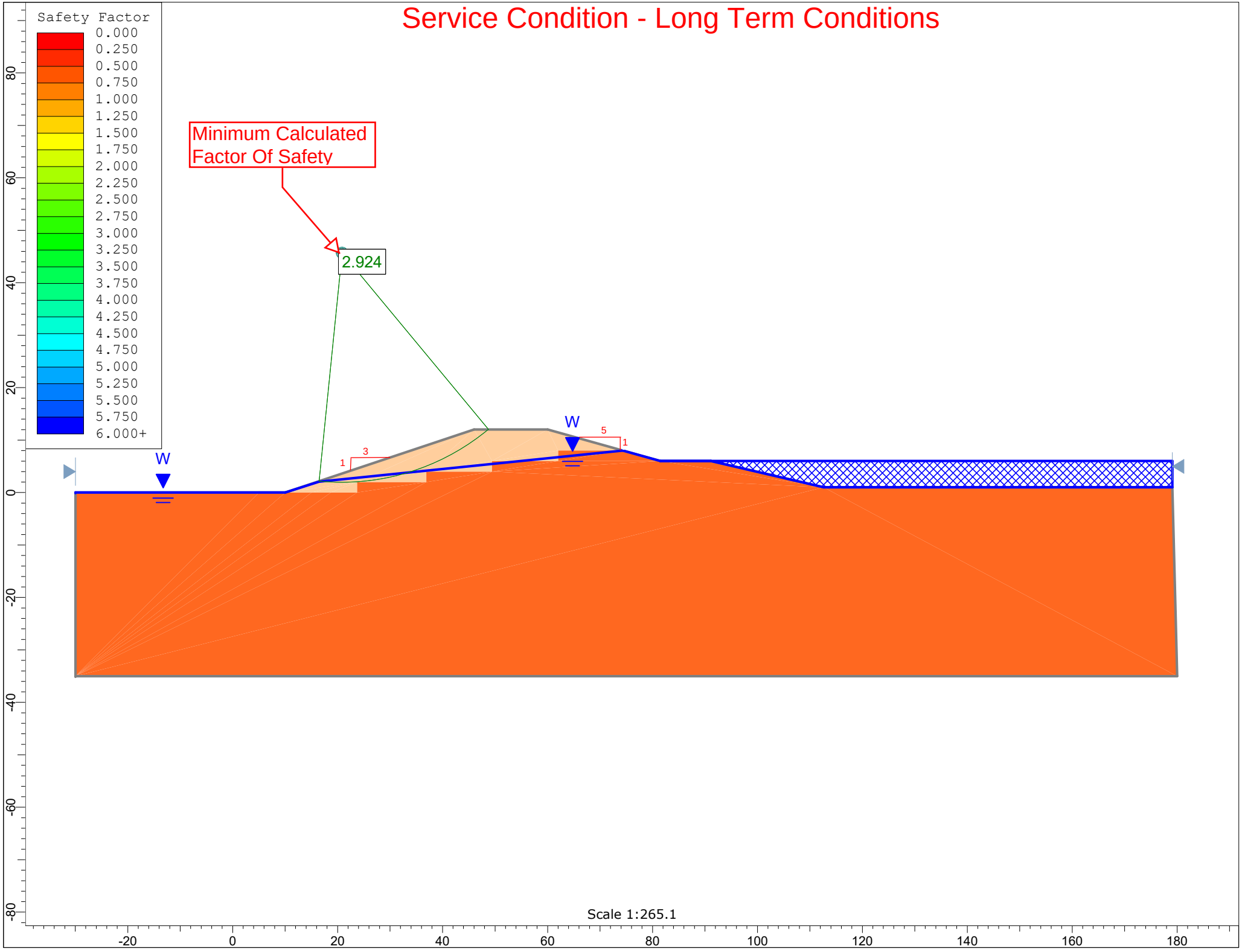

Flood Stage - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
9.387
W
W
1
3
5
1
Scale 1:265.1
80
60
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180

Rapid Draw Down - Long Term Conditions




Rapid Draw Down - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
8.711
W
W
5
1
3
1
Scale 1:266.0
80
60
40
20
0
-20
-40
-60
-80
-40
-20
0
20
40
60
80
100
120
140
160
180

Service Condition - Long Term Conditions



RZE/KFA SITE TESTING

DAM GUIDELINES SECTION & FINISH GRADE EVALUATION

PIT #		FINISH GRADE	FILL EVALUATION	
TP-1	EX. GRADE	674.00	664.00 - 669.00	(5-10 DP)
TP-2		672.00	662.00 - 667.00	
TP-3		677.00	667.00 - 672.00	
TP-4		680.00	662 - 680.00	
TP-5		715.00	709 707 - 715.00	
TP-6		705.00	700 668.00 - 705.00	
TP-7		724.00	716 715.00 - 725.00	

ADD INFILTRATION TEST @ 664.00

HOAG - DOUG MILLER TESTING RQST.

PERCOLATION TEST RESULTS (PT-#)

X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14' - SANDY SILTY CLAY	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS (TPS-#)

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PT-1	674.00	664.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-2	672.00	662.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-3	677.00	667.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-4	680.00	662.00	5'-10' DEEP	DAM GUIDELINES SEC. 8
PT-5	715.00	709.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-6	705.00	700.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOBIN.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS (B-#)

B -1 0"-6" TOPSOIL 6"-24" SILTY CLAY 24"-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -2 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -3 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -4 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -5 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -6 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B -7 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -8 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

LEGEND

X-HOAG-LEGEND

EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-#	DEEP HOLE
		FENCE
		UTILITY POLE
W	W	WATER LINE
		FIRE HYDRANT
EX ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY / PLANT TYPE	PLANT KEY
		VEGETATION

EXISTING	PROPOSED	DESCRIPTION
	UD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	FM 3" LPS	SANITARY PIPE-LOW PRESSURE
E/T		OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	ST MH	STORM STRUCTURE
	DI	INLET
	CB MH	CATCH BASIN/MANHOLE
	CO	CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD

EXISTING	PROPOSED	DESCRIPTION
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6' 10' 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' 15' 10'	OUTLET PROTECTION FOR 8"- 12" PIPE
	X Y 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE. MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. THE STUMPS, TREES AND SMALLER VEGETATION REMAINS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.

2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.

8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.

9. U.F.P.O. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.

10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.

11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.

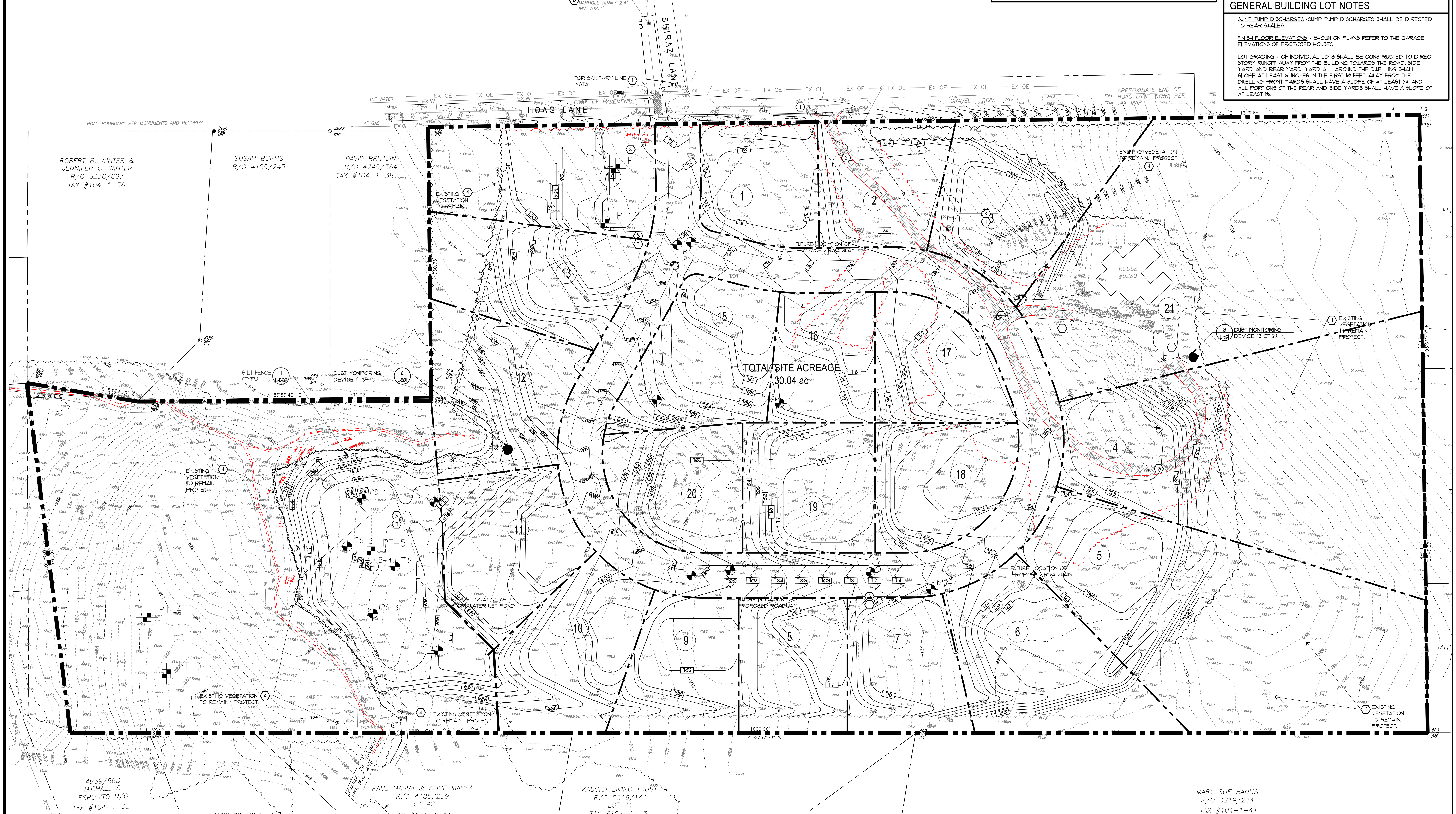
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 L-100 **SITE PREPARATION PLAN**

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK RUDY L. ZONA 079543 LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	10/23/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/28/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/28/19	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	06/04/19	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	07/02/19	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	09/23/19	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	12/18/19				

1 - Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Plotted By:
Date Plotted:
Drawing File:

Bearing Capacity Calculations

$q = N_c \cdot C$

$q = \frac{5.14 \cdot 2500}{3}$

$q = 4,283 \text{ psf}$

$N_c = 5.14$

$C = 2500 \text{ psf}$

$F.S. = 3$

Load applied by fill $= \gamma_{fill} \cdot H$

$H = 12'$ (maximum)

$\gamma_{fill} = 140 \text{ pcf}$

Load applied by fill $= 140 \cdot 12$

$= 1,680 \text{ psf}$

$1,680 \text{ psf} < 4,283 \text{ psf}$ ✓

Settlement Calculations

- Elastic Settlement

$$P_c = \frac{\Delta\sigma (1-\nu^2)\sqrt{A}}{E B_2}$$

$= \frac{1680 (1-0.35^2)\sqrt{14}}{160,000 (1.41)}$

$= 0.29 \text{ in.}$ ✓

$\Delta\sigma = 1680 \text{ psf}$

$\nu = 0.35$

$A = 14 \text{ ft}^2$

$E = 160,000 \text{ psf}$

$B_2 = 1.41$

Soil Piping

Laboratory testing resulted in low plasticity cohesive soils that are non-dispersive and not prone to soil piping.

DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS

HOAG LANE SUBDIVISION

DATED: _____, 2019

DECLARATION, made this ____ day of _____, 2019, by Hoag Road Properties, LLC, a New York Limited Liability Company, with a mailing address of 201 Solar Street, Syracuse, New York, 13204, hereinafter referred to as the "Company", as follows:

WITNESSETH:

WHEREAS, the Company owns premises located in the Town of Manlius, County of Onondaga and State of New York, being identified as 5280 Hoag Lane (Tax Map # 104.-01-39.2) in said Town, and being more particularly shown on a Subdivision Map entitled "Final Plat – Hoag Lane Subdivision, dated _____, 2019 and filed in the Onondaga County Clerk's Office on _____ as Filed Map# _____ ; and

WHEREAS, the Company hereby states that the purpose and reason behind the following covenants, conditions and restrictions is to enhance and protect the value, attractiveness and desirability of the lots or tracts of the Hoag Lane Subdivision as laid out and described within the Subdivision Map referenced above, and the approved plans of the Company (hereinafter, referred to as the "Hoag Lane Subdivision") thereby creating a pleasant community in which to live.

NOW, THEREFORE, the Company declares that the land shown on the Subdivision Map above referred to is to be held and shall be conveyed subject to and together with the following covenants, conditions and restrictions, which shall run with the land until terminated as hereinafter provided:

1. The lots shall be used solely for single family residential building purposes. No manufacturing, mercantile, service, commercial or business type of activity of any kind shall be conducted on any lot or premises thereon. A "home occupation" as defined and allowed by the Town of Manlius Zoning Ordinance may be permitted on a lot with proper approvals from the Town of Manlius. Group homes, foster homes and other types of "assisted living" homes shall be prohibited.
2. No fence shall be erected over a height of 4 feet with the exception of a privacy fence surrounding an in-ground swimming pool or patio area, or whatever lesser height is provided by the Town of Manlius Zoning Ordinance that is in effect from time to time. No metal or industrial type fences or enclosing devices shall be used on any lot (excluding fencing that is required on retention ponds) and, in any event, no fence, wall, hedge or shrub shall be planted in such a way as to interfere with traffic sight lines. All fences must be approved by the Architectural Control Committee and comply with all Town of Manlius setback standards and Cluster Development regulations.
3. No residence shall be built, permitted or occupied on said lot except for a single family dwelling with a finished living area of at least 1,500 square feet, exclusive of the garage, attic or basement areas, with a garage attached or an integral part thereof. All dwellings shall contain a garage suitable for housing at least two cars. A maximum of four (4) passenger automobiles may be parked permanently in the driveway of a lot, outside of any garage. The passenger automobiles must have a valid registration and inspection and may only be parked on a paved surface and not on any lawn, dirt or landscaped area. No commercial vehicles of any type shall be permitted to be parked on any lot for a period of 48 consecutive hours or longer. Maintenance on commercial vehicles is not permitted at any time, and any type of machinery or equipment to be used for maintenance purposes must be kept at all times when not in use inside the garage or permitted shed.
4. No detached garage or outbuildings of any kind shall be permitted on said lot, except for a storage

shed. Any such storage shed shall be constructed of the same or similar exterior materials as the main residence and may not exceed 400 square feet in measurement provided that such storage shed complies with all land use regulations enacted by the Town of Manlius. This restriction shall not preclude an in-ground swimming pool, provided the same be otherwise in compliance with all the rules and regulations of the Town of Manlius, New York. No above-ground swimming pools are permitted. No clothes lines are permitted.

5. All utility and cable services shall be underground, to the extent that underground service is available.
6. No television, radio or any other type of antenna or like apparatus of any kind shall be displayed to the public view on any lot or upon any building located upon said lot, except that a satellite dish of no more than twenty (24") four inches in diameter may be attached to the exterior of the residence. The use of solar panels, windmills or other alternative energy sources located on the exterior of any home must receive the approval of the Committee. No outdoor wood burning or other such furnaces shall be permitted.
7. There shall not be any long term storage of mobile homes, trailers (excepting utility trailers of no greater than twelve (12) feet in length used aid in the upkeep of the lot and the residential structure constructed on the lot, and not for commercial purposes), or campers on said lot; "long term" shall mean for more than four weeks in any one calendar year. No tent, shack, trailer, basement, garage or other out-building shall be used on any lot at any time as a residence, either temporarily or permanently. Boats may not be stored on the premises, other than wholly inside a garage with the garage door closed, during the period from October 1st to April 30th.
8. All trash, garbage, and household debris must be kept in storage containers inside the garage and out of sight of neighbors' view. Trash containers should be taken to the curb the night before pickup and removed with designated day of pickup.
9. All home construction, both interior and exterior, and all grading, lawn and other exterior work must be completed within a period of one (1) year after the start of construction. All lots must have a lawn or be otherwise suitably landscaped within one (1) year from the date of purchase.
10. There shall be no planting, landscape installations, or building of any type within designated drainage easement areas, or areas designated as forever wild, unless the same are approved by the Architectural Control Committee (as defined below) and the Town of Manlius. Lot Owners shall at all times mow and/or otherwise maintain all drainage easement areas on their respective lots and keep them clear of any type of debris. If the lot owners is not in compliance, the Architectural Committee, Home Owners' Association ("HOA") and/or the Town of Manlius may conduct the necessary maintenance and bill the lot owner for the costs of same, which charges must be paid promptly by the subject lot owner.
11. No trees within designated forever wilds areas shall be altered, cut or removed which are four (4) inches in diameter, or greater, as measured from a beginning height approximately three (3) feet from its nearest roots, without the written consent of the HOA. No permanent structures or fencing may be construction and/or installed in designated forever wild areas without written consent of the HOA.
12. No sign of any kind shall be displayed to the public view on any lot and no advertising of any kind shall be conducted or placed upon the lot or premises thereon except signs reading "FOR SALE" or "FOR RENT' or political signs as authorized by the Town of Manlius, the State of New York and the government of the United States.
13. No reconstructed, modular or manufactured type homes or trailers will be allowed, with the exception of pre-cut homes.
14. All architectural plans or other plans for the design and construction of a residence and/or

storage shed, swimming pool, etc., shall be approved in writing by a two-member Architectural Review Committee (hereinafter referred to as the "Committee"), as follows:

(A) The Committee shall initially consist of the following two individuals _____, their successors, heirs or assigns. Any vacancies in the Committee shall be filled by the sole choice of the remaining member.

(B) The approval of the Committee shall not be unreasonably withheld. No building shall take place prior to such written approval. The purpose of the Committee shall be to ensure conformance with these covenants, conditions and restrictions and to restrict the building of any structures that might result in the devaluation of neighboring properties but not to exercise restraint over a permissible wide latitude and range of personal preference and taste. In the event the Committee shall fail to approve plans, the aggrieved party shall be entitled to appeal the determination to an arbitrator for final resolution as follows: the aggrieved party and the Committee shall each pick one qualified arbitrator and the two arbitrators so selected shall pick a third qualified arbitrator; the majority vote of the three arbitrators shall be final and binding as to the acceptability of the proposed plans. Costs for hiring the arbitrators shall be split evenly amongst the parties. Each party shall be responsible for its own attorney's fees.

15. No animals, livestock or poultry of any kind shall be raised, bred or kept on any lot except that a maximum of three (3) household pets may be kept for personal and not commercial purposes. All animals must be kept on a leash when they are outside the owner's property and must not be allowed to become a nuisance to other owners by creating undue noise such as barking or other acts that disturb other lot owners.
16. This land is in the vicinity of land used for agricultural purposes. Farmers have the right to apply approved chemical and organic fertilizers, pesticides and herbicides and to engage in farm practices which may generate dust, odor, smoke, noise and vibration.
17. All lots and buildings shall be maintained in a good, clean and sanitary condition and in good repair, including but not limited to, the repairing, staining or painting, (or other external care) of all buildings, the seeding, watering, mowing of all lawns, the pruning and trimming of all trees, hedges, shrubbery and other plantings so that the same are not detrimental to adjoining lots, obstructive of the view of street traffic, or unattractive in appearance. Each lot owner shall keep and maintain all lawns, shrubbery and trees in the street right of way adjacent to such owner's lot. Trash, garbage or other waste shall be kept in sanitary containers and stored inside the premises and in a manner that is not offensive to other property owners.
18. No noxious or offensive activity shall be carried on upon any lot nor shall anything be done thereon which shall be or may become an annoyance or nuisance to the neighborhood.
19. All properties are to be conveyed SUBJECT TO and TOGETHER WITH:

    (A) Easements, restrictions and rights of way of record and as may be shown on the filed Subdivision Maps for Hoag Lane Subdivision, prepared by _____, dated_____, and filed in the Onondaga County Clerk's Office on_____, as Filed Maps #_____.

    (B) Easements for the installation and maintenance of buried electric, gas, telephone and cable TV utilities, being ten (10.00) feet in width, as measured from the street and road lines inward, and to run along the entire portion of the Subdivision lots as they border all streets and roads shown on the above-mentioned Subdivision Maps, or such lesser easements as may actually be taken by the utility companies. Said streets and roads currently consist of _____Road and _____ Way.
20. These covenants, conditions and restrictions shall run with the land and shall be binding on all

parties and persons claiming under them for a period of ten (10) years from the date on which they are first filed in the Onondaga County Clerk's Office. After that time said covenants and restrictions shall automatically be extended for successive periods of ten (10) years each unless, by a vote of a majority or the then owners of the lots with the Hoag Lane Subdivision, reduced to writing and recorded in the Onondaga County Clerk's Office, it is agreed to change said covenants in whole or in part.

21. The following construction standards must be adhered to:

(A) The siding on all houses must be approved by the Committee and generally should consist of (i) narrow, horizontal clapboards of either cedar or good grade vinyl, or (ii) cedar shakes, or (iii) of stone or brick masonry, or (iv) an acceptable combination of the foregoing materials, or other comparable and suitable materials satisfactory to the Committee;

(B) For roof shingles, all homes must use architectural grade shingles;

(C) All driveways, parking areas, etc., must be blacktopped within two (2) years from the date of obtaining a Certificate of Occupancy for the home. Other surface materials may be installed on driveways (e.g., concrete, brick, pavers) only upon the approval of the Committee; and

(D) The location of the home on the lot, its elevation, grading, etc, shall be approved by the Committee.

22. Enforcement: These covenants, conditions and restrictions shall be binding upon, inure to the benefit of, and be enforceable by Hoag Road Properties, LLC, its successors and assigns, the Committee, and by any lot owner in the Hoag Lane Subdivision. Enforcement shall be by action or proceedings at law or equity against any person(s), Company(s) or other entity violating or attempting to violate any covenant, condition or restriction, and may seek relief to restrain violation or to recover damages for said violation. The prevailing party in any enforcement proceeding or action shall be entitled to its court costs and reasonable attorneys' fees. However, the foregoing restrictive covenants shall in no manner be construed to hold Hoag Road Properties, LLC or the Committee, legally responsible or liable for the enforcement or non-enforcement of any provisions of the covenants, conditions or restrictions. The failure of Hoag Road Properties, LLC, the Committee or any other party who is a beneficiary of this Declaration to enforce any provision of the Declaration shall in no event be construed as a waiver of the right by that beneficiary or any other to do so thereafter, as to the same or a similar violation occurring prior to or subsequent thereto.

23. Severability: Invalidation of any one of the foregoing covenants by judgment or court order shall in no way effect any of the other provisions which shall remain in full force and effect.

24. Subordination: No breach of any of the covenants, conditions or restrictions herein contained shall defeat or render invalid the lien of any mortgage made in good faith and for value as to the subdivision or any lot therein. These covenants, conditions and restrictions shall be binding on any and all owners, including those owners whose title is acquired by foreclosure, trustee's sale or otherwise.

IN WITNESS WHEREOF, the Declarant, Hoag Road Properties, LLC, has executed this instrument by its duly authorized agent and officer the day and year first above-written.

HOAG ROAD PROPERTIES, LLC
(DECLARANT)

NAME:_____
By:
Its: Managing Member

State of New York)
) ss.:
County of Onondaga)

On the _____ day of _____ in the year 2019 before me personally came _____ to me known, who, being by me duly sworn, did depose and say that he resides at _____, New York; that he is the Managing Member of Hoag Road Properties, LLC, the Company described in and which executed the above instrument; that he knows the seal of said Company; that the seal affixed to said instrument is such corporate seal; that it was so affixed by authority of the board of directors of said Company, and that he signed his name thereto by like authority.

_____
NOTARY PUBLIC

DOs AND DON'Ts WITHIN TOWN of MANLIUS DRAINAGE EASEMENTS

An easement on a portion of your property* has been conveyed to the Town of Manlius for drainage purposes. However, the ownership and routine maintenance of this easement area rests with you - the property owner. It is expected that this area will be maintained as you maintain the rest of your lawn. The following are some of the things you should and should not do relative to a Town drainage easement:

DO

1. **MAINTAIN** the drainage easement as your lawn as much as practical. During wet times it may not be possible to mow. However, mowing and weed-whacking should be performed as field conditions allow.
2. **NOTIFY** the Town Department of Planning & Zoning if you observe anyone filling, obstructing or otherwise blocking or altering the land in a Town drainage easement.
3. **CONSTRUCT A SILT FENCE** (or similar device) along the drainage easement line if you are doing work near the easement involving soil disturbance. This will help to reduce sediment and other erosion materials from entering the drainage system.

DO NOT

1. **FILL, OBSTRUCT, BLOCK OR MATERIALLY ALTER** the Town drainage easement or permit an impediment in the drainage easement to remain.
2. **CONSTRUCT OR PLACE** improvements such as pools, fences, sheds or other structures in the Town drainage easement. Also, do not install temporary obstacles which cannot be easily moved such as play stations, swing sets, etc. These may impede the flow of water within the easement.
3. **MODIFY** the existing topography of the easement; **MATERIALLY IMPAIR** the use or **RESTRICT** the flow of stormwater within the drainage easement.
4. **DISPOSE** of brush, grass clippings, leaves, or other such materials within the Town drainage easement.

TOWN OF MANLIUS RESPONSIBILITY

The Town of Manlius will occasionally perform drainage maintenance on the easement but **WILL NOT REMOVE** *grass clippings, brush, leaves or other obstructions which are* ***caused by actions of the property owner(s)***. These types of obstructions may result in a notice to the owner of a violation of the Town's rights in the drainage easement which will need to be rectified. In addition, a property owner who violates the easement may be liable for water damage caused to adjoining property owners.

* You can determine whether your property contains a drainage easement by studying your property survey.

Vincent Ryan

From: Thomas Blair <tblair@fingerlakeslaw.com>
Sent: Thursday, March 7, 2019 12:18 PM
To: Tom Douglas; Rudy Zona; Scott Freeman
Cc: Vincent Ryan
Subject: Town call re tree removal

Gents-

I just ended a call with Jamie Sutphen. She reported that she checked in with Doug Miller, Randy C. and Tim F. and that they have told her that a permit is not needed and we should be all set to clear trees – without a permit, with the following understandings:

- tree cutting is allowed, but ground disturbance is not. So, that means no stump grinding, root removal etc….. – if that were to occur we would need a final approved SWPPP.
- tree cutting would proceed at our own risk and the Town recommends that we be very careful not to cut anything in the forever wild areas – in fact Jamie stated that she thinks we may even want to leave a buffer so there is no chance forever wild areas are impacted.

I advised Jamie that a surveyor was going to stake and flag the forever wild areas so no mistakes could be made – and she emphasized that a lot of markings would be better than nominal amounts.

She mentioned that she saw a PB member at a conference this morning and they commented that they feel the project is headed in the right direction.

I think now, we just get the NLEB tree survey in our back pocket, quickly, and we will be all set to accomplish some work.

If this all works…….We should next be looking at final designs, a final supplemental FEAF, SWPP, and answering all of D.Miller's comments so we can get onto a SEQR meeting and a public hearing.

Thx Tom

Thomas M. Blair
Blair Law Firm, PLLC
3895 Fennell Street
Skaneateles, NY 13152
Ph.: (315)685-9900
Fax: (315)685-9910
E-Mail: tblair@fingerlakeslaw.com

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Earthwork Field/Lab Testing Summary

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer.

Refer to Specification Section 31 2301 part 3.10 Field Quantity Control

IN THE MATTER
Of
SEQRA
DETERMINATION FOR
Woodland Hills – Hoag Lane Cluster
Subdivision for property located at 5280 Hoag Lane, Town of Manlius

Resolution August 10, 2020
DETERMINATION OF ENVIRONMENTAL SIGNIFICANCE

The **TOWN PLANNING BOARD OF THE TOWN OF Manlius**, in the County of Onondaga, State of New York, met in regular session via "Zoom" electronic meeting in accordance with the Executive Order of the Governor of the State of New York to assure compliance with the Open Meetings Law of the State of New York, on the 10th day of August 2020 at 6:30 p.m. The meeting was called to order by Joseph Lupia as Chairperson, and the following were present, namely:

Chairperson Joe Lupia

Ms. Anne Kelly

Mr. Richard Rossetti

Mr. Frank Mento

Mr. Michael LeRoy

Mr. Fred Gilbert

Mr. Arnie Poltensen

Absent:

WHEREAS, the Hoag Road Development, LLC ("Applicant") has proposed the development of 30.04 acre site located 5280 Hoag Lane (the "Parcel") in Town of Manlius into a Cluster subdivision of 21 homes, including roadways and infrastructure to accommodate the homes which are part of the Cluster subdivision (The "Project");

WHEREAS, The Planning Board of Town of Manlius ("Planning Board") is charged with review and approval or disapproval of the Project in accordance with the Code of the Town of Manlius including Subdivision Rules of the Town of Manlius Section , and

WHEREAS, the Applicant sought to have the Planning Board apply to the Project the provisions of Section 127-12 of the Code of the Town of Manlius which refers to "Cluster" Subdivision , as authorized by Town Law of the State of New York Section 278, ("Cluster Subdivision Regulation") and

WHEREAS, after multiple meetings with the Applicant at the Planning Board, and the applicant having supplied sufficient evidence for the total number of conventional lots that would be permitted on the Parcel, the Planning Board determined at its meeting on July 22, 2019 that the application of the Cluster Subdivision Regulation to this Project would permit 21 lots as the maximum number of lots that would be permissible on the Parcel under the Cluster Subdivision Regulation; and

WHEREAS, under Article 8 of the New York State Environment Law and 6 NYCRR ("SEQRA") the Planning Board at its September 23, 2019 Planning Board meeting declared the Project an Unlisted Action under SEQRA and declared its intent to act as Lead Agency for the Project, and thereafter issued to all involved and interest agencies a Notice of Intent that classified the Project is an Unlisted action and further stated that it intended to be the Lead Agency for the Action, to which no involved agency objected;

WHEREAS, on July 22, 2019 the Planning Board opened a Public Hearing on the Project to glean public input on all documents theretofore submitted by the Applicant, and

WHEREAS, the Public hearing was held over to and continued on August 26, 2019, and which was closed on August 26, 2019; and

WHEREAS in excess of 100 people attended each evening of the Public Hearing sessions and all present who desired to speak on the project were given an opportunity to be heard, and further given the opportunity to submit written comments, with said meeting minutes and written comments being part of the Public record of this Project; and

WHEREAS, the Applicant has appeared at several Planning Board meetings before and after the Planning Board approval to apply Cluster Subdivision Regulation, and

WHEREAS, the Planning Board has further reviewed many sets of documents, drawings and reports in connection with the Project and many versions of the SEQRA Full Environmental Assessment Form;

WHEREAS, between June 17 and July 1, 2020, the Applicant submitted a fully revised set of set of plans, documents, reports, letters to replace all previously submitted documents in full ("Project Documents "), including therein 33 full size "drawings" ; and

WHEREAS, also submitted with the Project Documents is the last version of the Full Environmental Assessment form which is entitled "Fourth Supplemental SEQRA 12-16-19 with supplemental documentation" and Verified 01/02/2020 ("FEAF"), and

WHEREAS, at the July 27, 2020 meeting of the Planning Board, the Town Engineer/Consultant advised that comments to the Project Documents would be available shortly, and the Planning Board Chairperson advised that the Planning Board intended to move

forward with a determination under SEQRA at its next scheduled Planning Board meeting on August 10, 2020, and

WHEREAS, the Project Documents were reviewed by the Town's Engineer/Consultant, after which was produced and provided a 25 page response letter dated July 28, 2020, with attachments thereto, many of which attachments were taken from the submitted Project Documents, ("Town Engineer Response Letter") with The Town Engineer Response Letter being available to the Planning Board, Applicant and Public on July 29, 2020 and

WHEREAS, upon review of the Project Documents and the Town Engineer Response Letter and all knowledge and information heretofore in the knowledge and information of the Planning Board on this Project, the Planning Board has identified several areas under Part 2 of the FEAF where the Project would have a potential large impact on the environment, and those areas include: **(a)** Section 1 - Impact on Land, including Section 1 (b), (c), (d), (e), (f) and (h) Other impacts identified as Stormwater Retention design impact and cut and fill process impact, particularly regarding local underlying geophysical topography and the Muirfield Basis; **(b)** Section 4 – Impact on groundwater, Section (h) Other impacts identified as the unique direct infiltration into the local underlying geophysical substrate creates potential for groundwater issues; **(c)** Section 15 – Impact on Noise, Odor, and Light , including Section 15 (a), and (d) Other impacts identified as During construction there will be temporary intervals of noise, exceeding ambient noise levels relating to typical construction noises/activity; and or noise in violation of the noise ordinance of the Town; **(d)** Section 17 – Consistency with Community Plans – Section 15 **(h)** Section 127 of the Town of Manlius Law set forth criterion for Cluster Development (Section 278 Town Law) and Project shows inconsistency with such plan due to potential failure to preserve natural and scenic qualities of lands; **(e)** Section 18- Consistency

with Community Plans, (f) and (g) Other impacts: potential non-compliance with standards for Cluster Development.

WHEREAS, each of the issues identified as potentially causing a significant environmental impact in the have been discussed at the Planning Board meeting of August 10, 2020 and are further addressed as set forth below in the Planning Board's finding of facts and conclusions herein;

NOW, THEREFORE, THE PLANNING BOARD OF THE TOWN OF MANLIUS MAKES THE FOLLOWING FINDINGS AND DETERMINATIONS:

1. The Applicant has provided letter reports made by Kenny Geotechnical Engineering Services dated May 18, 2020 and May 27, 2020 (the "Kenny Geotechnical Report"), which has been reviewed by the Town's Engineer/Consultant in conjunction with the other documents part of the July 1, 2020 Submission, and the Town's Engineer/Consultant has determined that environmental impact of this Project on stormwater volume and run-off is significant due to the project being in *"an environmental sensitive area with the Muirfield Drive drainage basin and with the large earth moving operation with soils depicted as having high silt content by the applicant... "* . While same may be mitigable, Town Engineer found that,

" Detail site specific plans on using on site soils susceptible of losing strength and requiring frost cover protection

(outlined in the Kenney Geotechnical Report dated 5/18/20) are not addressed in the proposed scope of work by the applicant", and further found that a "*waiver of NYS stormwater regulations for a 5-acre disturbance variance"* is not recommended.

2. The Town's Engineer/Consultant has determined that due to the significant impact of stormwater implications created by the project, and the applicant has agreed, that the large stormwater holding area/impoundment proposed by the applicant on the site, and being approximately 16.5 feet deep ("Stormwater Impoundment") must be designed to the standards set forth by the Department of Environmental Conservation as if is same was delineated as a "Dam"; which design, to date, has not been provided.

3. The Town's Engineer/Consultant advises that the extent of the "cuts and fills" and earth movement during the construction of this project may have significant impact on the environment as indicated specifically but not limited to the following comments: a. *"Much of the site has been cleared prior to Planning Board approval and significant earthwork volumes (60,000 cubic yards cut and 40,000*

cubic yards fill) are proposed. That relates to approximately 6,000 truck trips minimum on site. Cuts and fills average four feet. We recommend justification for significant earthwork and mass clearing for a conservation/cluster development. In addition, the applicant indicates over 8,000 cubic yards of structural fill material will be required for the project site. This does not include compost soil amendment that will be required for soil decompaction requirements of NYSDEC"; b. Based upon the recent test pit excavations, we feel rock may be present on site. TPS-5 encountered shale at 3 feet in an area where 4 feet of cut is proposed. TPS-8 was only excavated to a depth of 3 feet and photographs may indicate the presence of bedrock. Borings B-6 and B-7 indicate significant resistant at 7.5 to 8.5 feet of depth and may be indications of bedrock. B-1 and TPS-5 are in direct conflict with each other. Specified borrow material may not be available on the project site to meet the contours shown for the site.; It is recommended that a separate plan be prepared, as a field guidance, to outline how rocks encountered over 2 inches in size will be removed from the backfill (as dictated by the Kenney Geotechnical Report), the type of roller to be used on site for compaction,

mitigation efforts to be used to control the soil water content to obtain optimum moisture content for compaction, etc.

4. The extensive cut and fill operations, significant earth movement and significant stormwater retention work intended to be conducted on the site for this Project may have negative environmental impacts if not managed efficiently and effectively. Specific reference is made to the Kenney Geotechnical Report at numbers 3, 4, 5, 6 and 7.

5. There is a potentially significant environmental impact based upon this Project being in material conflict with the community's goals of Cluster development as adopted in Chapter 127-12 of the Town of Manlius Code pursuant to Section 278 of the Town Law of the State of New York to *"preserve the natural scenic qualities of open lands"*. The Town Engineer Consultant advises that *"Much of the site has been cleared prior to Planning Board approval."* The Town does not have jurisdiction over, nor does it require a permit, for the removal of trees and vegetation on the site as long as the ground was not disturbed. The clearing, which did not include land disturbance, occurred after this Board determined it would consider this site for Cluster

Development. Further, the significant land clearing coupled with the proposed significant earth movement as set forth in finding number 3 above, may negatively affect thecharacter or quality of existing community or neighborhood character.

6. There may be negative environmental consequences to placement of utilities and homes on soils that have not been properly compacted. The Town Engineer/Consultant has advised: "*The on-site fill that is excavated and proposed to be used as backfill under the roads and utilities must have a stringent quality control program to ensure proper compaction;* and further drawings provided by the applicant indicate" *No on site backfill material is to be placed under house footings, catch basins, or manholes as shown on the plans. These are to be placed on undisturbed soil as the project details indicate. Standard industry practice. Drawings require modifications to match this on-site requirement as depicted by the applicant.*"

7. During construction, negative environmental impacts may occur by reason of significant neighborhood traffic control and noise.

Based on the findings and determinations above, the Planning Board further finds and determines that the Project will have a significant environmental impact on

the neighborhood and the community character of the surrounding area(s);

NOW, THEREFORE BE IT RESOLVED, that having reviewed the FEAF and relating it to the criteria set forth in Section 617.(c) of the SEQRA regulations, and making the Findings and Determinations contained in this Resolution, the Planning Board as Lead Agency in this Unlisted Action hereby issues a Positive Declaration under Article 8 of the Environmental Conservation Law; and be it

FURTHER RESOLVED, that the Planning Board requires a Draft Environmental Impact Statement (the "DEIS") be prepared by the Applicant, pursuant to Section 617.9 of 6 NYCRR; the scope the DEIS shall be limited as follows:

1. a) Analysis of the manner in which a reduction of volume of storm water run-off on the site, beyond that already provided, will affect the Muirfield Basin, downstream flooding, the local underlying geophysical topography and other storm water impacts; including but not limited to an analysis of pre-development run-off volumes not exceeding post-development volumes and including site specific plans requiring frost cover protection, plans for bio-retention facilities, rain gardens, to support the percolation testing as set forth in the Kenny Geotechnical Report ; b) Analysis of storm water calculations for the site which do not include in the calculation the areas that are not disturbed/undeveloped as part of this Project.

2. Analysis of the Stormwater Impoundment as if designed to the standards set forth by the Department of Environmental Conservation Analysis for design of Dam, on the project site, and all matters of stormwater control, stability of any berms created

by the design, run-off analysis with downstream impacts in the event of the Stormwater Impoundment failure. Actual detailed design will be required to complete this analysis.

3. Analysis of the cuts and fills on the entirety of the site based upon the Kenny Geotechnical Report that provides there are particles of 2" or larger to be removed from the site and including analysis of disposal or crush and use on site including how same change the compaction, final elevation and grades on the site and including the extent of any fill materials that may be brought on the site; the impact of the cut and fill project on roads, overland stormwater and flow and utilities such as storm water and sewer piping;

4. Analysis of the manner and methods, including on-site construction supervision, documentation and reporting will be utilized by the applicant to assure that the significant environmental impacts relating to earth movement, cuts and fills, Stormwater impoundment construction will be mitigated.

5. Analysis of the manner and methods which will be utilized by the applicant to assure that this project will meet the goal to preserve the natural and scenic quality of open lands, promote the most appropriate use of land and provide a benefit to the Town as required by Town Law Section 127-12 and Section 278 of the Town Law of the State of New York.

6. Analysis of the manner and methods for placement of each proposed house on fill areas, as well as placement of utilities and including effect of requirement of 95% compaction of soils on home site locations and including plan which demonstrate same.

7. Analysis of manner and methods, for control of neighborhood construction traffic during period of significant earth movement and construction of infrastructure,

including proposed time frames for such work to assure compliance with the Town Noise ordinance and manner and method to mitigate adverse environmental impacts of the dust and construction traffic.

BE IT FURTHER RESOLVED, that the Lead Agency is the Planning Board of the Town of Manlius, with a mailing address of 301 Brooklea Drive, Fayetteville, NY 13066;

BE IT FURTHER RESOLVED, that the person at the Lead Agency to contact for further information regarding this Positive Declaration is Lisa Beeman, Secretary to the Planning Board;

BE IT FURTHER RESOLVED, that scoping is not necessary since the scope of the analysis has been determined by the Planning Board in this Resolution.

(Aye)	Nay	Chairman Lupia
(Aye)	Nay	Ms.. Kelly
(Aye)	Nay	Mr. Rossetti
Aye	(Nay)	Mr. Mento
(Aye)	Nay	Mr. LeRoy
(Aye)	Nay	Mr. Gilbert
(Aye)	Nay	Mr. Poltensen

I, Lisa Beeman, Secretary of the Planning Board, **DO HEREBY CERTIFY** that the preceding Resolution was duly adopted by the Town Planning Board of the Town of Manlius at a regular meeting of the Board duly called and held on the 10th day of August , 2020 that said Resolution was entered in the minutes of said meeting; that I have compared the foregoing copy with the original thereof now on file in my office; and that the same is a true and correct transcript of said Resolution and of the whole thereof.

I HEREBY CERTIFY that all members of said Board had due notice of said meeting.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Town of Manlius this 11th day of August, 2020.

DATED: August 11, 2020
Manlius, New York

Secretary, Lisa Beeman
Planning Board of the Town of Manlius
Onondaga County, New York

April | 12



Town of Manlius, N.Y.

Highway Specifications

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1. DEFINITIONS

DEVELOPER'S ENGINEER: Refers to the Professional Engineer employed by the developer to supervise the work of the Developer and thereafter certify to the Town that the items of work constructed by the Developer are built in accordance with the Approved Plans. At completion of all work, a complete set of "As-Built" drawings shall be submitted to the Town. This set of drawings shall be certified as being correct by the Developer's Engineer.

TOWN ENGINEER: Is that person or firm employed or retained by the Town to represent and/or advise the Town in all matters of an engineering nature.

HIGHWAY SUPERINTENDENT: Refers to the Superintendent of Highways employed by the Town.

DEVELOPER: Is that person, company or corporation that is the owner of the lands as shown on the final approved subdivision plan. The Developer will be responsible for full compliance to these specifications as well as any existing subdivision and zoning regulations of the Town of Manlius. The Developer will require any Contractor employed by him to perform the construction work to comply with the above mentioned specifications and regulations.

ROADWAY: Is that portion of the right-of-way that is disturbed for purposes of constructing the road section including pavement, gutter, ditches and back slopes.

2. PLANS

Plans showing original ground elevations and finished grades, centerline profiles, typical cross-section and proposed drainage facilities shall be submitted to the Town Board and the Highway Superintendent before final approval can be given. No construction shall be commenced until such approval has been given.

3. STANDARDS (see Town Subdivision Regulations Chapter 127)

A. GRADES

The road grade shall not be less than 1.0% nor more than 7% for minor roads and 5% for cul-de-sacs and hammerhead turn arounds unless otherwise approved by the Highway Superintendent. The road grade
at intersections shall not exceed 3% for a distance of 100 feet in any direction from the point of intersection.

B. RIGHT-OF-WAY

The right-of-way deeded to the Town shall not be less than 60 feet in width and with a 60 foot radius at the cul-de-sac -turn-arounds. The back slope from the edge of the roadway to the right-of-way shall not exceed 5% wherever practical and shall be graded to conform in general with the road grade.

C. CURVES

The horizontal curve shall not exceed a minimum radius of 150 feet on minor streets and cul-de-sacs. Longer radii are required for major streets as stated in the subdivision regulations.

D. DRAINAGE

The pattern of drainage shall be included in all road plans. This plan to clearly indicate: The direction of flow of all surface water; 2) the location, size and type of drainage structure; and 3) Notation as to final point of discharge of the surface water. No storm drains shall be less than 12 inches in diameter. Developers must make suitable entrances to private driveways, and driveway culverts shall be installed when directed by the Highway Superintendent. Catch basins shall be installed along the gutter at 400 foot intervals or less when considered necessary by the Highway Superintendent and/or the Town Engineer.

1. Storm sewers for residential subdivisions shall be designed based a 10 year frequency and as outlined by current NYSDEC rules and regulations. Special structures and facilities such as detention basins may be required by the Town Engineer when conditions warrant.
2. Finish grade of all lot corners must be indicated on the final plan. Rough grading of individual lots shall be within 6" of the indicated finish elevation. Building permits will not be issued until this has been accomplished.
3. Requirements as mandated by all regulatory agencies in addition to those of the Town must be complied with. All necessary permits must be obtained by the Developer.

E. UTILITIES

All utilities shall be located within the road right-of-way of the Town of Manlius wherever possible. Easements containing utilities and ditches outside the right-of-way must be properly described and will be subject to approval by the Town Planning Board. All utilities, including laterals, to be installed before construction of the sub-base course.

F. HIGHWAY AGREEMENT GUARANTEE

A certified check, bond, or other security acceptable to the Town in the amount agreed upon with the Highway Superintendent, as to the value of the work to be performed by the developer, shall be deposited with the Town Clerk of the Town of Manlius before any building permit is issued, to insure completion as to time and specifications. This

deposit shall be returned at the time of satisfactory completion of the work as indicated by the Highway Superintendent.

A certified check, bond, or other security acceptable to the Town in the amount of 5% for the roadway construction cost will be offered as a retainer for a period of one year after final acceptance of the road by the Highway Superintendent as a guarantee against any repairs within that period.

G. SIGNAGE

All proposed traffic control and street identification signage shall be submitted with final engineering drawings for review and approval by the Highway Superintendent and shall be completed in accordance with the New York State Manual of Uniform Traffic Control Devices, latest edition.

4. ROUGH GRADING OF ROADS

A. GENERAL

The Developer shall remove all rock, earth and other material required by the plans for the full width of the roadway. He shall dispose of this material as required.

Earth embankments shall be constructed to established lines and grades for the full width of the roadway at the location shown on the plans. Embankment material shall be natural soil, free from excessive moisture, frost, stumps, tree roots, sod, muck, marl, vegetation or other unsuitable material.

Where embankments are to be placed underwater, only acceptable granular material shall be used with prior approval of NYSDEC and the U.S. Army Corps of Engineers. All materials shall be suitable for compaction in layers not exceeding eight inched in thickness and shall remain stable when wet.

B. STRIPPING

Prior to the commencement of excavation of fill, stripping shall be conducted to remove all topsoil, roots, organic matter, rubbish or other debris for the full width of the pavement and adjacent disturbed land.

Usable topsoil from stripping may be stockpiled for future use at approved locations outside the limits of the road right-of-way. All work to be completed under current SPDES permit conditions of the Town of Manlius

C. MATERIALS TO BE USED

If there is not sufficient excavated material of a suitable quality at the site to complete the embankment, subgrades and backfilling to the required lines and grade, the Developer shall borrow the necessary additional materials. The source and acceptability of the borrow material shall be subject to approval of the Town Engineer or the Highway Superintendent.

The Developer shall request approval of proposed borrow areas at least five days before taking any material from such areas. All test pits, explorations and laboratory tests

required by the Highway Superintendent or Town Engineer shall be done by the developer at his own expense.

D. PLACING

In general, embankment materials shall be placed in horizontal layers not exceeding eight inches in thickness measured prior to compaction. Stones, if any, shall not exceed four inches in greatest dimension and shall be well distributed through the mass. Each layer of embankment material shall be roughly tamped or rolled to the required degree of compaction at optimum moisture content by sheepsfoot or pneumatic rollers, mechanical tampers or vibrators. Successive layers shall not be placed until the layer under construction has been thoroughly compacted. Trucks or other heavy equipment shall not be operated over pipelines until a minimum of 18 inches of backfill above the crown of the pipe has been placed and properly compacted.

E. COMPACTION CONTROL

Embankment shall have a minimum dry density of 95 percent of the maximum dry weight density in pounds per cubic foot as determined by the AASHO standard density test or the Proctor compaction test. Compaction tests shall be performed on a daily basis or as may be deemed necessary by the Highway Superintendent or the Town Engineer. Such tests shall be performed by qualified laboratory personnel at the Developer's expense. When the test results indicate that insufficient compaction has been obtained in any layer, the Developer shall take such action as the Highway Superintendent or the Town Engineer may direct to modify or alter the moisture content of the soil, to provide additional compaction or otherwise to increase the in-place soil density.

5. PREPERATION OF SUBGRADE

The Developer shall prepare the subgrade to receive the pavement in conformity with the lines and grades as shown on the plans. Before the sub-base course material is placed upon the subgrade, it shall be shaped to line and grade and compacted with an approved self-propelled roller weighing not less than 10 tons. All hollows and depressions which develop under rolling shall be filled with acceptable granular material and shall again be rolled. Granular materials used to fill depressions shall consist of approved hard, durable particles 100% of which shall pass a ½ inch sieve and not more than 5% of which shall pass No. 200 sieve. This process of shaping and rolling and filling shall be repeated until no depressions develop. The subgrade shall not be muddy or otherwise unsatisfactory when the sub-based material is placed upon it. If soft spots develop during the rolling, the material shall be removed and replaced with acceptable granular material above.

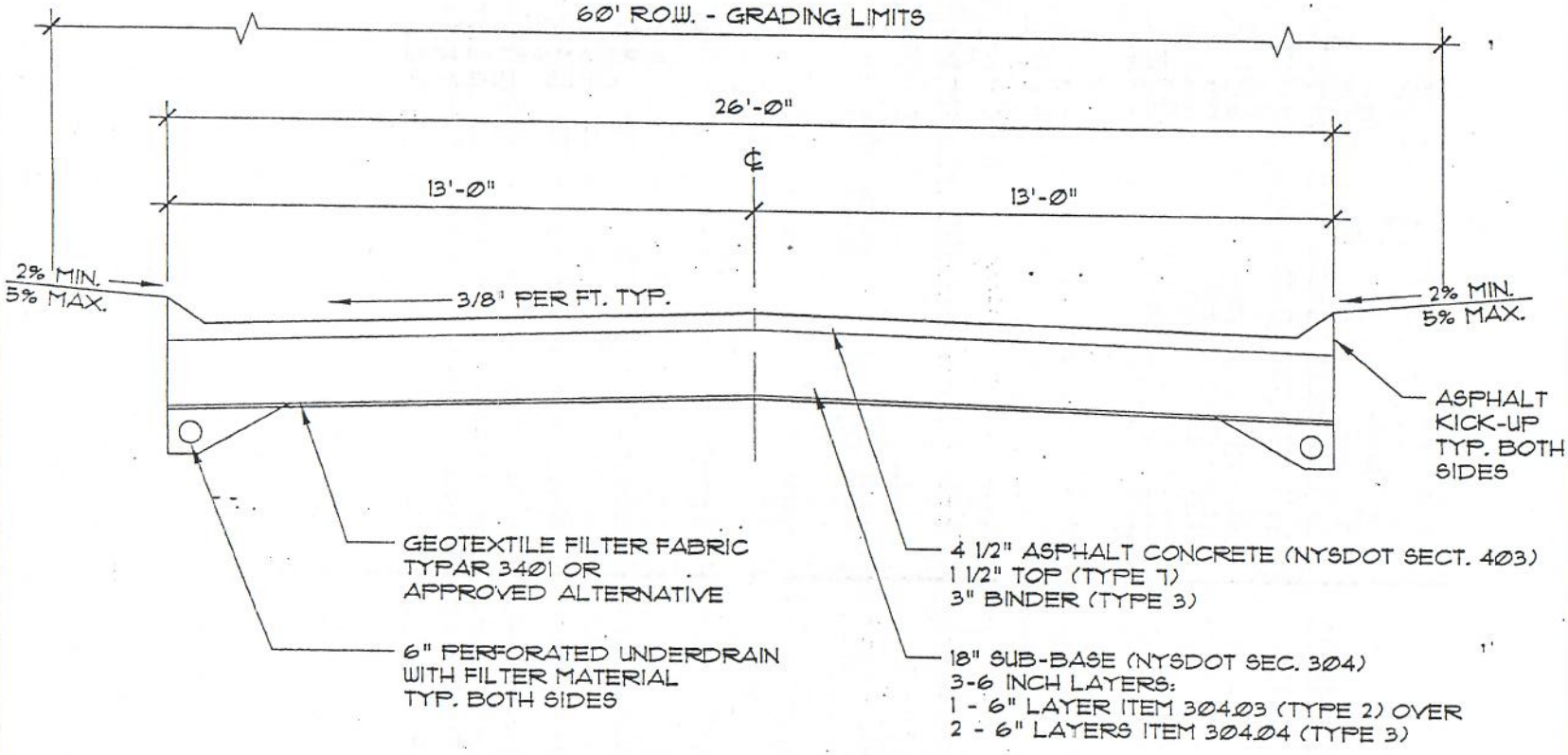
6. ROAD CONSTRUCTION

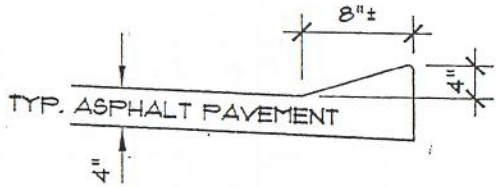
Details of road construction shall be as shown on the attached drawings titled Residential Road Specifications, Town of Manlius.

1. SD-1 Typical Road Cross Section
2. SD-2 Typical Road Cross Section with Catch Basin Location
3. SD-3 Standard Catch Basin
4. SD-4 Temporary Paved Turn Around and Easement

7. SPECIAL CONDITIONS

a. Rough Grading must be completed before the construction of utilities is commenced.
b. The Subgrade must be inspected and approved by the Highway Superintendent before the Sub-base Course is placed.
c. The Sub-base Course must be inspected and approved by the Highway Superintendent before the Binder Course is placed.
d. The Top Course of asphalt pavement shall not be placed until permission is obtained from the Highway Superintendent.
e. No certificate of occupancy for houses constructed on new roads will be issued until the road construction is completed and necessary approvals obtained. Approval to be obtained from the Highway Superintendent. A letter of Certification by the Developer's Engineer will be required under circumstances where the Highway Superintendent has not inspected and approved the construction procedures outlined above.





ASPHALT KICK-UP DETAIL

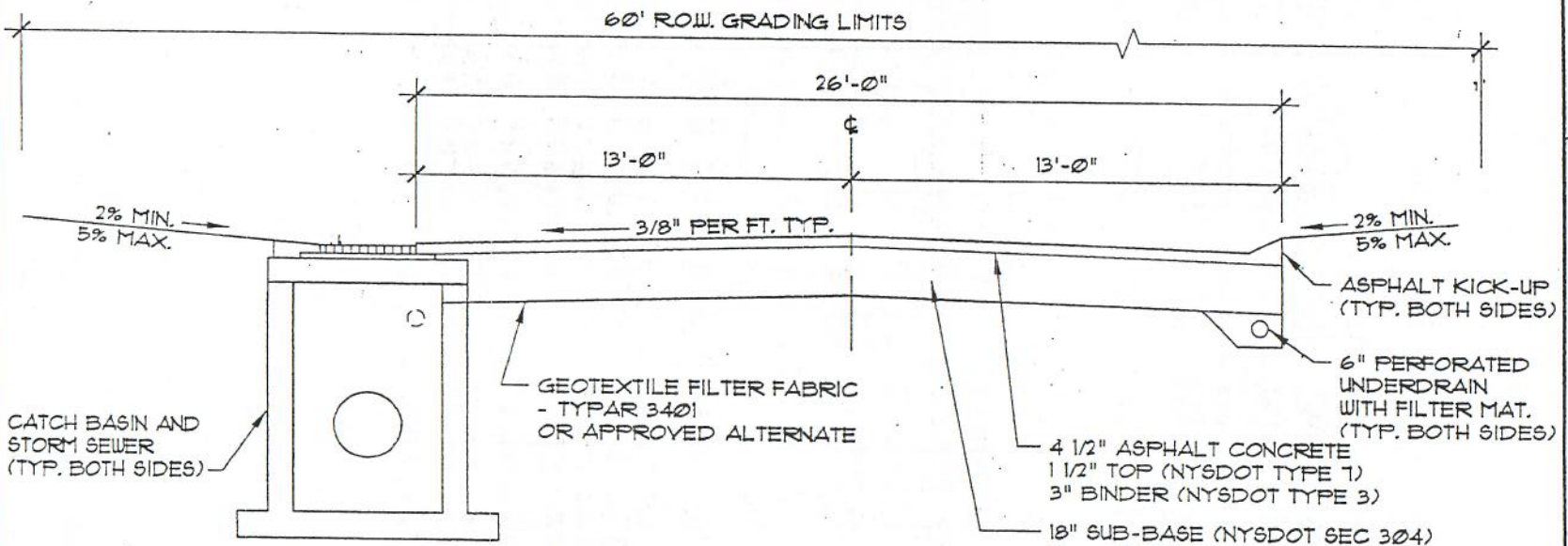
NOT TO SCALE

NYSDOT TYPE 7 TO BE COMPLETED WITH TOP COURSE OF ASPHALT

SD-1

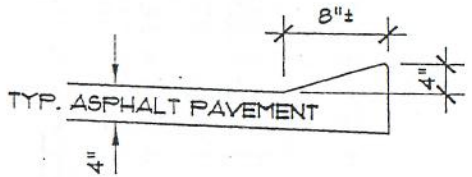
TOWN OF MANLIUS
TYPICAL ROAD
CROSS SECTION

December 2011



(CATCH BASINS SET 28' 2" CENTER TO CENTER IN NORMAL ROAD SECTION)

NOTE:
- CATCH BASIN RIM SHALL BE Ø2' BELOW EDGE OF PAVEMENT.
- ALL RISERS FOR CATCH BASIN TO BE PRECAST.
- EXTENSION RINGS AS MANUFACTURED BY FOR MILLER CO, INC.
- SEAL INSIDE BLOCK BOND FOLLOWED BY CONSEAL CS55 OR EQUAL.



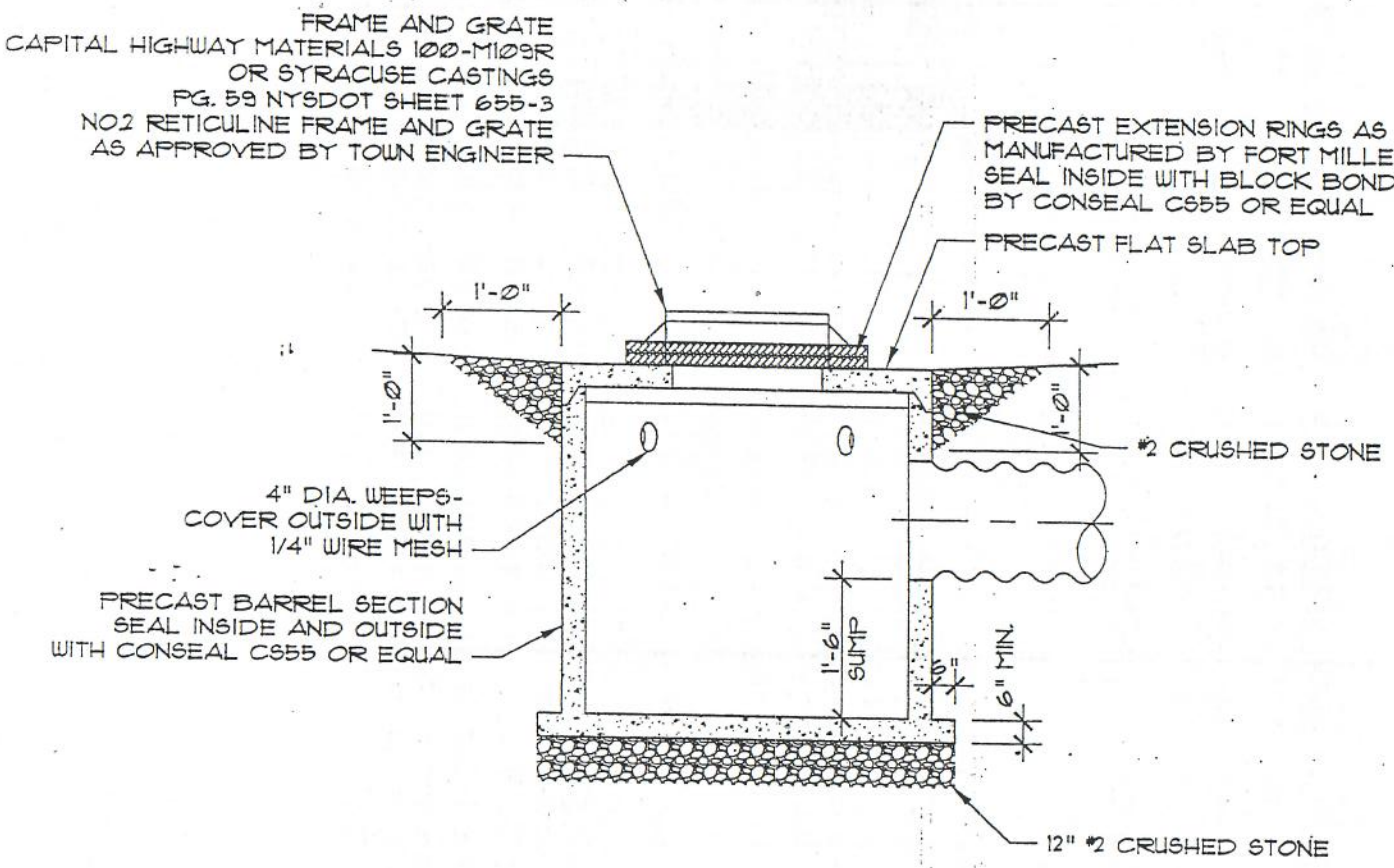
ASPHALT KICK-UP DETAIL
NOT TO SCALE

NYSDOT TYPE 7 TO BE COMPLETED WITH TOP COURSE OF ASPHALT

SD-2

TOWN OF MANLIUS
TYPICAL ROAD CROSS SECTION
WITH CATCH BASIN LOCATION

December 2011

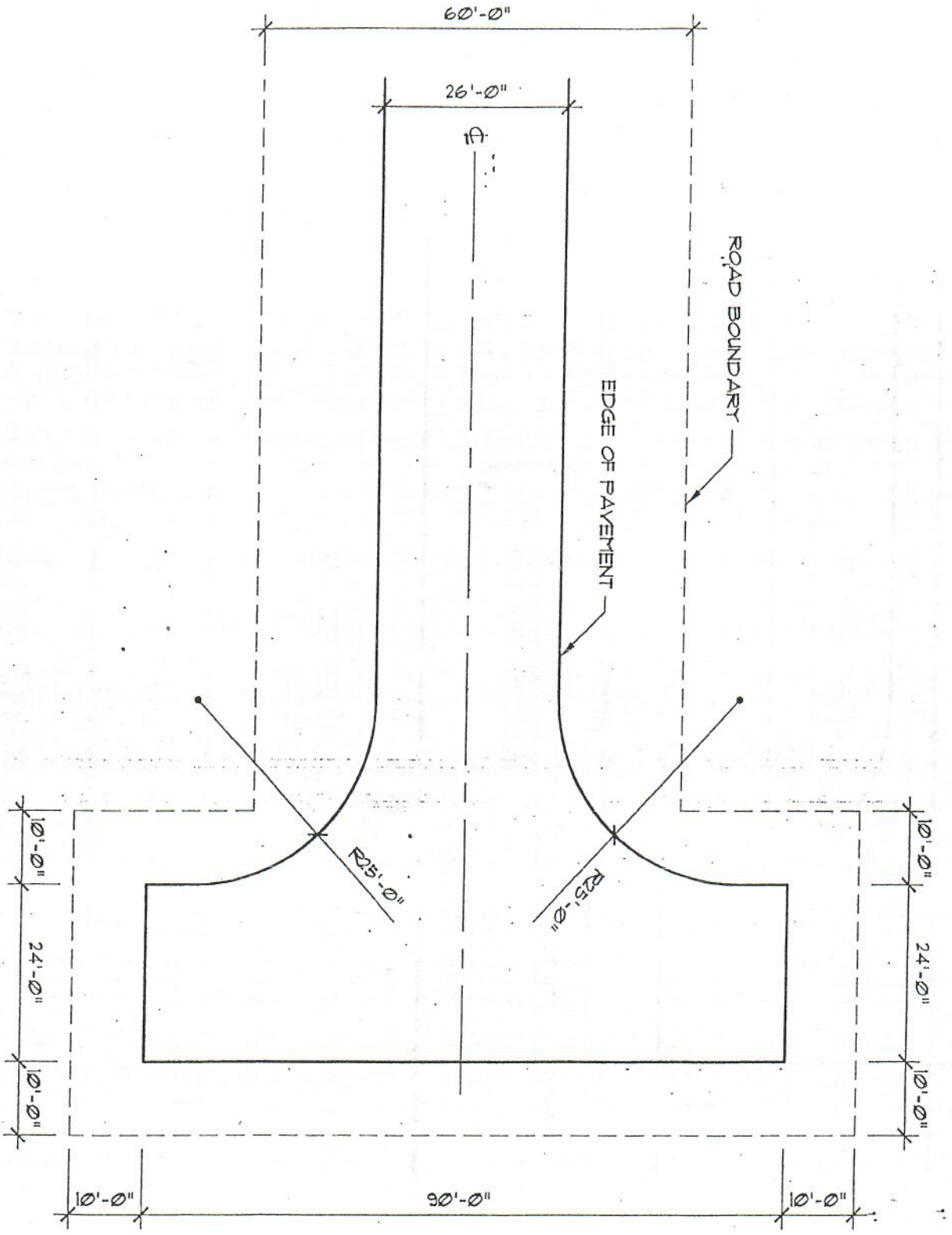


ALL STRUCTURES AND APPURTENANCES TO COMPLY WITH H-20 LOADING CRITERIA SUBJECT TO APPROVAL OF TOWN ENGINEER

SD-3

TOWN OF MANLIUS
STANDARD CATCH BASIN

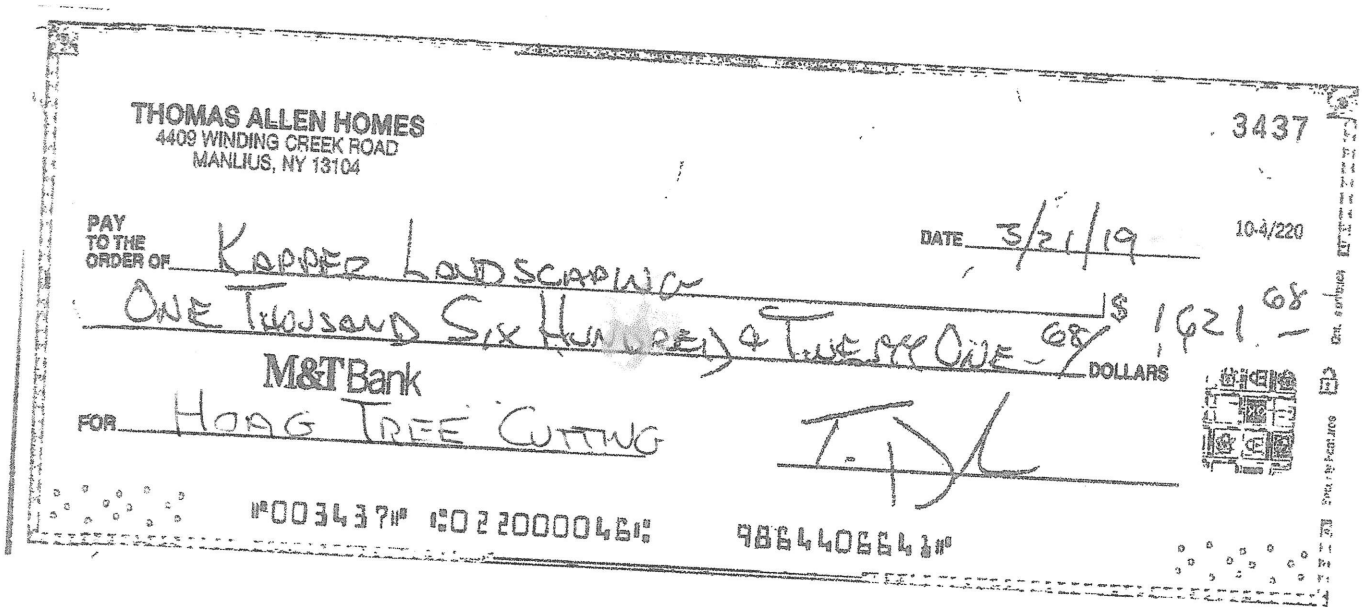
December 2011



TOWN OF MANLIUS
TEMPORARY PAVED TURN AROUND AND EASEMENT

December 2011

SD-4



THOMAS ALLEN HOMES
4409 WINDING CREEK ROAD
MANLIUS, NY 13104

3437

PAY TO THE ORDER OF Kapper Landscaping

DATE 3/21/19

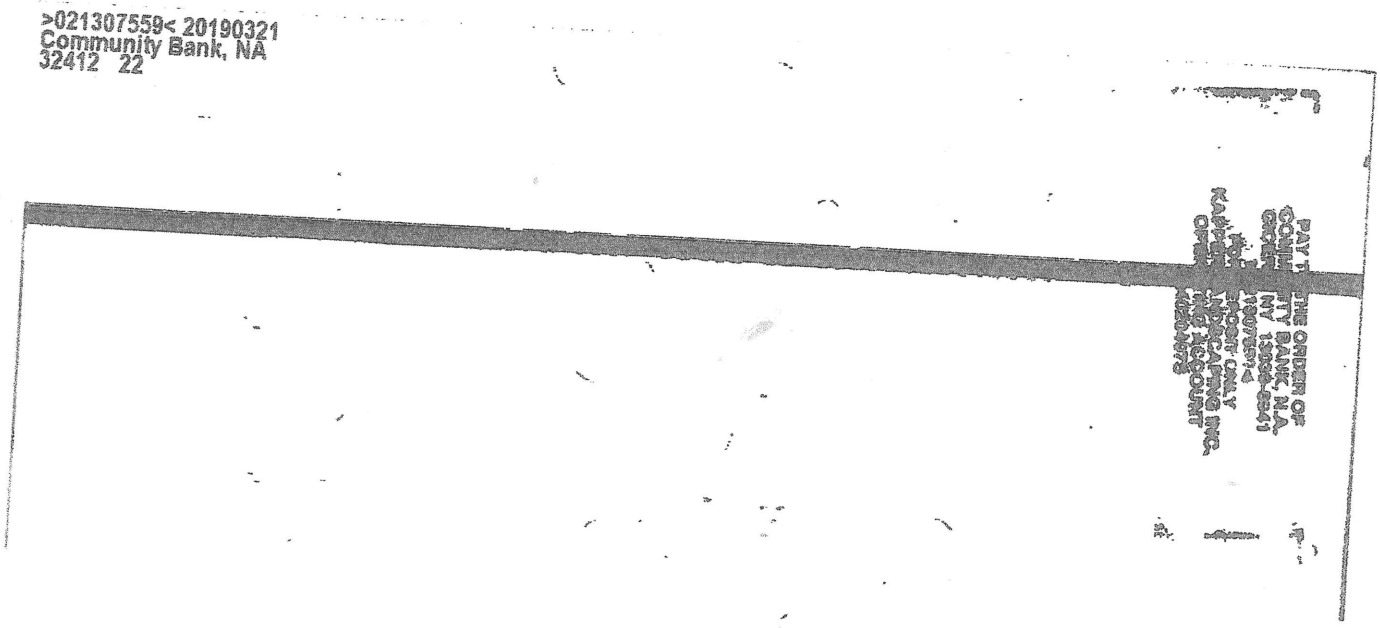
10-4/220

One Thousand Six Hundred & Twenty One 68/ $ 1621.68 DOLLARS

M&T Bank

FOR Hoag Tree Cutting

⑈003437⑈ ⑆022000046⑆ 9864406641⑈



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Community Bank, NA
32412 22

PAY TO THE ORDER OF
COMMUNITY BANK, N.A.
ORDER NY 13036-6341
[illegible]
[illegible] ONLY
KAPPER LANDSCAPING INC.
OPERATING ACCOUNT
[illegible]

UPDATED: 29 March 2018

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Doug Miller, P.E.

Miller Engineers

315-682-0028 | dougmiller@millerengineers.com

www.Millerengineers.com

Re: Hoag Lane Site Plan Review Comments

Response letter to Town of Manlius Engineer's and Neighborhood Letters.

Dear Mr. Miller,

Our office has reviewed your Engineering comments related to the Hoag Lane received on ***February 2nd 2018***. Below is our response to each comment received**.** Your comments are listed below followed by the design team response in bold italics.

HOAG LANE SITE PLAN

Materials reviewed:
Miller Engineers received a SWPPP, Traffic study and Drawings (L-000; L-100; L-101; L200; L-201; L-300; L-400; L-500; L-501; L-600) on January 29, 2018. The following is a preliminary review of the submission package. Engineering review deposits should be reviewed by appropriate Town personnel.

General Response:
1. The development team has provided a 24 lot conventional subdivision/ not to build plan for comparison to the municipality preferred 24 lot cluster plan which is based upon NYS town law § 278 cluster development guidelines. The cluster plan includes 23 new lots and 1 existing lot to accommodate the existing residential home located within the project limits. Updated plans include set back requirements on not to build plan.

2. All site topography has been updated after revised survey information.

3. Electric, telecommunications, and natural gas- A traditional 60'-0" R.O.W. can accommodate the listed utilities. Layout to be provided at a later date in coordination with National Grid.

4. Landscaping- The cluster plan preserves 5.88 (19.5%) acres of existing vegetation. Supplemental screening and street trees have been provided on L-400. This exceeds the towns recommended 8% of conserved land requirement.

1) General

a) Submissions including SWPPP, Traffic study and All Drawings are not signed or sealed. Drawings should be signed and sealed for review and submission.

RESPONSE: KFA and RZE to sign and seal all documents

b) Please provide geotechnical investigation data.

RESPONSE: Soil reports are provided in Appendix A of the SWPPP and locations are provided on the drawings.

c) Cluster Development
   (1) Provide access to all open space/conservation areas
   (2) Provide connection to all open space/conservation areas
   (3) Maximize use of open space/conservation areas to provide environmentally friendly buffer areas between existing and proposed development around entire site
   (4) Proposed lot B1 shown as a park like setting appears out of characteristics for the local area
   (5) Buffer area/conservation easement should be considered for area behind lots 1,5,6,7,8,9,10,11,12 & 18

RESPONSE: 1&2: Board recommended to not provide based on access to non-supervised areas. 3&5: Refer to drawing L- for updated buffer data. 4: Park has been removed.

d) Provide proposed cuts & fills for site work

RESPONSE: A cut-fill analysis of the site has been provided in Appendix N of the SWPPP Report.

e) A request for a project screening should be submitted as suggested by Onondaga County Planning Board to Natural Heritage Program or NYSDEC.

RESPONSE: Refer to planting plan drawing L-400. Plant buffers have been added along all perimeter areas which do not include existing vegetation buffer areas.

2) SEQR

a) Discrepancy between number of lots and number of homes, 24 or 25.

RESPONSE: Proposed project to include 23 proposed lots and 1 existing lot.

b) Indiana Bat requires attention

RESPONSE: KFA has coordinated with NYSNHP to confirm presence of bat populations or habitat. NYSNHP will provide guidance regarding bat presence treatment during construction times. Developer mitigation measures will be amended as necessary.

c) Documentation indicates one phase of construction. Please provide the duration of the work.

RESPONSE: All roads, utilities, stormwater facilities will be provided within 24 month construction. Utility service modifications to the existing house, model house (Lot 17) and approximately 3 lots will be included in Phase 1 construction.

3) Traffic

a) The study area for the traffic impact study included that intersections of Hoag Lane with Shiraz Lane, Dawley Road and Churchill Lane. These are very low volume residential cross streets within the existing residential area. A small 25-unit subdivision would not be expected to have any impact on local minor volume roadways. A more appropriate study area to include for this project should include the intersection of Hoag Lane with Route 257 since the majority of the site generated traffic will travel through this intersection and Route 257 is the arterial roadway in the area.

RESPONSE: A Gap Study has been provided with this submission and indicates no impact.

b) The traffic count time periods are appropriate.

RESPONSE: Understood.

c) It is reasonable to have applied no growth within the residential neighborhood as was done in the study. Had the study evaluated the Hoag Lane intersection with Route 257, growth rates and any other approved development in the area should have been applied.

RESPONSE: No study of Route 257 other than the Gap Study has been provided.

d) A gap analysis should have been completed for Hoag Lane at Route 257 to demonstrate that there are sufficient gaps on the main roadway in the area to accommodate the additional proposed development traffic.

RESPONSE: A Gap Study has been provided with this submission and shows no impact.

e) The trip generation estimates are appropriate.

RESPONSE: Understood.

f) The trip distribution is appropriate.

RESPONSE: Understood.

g) The proposed 25-unit residential development is confirmed as a minor traffic generator.
   i) Trip Generation Estimate – Completed.
   ii) Sight Distance Review at Site Access opposite Shiraz Lane – Completed.
   iii) Gap Analysis – Hoag Lane @ Route 257 – Not Completed
   iv) Sight Distance Review – Hoag Lane @ Route 257 – Not Completed.

RESPONSE: Gap analysis and Sight Distance Review are now complete.

h) A review of the primary access intersection of Hoag Lane with Route 257 to identify if there were any safety concerns associated with the additional traffic generated is warranted

RESPONSE: Completion of the Gap Study indicated none were found.

4) Highway

a) Boulevard entrance is not acceptable to the Town, delete boulevard entrance

RESPONSE: Boulevard entry has been removed. A widened entry has been provided which is 29 feet wide.

b) The Center cul de sac to be owned by HOA.

RESPONSE: Understood

c) Consider cul de sac for storm water

RESPONSE: The cul de sac has been incorporated into the flood route for storm water with the appropriate drainage easements.

d) Provide detail for road signage

RESPONSE: Road sign detail added to construction drawings detail21/ L-500.

e) Provide and coordinate Highway Agreement with the Town.

RESPONSE: Developer to coordinate with town engineer.

f) Provide detail for cul de sac, size, radius, ownership etc.

RESPONSE: Cul de sac size and radius has been labeled on L- 400.

g) The Cul de sac slope shall be less than 5%.

RESPONSE: Slope has been revised to less than 5%. Road profiles have been updated to reflect this change.

h) Fill areas under roads shall be noted on plans and a detailed QA/QC plan shall be submitted for all fill areas subject to approval of Highway Superintendent.

RESPONSE: Grading plans, profiles, and on drawing specifications show cut fill/ areas and methodology for cutting and fill placement.

i) Road slopes shall conform to Town of Manlius Highway details. Many locations on the site approach limits of 7% for road slopes, slopes less than 7% shall be confirmed prior to acceptance of the roads by the Town of Manlius

RESPONSE: All roads proposed have been modified to a 7% slope or less.

j) Intersection slopes shall be confirmed at 3%

RESPONSE: All intersections have been revised to a 3% slope or less.

5) Water Design

a) Provide confirmation of potential of public water supply from OCWA

Response: Preliminary OCWA letter attached to submission regarding water pressure.

b) Coordinate all water details through OCWA

Response: Understood

c) Confirm sequencing of existing water pit with OCWA

Response: Understood

6) Low Pressure Sewer System

General Response: It should be noted that the project will require creation and/or connection to a new or existing sewer district. Discussions are ongoing with WEP (for capacity) and the town engineer (for district issue).

a) Disadvantages of a low-pressure system include much institutional involvement because the pressure system has many mechanical components throughout the service area. The operation and maintenance (O&M) cost for a pressure system is often higher than a conventional gravity system due to the higher number of pumps in use.

Response: Understood.

b) Public education with each privately-owned pump is necessary so the user knows how to deal with emergencies and how to avoid blockages or other maintenance problems. The number of pumps that can share the same downstream force main is limited.

Response: Understood.

c) Power outages can result in overflows if standby generators or other accommodations are not available.

Response: Understood.

d) Life cycle replacement costs are expected to be higher because pressure sewers have a lower life expectancy than conventional systems.

Response: Understood.

e) Odors and corrosion are potential problems because the wastewater in the collection sewers is usually septic. Developer shall address this item

Response: The proposed low pressure sewer system is a closed system and we anticipate little to no odor issues.

f) Proper ventilation and odor control must be provided in the design and non-corrosive components should be used. Air release valves shall be designed to minimize odor problems and special discharge and treatment designs at each private pump shall be addressed to avoid terminal discharge problems.

Response: Final manufacturer design and details will be provided for review by OCDWEP, design engineer, and town engineer prior to construction.

g) Details of system are lacking including but not limited to: isolation valves, check valves, flushing ports, branch divider details, air release valves, corrosion control, odor control, manways, heat tracing (if necessary), emergency tap boxes and tracing devices

Response: See Item F above.

h) Private ownership and maintenance of grinder pump systems, odor control systems and emergency power is required. All appearances to be placed on private property

Response: Understood.

i) Force main shall be placed in a ROW with clear delineation of public/private demarcation

Response: All force mains proposed in the ROW.

j) Provide the ability to turn off – and back on – all the pumps in a pressure sewer system. This is a major time saving improvement and would assist during any major repair works.

Response: A note has been added to the plans.

k) Provide a system design of 24 hours holding capacity to significantly reduce any possibility of spills.

Response: See Item F above.

l) Basis of design requested for this scenario outlining responsibilities of the private/public aspects of the project. Basis of design to be made a part of the HOA offering plan

Response: Design has been provided. Manufacturer is required to provide detailed engineering submittals to RZE and Town engineer for review. The main within the R.O.W. and any agreements will be coordinated with Owner and Town Attorney.

m) Confirm downstream receiving sewer capacities

Response: We have contacted WEP for I&I requirements and sewer capacity and are awaiting a response at the time of this letter.

n) ROW's through private property shall be avoided where possible

Response: Understood.

o) Provide an offset plan per OCDWEP

Response: we have contacted WEP for I&I requirements and sewer capacity and are awaiting a response at the time of this letter.

7) Gravity Sewer System

a) Please provide table listing proposed sewer disposal mechanism for each proposed house

Response: KFA to has added data chart to grading plan drawing L-300.

b) Please provide updated sewer and force main profiles, existing profile exhibits some discrepancies

Response: Updated/revised profiles have been provided.

c) Confirm downstream receiving sewer capacities

Response: we have contacted WEP for I&I requirements and sewer capacity and are awaiting a response at the time of this letter.

d) ROW's through private property shall be avoided where possible

Response: Understood.

e) Provide an offset plan per OCDWEP

Response: See #6 (o) above.

f) Confirm document review with OCDWEP

Response: Final design to be submitted to OCDWEP for review.

8) Sitework

a) Provide sections at critical points throughout the site to illustrate cuts and fills required on the site

Response: Cut-fill analysis provided in Appendix N of the SWPPP Report.

b) Provide cut and fill calculations

Response: Cut-fill analysis provided in Appendix N of the SWPPP Report.

c) Provide specific detail on compaction requirements including proctor density requirements

Response: Proposed on drawing specifications and SWPPP to include proctor density requirements. Owner to provide compaction testing services during construction per specifications.

d) Greenspace areas require access to and from these locations for the HOA

Response: Maintenance access will be provided per stormwater maintenance agreement which is forthcoming.

e) Buffer areas should be considered at the outer reaches of the development to address concerns of residents. It would appear that the use of green space in clustering would be an advantage for the project

Response: Buffer area to south boundary line has been added.

f) Park like setting at the entrance to the project site should be reviewed with current residents

Response: Park setting has been removed based on community input and review by Town Attorney and Town Engineer.

g) Construction traffic routing is requested along the Hoag Lane vicinity and security for construction activity on roads should be considered

Response: KFA/RZE to coordinate with town engineer throughout the construction process.

h) Boulevard entrance for subdivision is not desirable

Response: Boulevard entry has been removed. A widened entry has been provided which is 29 feet wide.

i) Provide detail on depth to rock throughout the site (during meetings applicant has stated that this information is available)

Response: RZE/ KFA has provided and is located within SWPPP in Appendix A and on drawings.

j) Provide anticipated first floor elevations for proposed homes and accommodate for potential rock elevations for basements. Provide detail for addressing potential groundwater intrusion for basements located in rock

Response: KFA has added a perimeter foundation underdrain detail to the plans. Detail entitled 14/L-501 is located on drawings L-200.

k) Provide front, side and rear setbacks for proposed homes

Response: Setbacks for proposed building envelopes provided on layout drawing L-400.

l) Suggest the applicant meet with residents to gain input into local concerns

Response: Owner/ Developer is following up.

m) Provide detailed QA/QC plan for all fill areas, confirm adherence to Town of the plan prior to release of any building permits

Response: Cut/ fill analysis has been provided within Appendix N of the SWPPP. In addition, the cut/fill analysis indicates a majority of the site will be cut. Any fill areas will be addressed in the specifications.

n) Temporary construction staging area on proposed lot 12 appears to block existing drainage patterns

Response: Temporary construction staging area have been located to avoid existing drainage areas and will be adjusted as needed during construction.

o) Some ROW information appears lacking, confirm all required ROW's including required sizing

Response: Right of way locations have been finalized and sized appropriately.

9) Storm Water

General Response: Concept for the stormwater management system is to treat and control the subject site runoff and also provide quantity controls for upland areas within the contributory watershed. While we are not required to address upland areas, the developer has provided measures over and above what is required. The project does not have jurisdiction or control properties or drainage facilities downsteam of the existing swale point discharge, located at the northwestern corner of the property. Therefore, the project does not have the ability, nor is it the responsibility of the developer, to correct existing flooding or adverse drainage conditions downstream of the subject site. Stormwater responsibility of the developer is limited to the subject site only.

In addition, the pond is considered a stormwater management Best Management Practice facility and is not subject to NYS DEC Dam requirements. The pond does not exceed 3 million gallons capacity and does not exceed 15 feet height (less than 15 feet height and less than 8 feet permanent pool water depth) and is therefore, considered an exempt facility according to NYS Codes Rules and Regulations - Section 608.3 – Dams.

It should also be noted that while it's come to our attention that residents have raised several concerns, the Town of Manlius has an engineering consultant to review and provide expertise on stormwater engineering design matters.

a) System to be owned and maintained by HOA

Response: A stormwater maintenance agreement will be implemented with the town to address all stormwater maintenance.

b) Address point discharges including overflow point discharges from retention facilities consider use of "spreader type" system discharges

Response: The existing discharge from the site is a channelized ditch along the northwestern property corner along Churchill Lane. The proposed point discharge from the wet pond will provide some spreader provisions with the proposed riprap. Further "spreader" provisions are unnecessary since the final discharge point off the property is currently an existing drainage way (point discharge).

c) Provide for continued flow of storm water across site including ROW's for the same

Response: Stormwater easements have been indicated on the plans.

d) Consideration should be provided to reduce storm water runoff from the site above regulatory compliance

Response: The Wet Pond as proposed reduces pre-development/existing conditions runoff by 85±% in the 1-year storm to 41±% in the 100-year storm in post-development conditions. Regulatory compliance would require a no increase, or minimum 0% change in post-development conditions. Since we are providing 41±%-85±% reduction in post-development stormwater flows, provision for reducing stormwater runoff above regulatory compliance has been provided.

e) Provide for storm water discharge of sump pumps into site wide system. With basements below ground level footer drains will require mechanical pump systems with directed discharge to storm water control.

Response: KFA to add note to plans and show sump pump drain locations.

f) Signature in SWPPP NOI owner pre-dates the date of the final SWPPP. Confirm which design is confirmed by this NOI

Response: SWPPP is confirmed by NOI, signature was provided prior to final design.

g) Confirm depth to rock for storm water pond including fore bay

Response: Geotechnical report provided in Appendix A of the SWPPP report provides 3 tests at 18ft – 24ft depth with no presence of rock witnessed. Therefore, we do not anticipate any rock will be encountered during any portion of the wet pond or forebay.

h) Provide compaction requirements for earthwork for pond

Response: On drawing specifications have been added to the drawings and SWPPP Report.

i) Provide mapping for catchment areas

Response: Figure F has been provided in Appendix F.

j) Storm water pond does not appear to take into consideration point source originating along Churchill Drive at parcel 104-1-15

Response: The stormwater pond accepts all runoff from contributory watersheds even though off site watersheds currently discharge onto the subject site uncontrolled, see Figures 4 and 5. The stormwater management facility for this site will collect the uncontrolled discharges from adjacent properties and provide some treatment and management of the runoff on the subject site prior to discharge to the existing drainage channel at the northwestern corner of the site.

k) Direct 18" storm line discharge onto lot 104-1-37 (Susan Burns) is unacceptable. Line also combines 2- 18" HDPE storm lines at this location near cul de sac

Response: Proposed discharge pipe has been redirected to allow for better entrance into proposed forebay. No point discharges are currently planned near any adjacent properties and it should be noted that the Burns property is higher in elevation and discharges stormwater, uncontrolled to the subject site.

l) Center of cul de sac to be green and maintained & owned by HOA

Response: A private maintenance easement will be provided at a later date.

m) Storm line between lots 24 and 21 makes unacceptable 120-degree bend

Response: Proposed storm lines between lots 20 and 21 have been updated.

n) Storm profiles do not appear to match storm plans

Response: Storm profiles have been updated to match plans.

o) Swale behind lots 5,6,7,8,9,10,11,12 appears to dissipate onto lot 12 and into adjacent property on lot 104-1-15

Response: Per existing and proposed topography, this swale will redirect onsite and offsite runoff to the proposed FES where all stormwater runoff will then discharge into proposed wet pond.

p) SWPPP indicates infiltration basin, please confirm

Response: The SWPPP has been updated and the proposed stormwater BMP is a P-2 Wet Pond.

q) Long-term maintenance required by HOA. SWPPP to address this item

Response: A private maintenance agreement will be provided at a later date.

r) Grading and site plans referenced in SWPPP to be included in document

Response: Grading and Drainage Plans have been provided in Appendix M.

s) Infiltration logs from Kenney Geotechnical are confusing, please clarify

Response: The testing has been described in Section 3.0 of the SWPPP Report.

t) Significant point sources for storm water appear missing from catchment area EXDA-1B please revisit and include these area

Response: There is an existing ridge at the boundary of EXDA-1 that can be seen on the USGS in Figure 4 and was witnessed during onsite field testing.

u) Confirm depth to rock throughout site to validate assumed infiltration rates in overlying soils

Response: A wet pond has been proposed and has not taken into account any onsite infiltration due to testing performed by Kenney Geotechnical, see Appendix A.

v) RZ Engineering test hole data locations and pertinence to project required

Response: RZ Engineering test hole data locations and results provided on drawing L-100 Appendix A of the SWPPP, and discussed within Section 3.0 of the SWPPP.

w) Figure 10 is very difficult to read

Response: Figure 10 has been updated.

x) Figure 9 please confirm what this map shows

Response: Figure 9 is a mapper for NYSDEC Environmental Resources. Per available mapping, our site is an area with a potential for threatened or endangered species. Submission has been made to the DEC Natural Heritage on 03/15/17.

y) Please provide narrative for Figures 6,8,9,10 & 11. Figure 7 appears missing

Response: Figure 7 has been provided. Narrative for Figures 6,8,9,10 & 11 have been provided on the figure.

z) Catchment area maps appear misplaced in SWPPP

Response: Existing watershed catchment areas provided in Appendix C, proposed watershed catchment areas provided in Appendix D, sub-watershed catchment areas provided in Appendix F.

aa) SWPPP to address concerns associated with “Karst Topography” throughout the site

Response: Five deep hole tests were performed on 10/10/17 and their results have been included on the contract drawings and Appendix A of the SWPPP report. Additional soil investigation by Kenney Geotechnical is also provided in appendix A.

bb) Resubmission of SWPPP required to address above items

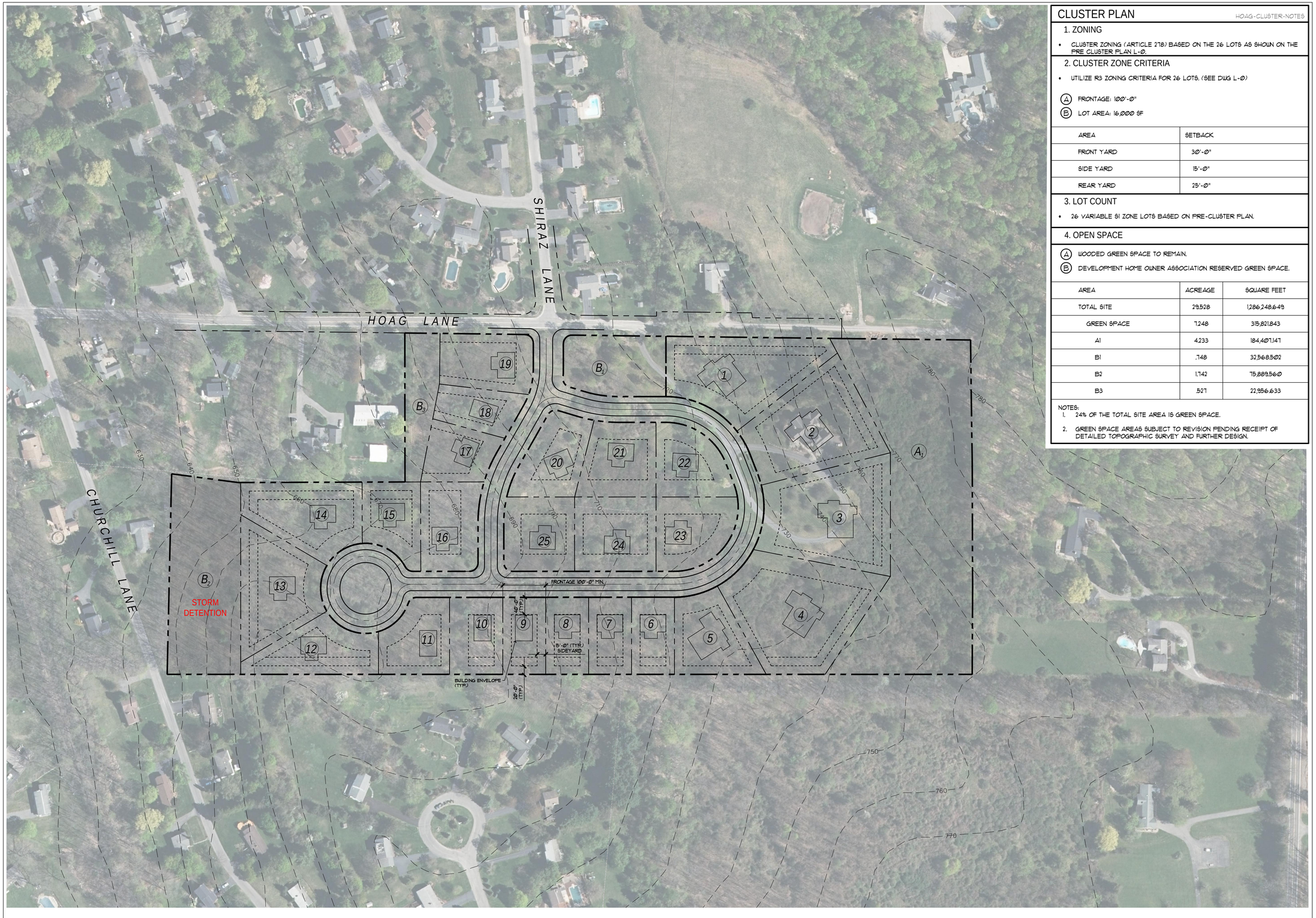
Response: A SWPPP Report has been resubmitted.

Very truly yours,

Keplinger Freeman Associates



Scott L. Freeman, R.L.A. ASLA



CLUSTER PLAN

HOAG-CLUSTER-NOTES

1. ZONING

- CLUSTER ZONING (ARTICLE 278) BASED ON THE 26 LOTS AS SHOWN ON THE PRE CLUSTER PLAN L-0.

2. CLUSTER ZONE CRITERIA

- UTILIZE R3 ZONING CRITERIA FOR 26 LOTS. (SEE DWG L-0)

(A) FRONTAGE: 100'-0"
(B) LOT AREA: 16,000 SF

AREA	SETBACK
FRONT YARD	30'-0"
SIDE YARD	15'-0"
REAR YARD	25'-0"

3. LOT COUNT

- 26 VARIABLE 91 ZONE LOTS BASED ON PRE-CLUSTER PLAN.

4. OPEN SPACE

(A) WOODED GREEN SPACE TO REMAIN.
(B) DEVELOPMENT HOME OWNER ASSOCIATION RESERVED GREEN SPACE.

AREA	ACREAGE	SQUARE FEET
TOTAL SITE	29.528	1,286,248.649
GREEN SPACE	7.248	315,821.843
A1	4.233	184,407.147
B1	.748	32,568.502
B2	1.742	75,889.560
B3	.527	22,956.633

NOTES:
1. 24% OF THE TOTAL SITE AREA IS GREEN SPACE.
2. GREEN SPACE AREAS SUBJECT TO REVISION PENDING RECEIPT OF DETAILED TOPOGRAPHIC SURVEY AND FURTHER DESIGN.

1 L-1 **CLUSTER PLAN**

0 100 200 300
SCALE IN FEET
N

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

CONSULTANTS

HOAG LANE SUBDIVISION

5290-5320 HOAG LANE
FAYETTEVILLE, NY 13066

CLIENT:

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1			
2			
3			
4			
5			
6			
7			

△- Symbol Indicates Revision Issued

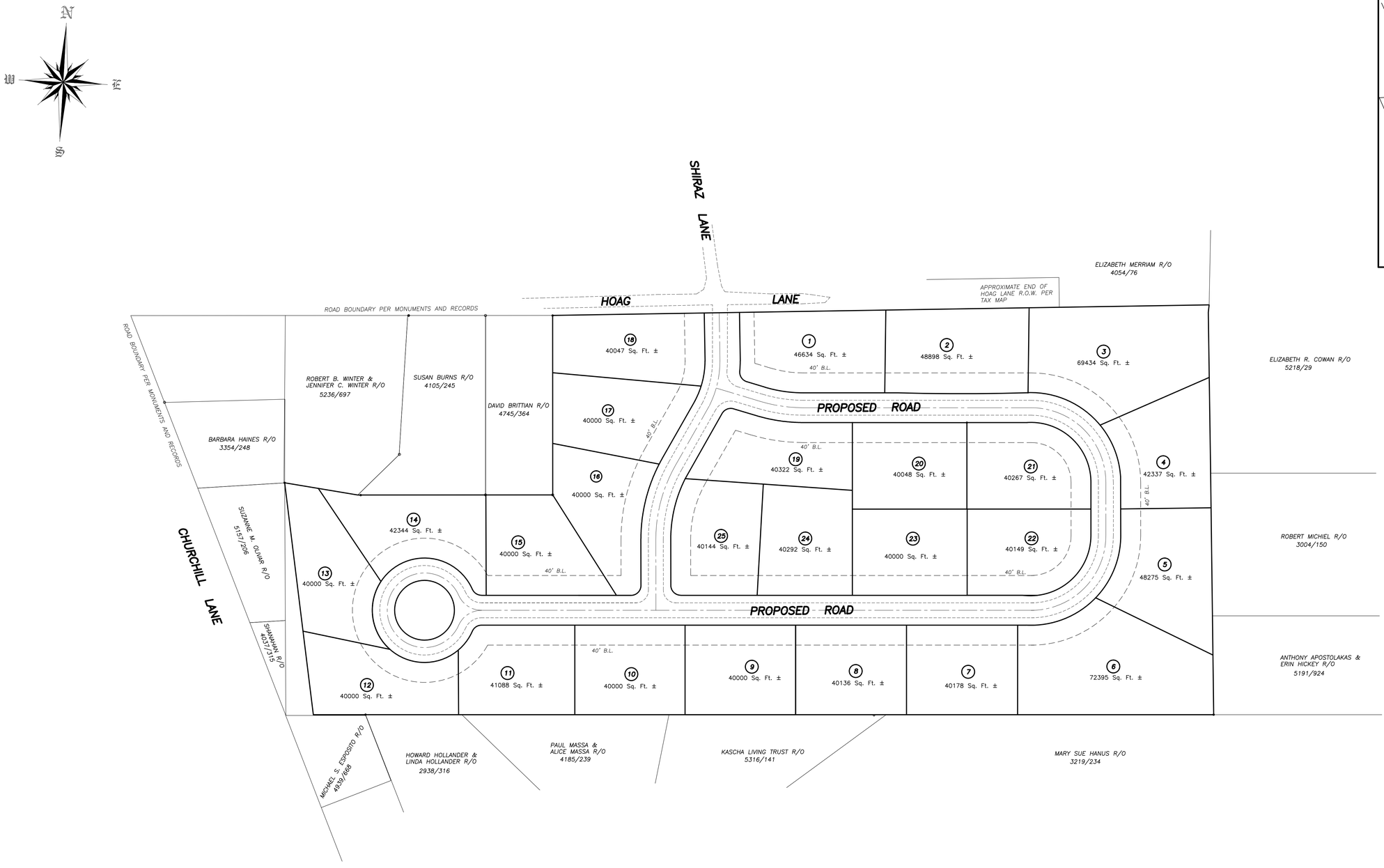
Drawn By: C.R.F.
Checked By: N.L.
Proj. No.: 37050
Date: AUGUST 15, 2017
Scale: AS NOTED

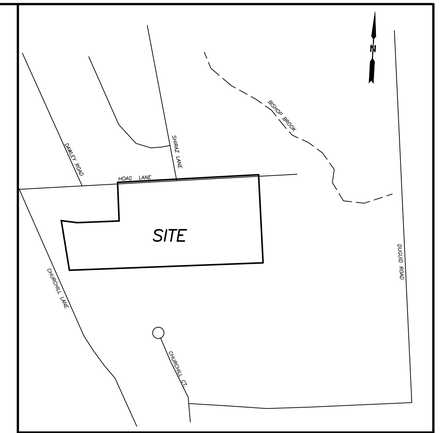
Title:

CLUSTER PLAN

L-1

Plotted By:
Date Plotted:
Drawing File:





LOCATION MAP

CURRENT ZONING:

- RESTRICTED RESIDENTIAL (RA)
- MINIMUM FRONTAGE – 150'
- MINIMUM AREA – 40,000 sf.
- MINIMUM FRONT YARD – 40'
- MINIMUM SIDE YARD – 20'
- MINIMUM REAR YARD – 40'

PLAN NOTES:

1. TOTAL 25 LOTS
2. ALL LOTS SHOWN HAVE A MINIMUM OF 150'
3. ALL LOTS SHOWN HAVE A MINIMUM OF 40,000 sf.

PLANNING NOTE:

THE PURPOSE OF THIS PLAN IS TO SHOW THE LOT DENSITY UNDER THE CURRENT ZONING OF RESTRICTED AGRICULTURAL (RA). THIS DATA WILL BE USED IN THE PLANNING OF A CLUSTER DEVELOPMENT UNDER NEW YORK STATE TOWN LAW 278 ON THIS PARCEL.

0 100 200 300

Only survey maps with the surveyor's embossed seal are genuine, true and correct copies of the surveyor's original survey map.
Unauthorized alteration or addition to a survey map bearing a licensed land surveyor's seal is a violation of sect. 7209, subsection 2, of the New York State Education Law.
The certification is limited to the persons for whom the survey map is prepared and on his behalf to the title company, governmental agency and lending institution listed herein. Certification are not transferable to additional institutions or subsequent owners.
The location of underground improvements, structures, and utilities are not covered by this certificate.

STATE OF NEW YORK FORREST L. SEGUIN 050383 LICENSED LAND SURVEYOR

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RESTRICTED AGRICULTURAL (RA) ZONING DENSITY PLAN

HOAG LANE SUBDIVISION

TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

SURVEY AND MAP PREPARED BY:
SeGUIN LAND SURVEYING, P.L.L.C.
FORREST L. SEGUIN, L.S.
6197 DYKE ROAD, CHITTENANGO, N.Y. 13037
PHONE:(315)263-1642 FAX:(315)687-0002

SCALE: 1" = 100'
DATE: 11/1/2017
PROJECT NO. 17100
TAX MAP NO.104-01-39.2
DWG. HOAG LANE SKETCH

TOWN OF MANLIUS
CLUSTER DEVELOPMENT

HOAG-CLUSTER-NOTES

1. ZONING

- CLUSTER ZONING (ARTICLE 278) BASED ON NYS SUBDIVISION REVIEW. THE 25 LOTS OF RA ZONING ARE SHOWN ON THE (RA) ZONING DENSITY PLAN FROM SeGUIN LAND SURVEYING, P.L.L.C.

2. CLUSTER ZONE CRITERIA

- UTILIZE R3 ZONING CRITERIA FOR 25 LOTS.

(A) FRONTAGE: 100'-0"
MIN: 100'-0"
AVG: 110'- 0"

(B) LOT AREA: MINIMUM 16,000 SF
MIN: 17,862.97 SF
AVG: 32,397.34 SF

AREA	SETBACK
FRONT YARD	30'-0"
SIDE YARD	15'-0"
REAR YARD	25'-0"

3. LOT COUNT

- 25 VARIABLE 51 ZONE LOTS BASED ON PRE-CLUSTER PLAN.

4. OPEN SPACE

(A) WOODED GREEN SPACE TO EAST TO REMAIN.

(B) DEVELOPMENT HOME OWNER ASSOCIATION RESERVED GREEN SPACE.

AREA	ACREAGE	SQUARE FEET
TOTAL SITE	29.528	1,286,248.649
GREEN SPACE	7.248	315,821.843
A1	4.233	184,407.147
B1	.748	32,568.502
B2	1.742	75,889.560
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1. 24% OF THE TOTAL SITE AREA IS GREEN SPACE.
2. GREEN SPACE AREAS SUBJECT TO REVISION PENDING RECEIPT OF DETAILED TOPOGRAPHIC SURVEY AND FURTHER DESIGN.

HOAG LANE

SHIRAZ LANE

ROAD 'A'

ROAD 'B'

NEIGHBORHOOD PARK

CONSERVED GREEN SPACE

CONSERVED GREEN SPACE

STORM DETENTION AREA

ROBERT B. WINTER & JENNIFER Q. WINTER R/O 5236/697 TAX #104-1-36

SUSAN BURNS R/O 4105/245 TAX #104-1-37

DAVID BRITTIAN R/O 4745/364 TAX #104-1-38

ROBERT MICHIEL R/O 3004/150 TAX #104-1-40.2

ANTHONY APOSTOLAKOS ERIN HICKEY R/O 5191/924 TAX #104-1-40

MARY SUE HANUS R/O 3219/234 TAX #104-1-41

KASCHA LIVING TRUST R/O 5316/141 LOT 41 TAX #104-1-13

PAUL MASSA & ALICE MASSA R/O 4185/239 LOT 42 TAX #104-1-14

HOWARD HOLLANDER & LINDA HOLLANDER R/O 2938/316 LOT 43 TAX #104-1-15

4319/688 MICHAEL S. ESPOSITO R/O TAX #104-1-32

HOAG LANE SUBDIVISION
HOAG LANE, MANLIUS, NEW YORK
GRAPHIC SITE PLAN | CLUSTER DEVELOPMENT

DECEMBER 1, 2017

0 50 100 160
SCALE IN FEET

KEPLINGER FREEMAN ASSOCIATES

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. INSTALL 5' WIDE GRANITE CURB ISLAND PER DETAIL 9/L-500.
4. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
5. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. BUILDER TO COORDINATE LOCATION OF GRAVITY SANITARY LATERAL VENT AND TRAP WITH GRAVITY SEWER MAIN. COORDINATION LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
6. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL.
7. LOW PRESSURE SANITARY SEWER MAIN.
8. SANITARY VENT AND TRAP. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
9. ROOF DRAINS TO DAYLIGHT TO ADJACENT LAWN AREAS AT EXISTING GRADE.
10. INSTALL JUTE MESH SWALES PER DETAIL 6/L-500.
11. INSTALL ASPHALT DRIVEWAY PER DETAIL 7/L-500.
12. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
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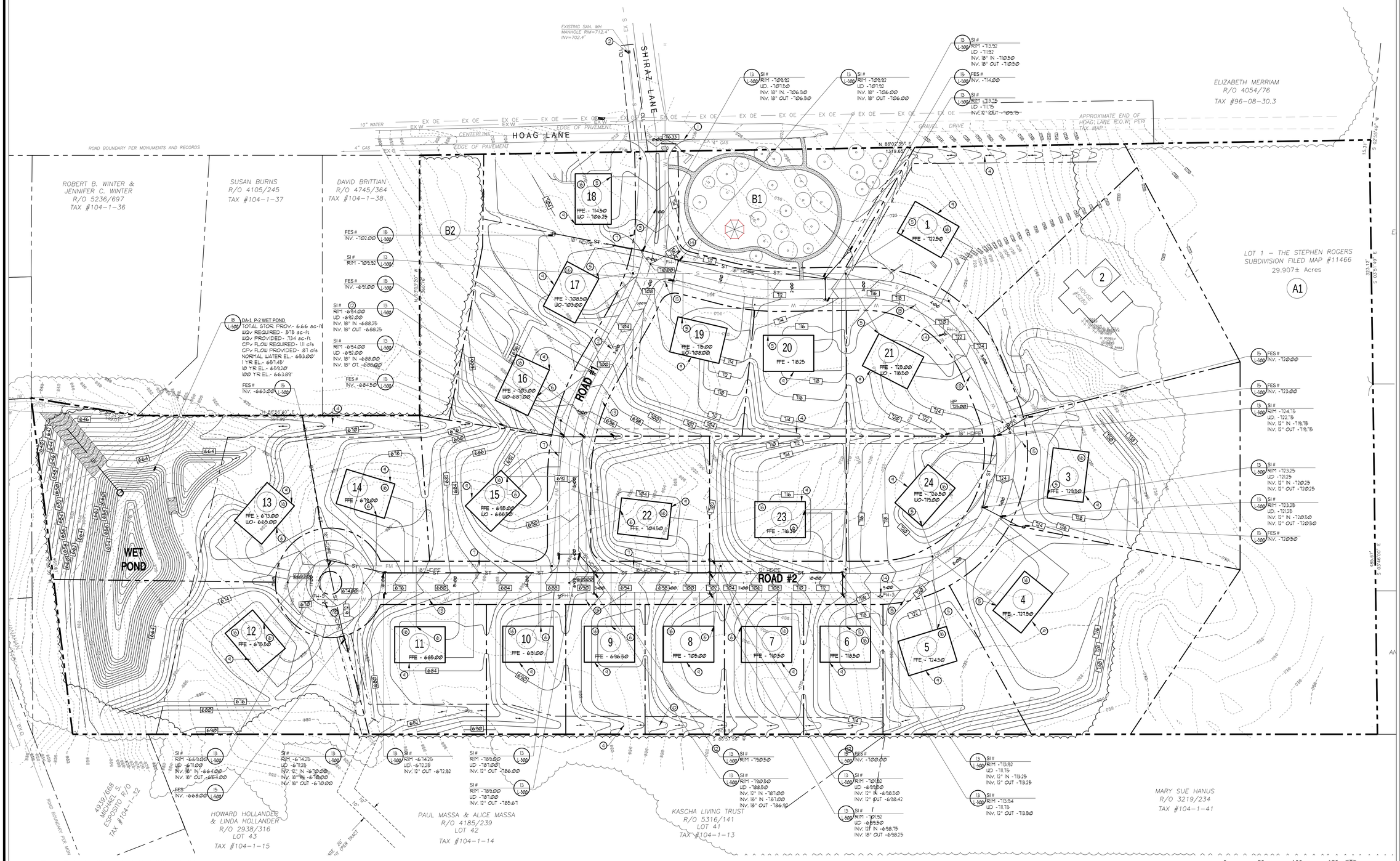
14. INSTALL FIRE HYDRANT AND VALVE.
15. INSTALL THRUST BLOCK.
16. INSTALL WATER LINE LATERAL TO HOUSE. HOME BUILDER TO COORDINATE LOCATION.



1 L-200 **GRADING AND DRAINAGE PLAN**

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EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:

ISSUED AND REVISIONS NOTIFICATION			
No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
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5			
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Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	3706D
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:

GRADING and DRAINAGE PLAN

L-200

Plotted By:
Date Plotted:
Drawing File:

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. INSTALL 5' WIDE GRANITE CURB ISLAND PER DETAIL 9/L-500.
4. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
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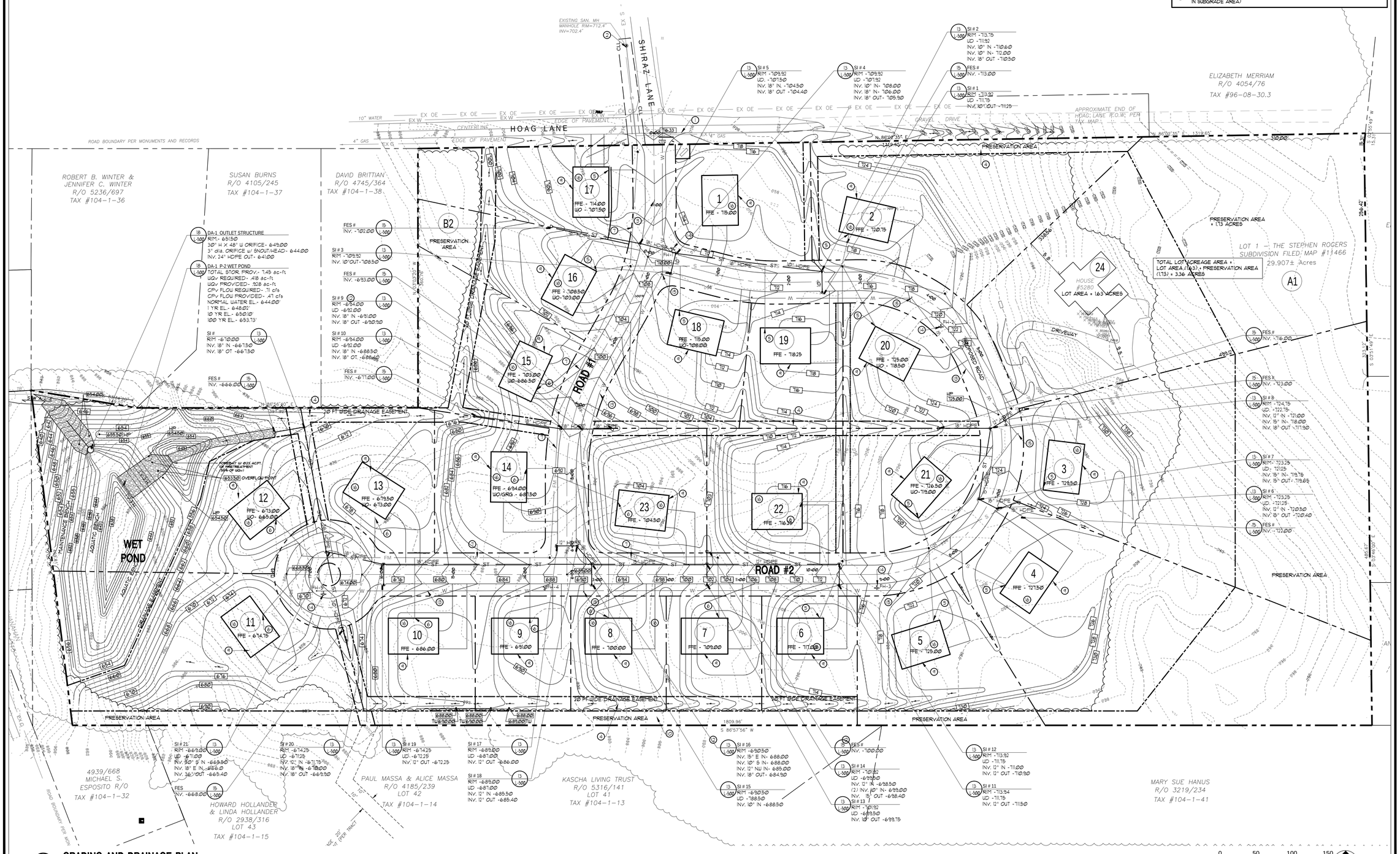
17. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)



1/L-200 **GRADING AND DRAINAGE PLAN**

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EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:

ISSUED AND REVISIONS NOTIFICATION			
No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	03/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/20/18
3	3	PUBLIC HEARING- MANLIUS	03/16/18
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7			

Drawn By: VER
Checked By: SF
KFA Proj. No.: 3170.00
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
GRADING and DRAINAGE PLAN

L-200

Plotted By:
Date Plotted:
Drawing File:

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. OMITTED
4. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
5. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. BUILDER TO COORDINATE LOCATION OF GRAVITY SANITARY LATERAL VENT AND TRAP WITH GRAVITY SEWER MAIN. COORDINATION LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-I MANUFACTURER OR APPROVED EQUAL.
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15. INSTALL THRUST BLOCK.
16. INSTALL WATER LINE LATERAL TO HOUSE. HOME BUILDER TO COORDINATE LOCATION.
17. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
18. INSTALL FOUNDATION DRAIN PER DETAIL XXX.
19. SUMP PUMP AND FOUNDATION DRAIN. DRAINS THAT DAYLIGHT SHALL REQUIRE A RODENT SCREEN.
20. TEMPORARY STOCKPILE AREA HIGH POINT SHOWN AT 791.00. FINAL FINISH GRADE OF TOPSOIL STOCKPILE AREA SHALL BE 779.00.
21. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.

HOAG LANE
SHIRAZ LANE
ROAD #1
ROAD #2
EXISTING VEGETATION
WEST CONSERVATION AREA
NORTH CONSERVATION AREA
EAST CONSERVATION AREA
SOUTH PRESERVATION AREA
SOUTH CONSERVATION AREA
WET POND
TOPSOIL STOCKPILE AREA
FILL AREA
HOUSE #5280
LOT AREA = 1.63 ACRES
DRIVEWAY
PROPOSED ROAD
GRAVEL DRIVE
APPROXIMATE END OF HOAG LANE R.O.W. PER TAX MAP
ELIZABETH MERRIMAN R/O 4054/76 TAX #96-08-30.3
LOT 1 – THE STEPHEN ROGERS SUBDIVISION FILED MAP #11466 29.907± Acres
ROBERT B. WINTER & JENNIFER C. WINTER R/O 5236/697 TAX #104-1-36
SUSAN BURNS R/O 4105/245 TAX #104-1-37
DAVID BRITTIAN R/O 4745/364 TAX #104-1-38
4939/668 MICHAEL S. ESPOSITO R/O TAX #104-1-32
HOWARD HOLLANDER & LINDA HOLLANDER R/O 2938/316 LOT 43 TAX #104-1-15
PAUL MASSA & ALICE MASSA R/O 4185/239 LOT 42 TAX #104-1-14
KASCHA LIVING TRUST R/O 5316/141 LOT 41 TAX #104-1-13
MARY SUE HANUS R/O 3219/234 TAX #104-1-41
EXISTING SAN. MH MANHOLE RIM=712.4' INV=702.4'
20 FT WIDE DRAINAGE EASEMENT
10" WATER
4" GAS
12" HDPE
15" HDPE
18" HDPE
ROAD BOUNDARY PER MONUMENTS AND RECORDS
CENTERLINE
EDGE OF PAVEMENT
EX OE
EX W
EX G
EX 12" GAS
FLOOD ROUTE
FOREBAY W 828 ACFT. OF PRETREATMENT (VOL OF WQv)
655.50 OVERFLOW POINT
12' MAINTENANCE BENCH
AQUATIC BENCH
RANGE ELEVATION
TOP OF BANK
TOE OF SLOPE
1V:4H
S 86°57'56" W 1809.96'
N 86°57'56" E 1319.65'
N 86°45'40" E 1319.65'
S 03°54'49" E 1320.42'
S 03°54'49" E 1320.42'
S 03°54'49" E 1320.42'
N 86°45'40" E 1319.65'
S 86°57'56" W 1809.96'
S 03°54'49" E 1320.42'
S 03°54'49" E 1320.42'
S 03°54'49" E 1320.42

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. OMITTED
4. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
5. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. BUILDER TO COORDINATE LOCATION OF GRAVITY SANITARY LATERAL VENT AND TRAP WITH GRAVITY SEWER MAIN. COORDINATION LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
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17. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
18. INSTALL FOUNDATION DRAIN PER DETAIL XXX.
19. SUMP PUMP AND FOUNDATION DRAIN. DRAINS THAT DAYLIGHT SHALL REQUIRE A RODENT SCREEN.
20. TEMPORARY STOCKPILE AREA HIGH POINT SHOWN AT 758.50. FINAL FINISH GRADE OF TOPSOIL STOCKPILE AREA SHALL NOT EXCEED 758.50 AND SHALL BE GRADED WITH UNIFORM SIDE SLOPES NOT EXCEEDING 1' VERTICAL TO 3' HORIZONTAL SIDE SLOPES. AREA SHALL BE SEEDED WITH WILDFLOWER SEED MIX AND (10) BARE ROOT DECIDUOUS 1.5" CAL. TREES.
21. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.

HOAG LANE

SHIRAZ LANE

ROAD #1

NORTH CONSERVATION AREA

EAST CONSERVATION AREA

WEST CONSERVATION AREA

SOUTH CONSERVATION AREA

WET POND (HOA)

TEMPORARY FILL AREA

EXISTING VEGETATION

ROBERT B. WINTER & JENNIFER C. WINTER R/O 5236/697 TAX #104-1-36

SUSAN BURNS R/O 4105/245 TAX #104-1-37

DAVID BRITTIAN R/O 4745/364 TAX #104-1-38

4939/668 MICHAEL S. ESPOSITO R/O TAX #104-1-32

HOWARD HOLLANDER & LINDA HOLLANDER R/O 2938/316 LOT 43 TAX #104-1-15

PAUL MASSA & ALICE MASSA R/O 4185/239 LOT 42 TAX #104-1-14

KASCHA LIVING TRUST R/O 5316/141 LOT 41 TAX #104-1-13

MARY SUE HANUS R/O 3219/234 TAX #104-1-41

LOT 1 - THE STEPHEN ROGERS SUBDIVISION FILED MAP #11466
29.907± Acres

TOTAL LOT ACREAGE AREA + LOT AREA (19.3) + PRESERVATION AREA (1.73) + 3.36 ACRES

HOUSE #5280
LOT AREA = 1.63 ACRES

1 CLUSTER GRADING AND DRAINAGE PLAN - 21 LOTS
L-200

SCALE IN FEET 0 50 100 150

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:

ISSUED AND REVISIONS NOTIFICATION			
No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7			

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 3705.0
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:

CLUSTER GRADING and DRAINAGE PLAN- 21 LOTS

L-200

Posted By:
Date Posted:
Drawing File:

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

X:\HOAG\ZONING-REVISED

1. ZONING

- TAX MAP #104.-01-39.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE §278). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY SEGUIN LAND SURVEYING, P.L.L.C. AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KFA.
  HTTPS://WWW.DOS.NY.GOV/LG/PUBLICATIONS/SUBDIVISION%20REVIEW%20NY%20PDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 23 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R) FRONTAGE: 150'-0" MIN: 150'-0"
LOT AREA: MINIMUM 40,000 SF

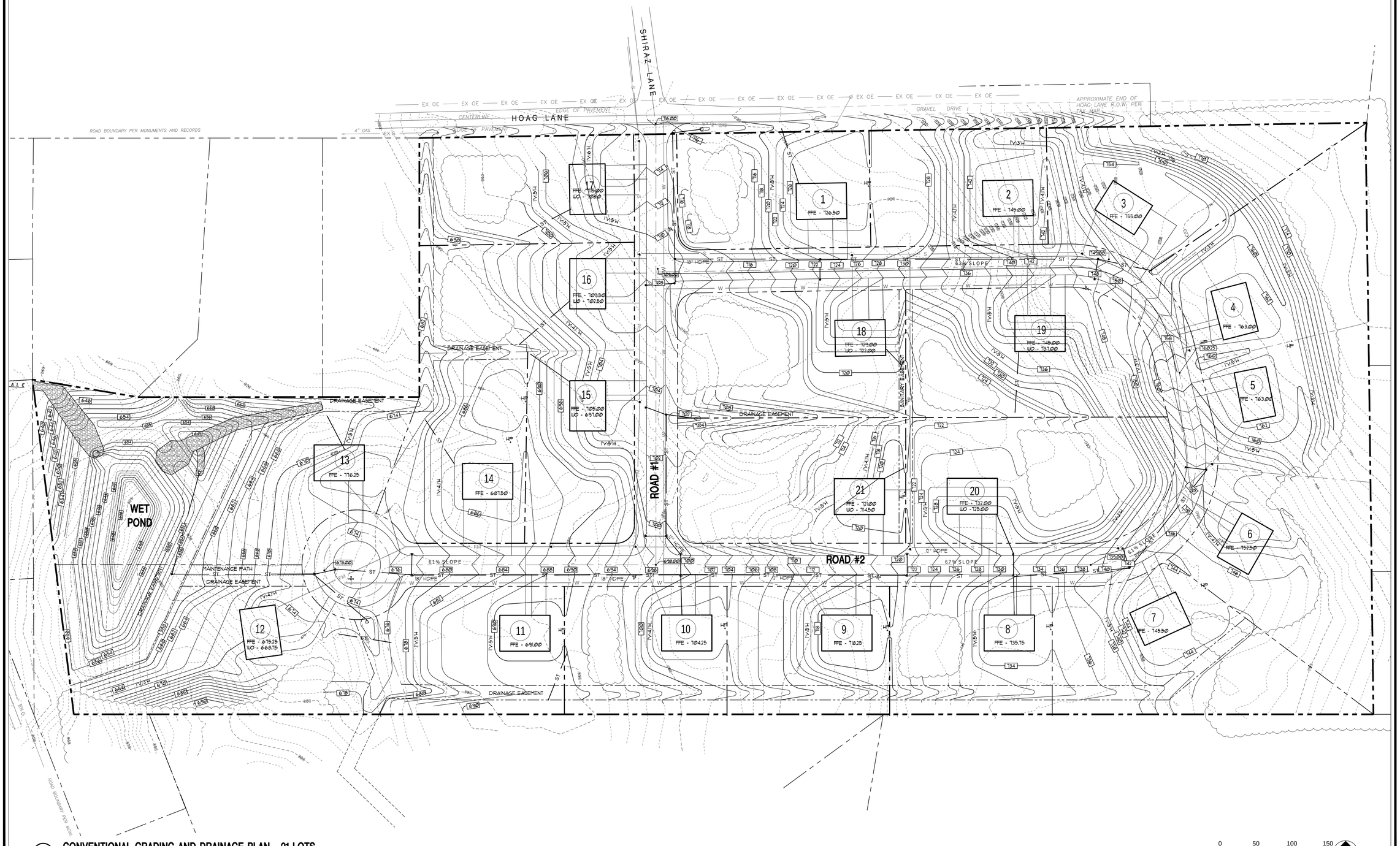
(R2) FRONTAGE: 100'-0" MIN: 100'-0" AVG: 170'+ -0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

- CONSERVATION AREA- EXISTING VEGETATION TO REMAIN. NO GRADING, OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH PRESERVATION AREA. REFER TO AREAS A,B,C, AND D BELOW.

CONSERVATION AREAS		ACREAGE	SQUARE FEET
TOTAL SITE		29.90	1,302,765.28
TOTAL CONSERVATION AREA		7.50	326,700.00
(A)	EAST CONSERVATION AREA	3.92	170,869.81
(B)	SOUTH CONSERVATION AREA	.61	26,440.30
(C)	WEST CONSERVATION AREA	2.43	106,007.61
(D)	NORTH CONSERVATION AREA	.54	23,351.29

NOTES:
1. 25.08% OF THE TOTAL SITE AREA IS CONSERVATION AREA IN THE CLUSTER SITE PLAN 10/23/2018.



1 L-202 CONVENTIONAL GRADING AND DRAINAGE PLAN - 21 LOTS

KEPLINGER FREEMAN ASSOCIATES
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HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:

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7			

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	370580
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
CONVENTIONAL GRADING AND DRAINAGE PLAN - 21 LOTS

L-202

Plotted By:
Date Plotted:
Drawing File:

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. OMITTED
4. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
5. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. BUILDER TO COORDINATE LOCATION OF GRAVITY SANITARY LATERAL VENT AND TRAP WITH GRAVITY SEWER MAIN. COORDINATION LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
6. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL.
7. LOW PRESSURE SANITARY SEWER MAIN.
8. SANITARY VENT AND TRAP. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
9. ROOF DRAINS TO DAYLIGHT TO ADJACENT LAWN AREAS AT EXISTING GRADE.
10. INSTALL JUTE MESH SWALES PER DETAIL 6/L-500.
11. INSTALL ASPHALT DRIVEWAY PER DETAIL 7/L-500.
12. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
13. INSTALL WATER LINE PENDING OCWA REVIEW AND DESIGN.
14. INSTALL FIRE HYDRANT AND VALVE.
15. INSTALL THRUST BLOCK.
16. INSTALL WATER LINE LATERAL TO HOUSE. HOME BUILDER TO COORDINATE LOCATION.
17. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
18. INSTALL FOUNDATION DRAIN PER DETAIL XXX.
19. SUMP PUMP AND FOUNDATION DRAIN. DRAINS THAT DAYLIGHT SHALL REQUIRE A RODENT SCREEN.
20. TEMPORARY STOCKPILE AREA HIGH POINT SHOWN AT 758.50. FINAL FINISH GRADE OF TOPSOIL STOCKPILE AREA SHALL NOT EXCEED 758.50 AND SHALL BE GRADED WITH UNIFORM SIDE SLOPES NOT EXCEEDING 1' VERTICAL TO 3' HORIZONTAL SIDE SLOPES. AREA SHALL BE SEEDED WITH WILDFLOWER SEED MIX AND (10) BARE ROOT DECIDUOUS 1.5" CAL. TREES.
21. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.

ROAD BOUNDARY PER MONUMENTS AND RECORDS

ROBERT B. WINTER & JENNIFER C. WINTER R/O 5236/697 TAX #104-1-36

SUSAN BURNS R/O 4105/245

DAVID BRITTIAN R/O 4745/364 TAX #104-1-38

EXISTING VEGETATION

EXISTING SAN. MH MANHOLE RIM=712.4' INV=702.4'

10" WATER

4" GAS

EDGE OF PAVEMENT

CENTERLINE

ROAD #1

WATER PIT TEST

FES # INV. -113.00

SI # 5 RIM -109.00 UD. -107.50 INV. 18" IN. -104.50 INV. 18" OUT -104.40

SI # 4 RIM -110.92 UD. -107.92 INV. 10" IN- 108.00 INV. 18" IN- 106.00 INV. 18" OUT- 105.90

SI # 2 RIM -116.25 UD. -111.92 INV. 10" IN -110.60 INV. 10" IN- 112.00 INV. 18" OUT -110.50

SI # 1 RIM -116.25 UD. -111.75 INV. 10" OUT -111.25

APPROXIMATE END OF HOAG LANE PER TAX MAP

GRAVEL DRIVE

TOTAL LOT ACREAGE AREA + LOT AREA (19.3) + PRESERVATION AREA (1.13) = 3.36 ACRES

HOUSE #5280

DRIVEWAY

FILL AREA

SI # 3 RIM -107.92 INV. 10" OUT-108.50

FES # INV. -685.00

SI # 9 RIM -693.00 UD -692.00 INV. 15" IN -691.00 INV. 15" OUT -690.90

SI # 10 RIM -690.50 UD -689.00 INV. 18" IN -688.50 INV. 18" OT -688.40

FES # INV. -676.00

FES # INV. -

DA-1 OUTLET STRUCTURE OPEN RIM - 675.00 12" H x 72" W ORIFICE- 673.00 2.8" DIA. ORIFICE w/ SNOUT/HEAD- 671.00 INV. 24" HDPE OUT- 671.00

DA-1-P-2 WET POND TOTAL STOR. PROV.= 2.733 ac-ft WQv REQUIRED- .417 ac-ft WQv PROVIDED=.801 ac-ft CPv FLOW REQUIRED- 38 cfs CPv FLOW PROVIDED- 74 cfs NORMAL WATER EL.- 671.00' 1 YR EL.- 672.93 10 YR EL.- 673.57 100 YR Elev 675.10'

WET POND (HOA)

OVERFLOW POINT 675.15

OVERFLOW POINT 676.00

FOREBAY W - ACPT. OR PRETREATMENT 4% OF WQv

SI # 17 RIM -689.15 UD -687.00 INV. 12" OUT -686.00

SI # 18 RIM -689.15 UD -687.00 INV. 12" IN -685.50 INV. 12" OUT -685.40

SI # 14 RIM -691.00 UD -693.50 INV. 12" IN -688.50 (1) INV. 10" IN- 693.00 INV. 15" OUT -688.40

SI # 13 RIM -691.00 UD -693.50 INV. 10" OUT -693.75

SI # 12 RIM -111.92 UD -111.75 INV. 12" IN -111.00 INV. 12" OUT -110.90

SI # 11 RIM -111.92 UD -111.75 INV. 12" OUT -111.50

ROCK CHECK DAM (TYP.)

FES # INV. -716.00

SI # 8 RIM -725.75 UD. -721.75 INV. 12" IN -721.00 INV. 15" IN- 718.00 INV. 18" OUT -717.90

SI # 7 RIM -725.00 UD. -721.25 INV. 15" IN- 719.75 INV. 15" OUT- 719.65

1 FFE - 719.75
2 FFE - 726.00
3 FFE - 731.00
4 FFE - 731.00
5 FFE - 731.00
6 FFE - 729.25
7 FFE - 720.00
8 FFE - 714.00 WO- 707.50
9 FFE - 707.50
10 FFE - 699.00 WO- 691.50
11 FFE - 692.00 WO 685.50
12 FFE - 695.00 WO- 686.00
13 FFE - 709.00 WO- 701.50
14 FFE - 714.00 WO - 707.50
15 FFE - 713.00 WO - 708.50
16 FFE - 717.00 WO- 711.50
17 FFE - 724.25
18 FFE - 724.50
19 FFE - 715.00
20 FFE - 703.00 WO - 696.50

49.39/668 MICHAEL S. ESPOSITO R/O TAX #104-1-32

HOWARD HOLLANDER & LINDA HOLLANDER R/O 2938/316 LOT 43 TAX #104-1-15

PAUL MASSA & ALICE MASSA R/O 4185/239 LOT 42 TAX #104-1-14

KASCHA LIVING TRUST R/O 5316/141 LOT 41 TAX #104-1-13

MARY SUE HANUS R/O 3219/234 TAX #104-1-41

1809.96' S 86°57'56" W

1 L-200 GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS

0 50 100 150 SCALE IN FEET

N

Plotted By:

Date Plotted:

Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
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HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:

ISSUED AND REVISIONS NOTIFICATION			
No.	Rev.	Description	Date
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/20/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:

CLUSTER GRADING and DRAINAGE PLAN- 21 LOTS

L-200

STORM STRUCTURE SCHEDULE

X-HOAG-STORM-CHART

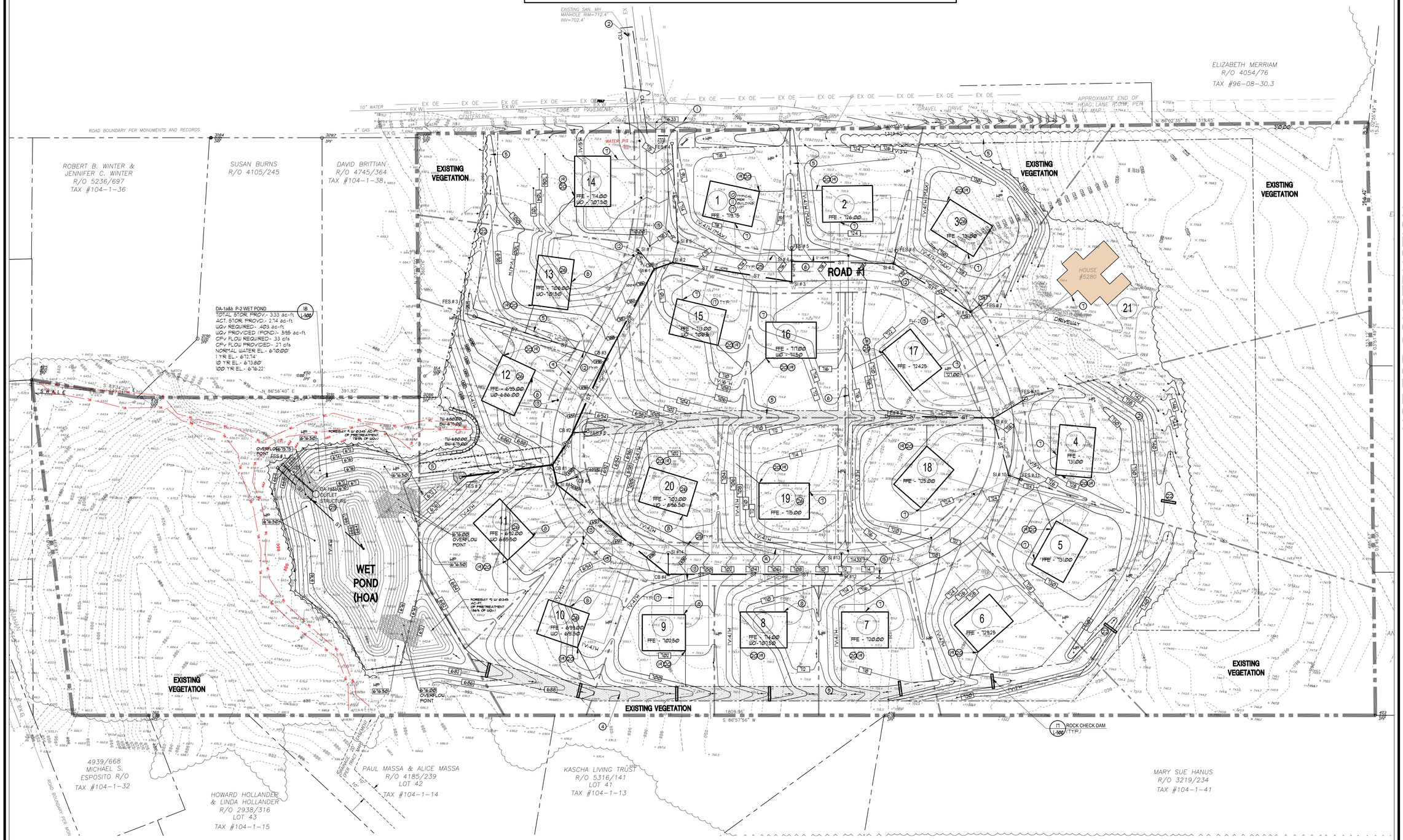
STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES # 1	FLARED END SECTION [2]	N/A	-	664.00
DA-1A4B	10' DIA. OUTLET STRUCTURE [1]	675.25	REFER TO DETAIL FOR ORIFICE INFORMATION	665.50
FES # 2	FLARED END SECTION [2]	N/A	-	676.00
CB # 1	CATCH BASIN - 6'-0" [3]	691.20	(NE)-24"- 679.50 (SE)-18"- 681.00 UD- 689.20	679.00
CB # 2	CATCH BASIN - 4'-0" [3]	693.00	(NE)-24"- 680.75 (E)-15"- 688.50 UD- 691.00	680.00
CB # 3	CATCH BASIN - 4'-0" [3]	698.25	(W)-12"- 689.00 (NE)-18"- 695.00 UD- 691.00	689.00
SI # 1	STORM INLET [4]	701.92	(NW)-10"- 700.10 (NE)-18"- 701.00	700.00
SI # 2	STORM INLET [4]	710.75	(N)-12"- 706.75 (E)-18"- 706.00	704.00
SI # 3	STORM INLET [4]	716.50	(N)-15"- 711.50 UD- 714.50	710.00
SI # 4	STORM INLET [4]	716.50	(N)-12"- 713.50 (E)-12"- 713.50 UD- 714.50	712.00
SI # 5	STORM INLET [4]	721.00	(N)-12"- 719.00 (SE)-12"- 718.50 UD- 719.00	717.00
SI # 6	STORM INLET [4]	725.75	(NE)-12"- 723.10 UD- 723.75	723.00
FES # 7	FLARED END SECTION [2]	N/A	-	725.00
FES # 3	FLARED END SECTION [2]	N/A	-	690.00

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
SI # 7	STORM INLET [4]	708.00	UD- 706.00	701.00
SI # 8	STORM INLET [4]	710.92	(N)-10"- 708.00 UD- 708.91	707.50
FES # 4	FLARED END SECTION [2]	N/A	-	713.00
FES # 5	FLARED END SECTION [2]	N/A	-	718.00
FES # 6	FLARED END SECTION [2]	N/A	-	721.00
FES # 8	FLARED END SECTION [2]	N/A	-	689.00
FES # 9	FLARED END SECTION [2]	N/A	-	716.00
SI # 9	STORM INLET [4]	726.10	(NE)-12"- 721.00 (S)-12"- 720.00 UD- 724.10	717.90
SI # 10	STORM INLET [4]	724.65	(SE)-12"- 722.50 UD- 722.65	722.40
FES # 11	FLARED END SECTION [2]	N/A	-	723.00
FES # 10	FLARED END SECTION [2]	N/A	-	724.00
SI # 11	STORM INLET [4]	688.50	(E)-10"- 685.50 (SE)-18"- 685.50 UD- 681.50	681.00
CB # 4	CATCH BASIN - 4'-0" [3]	696.90	(N)-10"- 693.75 (E)-12"- 693.75 UD- 694.90	692.75
SI # 12	STORM INLET [4]	711.40	(N)-12"- 709.00 UD- 709.40	708.50
SI # 13	STORM INLET [4]	711.40	UD- 709.40	709.40
CB # 5	CATCH BASIN - 4'-0" [3]	693.50	UD- 681.50	686.00
SI # 14	STORM INLET [4]	696.90	UD- 694.90	694.90

NOTES:
1. INSTALL OUTLET STRUCTURE PER DETAIL 2@/L-500.
2. INSTALL FLARED END SECTION PER DETAIL 15/L-500.
3. INSTALL STORM INLET PER DETAIL 13/L-500.
4. INSTALL CATCH BASIN PER DETAIL 11/L-500.
5. INSTALL STORM PIPING TRENCH DETAIL PER DETAIL 12/L-500 & 3/L-503 IN FILL AREAS

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL.) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.) ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. ROOF DRAINS TO DAYLIGHT TO ADJACENT LAWN AREAS AT EXISTING GRADE.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501, FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES. (4 HYDRANTS)
16. PROVIDE MINIMUM 1' VERTICAL : 4.1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
19. INSTALL FOUNDATION DRAIN PER DETAIL 10/L-501.
20. SUMP PUMP FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND SUM PUMP PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
21. AREA SHALL BE SEEDED WITH WILDFLOWER SEED MIX AND (10) BARE ROOT DECIDUOUS 15" CAL. TREES.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. PROPOSED 12" POND DRAIN WITH INLET PROTECTION AND ANTI-SEEP COLLARS AS NECESSARY. PROPOSED AGRIDRAIN IN-LINE WATER LEVEL CONTROL STRUCTURE OR APPROVED EQUAL.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-101 THRU L-105 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.



1/L-200 GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS

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STATE OF NEW YORK — ROBERT L. ZOSS — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

NOT FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
6	6	TOWN REV.- 21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL. BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001417 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CLUSTER GRADING and DRAINAGE PLAN- 21 LOTS

L-200

Plotted By:
Date Plotted:
Drawing File:

STORM STRUCTURE SCHEDULE

X-HOAG-STORM-CHART

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES # 1	FLARED END SECTION [2]	N/A	-	24"-665.00
DA-1A&B	10' DIA. OUTLET STRUCTURE [1]	675.45	REFER TO DETAIL FOR ORIFICE INFORMATION	665.20
FES # 2	FLARED END SECTION [2]	N/A	-	(E)-24"-676.00
CB # 1	CATCH BASIN - 6'-0" [3]	691.72	(NE)-24"-684.50 (S)-24"- 685.00 UD- 689.20	(W)-24"-684.50
CB # 2	CATCH BASIN - 4'-0" [3]	692.75	(NE)-24"-688.75 (E)-15"-688.50 UD- 691.00	(SW)-24"-687.50
CB # 3	CATCH BASIN - 4'-0" [3]	697.72	(W)-12"-690.90 (NE)-18"-694.00 UD- 696.25	(SW)-24"-690.80
SI # 1	STORM INLET [4]	707.75	(NW)-12"-702.10 (NE)-18"-702.10	(S)-18"-700.00
SI # 2	STORM INLET [4]	710.75	(N)-12"-706.75 (E)-18"-707.25	(SW)-18"-706.00
SI # 3	STORM INLET [4]	715.90	(N)-15"-711.50 UD-714.50	(W)-18"-711.25
SI # 4	STORM INLET [4]	716.05	(N)-12"-713.50 (E)-12"-713.50 UD- 714.50	(S)-15"-712.00
SI # 5	STORM INLET [4]	721.50	(N)-12"-718.00 (SE)-12"-718.50 UD- 718.00	(W)-12"-717.00
SI # 6	STORM INLET [4]	725.75	(NE)-12"-722.10 UD- 722.75	(NW)-12"-722.00
FES # 7	FLARED END SECTION [2]	N/A	-	12"-725.00
FES # 3	FLARED END SECTION [2]	N/A	12" - 691.50	-
FES # 12	FLARED END SECTION [2]	N/A	12" - 704.00	-

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
SI # 7	STORM INLET [4]	709.75	UD-707.00 12"-703.20	(SE)-12"-703.10
SI # 8	STORM INLET [4]	710.55	(N)-10"-708.00 UD-708.91	(S)-12"-707.50
FES # 4	FLARED END SECTION [2]	N/A	10"-713.00	-
FES # 5	FLARED END SECTION [2]	N/A	12"-715.00	-
FES # 6	FLARED END SECTION [2]	N/A	12"-721.00	-
FES # 8	FLARED END SECTION [2]	N/A	-	15"-689.00
FES # 9	FLARED END SECTION [2]	N/A	-	15"-718.00
SI # 9	STORM INLET [4]	726.10	(NE)-12"-720.00 (S)-12"-720.00 UD- 724.10	(W)-15"-719.50
SI # 10	STORM INLET [4]	724.65	(SE)-12"-721.65 UD-721.65	(N)-12"-721.50
FES # 11	FLARED END SECTION [2]	N/A	12" - 722.00	
FES # 10	FLARED END SECTION [2]	N/A	12"- 722.00	-
CB # 5	CATCH BASIN - 4'-0" [3]	691.42	(E)-10"-685.50 (SE)-18"-685.50 UD- 687.50	(N)-24"-685.25
CB # 4	CATCH BASIN - 4'-0" [3]	696.72	(S)-10-"-693.75 (E)-12"-693.75 UD- 694.90	(NW)-18"-693.25
SI # 12	STORM INLET [4]	711.75	(S)-12"-708.25 UD-708.25	(W)-12"-708.00
SI # 13	STORM INLET [4]	711.75	UD-709.40	(N)-12"-708.50
SI # 11	STORM INLET [4]	691.42	UD-687.50	(W)-10"-686.00
SI # 14	STORM INLET [4]	696.72	UD-694.90	(N)-10"-693.90
SI # 15	STORM INLET [4]	697.72	(W) - 691.05 UD-696.00	(E)-12"-691.00
FES # 11	FLARED END SECTION [2]	N/A	24"- 665.00	-

NOTES:
1. INSTALL OUTLET STRUCTURE PER DETAIL 20/L-500.
2. INSTALL FLARED END SECTION PER DETAIL 15/L-500.
3. INSTALL STORM INLET PER DETAIL 13/L-500.
4. INSTALL CATCH BASIN PER DETAIL 11/L-500.
5. INSTALL STORM PIPING TRENCH DETAIL PER DETAIL 12/L-500 & 3/L-503 IN FILL AREAS

GENERAL BUILDING LOT NOTES

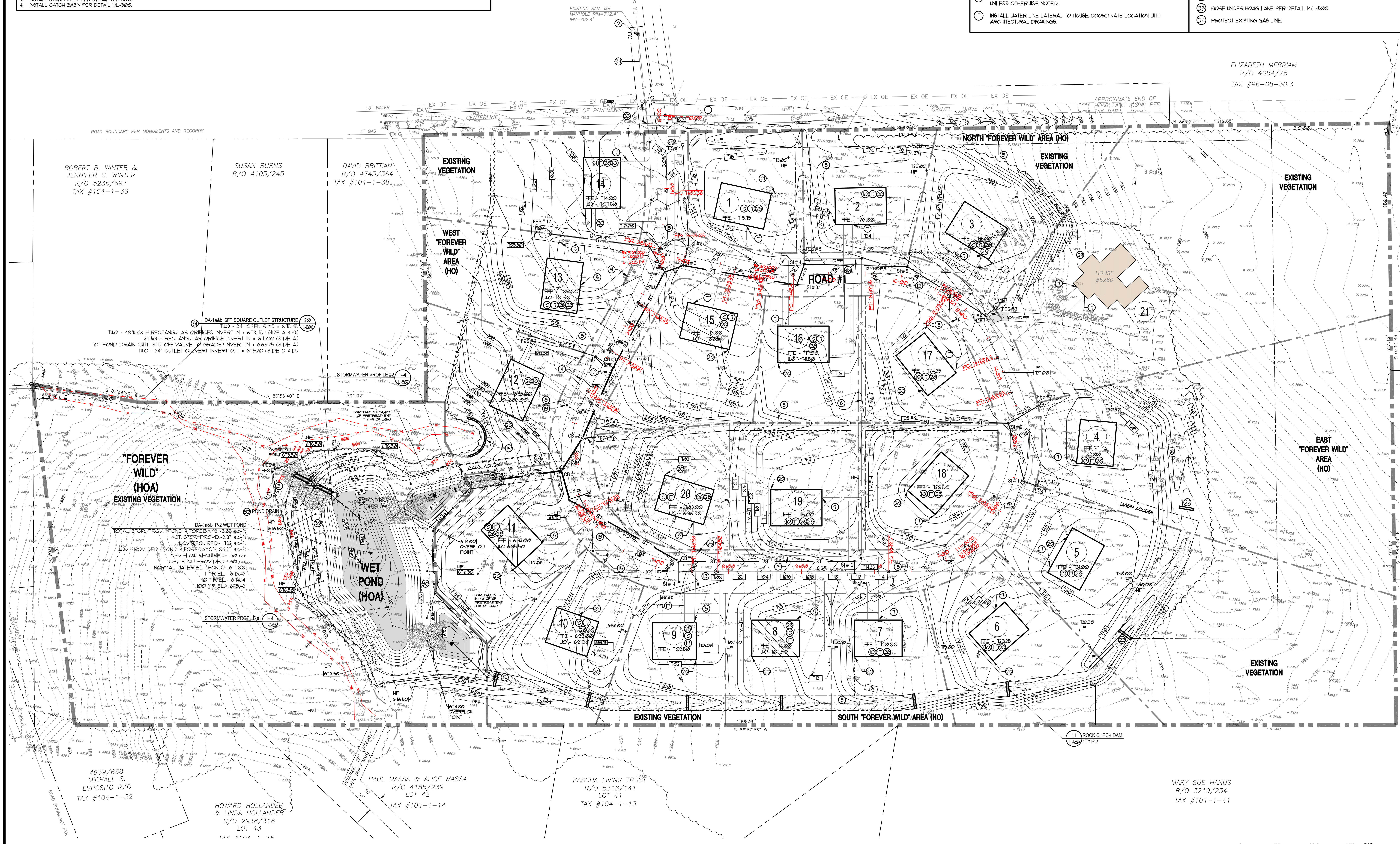
SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (1/4" PER FT.). ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS & PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501. FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS). REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4.1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT. RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 20/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-102 THRU L-108 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT. (16)
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE SOIL.
30. MAINTENANCE ACCESS. NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" WDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 1'V:8'H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 L-200 **GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS**

Friday, August 7, 2020 3:51:48 PM

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK RUDY L. ZONA 079543 LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

△ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20
15	15	NOTE REMOVAL (NOTE 10)	07/30/20
16	16	MANLIUS- PLAN SUBMISSION	08/07/20
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001473 STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CLUSTER GRADING and DRAINAGE PLAN- 21 LOTS

L-200

Plotted By:
Date Plotted:
Drawing File:

TOWN OF MANLIUS
PLANNING BOARD MINUTES
September 25, 2017 **APPROVED**

The Town of Manlius Planning Board met in the Town Hall at 7:00 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Don Crossett, Walt Neuhauser and Mike LeRoy. Also present was Planning Board Attorney Timothy Frateschi and Town Engineer Douglas Miller.

Also Present: Mike & Ellen McGrew, Raymond & Cynthia Mann, Frank Rydelek?, Robert B. Winter, Scott Freeman, Brad Jacoler?, Tom Douglas, Mary Currell, Cathy Kousmanidis, Sue Oliver, Maureen Clark, Ron & Carol Ramsden, Chuck White, Sue & Doug Burns, Francis McBride, W, Wilson, Karen McDonald, Amy Straud Dunlavey, Betty?, Francis Straub, Danielle Conway, Sean Egan, Donna?, Maria Aliliando, Jeannette?, Mark?, Steven Blatt, Walter & Elizabeth?, Marlene?, Eileen & John Krell, Howard Hollander.

The Pledge of Allegiance was recited.

Minutes
Attorney Frateschi stated that he spoke with the Attorney for the 2-Lot Subdivision (Mr. Camperlino's property) who provided him with the deed that incorporates everything that the Planning Board has requested.

Member Kelly made a motion seconded by Member Neuhauser and carried unanimously to approve the minutes of September 11, 2017.

Raymond Mann – 609 Oneida St., Chittenango, NY 13037
Public Hearing – Division of Land – Pierson Rd., Fayetteville, 13066
Tax Map # 082.-01-35.1
Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Frateschi reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Kelly made a motion, seconded by Member Crossett and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to waive the reading of the Public Hearing notice.

Member Neuhauser made a motion seconded by Member LeRoy and carried unanimously to open the Public Hearing at 7:05pm.

With there being no comments from the public, Member Kelly made a motion seconded

by Member Crossett and carried unanimously to close the Public Hearing at 7:06pm.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to approve the Preliminary Subdivision Map; prepared by SeGuin Land Surveying, P.L.L.C.; Mann Family Farm Subdivision; dated August 31, 2017; Project # 16199A.

Member Gilbert made a motion seconded by Member Neuhauser and carried unanimously to waive the Public Hearing for the Final Subdivision map.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to approve the Final Subdivision Map with the map being re-dated for tonight's meeting.

Hoag Road Development, 201 Solar Street, Syracuse, New York 13204
Site Plan – 25- Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Chairman Lupia explained to the audience that the Board has just received this application and that it is in its very early stages. He informed them that tonight is not a Public Hearing and that there would be one in the future if the application progresses.

Scott Freeman spoke on behalf of the Developer, Tom Douglas. Mr. Freeman stated that this is the very beginning of this project. He said that the existing parcel is approximately 30 acres currently Zoned RA with 1 residence on it. Per Town Code they can subdivide and work within the RA Zoning code. The application is proposing 25 lots based on a 40,000 square feet or greater lot size with the average being a little over 40,000 square feet. One lot will be for the existing residence the other 24 will be new lots.

Mr. Freeman stated that the applicant is requesting a cluster development of the 25 lots. To the greatest extent possible, the applicant is planning on leaving the trees as an extension of the neighborhood. They will leave the buffer in the back.

Mr. Freeman said that the 3 main issues are providing sanitary sewer, water and stormwater retention. He doesn't have all the answers now, but will soon. They will work with OCWA. They may have to put in a pump system for the water. They will provide a SWPPP. The lot size is based on having public sewer for the development.

Chairman Lupia asked Town Engineer Miller if he had had a chance to go over the calculations on the project yet. Engineer Miller said that he has met with the applicant on a couple occasions and they haven't gotten into the details yet.

Attorney Frateschi explained under conventional zoning the applicant has to show this Board and the Engineer, through a Surveyor, how many lots he can get on the site, meaning 40,000 square foot lots with 100 feet of road frontage. So, he has presented a plan that shows he can get 25 conventional lots in 25 acres. He has also come up with a cluster plan based on the R3 zone which is a small lot zoning. A Surveyor will then have to prove to this Board and the Engineer that he can actually get 25 buildable lots on this 25-acre parcel.

Next would be the details of the Storm Water Pollution Prevention Plan. How will the water be retained on the site? Then they will have to provide proof of no flora or fauna or endangered species on the property. Traffic and drainage will also be addressed. All of this will go into the SEQRA review the Planning Board will undertake.

Both Chairman Lupia and Attorney Frateschi advised the audience that this is not a public hearing and that they are more than welcome to submit any comments in writing to the Board.

Other Business

With there being no further business, Member Gilbert made a motion, seconded by Member Crossett and carried unanimously to adjourn the Regular Meeting at 7:38pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
December 11, 2017 **APPROVED**

The Town of Manlius Planning Board met in the Town Hall at 7:00 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Don Crossett, Walt Neuhauser and Mike LeRoy. Also present was Planning Board Attorney Timothy Frateschi and Town Engineer Doug Miller.

Also, Present: Mike & Ellen McGrew, Paul Curtin, John & Stella Penizotto, Sue Oliver, Bob Abbott, Nick Saturno, Chuck White, Eileen Krell, Chelsea Fuller, Rob Winter, David Britton, Rodney Thomas, Cathy Kousmanidis, Bill Camperlino, Kathleen & Sean Egan, Jackie Ayres, Phil Britton, Rudy Zona

The Pledge of Allegiance was recited.

Minutes
Member Kelly made a motion seconded by Member Neuhauser and carried unanimously to approve the minutes of October 23, 2017. Member Gilbert abstained.

Shining Stars Daycare Center, 4595 Enders Road, Manlius, NY 13104
Amended Site Plan – Shining Stars Daycare, 4595 Enders Rd. Manlius, NY 13104
Tax Map # 114.-01-31.0
Attorney Paul Curtin stated that they would like the former day care building on Lot 1 to remain as is. There is some interest in leasing the former day care building and they want to pursue this possibility Until there is a use acceptable to the Board, it will remain vacant.

Greg Sgromo, Engineer, explained that the Site Plan in front of the Board shows the existing structure as it is today, the potential configuration of the parking lot, drainage and future access to the property. The parking lot is in a different position than the original lot and it meets code. Drainage is shown along the sides and front of the building which is consistent with the DEC regulations. The drainage has not been fully designed, but they took in the parameters in account as the previous site. The purpose of showing this Site Plan is not for approval but to show the Board that it is possible to meet all Code requirements if the former day care building is not demolished.

Mr. Curtin stated that there will be no use of the property until the Planning Board has gotten a full look at the Site Plan. Mr. Curtin also stated that the existing house on Lot 1 will be demolished, as the Planning Board's resolution requires, within the next several weeks.

Chairman Lupia said that the Board's previous resolutions relating to the new day care site plan and subdivision approvals required both the house and the former day care building to be demolished. That's why a SWPPP wasn't done for Lot 1. Doesn't the SWPPP for the new day care have to be updated to take into account the impervious ground from the former day care center and the parking lot?

Member Kelly said that she is not in favor of the new plan to keep the building up. She

said demolition was a condition of the new day care site plan and subdivision and the building is an eyesore and it is unattractive.

Member Neuhauser is concerned about the vacancy of the former day care building. The Board doesn't know how long this building will stay vacant and that is a big concern.

Chairman Lupia asked if there is/was a problem with the roof of the former day care building because there was a tarp over it at one point. Mr. Penizotto said that the roof problem has been fixed.

Mr. Penizotto said that they aren't going to let the building deteriorate. They have to be able to walk potential buyers/leasers through it and they will be keeping the heat on, so the pipes don't freeze this winter.

Member Crossett asked how strong is the interest in the building? Mr. Curtin said strong enough to be in front of you this evening. The interest is of for professional office space.

Member Crossett asked about what kind of interest they had in renting the gym? Mr. Penizotto said good interest, the F-M school district is using it. Member Crossett also asked if he there has been enough interest to attract business to have people come and watch these people do there thing? Mr. Penizotto said absolutely not. Member Crossett asked if he anticipated that? Mr. Penizotto said that is not what it was designed for. Member Crossett said that the ad in the paper is pretty broad, looking for tenants to come and use the gym. Member Crossett said it seems we are getting into a lot of different uses for this property.

Member Neuhauser again stated that he is uncomfortable leaving the building vacant.

Member Gilbert said that he is concerned about the buildings appearance since it is the entrance to the Village of Manlius. It would be nice to spruce it up a bit.

Member LeRoy asked if there was any timeline. Mr. Curtin said he couldn't say.

Attorney Frateschi told the Board that there is an agreement in place that the applicant will, as a condition of the Site Plan and subdivision approval for the new daycare center, will take both buildings down with in 90 days of the issuance of the Certificate of Occupancy (C/O). That is the agreement the Town has in place as of this meeting. The house on the site has to come down because right now there are 2 primary structures on 1 lot and that is in violation with Town Code. Keeping the existing daycare up would not be in violation, but it would be in violations of the conditions of the new daycare center. Ultimately the concern is the maintenance of the building. We can work together to find a way to bring the building up to acceptability rather than take it down. Those are things that can be talked about if the Board felt that because of the applicants request and the interest in the building that it wants to change the requirement to demolish the buildings.

Chairman Lupia said that we have adequate security and an agreement in place so that

this is something that does not need to be determined tonight. We can have an opportunity to think about this and have a more detailed discussion.

Member Gilbert asked if a Certificate of Occupancy had been issued. Yes, the C/O was issued on November 29, 2017.

Member Gilbert stated that he shared concern with Members Kelly and Neuhauser about the state of the building.

Attorney Frateschi suggested meeting with Attorney Curtin, Greg Sgromo and Town Engineer Doug Miller to talk about some type of maintenance plan for the building. Member Kelly made a motion seconded by Member Neuhauser and carried unanimously to table the discussion until the January 8, 2018 meeting.

Hoag Road Development, 201 Solar Street, Syracuse, New York 13204
Site Plan – 25- Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Rudy Zona, RZ Engineering, was there representing the applicant. Mr. Zona stated that they have made progress since the last meeting. They now have a survey, the Long Form SEQR, a traffic study and Preliminary field testing of the soils. The build plan consists of the property being on sewer. There has been a Cluster plan prepared for the 25 lots. There is also a conventional plan that shows how those 25 lots can meet existing zoning.

Member Kelly asked how big the proposed park is. Mr. Zona said a little over an acre.

Chairman Lupia asked what the intent was regarding the ownership of the park. Mr. Zona said a Home Owners Association will own the park and give permission for the community to use the park as well.

Mr. Zona said that his office went out and did a Traffic Impact Study, 3 intersections, Shiraz, Dawley and Churchill. The study shows there will not be a significant increase in as a result of the proposed subdivision because Hoag Lane is a dead end.

A traffic study was given to Clerk Beeman at the meeting for the record.

Mr. Zona said that a drainage plan is being worked on right now. They will incorporate the drainage into the SWPPP plan. The applicant anticipates that the stormwater situation will actually improve because of the regulations that will have to be followed.

Chairman Lupia reminded the audience that tonight is not a Public Hearing, just an informational meeting and there will be a public hearing in the future. Everyone will be provided with adequate notice of the Public Hearing, including the date, time and place.

Conversation ensued regarding a fence to run along Hoag to the entrance of the property.

They are coordinating with WEP and OCWA regarding sewers and water.

The following items are still outstanding and need to be submitted in order to begin the SEQRA process:

1. Additional soil testing
2. Finish the roads and sewer system profiles
3. SWPPP and the drainage
4. Coordinate with the Fire Department
5. Coordinate with OCWA
6. Coordinate with gas and electric – National Grid

Engineer Miller stated that there were a few things on the SEQR long form that was submitted that need to be addressed:

1. The water section needs to be complete;
2. Do existing sewer lines serve the project sight, the box is checked yes, and the answer is really no;
3. Traffic there was no study, it was handed in at the meeting, its incomplete on the SEQR form;
4. There are several references to parklands, the Town Board doesn't traditionally accept parklands in the Town of Manlius. Mr. Zona said he believes the intention is to dedicate it to the Homeowners.
5. 25% of the lots is 15% or greater slopes, check the code; there is a steep slope criteria. The initial build out and the cluster plan should include that as well.

Members Gilbert and Neuhauser are concerned about an emergency entrance and exit into the subdivision. As proposed, there is only one way in and out of the subdivision and that might be a problem for emergency vehicles if the entrance/exist is blocked.

Kimco Realty, 65 W. Gray Rd. Falmouth, Maine 04105
Site Plan/Subdivision – 7043 Manlius Center Road, East Syracuse, NY 13057
Tax Map # 062.-02-10.2/1

Bob Abbott, Architect, was there to represent ESW Realty, there is a purchase offer on the former Tim Horton's building in Fremont. They would like to open a Dunkin Donuts in this location. He stated that the outside of the building will remain mostly intact and some changes will be occurring inside. The drive thru will remain the same except for the Dunkin menu board. The drainage does not get touched.

Chairman Lupia and attorney Frateschi discussed cross easements and that they should be put on the subdivision plan.

Member Gilbert made a motion seconded by Member LeRoy and carried unanimously to hold a Public Hearing on January 8, 2018 at approximately 6:35pm.

Other Business

1. Chairman Lupia explained to the Board that the Town Board, starting in January, will be changing the Town Board meeting time to 6:30pm. He asked if the Planning Board would like to entertain the idea.

   Conversation ensued, and the Board unanimously agreed to move the time of the Planning Board meetings to 6:30pm starting January 8, 2018.

Member Gilbert made a motion seconded by Member LeRoy and carried unanimously to change the time of the Planning Board Meeting to 6:30pm beginning January 8, 2018.

2. William Camperlino, was under the impression that he was on the Agenda, Chairman Lupia said that it wasn't fair to the Board if he spoke because they have no paperwork in front of them regarding his project.

   Attorney Frateschi stated that he spoke to Mr. Camperlino's attorney and there is still no indication from the owner of the property that access is given to the property. Until that happens there is nothing to discuss.

With there being no further business, Member Gilbert made a motion, seconded by Member Kelly and carried unanimously to adjourn the Regular Meeting at 8:17pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
January 22, 2018 Approved

The Town of Manlius Planning Board met in the Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Walt Neuhauser, Mike LeRoy and Michael McGrew. Also present was Planning Board Attorney Timothy Frateschi and Town Engineer Doug Miller.

Absent: Member Crossett

Also, Present: Ellen McGrew

The Pledge of Allegiance was recited.

Minutes
Member Kelly made a motion seconded by Member Neuhauser and carried unanimously to approve the minutes of January 8, 2018.

Hoag Road Development, 201 Solar Street, Syracuse, New York 13204
Site Plan – 25- Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2
Chairman Lupia stated that several items, including the Traffic Impact Study and the SWPPP, have not yet been reviewed by the Board. Therefore, he made the decision to not have them on tonight's Agenda to give the Board members adequate time to absorb the information and come up with any questions they may have. The Applicant should be at the next meeting.

Conversation ensued regarding the questions on the EAF form.

Accessory Use Permit
Thomas Salzberg, 179 West Seneca Street, Manlius, NY 13104 Tax Map # 106.-01-05.0

The Board is in receipt of a memo dated January 12, 2018 from Code Enforcement Officer Randy Capriotti regarding the above property. The letter states that there are no complaints and or violations on the property and there have been no changes since the original application and he recommends that it be approved for a period of seven (7) years.

Conversation ensued regarding the Zoning in the area.

Member Gilbert made a motion, seconded by Member McGrew and carried unanimously to approve the above Accessory Use Permit, under the same terms and conditions previously granted, for a period of seven (7) years, all to expire on January 24, 2025.

Other Business

With there being no further business, Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to adjourn the Regular Meeting at 6:38pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
February 12, 2018 **APPROVED**

The Town of Manlius Planning Board met in the Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Donald Crossett, Mike LeRoy and Michael McGrew. Also present was Planning Board Attorney Timothy Frateschi and Town Engineer Doug Miller and Director of Code Enforcement Randy Capriotti.

Absent: Member Neuhauser

Also, Present: Susan Ryan, James Ryan, Jason Cook, Howard Hollander, David Brittain, Sean Egan, Monica Browning, Chuck White, Kathy Bennett, Cathy Koumanidis, Sue Oliver, Sue and Doug, Blumin, Maureen Clark, James Horton, Ellen Predmore, Ellen McGrew, Mike Collins, Ed Zemand, Gunther Kascha, Elizabeth? Beverly Thomas, Rodney Thomas, Beth and Ronald Powell, Chelsea Fuller & Rod Ives

The Pledge of Allegiance was recited.

Minutes
Member Kelly made a motion seconded by Member LeRoy and carried unanimously to approve the minutes of January 22, 2018. Member Crossett abstained.

Hoag Road Development, 201 Solar Street, Syracuse, New York 13204
Site Plan – 25- Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2
Scott Freeman and Tom Douglas were there on behalf of the applicant.

Mr. Freeman stated that they had a full survey done that includes the topography. They do not have all the boring information but one of the concerns was ground water. The land is currently zoned residential and per the current zoning and planning criteria they can fit 25 lots on this site using every square inch of the site. They have requested the Planning Board authorize Cluster Zoning. They lowered the number of lots to 24 because of the grade change and to make the lots sellable.

Storm water has been discussed at length. Per NYSDEC regulations all the increased runoff must be treated, this includes driveways and pavement. The subdivision will have 3 swales to handle the storm water. There will also be a wet pond, meaning the water does not drain. The drainage should l be improved for the surrounding neighborhood since the subdivision will control water that is coming onto the site that now is uncontrolled. By retaining water on the site longer, flooding downstream should be improved.

Mr. Douglas talked about the egress for emergency vehicles. They spoke to Fayetteville Fire Chief Paul Hildreth and that maybe having an island in the entrance to the development is aesthetically pleasing and having two lanes can help the flow of traffic. Chief Hildreth had 2 concerns:

1. Code requires Fire Hydrants every 750 feet, please have them every 500

instead.

2. And make sure the turning radius works for the larger fire trucks to get in and out.

There is some land outside the individual property owners boundaries and it will be owned and cared for by an HOA. They are in the process of putting the HOA agreement together.

Mr. Douglas stated that he would like to install an equestrian style/type fence from one end of the property to the other along Hoag Lane.

Chairman Lupia is concerned about a buffer on the east and west sides and that there is no way to access the "open land" from the interior unless your property borders on the property. Why were there no Easements or Right of Ways created so that the other occupants of the development can have access to the open space? Mr. Douglas said that the land is heavily thicketed so its very dense and his concern is if you allow certain people up there you may have high school kids up there partying. Its more for a wildlife buffer.

The Chairman's second concern is Lots 4-12 there is no buffer or forever wild easement behind the houses, why not? Mr. Freeman said if you look at the houses there are trees planned for back there is also a drainage swale.

Attorney Frateschi stated that it is up to the Planning Board to decide how they want the cluster development to look, whether it be with screening or with a buffer area of undisturbed vegetation and/or trees.

Mr. Freeman requested a work session with the Chairman and a couple Board members to tighten things up.

Attorney Frateschi asked where the conventional subdivision map that shows how many lots can be built. Mr. Freeman said he did not have it with him, but he did submit it. Mr. Freeman asked to explain the slope of 25% or more. Attorney Frateschi stated that under the design standards for lots you can't build within 25 feet of an existing slope of 25% or more. The conventional subdivision map should have topo and should show the road layout and conform to the design standards of the Town Code.

Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to declare the Planning Board Lead Agency for SEQR and it be an Unlisted Action.

Member Gilbert made a motion, seconded by Member Kelly and carried unanimously to hold a Public Hearing on March 26, 2018 at approximately 6:35pm.

Mark & Monica Browning, 8306 Prestwick Drive, Manlius, NY 13104
Accessory Use Permit – Same Location – Photography Studio
Tax Map # 117.-14-04

Mrs. Browning stated that she would like to open a Photography Studio in her home. She will be photographing newborn babies. Her goal is to have 8-10 per month. The driveway can comfortably hold 8 cars and the hours of operation will probably be 9am and 5pm. Each session is anywhere from 1-3 hours. There will be no sign in front of the house.

Member Kelly is not comfortable putting a business in an R-1 zone. She is not in favor of this project. Attorney Frateschi said that a professional office can be operated in R-1 with an Accessory Use Permit and in the past the Code Enforcement Officer has interpreted photography as a profession type of business.

Member Gilbert made a motion, seconded by Member Crossett and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to hold a Public Hearing on March 12, 2018 at approximately 6:35pm.

Michael J. Collins, PO Box 668, Fayetteville, New York 13066
Site Plan - Green Lakes Country Store – 600 Sq. Ft. Country Store – 7580 Green Lakes Rd, Fayetteville, NY 13066
Tax Map # 079.-01-05.0

Mr. Collins told the Board that he wants to close the Last Detail and open a Country Store that would help serve Green Lakes. He wants to be open seasonally from April to November.

Chairman Lupia stated that in order to move forward, the Board would need a proper survey of the property that includes the Site Plan, defined parking spaces and the building itself. He said that after we receive the survey, the Board can revisit the plan and refer the project to the Onondaga County Planning Board.

Director of Code Enforcement Capriotti handed Mr. Collins a list of the items that need to be addressed regarding this project.

United Refining Company of Pennsylvania, 15 Bradley St., Warren, PA 16365
Site Plan – Kwik Fill – 7078 Manlius Center Rd., E. Syracuse, NY 13057
Tax Map # 062.-04-09.1A

Jason Cook was there to represent the applicant. Mr. Cook stated that the old canopies that are existing now have old fire suppression systems that need to be replaced. They cannot install new fire suppressions systems on the old canopies because they cannot hold the weight of the new system. They would like to demo the existing canopies that currently exist there now, get rid of the gas dispensers that are there now and install a new 24x50 canopy out front with 2 gas dispensers. They would like to upgrade the petroleum system also.

Discussion ensued regarding the previous submission of building a new store and the retaining wall. The Board also discussed the traffic issue on the property.

The Board suggested that Mr. Cook discuss the previous plan once more with decision makers at the Applicant and see if there are changes to the plan that would make it more economically feasible. The Planning Board is open to discuss changes to the Site Plan to accommodate the concerns Mr. Cook raised tonight.

The Board tabled the discussion for further input from the applicant.

Cameron General Contractors, Inc., 8040 Eiger Drive, Lincoln, NE 68516
2-Lot Subdivision – Town Center Retirement Community LLC., 3900 Medical Center, Fayetteville, NY 13066
Tax Map # 086.-01-03.6

Rod Ives from Napieralla Consulting was there along with Kathy Bennett representing the applicant. The applicant is asking to subdivide the parcel so they can have a piece of property to sell. They did have a buyer for the property, but the deal fell through. They currently have no buyer for the property and no plans to develop it. They are creating a 7.8 acre lot which they believe will be more marketable if it is subdivided.

The neighbors have not been notified and need to be notified for the Public Hearing.

Member Crossett made a motion, seconded by Member LeRoy and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Member Gilbert made a motion, seconded by Member Kelly and carried unanimously to hold a Public Hearing on March 12, 2018 at approximately 6:40pm.

Route 5 Company, LLC, 540 Towne Drive, Fayetteville, NY 13066
Subdivision – Parking lot between Key Bank and McDonalds
Tax Map # 087.-01-15.0 and 087.-01-12.4

Kate Johnson was there representing the applicant. She stated that they would like to create a new 1.58 acre lot. The lot in question is currently owned by TOPS Grocery Store and is a parking lot between Key Bank and McDonalds. COR would like to buy the lot. They do not have a tenant for the lot.

Discussion ensued regarding the parking for TOPS, McDonalds and Key Bank. If the lot is subdivided, does it take away parking from the surrounding businesses?

The Board would like the matter referred to the Onondaga County Planning Board. Attorney Johnson will revise the Site Plan to include a new parking plan to send to the County.

The Board stated that the neighbors need to be notified regarding the subdivision.

Member Kelly made a motion, seconded by Member Crossett and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Member Kelly made a motion, seconded by Member Crossett and carried unanimously to hold a Public Hearing on March 12, 2018 at approximately 6:45pm.

David Stringer, Mallards Landing Assoc., LLC, Between Widgeon Path & Aylesbury Path, Manlius, NY 13104
Final Subdivision Approval - Mallards Landing, Phase II, Section 9, 10 Lots
Tax Map # 117-02-01.1

Town Engineer, Doug Miller stated that he received a phone call from David Stringer regarding the Final Approval for Mallards Landing, Phase 2, Section 9 Subdivision map.

Engineer Miller stated that the Final Subdivision Map is in compliance with the original map and he recommends that the map be approved.

Conversation ensued regarding the map.

Member Gilbert made a motion seconded by Member Crossett and carried unanimously to waive a Public Hearing for the Final Approval.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to approve the Final Subdivision Map – Mallards Landing, Phase 2, Section 9 – Site Plan – File Number 591.035 – Drawing Number C1.0 - Town of Manlius Onondaga County, NY as proposed on the application prepared by Dunn & Sgromo Engineers, dated June February 12, 2018.

Other Business

With there being no further business, Member Gilbert made a motion, seconded by Member Crossett and carried unanimously to adjourn the Regular Meeting at 8:26pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
May 14, 2018 **APPROVED**

The Town of Manlius Planning Board met in the Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Don Crossett, Mike LeRoy and Michael McGrew. Also present was Acting Planning Board Attorney Jamie Sutphen, Town Engineer Doug Miller and Director of Code Enforcement Randy Capriotti.

Absent: Member Walt Neuhauser.

Also, Present: Ellen McGrew, Elizabeth Cowlly, Barbara Mihalas, Eileen Krell, Mary Ellen Brausn, Cathy Kousmanidis, Chris & Sara Bollinger, Doug & Sue Burns, Rob Winter, Sean Egan, Mark?, Amy Slutzky, Betsy?, Mark VanAlstyne, Nadine Bell, Chuck White, Paul Massa, Alice Massa, Sue Oliver, James Horton, Maureen Clark, Jan Ondrich, Gary Slutzky, David Brittain.

The Pledge of Allegiance was recited.

Minutes
Member Kelly made a motion seconded by Member Crossett and carried unanimously to approve the minutes of April 9, 2018.

Mark Van Alstyne, 317 Homewood Drive, Fayetteville, NY 13066
Accessory Use Permit – 100 Washington Blvd., Fayetteville, NY 13066
Tax Map # 085.-08-11.0
Mr. Van Alystyne stated that he would like to turn a small house into a Chiropractic/Physical Therapy Office.

Chairman Lupia asked if the Applicant had planned to live at the home. Mr. Van Alstyne said not at this time.

Member Kelly asked about parking and how many were needed. The applicant said maybe 4-5 spots. Discussion ensued regarding parking for the property.

Chairman Lupia asked the Applicant if he wanted to get the parking drawn on a proper survey before setting a date for a Public Hearing. Mr. Van Alystne said yes.

Member Gilbert asked to see more information on the sign.

The Board decided to table the matter until June 11, 2018.

Hoag Road Development, 201 Solar Street, Syracuse, New York 13204
Site Plan – 25- Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2
Tom Douglas, Developer, gave a quick overview of the project. He stated that this is a responsible development, meaning that this is a Residential development in the middle of a residential area that is surrounded by residents. All Single-Family homes will be

built. They will take care of the flooding that have given the residents on Hoag and Churchill problems. All the materials will stay on site. By law he can either build a conventional plan or a cluster plan.

Tom Blair, Cheny and Blair, Attorney, showed the Board the 30.04-acre property on Hoag Lane. He told the Board that the paperwork in front of them is a Supplemental Application. The Board should see upgrades and responsibility on behalf of the Developer. All of the utilities are either on the property or directly adjacent to the property. There is adequate capacity for all of the services that need to be brought onto the project. He is calling it a 23 +1-lot subdivision. The only tweak may have to be extending the existing sewer district boundary lines to capture the boundary lines of this project. There are adequate road networks and there is plenty of capacity within the roads and a Traffic Study has been done voluntarily. There is a detention basin being proposed on this site.

Scott Freeman, Keplinger Freeman Associates, Landscape Architect, why did we prepare 2 site plans for the Board? Per Town Code they are required to show what the density can be with the current regulations; each lot needs to be 40,000 square feet. The road will be public, so you have a cul-de-sac, an entry point and a loop, that does not count towards the lot area. The minimum road frontage is 150 feet. They meet or exceed the criteria for all lots. You end up with 23 new lots. To build this plan per Town Code, they would bull doze the entire lot, leaving no tree standing. There would be 7 acres of impervious run-off. This will be a single-phase development plan. Mr. Freeman stated that they have submitted to the County for preliminary comments and the County recommends that they look at Cluster planning. Cluster works based on the criteria set up by the Board. They have been working on a Cluster Plan. Lot sizes are smaller, but you pick up more green space.

Rudy Zona, RZ Engineering, stated that again a traffic impact study has been done for 3 intersections, Hoag Lane at Dawley, Shiraz and Churchill Lanes. The analysis has found that there is no notable affect on traffic. They also did a GAP analysis study performed at the intersection of 257 and Hoag Lane. The Town Engineer requested it. A GAP study is when you measure the gaps in traffic between the end of one vehicle and the beginning of the next. Mr. Zona said that the road has plenty of capacity to handle the extra traffic. Mr. Zona stated that as far as Sanitary goes, they talked to the Onondaga County Department of Water Environmental Protection (OCWEP) and there is sufficient capacity at the treatment plant. They probably tie into the sanitary sewer that exists on Shiraz Lane. They are proposing an E1 type system. OCWA says that there is sufficient water and there is sufficient infrastructure capacity to provide water. OCWA will design and provide water to the site. The roads within the subdivision will be dedicated to the Town and will be built to Town specs; they have less than 7 percent on the roadways.

Mr. Zona spoke about Storm water. They have chosen to do a wet pond. Will have a channel with rock in it and the DEC states that for the first 10 feet of the pond it has to be 1 foot deep. There will also a storm water run-off control structure, basically just a concrete vault with a hole in it controlling the water.

Member Kelly asked how big the pond is. Mr. Zona said 2.4 million gallons. It is

350x300 in size and 6 feet deep. The pond will be wet at all times.

Chairman Lupia asked who will be owing the pond? Mr. Zona said the property owners. Mr. Douglas said that included in the deeds for all the lots, all the open swales will be maintained by the property owners. Mr. Douglas said that he would propose the Town take over the inspections and the maintenance of the ponds only because they are trying to alleviate any offsite problems, its not just a Hoag Lane site problem. They figure the Highway department will be out maintaining the roads and the pipes and catch basins anyway, so they can keep an eye on the pond as well.

Mr. Zona said that there will be easements and three will be plenty of room for maintenance. The basins will treat not only the quantity of the water flow but the quality as well. There will be a SWPPP signed with the Town.

Mr. Douglas stated that he met with some of the homeowners in the area and the question he got asked was how long is this project going to impact the already existing neighborhood? He said if the economy stays good then maybe 3-4 years.

Acting Attorney Sutfin asked Mr. Freeman 2 questions:

1. How is the greenspace going to be treated and maintained?
2. What are the covenants that are expected?

Attorney Blair said the greenspace will have deed restrictions so that there will be no development in those areas. Every homeowner will be educated as to the drainage, they will be shown their easement, they will be shown the do's and dont's for maintaining the drainage and they will have a handout regarding the buffer areas and open spaces. They will clearly understand the deed restrictions.

Attorney Blair said that in wrapping up the Environmental Impact is the final piece of the project. He discussed his narrative that was previously given to the Board.

Discussion ensued regarding the local schools and the impact this project may or may not have on enrollment.

Chairman Lupia stated that if the next step is a Public Hearing, the public will be allowed to speak and make the appropriate comments regarding the project and before that the Board will make a SEQR determination.

Discussion ensued regarding unanswered questions on the SEQR form.

Member Kelly made a motion, seconded by Member Gilbert and carried unanimously to hold a Public Hearing on June 11, 2018 at approximately 6:35pm.

Other Business

With there being no further business, Member Gilbert made a motion, seconded by Member Kelly and carried unanimously to adjourn the Regular Meeting at 8:04pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
July 23, 2018 **APPROVED**

The Town of Manlius Planning Board met in the Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Don Crossett, Mike LeRoy and Mike McGrew. Also present was Planning Board Attorney Jamie Sutphen and Town Engineer Doug Miller.

Also, Present: Ellen McGrew, Mark VanAlstyne, Ed Kiesa, S. Aggarwal, J. Barrett, Jackie Ayres, Serresh Agral?, Paul and Alice Mass, Gary Slutzky, Eileen Krell, Santa Romdes?, Mary Ellen Branson, Marianne Douglas, Gunther Lascha, Masoud Tamjidi?, Rudy Zona, M. Blumin, Carol Zenzel, Jaub & Sandra Nitiol?, Barbara Mihalas, James Horton, KP Kelly, Chuck White, Cathy Kousmanidis, David Brittain..

The Pledge of Allegiance was recited.

Minutes
Member Kelly made a motion seconded by Member LeRoy and carried unanimously to approve the minutes of July 9, 2018. Member Gilbert abstained.

Mark Van Alstyne, 317 Homewood Drive, Fayetteville, NY 13066
Site Plan – 100 Washington Blvd., Fayetteville, NY 13066
Tax Map # 085.-08-11.0
Mr. Van Alstyne stated that he would like to open a Physical Therapy Office on Washington Blvd.

The Board agreed that the new plan that was submitted, including parking, was much better than the previous plan.

Attorney Sutphen reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Crossett made a motion, seconded by Member LeRoy and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member LeRoy made a motion seconded by Member Gilbert and carried unanimously to open the Public Hearing at 6:36pm.

With there being no comment from the public, Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to close the Public Hearing at 6:37pm.

Chairman Lupia stated that the Board could not make a determination tonight because they haven't heard from the Onondaga County Planning Board regarding their decision about the project. The Board will adjourn the decision until the August 13, 2018 meeting.

Conversation ensued regarding the sign for the property. The Applicant agreed to bring more information about the sign and lighting to the next meeting. The Board also asked Mr. Van Alstyne to have a timeline for completion of the project at the next meeting.

Hoag Road Development, 201 Solar Street, Syracuse, New York 13204
Site Plan – 25- Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Chairman Lupia stated that the Board has not received any new plans from the Applicant, but the Applicant is here to present a reconfiguration of the subdivision based on the comments and concerns raised to date.

Tom Blair, Attorney for the project, stated that they would like to discuss the proposed subdivision and how its laid out. They would like to have conversations on how to improve the layout and provide more open area and assist in maintaining some of the existing features.

Rudy Zona, Engineer, showed the conventional plan 23 lots plus 1. They also submitted a cluster plan. They got the feeling that it was a little crowded and the amount of earthwork that had to be undertaken really takes away from the greenspace that is really the most important part of a cluster plan. They went back to the drawing board and came up with 21 lots including the existing residence; they have the same stormwater plan and they are trying to preserve the existing land features. They plan to build the homes in phases.

Tom Douglas, Developer, stated that there will be 20 new lots plus the one that already exists. They have taken 2 lots off the table. Attorney Sutphen said there are 3 lots off the table. Mr. Douglas agreed. They have increased the buffer zones dramatically. Being proposed is to “phase” the project. Everything east of Shiraz will be Phase 1 and everything else would be Phase 2.

Conversation ensued regarding the drainage and the stormwater into the drainage pond. Mr. Douglas said that their stormwater plan will be taking care of a large part of the drainage issues in the area but not all of them.

Mr. Zona stated that all the infrastructure, the sewers, the retention pond and the water hook ups, will be built first.

Attorney Sutphen recapped the current status of the project for the Board. She explained that the lots that can be reasonably built a conventional plan is a threshold issue in determining the appropriate number of lots for the cluster. that there was the conventional plan presented which laid out a was a 24s and that the cluster plan was then based upon that. Issues of lot count, phasing, green space, earth movement, cut and fill, acreage disturbance, drainage plans are among the issues that the Board needs to address to get a negative declaration for the project. The Town Engineer reviewed the plan and has raised concerns about the significant environmental impacts related the large amount of earth moving activity, changes to the topography, and drainage impacts from that activity. Changing the topography as proposed under a cluster development plan is problematic, since a goal of a cluster plan is to preserve existing greenspace and natural land contours. The Board has not yet come to a

conclusion on this, but the Town Engineer has expressed that there is a significant amount of engineering that would be required for the Applicant to build the full the lots proposed there was significant discussion regarding dropping the number of lots to 21 total lots. The applicant needs to provide more specific engineering details on all of the open items, However, with the information currently available, the Town Engineer expressed that it appears more optimistic that with proper and full engineering, the site may be able to accommodate 21 total lots within the parameters of a cluster. .

Engineer Miller said that he spoke to Mr. Zona and they are looking at the natural contours of the land.

Attorney Blair said that the fill will now remain on site instead of trucking the fill off site. Attorney Sutphen said that the Board is still trying to determine what the maximum number of lots that are realistic for a site of this size and challenging topography. The Applicant will have to come up with an engineering plan that Engineer Miller would have to review again to make sure that any environmental concerns can be mitigated. Mr. Zona said that they have consulted with Joe Mueller regarding the earthwork. If the Board thinks that we are heading in the right direction with around 21 lots, then the Applicant will have to go back and satisfy the Town Engineer that 21 lots are doable. The Board can determine if less lots will fit all the issues identified, like the greenspace, the earthwork, the contours which seem to be the main issues that Engineer Miller is trying to solve for the Board.

Member Gilbert said that this land is challenging. He asked how much change will there be to the major ravine that comes through the development? Mr. Zona said most of the stream will be maintained. The only change will be to grade it in to get the stormwater in, there shouldn't be a whole lot of change.

Chairman Lupia asked if the Applicant would be willing to entertain questions from the audience even though it wasn't a Public Hearing? The Applicant said that they would be willing to stay after the meeting to answer questions. The Chairman said that that would be a great idea.

Attorney Sutphen said that the next step is to hear what some of the residents have to say. The Board is still in the work session phase and needs to determine if the applicant should be encouraged to pursue the proposed lot count with the suggestions given.

Chairperson Lupia solicited reaction from the Board members on this proposal. Member Kelly said that it should be up to Engineer Miller, and what he comes with the slopes and contours. Engineer Miller said that he had a discussion with Mr. Zona and he is trying to work with the contours of the land, adding more or less buffers.

Conversation ensued regarding engineering on the project.

Overall, the Board members are looking for more information in conformance with what the Town Engineer has requested. The Board agreed that they would like to see the current plan pursued as being than previous plans and agreed that Engineer Miller has a good sense on what the Board is looking for.

Other Business

With there being no further business, Member Gilbert made a motion, seconded by Member Crossett and carried unanimously to adjourn the Regular Meeting at 7:26pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
December 10, 2018 Approved

The Town of Manlius Planning Board met in the Town Hall at 6:30 PM with Chairman Joe Lupia presiding and the following Members were present: Ann Kelly, Mike LeRoy, Mike McGrew and Frank Mento. Also, present were Town Attorney Jamie Sutphen, Town Engineer Douglas Miller.

Absent: Member Gilbert and Member Crossett

Also Present: Ellen McGrew, Nathan VanderWal, Chris Borncamp, David Brittain, Paul & Alice Massa, Chuck White, Cathy Kousmanidis, Jackie Ayres, Tom Douglas, James Horton, Tom Blair, Eileen Krell, Chelsea Fuller, Gary Slutzky, Matt Mulcahy & Bob Iodice.

The Pledge of Allegiance was recited.

Minutes
Member LeRoy made a motion seconded by Member Mento and carried unanimously to approve the minutes of November 26, 2018.

United Refining Company of Pennsylvania, 15 Bradley St. Warren, PA 16365
Amended Site Plan – Kwik Fill – 7078 Manlius Center Rd., E. Syracuse NY 13057
Tax Map # 062.-04-09.1
The applicant was not present, but was available by phone as arranged in advance, due to the distance of travel. The revised Site Plan was reviewed.

Chairman Lupia stated that the Planning Board had received comments back from the Onondaga County Planning Board. They are as follows:

1. Per the New York State Department of Transportation, any future development of the site will likely necessitate modifications to the existing driveways and sidewalk on Manlius Center Road, in order to meet Department standards.
2. The Town is advised to ensure any requirements of the New York State Department of Environmental Conservation regarding proper removal and disposal of underground storage tanks are met as a condition of municipal approval of the site plan.

Member LeRoy made a motion, seconded by Member McGrew and carried unanimously to approve the Amended Site Plan for the United Refining Company of PA with the above conditions.

Verizon Wireless, 1275 John Street, Suite 100, W. Henrietta, NY 14586
Site Plan – Microcell Tower – Enders Road ROW adjacent to 4545-4725 Enders Road, Manlius, NY 13057
Tax Map # 114-01-08
Nate VanderWal from Nixon Peabody was present representing the Applicant. Mr. Vanderwal stated that Verizon is constantly monitoring services and figuring out where coverage and capacity is needed. The existing sites in place now cannot meet the demand on the network. National Grid will replace the existing pole and Verizon will add on to that pole.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to declare the Planning Board Lead Agency for SEQRA.

The short form EAF was received and reviewed by the Board.

Member Kelly made a motion, seconded by Member Mento and carried unanimously to declare the matter an Unlisted Action under SEQRA for the project.

Town Engineer Miller stated that nowhere on the submitted plans does it say to remove the existing cell tower. The Applicant agreed to add to the plans to remove the old tower to install a new one.

Member Mento made a motion, seconded by Member Kelly and carried unanimously to give a positive recommendation to the Town Board for a Special Use Permit for the Site Plan for a microcell tower by Verizon Wireless with the condition of removing the existing tower and putting up a new tower and with the condition that the matter would be returned to the Planning Board for Site Plan Approval.

Route 5 Company, LLC, 540 Towne Drive, Fayetteville, NY 13066
Subdivision – Parking lot between Key Bank and McDonalds
Tax Map # 087.-01-15.0 and 087.-01-12.4

Kate Johnson, COR Development, was present. She stated that TOPS supermarket would like to subdivide the property between Key Bank and McDonalds and COR would like to buy the empty lot. They would like to divide 6.02 acres into 3 lots; 2.6 acres, 1.8 acres and 1.5 acres. Ms. Johnson showed the Board a map containing the properties and how they want to subdivide the parcels. COR would like to purchase the lot from TOPS.

Member Mento asked if something was going to be built in this location, eventually. Attorney Johnson said that yes, they would like to find a tenant to fill the location.

Member Mento asked if anyone has looked at the parking for the entire Towne Center facility and how it will impact the entire space? Attorney Johnson said she didn't think so. Member Mento asked if there was enough parking in the entire complex so if this subdivision did happen, there would still be enough parking for the other tenants? Attorney Johnson said that the calculation has been done and there are enough parking spaces.

Attorney Sutphen stated that this is the exact same application that was presented to the Board in February, therefore it is a continuation of the application. The Board declared themselves lead agency for SEQR at the February 12, 2018 meeting.

Member Kelly made a motion, seconded by Member Mento and carried unanimously to hold a Public Hearing on January 14, 2019 at approximately 6:35pm.

Hoag Lane Development, 201 Solar Street, Syracuse, New York 13204
Site Plan - 21-Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Revised draft plans have been submitted to the Board for further review.

Scott Freeman, Architect, representing the applicant, went through the 5 points that were brought up at the last meeting.

1. They have lowered the number of lots from 23 to 21.
2. They have removed the cul-de-sac, the result being 76% down to 66%, reducing the amount of disturbance.
3. The impervious areas of pavement went from 15% to 12%, reducing the amount of runoff.
4. The forever wild greenspace has been increased.
5. The amount of truck traffic has been greatly reduced. They will have to bring in stone to

make the road to Town specs.

Member Mento inquired as to the size storm events they were controlling with the pond. Mr. Freeman said the 5-10, 50-100-year storms. The full SWPPP has been submitted.

Mr. Freeman said that they looked at the comments about how they are going to take care of the drainage easements, the sanitary easements and the forever green area and they are ready to have a discussion at a later date to work out the details.

Engineer Miller asked Mr. Freeman about the cluster drawings regarding almost 11,000 cubic yards of fill. Mr. Freeman said he didn't want to speak for Joe Mueller, but some of the fill is cut fill from the basements and the topsoil he was assured that when its done it will balance. Mr. Freeman said that they can have a further discussion regarding the matter and Engineer Miller said I think we have to because it is a big discrepancy.

Attorney Sutphen asked about the setbacks and the building envelopes. Mr. Freeman said that the existing Conventional zoning for R-1, they looked at R-3 with Cluster Zoning. Various "notes" relating to set backs & other matters will be on the final plan and further reviewed.

Conversation ensued regarding the HOA. There will be various covenants that will run to the benefit of the Town. Attorney Sutphen asked the Developer to put everything in writing with respect to the HOA, covenants, easements, etc. and submit it so that she can review it.

SEQRA review will & findings will need to precede the Public Hearing and will be worked on.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to hold a Public Hearing on January 14, 2019 at approximately 6:40pm.

Other Business

With there being no further business, Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to adjourn the Regular Meeting at 7:35pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
January 14, 2019

APPROVED

The Town of Manlius Planning Board met in the Town Hall at 7:00 PM with Chairman Joseph Lupia presiding and the following Members were present: Ann Kelly, Don Crossett, Mike LeRoy, Mike McGrew and Frank Mento. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Absent: Member Gilbert

Also Present: Ellen McGrew, Robert Michiel, Sean Egan, Rob Taylor, Sue Oliver, Pieter & Sandy Keese, David Brittain, Sharon Telhi?, Stan Kelso, Paul Massa, Tom Blair, Trevor Staniec, Chuck White, Sara Bollinger, James Horton, Matt Mulcahy, Sue & Doug Burns, Gunther Kascha.

The Pledge of Allegiance was recited.

Chairman Lupia stated that the Hoag Lane Public Hearing was cancelled for this evening. The Applicant submitted a new map to the Board; they felt that holding a Public Hearing would not be appropriate at this time. The Applicants, however, will be presenting the new plan at the meeting tonight and there will be no Public Hearing tonight.

Minutes

Member McGrew made a motion, seconded by Member Kelly and carried unanimously to approve the minutes of December 10, 2018.

Organizational Meeting 2019

The Town Board appointed Joseph Lupia Chairman of the Planning Board for a period of 1 year.

The Town Board appointed Joseph Lupia to the Planning Board for 7-year term expiring 12/31/2025.

Member LeRoy made a motion, seconded by Member McGrew and carried unanimously to appoint Baldwin, Sutphen and Frateschi Law Firm as Attorney for the Planning Board.

Member Mento made a motion, seconded by Member McGrew and carried unanimously to appoint Miller Engineering as the Planning Board Engineer.

Member LeRoy made a motion, seconded by Member Kelly and carried unanimously to appoint Lisa Beeman as the Planning Board Clerk.

Member Crossett made a motion, seconded by Member LeRoy and carried unanimously to approve the Planning Board 2019 Meeting Schedule, which states that the Board will meet on the 2nd and 4th Mondays of the Month at 6:30 PM and the Board approved the Application Filing Deadline Schedule.

Planning Board Meeting Schedule for 2019	
Meeting Date	**Filing Deadline**
January 14, 2019	January 4, 2019
January 28, 2019	January 18, 2019
February 11, 2019	February 1, 2019
February 25, 2019	February 14,2019
March 11, 2019	March 1, 2019
March 25, 2019	March 15, 2019
April 8, 2019	March 29, 2019
April 22, 2019	April 12, 2019
May 13, 2019	May 3, 2019
June 10, 2019	May 31, 2019
June 24, 2019	June 14, 2019
July 8, 2019	June 28, 2019
July 22, 2019	July 12, 2019
August 12, 2019	August 1, 2019
August 26, 2019	August 14, 2019
September 9, 2019	August 28, 2019
September 23, 2019	September 13, 2019
October 28, 2019	October 18, 2019
November 25, 2019	November 15, 2019
December 9, 2019	November 26, 2019
December 23, 2019	December 13, 2019

Route 5 Company, LLC, 540 Towne Drive, Fayetteville, NY 13066
PUBLIC HEARING - Subdivision – Parking lot between Key Bank and McDonalds
Tax Map # 087.-01-15.0 and 087.-01-12.4

Kate Johnson, COR Development was at the meeting representing the Applicant.

Attorney Sutphen stated that the Planning Board declared Lead Agency for SEQR back in February 2018.

Attorney Sutphen reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Kelly made a motion seconded by Member Crossett and carried unanimously to open the Public Hearing at 6:37pm.

1. Trevor Staniec, Fayette Manor
    a. What is going to be the use of the parcel after the subdivision? Attorney Johnson said that they have no use for the for the parcel at the moment.
    b. Concern regarding the Centro bus stop was made. Mr. Staniec stated that the bus stop is very well used, and he would like to see it relocated if possible.
    c. The potential traffic load is an issue and the timing of the traffic.
    d. Sewer easements were brought up as well.
2. Wilson Steckiewicz, Fayette Manor
    a. Concerned about the parking spaces behind TOPS
    b. Concerned about the speed on the road behind TOPS
    c. Concerns about the potential for smells, sound and lighting pollution
    d. Wetlands, animals and tree concerns
    e. She is against the project

Chairman Lupia thanked Ms. Steckiewicz for her comments and also said that this particular project is going to have virtually no impact on most of the issues that were spoken of.

For the record the Chairman stated that the Legal Notice for the Public hearing has been published.

Member Kelly made a motion seconded by Member LeRoy and carried unanimously to close the Public Hearing at 6:53pm.

Member Kelly made a motion, seconded by Member Mento and carried unanimously to approve the Subdivision of the Parking Lot between McDonalds and Key Bank. Prepared by CNY Land Surveying; Douglas Reith, Land Surveyor; Final Plat Town Center at Fayetteville; Resubdivision of lots 4A and 4B into lots 4AA, 4BB and 15; dated November 25, 2017.

Hoag Road Development, 201 Solar Street, Syracuse, New York 13204
PUBLIC HEARING - Site Plan - 21-Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Attorney Tom Blair told the Board that they were back before the Board to give an update on the project. Attorney Blair told the Board that they submitted an updated plan on January 4. In the submission there is a new full Environmental Assessment Form

that has been updated to reflect the fewer number of lots count, the less permeable surface, the forever wild areas, etc. Capacity letters were also dropped off with the January 4th submission. They are still waiting for National Grid.

Attorney Blair passed out a map to the Board with some adjustments made to the forever wild areas.

Attorney Blair stated that this is now a 20-Lot subdivision with an existing home. The permeable surfaces have been greatly reduced, the green spaces have been greatly enhanced and they are trying to implement controls to make sure that the HOA is going to maintain all of the retention pond facilities, the cutting and clearing of the siltation build up and use the monies in the HOA to properly take care of it for drainage purposes.

Conversation ensued regarding the retention basin's and how much water it can hold.

Chairman Lupia said that the Board needs to see the ponds maintenance agreement; the proposed restricted covenants for the development; the updated SWPPP and a GEO Tech study on the wet pond.

Engineer Miller suggested that everything be put into the SWPPP so that it is all enforceable with the Towns SPEDES Permit.

Chairman Lupia told Attorney Blair that the Board will not be scheduling a Public Hearing until they receive all of the reports that were talked about at the meeting tonight.

OTHER BUSINESS

With there being no further business, Member Crossett made a motion, seconded by Member LeRoy and carried unanimously to adjourn the Regular Meeting at 7:39 pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
January 28, 2019

APPROVED

The Town of Manlius Planning Board met in the Town Hall at 7:00 PM with Chairman Joseph Lupia presiding and the following Members were present: Ann Kelly, Fred Gilbert, Mike LeRoy, Mike McGrew and Frank Mento. Also, present were Attorney Tim Frateschi and Town Engineer Douglas Miller.

Absent: Member Crossett

Also Present: Ellen McGrew, Rachelle Hansen, Jack Gramlich, Sandy Kirnan, Douglas Wojcik, David Tyler.

The Pledge of Allegiance was recited.

Minutes
Member LeRoy made a motion, seconded by Member Kelly and carried unanimously to approve the minutes of January 14, 2019. Member Gilbert abstained.

Central New York Land Trust, PO Box 9417, Syracuse 13290
Site Plan – Parking Lot for 3 Falls Woods – East of Sweet Rd., ¼ Mile North of State Route 173
Tax Map # 108.-02-15.0
Member McGrew recused himself.

Jack Gramlich, Board Member for the CNY Land Trust, told the Board that they would like the public to have access to the 3 Falls Woods property by constructing a Parking Lot along Sweet Road ¼ mile north of NYS Rt. 173.

Member Mento entered the meeting at 6:33pm.

Chairman Lupia said that on the map it looks like the driveway itself will be 25' wide by 40' in depth. Mr. Gramlich said yes, plus another 40' to the parking lot; 80' total. Chairman Lupia said the parking lot itself will be 40' wide x 90' long. Mr. Gramlich said yes.

Mr. Gramlich said that there will be 8 parking spaces plus 1 Handicapped spot. The will be no pavement only gravel, crushed stone, 8" deep.

Member Gilbert stated that he would like the Highway Superintendent to take a look at the driveway cut. The Board determined that State Route 173 is a State Road.

Chairman Lupia asked about additional barriers at the end of the parking lot to prevent cars from continuing further like a split-rail fence. Mr. Gramlich stated that they have

done this at other sites. Mr. Gramlich said there will be a 3x4 bulletin board/kiosk. He also said that there is a lot of buckthorn in on the property that will provide an additional visual barrier. Chairman Lupia would like more trees planted along the parking lot for an extra barrier to the houses on either side.

Attorney Frateschi reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member LeRoy made a motion, seconded by Member Mento and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Frateschi indicated for the record that the action is an unlisted action under SEQRA.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to hold a Public Hearing on February 11, 2019 at approximately 6:35pm.

Member McGrew re-entered the meeting.

Rachelle Hansen, 4443 Watervale Road, Manlius, NY 13104
Accessory Use Permit – Psychologist Office in Home – 4443 Watervale Rd.
Tax Map # 110.-10-15

Ms. Hansen told the Board that she is a licensed Psychologist and would like to open an office in her home.

Chairman Lupia asked about hours. Ms. Hansen said probably Friday afternoons or Saturday mornings.

Attorney Frateschi reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Gilbert made a motion, seconded by Member Mento and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Frateschi indicated for the record that the action is an unlisted action under SEQRA.

Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Mento made a motion, seconded by Member Gilbert and carried unanimously to waive the Public Hearing for an Accessory Use Permit at 4443 Watervale Road. Attorney Frateschi stated that the Code says that the Board can have a Public Hearing if they wish, but it is not required.

Member Gilbert made a motion, seconded by Member Kelly and carried unanimously to approve the Accessory Use Permit for Rachelle Hansen for a Psychologist Office at 4443 Watervale Road for a period of 7 years to expire January 28, 2026 with the following conditions:

1. The information in the application sets forth the conditions of the accessory use permit;
2. No more than one patient at a time;
3. No business signs identifying the business

Douglas Wojcik – 7946 Halite Course, Fayetteville, NY 13066
2-Lot Subdivision – 8390 East Seneca Turnpike, Manlius, NY 13104
Tax Map # 115.-05-07.1
Mr. Wojcik stated that he would like to subdivide the land on East Seneca Turnpike so that he can build a barn with a small apartment on the second lot and keep the original house on the first lot. According to the Town of Manlius code you cannot have 2 dwellings on one piece of land, therefore he would like to split the land into two parcels.

Attorney Frateschi reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Mento made a motion, seconded by Member LeRoy and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Frateschi indicated that this action is an unlisted action under the SEQRA.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Gilbert made a motion, seconded by Member Kelly and carried unanimously to hold a Public Hearing on February 11, 2019 at approximately 6:40pm.

OTHER BUSINESS
Member Kelly stated that she had gone over to look at the Hoag Lane property. She stated that she would like to see more information about the drainage basin. She also stated that there appears to be a permanent stream that runs through the property.

Chairman Lupia said that this a proposed cluster development and we are supposed to

be using the natural contours of the land, keeping the trees there as is and it appears that the applicant is making significant changes to the landscape of the land.

Member Gilbert said that he has spent time looking at the property and it could cause hardship to surrounding homes during the construction phase. He is concerned that the character of this subdivision is significantly different from the rest of the area around it.

Engineer Miller stated that he is concerned about streams that run through the property. These streams do not appear to be designated streams by the Army Corp of Engineer or the NYS DEC.

Members Gilbert, LeRoy and Kelly all agreed that there is a stream running through the property and that NYS DEC should look at it to see if it should take jurisdiction.

Conversation ensued regarding the size of the detention pond.

Member Gilbert asked if a DEC person has been to the site to look at the drainage and other concerns they may have? Engineer Miller said that they have not been there.

The Board asked Engineer Miller to draft a letter to the Hoag Lane Applicants about having the DEC and/or the Army Corps of Engineers to go to the property to confirm that they do not want to take jurisdiction over the stream. The Board would like something back in writing.

With there being no further business, Member Gilbert made a motion, seconded by Member McGrew and carried unanimously to adjourn the Regular Meeting at 7:40 pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
June 10, 2019

APPROVED

The Town of Manlius Planning Board met in the Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Don Crossett, Mike LeRoy and Mike McGrew. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Absent: Member Mento

Also, Present: Ellen McGrew, David Muraco and Neil Ondrako

The Pledge of Allegiance was recited.

Minutes
Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to approve the minutes of April 22, 2019. Members McGrew abstained.

Empire Management Co. 4306 E. Genesee St., Dewitt, NY 13214
2 Lot Subdivision – 8394 Salt Springs Road, Manlius, NY 13104
Tax Map # 099.-02-06.1
David Muraco, the Applicant, stated that he would like to divide the 14.365-acre parcel on Salt Springs Road into 2 parcels. He will be keeping the horse barn on the property with no further development.

Attorney Sutphen told the Board that the Barn use is a primary permitted use within the Zoning district.

Member LeRoy made a motion, seconded by Member Crossett and carried unanimously to hold a Public Hearing on June 24th, 2019 at approximately 6:35pm.

Eagleview Development, 7519 Morgan Road, Liverpool, NY 13090
Site Plan Amendment - Subdivision 16 Lots - Reserve at Bishop Brook, E. Seneca Turnpike & Hyde Rd., Manlius, NY 13104
Tax Map # 115.-05-07.3
Dan Bargabos, the Applicant was there and explained to the Board that they would like to plant Norway Spruce Trees instead of the originally planned Austrian Pines. The Planning Board reviewed the application and discussion ensued.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to approve the Site Plan Amendment as proposed by the Applicant.

Accessory Use Permit Renewals: Tax Map #'s 085.-06-08.1
Thomas Harig, Insurance Agency 7153 E. Genesee St., Fayetteville, NY

Thomas Harig, Rear Apartment (Up and Down), 7153 E. Genesee St., Fayetteville, NY

Thomas Harig, 2nd Floor Apartment. 7153 E. Genesee St, Fayetteville, NY

The status of the prior Accessory Use Permits was discussed by the Planning Board. Engineer Miller stated that the Code Enforcement Officer and the Town of Manlius Police Department have not received any complaints regarding the property.

Member Gilbert made a motion, seconded by Member Kelly and carried unanimously to approve the 3 Accessory Use Permits as presented by Thomas Harig.

OTHER BUSINESS

There was a question regarding the status of the Hoag Lane project. No new subdivisions have been made to date.

With there being no further business, Member Gilbert made a motion, seconded by Member Crossett and carried unanimously to adjourn the Regular Meeting at 6:54 pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
June 24, 2019

Approved

The Town of Manlius Planning Board met in the Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Don Crossett, Mike LeRoy, Mike McGrew and Frank Mento. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Also, Present: Ellen McGrew, Stacey Kelso, Linda Kelso, Shawn Teelir?, John McCoy, Mark Bartlett, Chelsea & Corinne Fuller, Arnold Poltenson, Scott Freeman, Chuck White, Walter & Betsy Merrain?, David Brittain?, Barbara Mihalas, Dan Shulman, Jack & Sandra?, Sue Oliver, Doug & Sue Burns, Ellen Predmore, Maureen Clare?, Paul Madden, Marlene Blumer, Chris & Sara Bollinger, Gary Slutzky, Lyndsay Burn, Rob Winter, Gunther Kascha.

The Pledge of Allegiance was recited.

Minutes
Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to approve the minutes of June 10, 2019. Member Mento abstained.

Empire Management Co. 4306 E. Genesee St., Dewitt, NY 13214
PUBLIC HEARING - 2 Lot Subdivision – 8394 Salt Springs Road, Manlius, NY 13104
Tax Map # 099.-02-06.1
Mark Bartlett was present for the applicant/owner; he gave the Board a brief overview of the project. They are dividing the 1 lot into 2, keeping the barns on one parcel and the house on the other parcel.

Attorney Sutphen reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Mento made a motion, seconded by Member LeRoy and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Sutphen indicated for the record that the action is an unlisted action under SEQRA.

Member Mento made a motion, seconded by Member LeRoy and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Kelly made a motion, seconded by Member Crossett and carried unanimously

to open the Public Hearing at 6:36pm.

With there being no comment from the public, Member Gilbert made a motion, seconded by Member Kelly and carried unanimously to close the Public Hearing at 6:37pm.

Member Mento made a motion, seconded by Member Gilbert and carried unanimously to approve the 2-Lot Subdivision, Map of Salt Springs LLC prepared by David Vredenburgh, Licensed Land Surveyor, dated 05-01-2019.

David Stringer, Mallards Landing Assoc., LLC, Between Widgeon Path & Aylesbury Path, Manlius, NY 13104
Final Subdivision Approval - Mallards Landing, Phase II, Section 9, 10 Lots
Tax Map # 117-02-01.1

Attorney Dan Shulman was present representing the Applicant, David Stringer. He briefly explained to the Board what Mr. Stringer was looking to do re: the subdivision. He was going back to a subdivision previously approved by a 2018 modification. This final map is in compliance with the Preliminary Plan.

The Planning Board had a brief discussion regarding the project and with there being no more comments, Member Gilbert made a motion seconded by Member LeRoy and carried unanimously to approve The Final Plan, Mallards Landing, Phase 2 Section 9, Prepared by D.W. Haning L.S., P.C. Final Map dated 06-24-19.

Attorney Sutphen asked that the following verbiage be placed on the final map:

> This Subdivision Map supersedes Re-subdivision Map filed November 15, 2018 in the Onondaga County Clerk's Office as Map No. 12617.

Woodland Hills Subdivision (Hoag Lane Development), 201 Solar Street, Syracuse, New York 13204
Site Plan - 21-Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Attorney Tom Blair gave the Board an overview/review of the project. He stated that there is a report from Environmental Resources regarding the745 linear feet intermittent stream on site and there is a spring (about a tenth of an acre) on the property. This is not a DEC mapped stream; it falls under the Army Corp of Engineers. He summarized the following points:

1. They have adjusted the lots to comply with the Town mandated buffers.
2. The average lot sizes have decreased 2000 square feet.
3. The GEO Tech report has been done; a report is in the binder. There is no sign of karsh topography.
4. The adjustment of the lots has increased the green space.
5. The earthwork (dirt) is not leaving the site.
6. Force mains have been reduced.
7. HOA will have DCCR's and covenants will apply.
8. There has been no ground disturbance.

The applicant is before the Board tonight to re-introduce the project with all of the intermittent water courses in place, with the shrunken lots, the enlarged green space and the lot count as it exists.

Attorney Blair asked that the record reflect that the Applicant has asked to hold a Public Hearing in July. He asked if Engineer Miller would be inclined to submit a letter on his findings. Engineer Miller said that he has preliminarily looked at the new paperwork and will work on issuing a letter.

Chairman Lupia stated that the Board would normally review SEQR preceding the Public Hearing; He would also like to hear from Engineer Miller regarding his findings, thoughts and opinions, before the Public Hearing is scheduled.

Attorney Blair asked for the Public Hearing to be on July 22, 2019.

The Board decided that the Applicant isn't needed at the next meeting. The meeting will be to talk about the project amongst the Board and decide if they should go forward with a Public Hearing.

Member Crossett stated that the Board relies a great deal on Engineer Miller's input and it should be noted that the Board should have a letter in hand before any decision is made.

OTHER BUSINESS

With there being no further business, Member Gilbert made a motion, seconded by Member Crossett and carried unanimously to adjourn the Regular Meeting at 7:37 pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
July 8, 2019

Approved

The Town of Manlius Planning Board met in the Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Don Crossett, Mike LeRoy and Frank Mento. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Absent Member Gilbert, Member McGrew and Member Kelly

Also, Present: Ellen McGrew, Arnold Poltenson, Bob Eggleston, James Horton, Sara Bollinger, Sue Oliver, Doug & Sue Burns, Chuck White, Corinne Fuller, Cathy Kousmanidis, Eileen Krell, plus 2 names that aren't legible.

The Pledge of Allegiance was recited.

Minutes
The minutes were tabled until the next meeting

Linda Jones, 8317 Manlius-Cazenovia Road, Manlius, NY 13104
Site Plan/Recommendation to Town Board – Dog Grooming – 8317 Manlius-Cazenovia Road, Manlius, NY 13104
Tax Map # 117.-01-03.0
Bob Eggleston was there representing the Applicant Linda Jones. He stated that the Applicant has lived 20+ years on the property and has a dog grooming business in Manlius. She would like to scale back her current business and build a 1200 square foot building to groom dogs in on her property. 460 square feet will be used for dog grooming and the other 740 square feet will be for her own private use. Mr. Eggleston stated that there will be no boarding dogs, the dogs will be there by appointment only; hours will be Tuesday to Friday from 8am to 5pm and there will be no sign at the road.

Chairman Lupia stated that The Town of Pompey is within 500 feet of this project and he would like to hear what they have to say, if anything, before the Planning Board makes a final decision. It is a legal requirement that the Town of Pompey be notified.

Attorney Sutphen told the Board that at the last Town Board meeting there was discussion about the Planning Board and the Town Board coordinate the review of this project as required by the Special Permit Regulation of the Town. The Town Board recommended that the Public Hearing take place at the Town Board and that no additional Public Hearing will be required at the Planning Board. The Board will plan to make a recommendation to the Town Board at the next meeting. The Board may also do Site Plan Approval subject to the Special permit. Also, Site Plan approval subject to Special Permit.

Member LeRoy made a motion, seconded by Member Crossett and carried unanimously to waive a Public Hearing at the Planning Board level; the Town Board will hold the Public Hearing.

Chairman Lupia stated that this project will be tabled until the meeting of July 22.

COR Route 5 Company, 540 Towne Drive, Fayetteville, NY 13066
Subdivision/Site Plan – Chase Bank – Towne Center
Tax Map # 087.-01-18

Kate Johnson from COR was there representing the project. She stated that the applicant would like to subdivide the existing lot into 2 separate parcels, one to be kept as is the other one to be used to build a Chase Bank.

Andy Hart from Bregman Associates told the Board that the building front will face in toward the Towne Center. There will be 35 parking spaces on the property and single lane ATM drive-through. Access to the parking lot will be a one-way off of Towne Drive and another entrance and exit to the North. They will be re-locating the existing driveway into the Professional building, making it better by creating a 4-way intersection. Mr. Hart said that all utilities are already on site. Lighting will be dark sky compliant, LED lights.

Chairman Lupia is concerned about the safety issues created by cars trying to go back through the one-way only to get back to Genesee St. without going all the way around the parking lot. Mr. Bregman said that there will be a “Do not enter sign”. Chairman Lupia asked about the existing median. Mr. Bregman said that they can look into extending the median to prohibit cars from going across if they exit at the entrance only point.

Karlee Hansen spoke about the elevations, the colors of the building and the materials that will be used. She also addressed signage. There will be no monument sign on Genesee Street; the only signage will be on the building.

Member Crossett made a motion, seconded by Member LeRoy and carried unanimously to hold a Public Hearing on July 22, 2019 at approximately 6:35pm.

Woodland Hills Subdivision (Hoag Lane Development), 201 Solar Street, Syracuse, New York 13204
Site Plan - 21-Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Chairman Lupia discussed SEQR with the Board as it relates to this project. He said the board usually does SEQR before the Public Hearing but is of the opinion that the Board should hear from the Public before SEQR is determined because of the concerns that the Board has already heard. The Board is in agreement to make a SEQR determination after the Public Hearing.

Chairman Lupia asked Town Engineer Doug Miller for his preliminary findings are as follows:

1. Cluster development would be appropriate, as one of the purposes of clustering is to reduce the impact on the wetlands
2. The conventional plan appears to support a maximum 21 lots
3. The SWPPP presented by the Applicant appears to have some discrepancies from what was stated at the last meeting, Mr. Miller is working with the project Engineer to resolve these issues
4. Phasing Plans have been discussed. It is likely that the nature of the project will require some phasing as required by the DEC.

Member LeRoy asked if there was any mention of blasting on the site. Engineer Miller said that there was no indication at this time.

Chairman Lupia questioned the phasing of the project. Engineer Miller said that there should be a dust mitigation plan in place.

Attorney Sutphen said that as a procedural matter, before the Board opens the Public Hearing, the Board should make a finding as to the project being appropriate for clustering as well as a finding of the maximum number of lots a conventional plan will support.

Member Mento made a motion, seconded by Member LeRoy and carried unanimously to hold a Public Hearing on July 22, 2019 at approximately 6:40pm.

Member Crossett inquired as to Engineer Miller preparing a letter for the Board like he has done in the past. Engineer Miller responded in the positive.

OTHER BUSINESS

With there being no further business, Member Crossett made a motion, seconded by Member Gilbert and carried unanimously to adjourn the Regular Meeting at 7:11 pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
July 22, 2019

APPROVED

The Town of Manlius Planning Board met at the Manlius Fire Department, 8200 Cazenovia Road at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Don Crossett, Mike McGrew, Mike LeRoy and Frank Mento. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Absent: Member Kelly

Also, Present: Based upon persons who signed in or otherwise identified themselves: Ellen McGrew, Sean Egan, Dylan Bruns?, Dawna Hayes, Randy Luckette, Don Palumbo, Anne & Charles Barton, Jackie Ayres, Madeline Bort, Kevin & Michelle Clark, Rob Taylor, Ellen Predmore, Liz Mossovitz, Mary Ellen Branson, Heather Waters, Jason Klaiger, Shaun Tellro?, Gary Slutzsky, Kathy Englert, Donald & Martha Ponge, Walter Merriam, Nadia Schepp, Karrie & Jason Catalino, Robert Michiel, Chelsea & Corinne Fuller, Bob Eggleston, Sara & Chris Bollinger, Eileen Krell, Anthony DeVincenti?, Jaya Nemani, Jen & Rob Winter, Howard Woronor, Laurie Obrist, Linda & Peter McShane, Jacob & Sandra Niziol, Rite & Suresh, David Brittain, Carmela Peters, Susanne Oliver, Kara & Drew Clippard, Doug & Sue Burns, Betsy Merriam, Jamie Pomilio-Mulcahy, John Hamilton, James Horton, James & Susan Ryan, Linda Jones, Elaine Denton, Kathleen Best, Chuck White, Cathy Kousmanidis, Marlene Blumin, John Loeffler, Matt Mulcahy, France Smith, John Burns, Tom Blair, Barbara Mikalas?, Liz & Mary?, Gunther Kascha, Don Gates, Trevor Gates, Wilson Simmons.

The Pledge of Allegiance was recited.

Minutes

Member McGrew made a motion seconded by Member LeRoy and carried unanimously to approve the minutes of June 24, 2019.

Member Gilbert made a motion, seconded by Member Crossett and carried unanimously to approve the minutes of July 8, 2019. Members Gilbert and McGrew abstained.

Linda Jones, 8317 Manlius-Cazenovia Road, Manlius, NY 13104
Site Plan/Recommendation to Town Board – Dog Grooming – 8317 Manlius-Cazenovia Road, Manlius, NY 13104
Tax Map # 117.-01-03.0

Mr. Robert Eggleston, Architect, stated that they were before the Board 2 weeks ago and that they were here tonight for a recommendation to the Town Board for a Special Use Permit.

Member Leroy made a motion, seconded by Member McGrew and carried unanimously to send a positive recommendation to the Town Board for a Special Use Permit for this application. (Please see attached resolution)

Attorney Sutphen reminded the Board that the Public Hearing will take place at the Town Board level.

Revive Syracuse Home Rescue LLC, 7189 East Genesee St., Fayetteville, NY 13066
Accessory Use Permit – Real Estate Office– 7189 East Genesee St., Fayetteville, NY 13066
Tax Map # 087.-07-48.2

Don Palumbo, Owner, gave some background on the property and made a presentation for his plan. He then explained that he would like to lease the front half of the building (the 1st and 2nd floor of the front half of the building) to a Real Estate Broker, Better Homes and Gardens Select. Hours of operation will be 8:30am – 5pm, Monday-Friday.

Chairman Lupia stated that there was an error on the Agenda and this item is indeed for a Real Estate Broker office, not an Apartment.

Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to hold a Public Hearing on August 12, 2019 at approximately 6:35pm.

COR Route 5 Company, 540 Towne Drive, Fayetteville, NY 13066
PUBLIC HEARING – 2-Lot Subdivision/Site Plan – Chase Bank – Towne Center
Tax Map # 087.-01-18

Kate Johnson, COR Development, Andy Hart, Bergman Associates and Carly Hansen, COR Development were present to speak about the project.

Ms. Johnson made a presentation of the planned project. She stated that the gazebo, planters and such are going to stay in their current locations. The clocktower will have to be moved, so it will be more central in the park area.

Attorney Sutphen reviewed the Long Form EAF with the Board.

Member Mento made a motion, seconded by Member LeRoy and carried unanimously to issue a Negative Declaration in regard to SEQR with the condition that Lot 10B always remain a park-like setting and not be commercially developed.

Member LeRoy made a motion, seconded by Member McGrew and carried unanimously to open the Public Hearing at 7:10pm.

1. Resident from Burdick St. – concerned about the effect the drainage that this project will have on his property;

2. John Hamilton – Euclid Dr. – Not in favor of the project; concerned about pedestrian access to Towne Center, sidewalks; he would like the gazebo to be taken out and a garden to be planted;
3. Resident from 102 Warner Rd. – Opposed to the project; she uses the gazebo;
4. Ellen McGrew – Limberlost Lane – concerned about the visual impact that the building will have on Town Center; concerned about the trees on the property, are they coming down; Ms. Johnson said that the trees are staying;
5. Chelsea Fuller – concerned about the lack of green space;
6. Ms. Wilson – 106 Fayette Circle – concerned about drainage; too much parking and traffic concerns; concerns about animals; flooding;
7. Robert Taylor – 102 Fayette Circle – already another bank nearby, don't need another one so close;
8. Kerry – 300 Fayette Drive – concerned about long term traffic issues; asked about pedestrian walkways.

Member Crossett made a motion, seconded by Member Gilbert and carried unanimously to close the Public Hearing at 7:36pm.

Conversation ensued regarding the Public input about the project.

Member LeRoy made a motion, seconded by Member Crossett and carried unanimously to table the Application until August 12, 2019.

Chairman Lupia told the audience that the Board was going to take a 5-minute break before moving onto the next Agenda item.

Woodland Hills Subdivision (Hoag Lane Development), 201 Solar Street, Syracuse, New York 13204
PUBLIC HEARING - Site Plan - 21-Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2
Attorney Tom Blair representing the applicant, presented the project, giving a brief overview.

Chairman Lupia stated that before a Public Hearing, the Planning Board will usually determine SEQR, but in this instance the Board would like to hear from the Public and have determined that it will undertake the SEQR review process at later date, after public input.

Chairman Lupia asked Engineer Miller about the memo that was written to the Board from Miller Engineering. Engineer Miller reviewed the conventional plan versus the cluster plan regards to the memo. Please see the Letter of Miller Engineering dated, July 19, 2019 which is incorporated by reference herein.

Attorney Sutphen read aloud a proposed resolution which had been delivered & reviewed by Planning Board members in advance of the meeting regarding a

determination as required to a maximum number of lots a conventional plan would allow.

Member Gilbert made a motion, seconded by Member Mento and carried unanimously to adopt the resolution to have the maximum number of Lots on the property be 21 according to the resolution attached hereto.

Member Crossett made a motion, seconded by Member LeRoy and carried unanimously to open the Public Hearing at 8:20pm.

Chairman Lupia stated that the Board has received letters from the following residents: Chelsea Fuller, Douglas & Susan Burns, Paul & Alice Massa (2 Letters), Gary Slutzsky, Rose & Gunther Kascha, Howard & Linda Hollander, Jacob & Sandra Niziol, Barbara Ulrich, an email from Erin Poole.

The following members of the public spoke, with a brief summary of each herein:

1. Matt Mulcahy – 7815 Karakul Lane – concerns about green space, drainage, wetlands, streams, one way in and one way out of the development, issues with the HOA, project in multiple phases? How many years?, concerns about the SWPPP, the original application & EAF of the application and traffic concerns;
2. Nadine Bell, Attorney – Representing Hoag Lane concerned Neighbors group: summarized her letter previously submitted to the Board including: there will be adverse effects on the neighborhood; setbacks on a couple of lots; the conventional plan is flawed; drainage/flooding concerns; easement issues; HOA and stormwater issues; concerns with the school district; sanitary sewer concerns;
3. Kathy Engler – 516 South Manlius Street – project will benefit the community; has traffic concerns;
4. Eileen Krell – 5205 Hoag Lane – drainage concerns;
5. Doug Burns – 5268 Hoag Lane – drainage concerns; oversized ponds; who is going to do the up-keep on the wet pond?; schools will be overcrowded; traffic concerns;
6. David Brittain – creek concerns; traffic issues, school overcrowding; property values; drainage concerns; concerned about the ponds and how deep they will be;
7. Nadia Hullar-Schepp – 611 South Manlius Street – in favor of the project; the project will have a positive impact on small businesses in the area;
8. Paul & Alice Massa – 612 Churchill Court -concerns on the ponds; pollution, sewage and noise control issues; tree concerns; adjoining lot size concerns; concern about the construction staging area;
9. Kathy Best – 8507 Woodbox – concerned about drainage and maintenance of drainage issues as reflected in prior subdivisions;
10. Ellen Hoffer- Predmore- 5103 Shiraz Lane (corner of Hoag and Shiraz) - concerns about 21 new houses being built when there are already so many for sale; what is the timeline for the project?; traffic concerns; issues with the pond;

entrance & exit concerns into the development; drainage concerns; underground water concerns; is there going to be mosquito spraying now that there are going to be ponds?;

11. Mary Ellen Branson – 5120 Shiraz Lane – progress is a good thing, not against it but; drainage & storm sewer concerns;
12. Don Ponge – 5117 Shiraz Lane – traffic concerns; Hoag Lane is already undersized; water concerns;
13. James Ryan – Shiraz Lane – questions the water issues;
14. James Horton – 5228 Hoag Lane – water issues/concerns; safety concerns on the roadway; concerned about when building will begin (time);
15. Ms. Wilson – 107 Dawley Road – traffic concerns; drainage concerns;
16. Maury – 103 Dawley Road – thinks the plan is good; wants it to be done right;
17. Dylan – 7821 Karakul Lane – good plan, not opposed to it;
18. Jason Maxon – Brickyard Falls Area – concerns about water; school numbers have dropped;
19. Alice Massa – Hoag Lane – read a letter from a water Engineer from ESF;
20. Gary Slutsky– 5112 Muirfield Drive – drainage concerns; wants no new development until drainage/water issues are fixed that are present in the area;
21. Shawna Teelin – grew up on 5152 Hoag Lane – read a letter from residents at the stop sign on Hoag Lane – Michael and Karen Murphy – they do not approve or support the development; Ms. Teelin would like to see new construction;
22. Jamie Pomilio-Mulcahy – 7185 Karakul Lane – spoke about houses for sale in the area; the Town does not need new construction;
23. Ann Barton – 316 Dawley Rd. – concerned about road width and safety of people walking on the road; concerned about one way in one way out of Hoag Lane;

Attorney Tom Blair told the Board that the following people have written letters to him in favor of the project: James Blasting, Lauren Muraffa, Andrew Fish, CenterState CEO, Christopher Teelin. Attorney Blair gave the letters to the Clerk.

Member Gilbert made a motion, seconded by Member Crossett and carried unanimously to adjourn the Public Hearing until August 26, 2019.

Chairman Lupia stated that the Board would like to hear more from the Onondaga County Planning Board before a decision is made.

OTHER BUSINESS

With there being no further business, Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to adjourn the Regular Meeting at10:08pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
August 12, 2019

APPROVED

The Town of Manlius Planning Board met at the Manlius Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Mike McGrew, Mike LeRoy and Frank Mento. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Absent: Member Crossett

Also, Present: Ellen McGrew, Dawna Hayes, Patrick Hill, Karne Catalin, Jason Catalin, Robert Taylor, Arnold Poltenson, Elaine Denton, Don Gates, Espinozas, O'Connor, Bollinger

The Pledge of Allegiance was recited.

Minutes
Member LeRoy made a motion seconded by Member Gilbert and carried unanimously to approve the minutes of July 22, 2019. Member Kelly abstained.

Revive Syracuse Home Rescue LLC, 7189 East Genesee St., Fayetteville, NY 13066
Accessory Use Permit – Real Estate Office– 7189 East Genesee St., Fayetteville, NY 13066
Tax Map # 087.-07-48.2
Chairman Lupia stated that the Applicant has requested an adjournment of the Public Hearing. The Town Engineer has provided the Applicant and the Board information that is still needed to complete the application. In light of that an adjournment was granted to a date to be determined. When the information is supplied by the applicant, a new Public Hearing will be scheduled, the application will be republished.

COR Route 5 Company, 540 Towne Drive, Fayetteville, NY 13066
PUBLIC HEARING – 2-Lot Subdivision/Site Plan – Chase Bank – Towne Center
Tax Map # 087.-01-18
Chairman Lupia stated that at the July 22, 2019 meeting SEQR was completed and a Public Hearing was held regarding this project.

Member Mento enters the meeting at 6:32pm

Member Kelly stated that the project is a good idea and that the gazebo shall remain is a good plan. Leaving the greenspace/park is good.

Chairman Lupia said that one of the biggest complaints is that has been heard is that there are enough banks in the area and that the Board should not let another bank be

built. That is a matter of opinion and not within the purview of this Board.

Attorney Sutphen went over the prepared resolution which had been provided to the Planning Board Members in advance of the meeting with opportunity to comment. (Please see the attached resolution).

After discussion thereon, Member Kelly made a motion, seconded by Member Mento and carried unanimously to accept the attached resolution to approve the 2-Lot Subdivision, dated 06-25-19, prepared by CNY Land Surveying, File No. 19.086.

Member Mento made a motion, seconded by Member Kelly and carried unanimously to approve the Site Plan, dated 06-25-19, prepared by CNY Land Surveying, File No. 19.086.

Member Mento asked about easement rights to Lot 10B. There will be easement rights between Lots 10A and 10B.however they shouldn't be necessary because no one should be driving to Lot 10B. He also expressed that a bank is the lesser of the evils and that its a well-designed project.

Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to authorize the Chairman to sign the Final Map.

OTHER BUSINESS

Chairman Lupia stated that he and the Board should talk about Hoag Lane. The Public Hearing is still open and will continue 2 weeks from tonight.

Member Kelly asked about the consensus was from the Public Hearing.

Chairman Lupia said that there were 23 speakers and a number of issues were raised. Traffic seemed to be one of them, Hoag Lane is not designed for pedestrian traffic, it is a street "by use". A big concern was the Detention Pond, and this concerns the Chairman. He said that is concerns him because 40 feet is an extremely large volume of water.

Member Mento stated that he had 3 statements on the project: if its designed properly; if its constructed properly and if its maintained properly along with the HOA. If those 3 things happen, then it's very difficult to take a negative position.

The board collectively agreed that they are concerned about the HOA.

Member Kelly asked what happens when the HOA is no more? Does the Town take over?

Chairman Lupia asked about possibly setting up a Special District? He asked what Engineer Miller thought. Engineer Miller said that its possible, but its not consistent with what the Town has down in the past.

Engineer Miller spoke about the other SWPPP's that we have in the Town of Manlius and how they are maintained.

The Board is concerned with pedestrian traffic on Hoag Lane.
Member McGrew is concerned with the HOA and how it will be maintained. He is also concerned about grinder pumps and what happens if there is a power outage.

Chairman Lupia stated that the purpose of the next Planning Board meeting on August 26 is to continue the Public Hearing in the event anyone new wanting to speak can and then should move into the SEQR process.

Conversation ensued regarding the SEQR process for this project.

Engineer Miller stated that all the comments, including the memo written from Miller Engineers, have been sent to the Applicant and to date there has been no response to date.

The Board generally agreed that the issues of 1) Proper design; 2) Proper construction; 3) Proper maintenance of drainage, etc. are key issues that must be addressed by this Board as the project moves forward.

With there being no further business, Member Gilbert made a motion, seconded by Member Mento and carried unanimously to adjourn the Regular Meeting at 7:23pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
August 26, 2019

APPROVED

The Town of Manlius Planning Board met at the Manlius Town Hall at 6:30 PM with Acting Chairman Fred Gilbert presiding and the following Members were present: Ann Kelly, Mike McGrew, Mike LeRoy, Mike McGrew and Frank Mento. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Absent: Chairman Lupia

Also, Present: Ellen McGrew, Mark & Mary Currell, Francoe Smith, Jamie Pomillo Mulcahy, Mary Ellen Branson, Chelsea Fuller, Corinne Fuller, Ellen Hoefer Predmore, John M. O'Connor, K.P. Kelly, Faye Dannick, Lee Tedeschi, Alianno?, JE Ryan?, Lois Schroeder, Al Doming, Maureen Clark, Marlene Blumin, Paul Maddon?, Anne Barton, Joni Dominy, Harry G. Stewart, Robert Michiel, Jim Blasting, Tyler Buesching?, Chuck White, Eileen Krell, Sue Oliver, Wilson Simmons, Joanne Britt?, Phil Britton, Paul & Alice Massa, Gunther Kascha, Patty & Robb Carey, James Horton, Gary Slutsky, Sue & Doug Burns, Elaine Denton, David Brittain, Rob & Jen Winter, Prerna Deer, Sean Egan, Ghsa Ryan?.

The Pledge of Allegiance was recited.

Minutes
Member LeRoy made a motion seconded by Member McGrew and carried unanimously to approve the minutes of August 12, 2019. Member Crossett abstained.

Harry Stewart, 6520 Schepps Corners Road, Kirkville, NY 13082
Accessory Use Permit – Treasure Hut – 6520 Schepps Corners Rd.
Tax Map # 050.-02-02
Mr. Stewart, the Applicant explained his business to the Board stating that he repairs jewelry, clocks, watches, etc.

Acting Chairman Gilbert stated that since this application is on a County Rd., the Board has to send the application to the Onondaga County Planning Board (OCPB). With the Board not being able to act on this application until they receive a decision from the OCPB, Acting Chairman Gilbert stated that he would like to hold the Public Hearing on September 23, 2019.

Member Kelly made a motion, seconded by Member Crossett and carried unanimously to hold a Public Hearing on September 23, 2019 at approximately 6:35pm.

Woodland Hills Subdivision (Hoag Lane Development), 201 Solar Street, Syracuse, New York 13204
CONTINUED PUBLIC HEARING - Site Plan - 21-Lot Subdivision – 5290-5320 Hoag

Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Acting Chairman Gilbert asked the Board if they had anything that they would like to talk about before the Public Hearing continued.

Member McGrew asked if the Town Engineer had heard anything from the Applicant in terms of the letter that Mr. Miller sent. Engineer Miller said that nothing has been received to date.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to continue/resume with the Public Hearing. A summary of the Public Comments follows:

1. James Ryan, 5124 Shiraz Lane – questioned the Board as to their knowledge of several issues on the Site Plan;
2. Jim Blasting, 7843 Karakul Lane – questioned as to SWPPP requirements; sewer line management; underground springs, etc.; he stated that the property is Zoned Residential, doesn't understand why the current owner could not use the land for residential use;
3. Chuck White – 5121 Shiraz Lane – questioned whether the Public Hearing remain open if the applicant has not addressed any of the issues so the public can comment;
4. Mary Ellen Branson – 5120 Shiraz Lane – expressed major concerns regarding the retention pond;

Tom Blair, Attorney for the Applicant stated that the Board and the applicant have looked at the drainage and the retention ponds, they have spoken about the fence surrounding the pond; he spoke about the SWPPP; he said that the HOA is in charge of drainage;

5. Lynn Paddock – 211 Dawley Rd. – asked about water permeable surface; Attorney Blair said that homeowners will be allowed to choose water permeable options, such as driveways, walkways, pool aprons, patios and will be encouraged to do so;
6. Ann Barton – 316 Dawley Rd. – concerned about traffic issues; ingress and egress issues;
7. Faye Dannick – Churchill Lane- expressed that she is against the development;
8. Jamie Pomillo Mulcahy – 7815 Karakul Lane – expressed concerns about the retention ponds and the "professional" HOA's;
9. Dave Britton – 5270 Hoag Lane – wants information on whether there will there be drilling; rock;
10. Alice Massa – Churchill Court – is concerned about standing water; mosquito's; the EEE virus; is there going to be blasting; conservation easement/forever wild concerns;
11. Corrinne Fuller – 5142 Hoag Lane – expressed concerns about the traffic on Hoag Lane; whether it has to be 20 homes, and whether the number of homes can be reduced;

12. Matt Mulcahy – 7815 Karakul Lane – concerned that the streams and the wetlands not being mentioned in the SWPPP; concerned that people whom are getting paid by the developer have been the ones providing information so far;
13. Chelsea Fuller- 5214 Hoag Lane – talked about drainage concerns in the area; is against the project; she would like to see no new construction in the area;
14. Wilson Simmonds – 107 Dawley Road – expressed concerns with water;
15. Gary Slutsky – 5112 Muirfield Dr. – concerns about water/drainage in the area and traffic study;
16. Mary Ellen Branson - Shiraz Lane – would like to hear a summary of the meeting;
17. Ellen Predmore – Shiraz Lane – expressed traffic and water concerns;
18. Don Gates – Post Road – cannot speak to this project, but he has concerns over traffic and the loss of green space.

Acting Chairman Gilbert requested that Member Mento reiterate for the Public and summarize the matters within the Board that had been discussed at the last meeting.

Member Mento explained that with this project, the Board will be looking at 1). Proper design; 2) Proper construction; 3) Proper maintenance. There are key issues that must be addressed by this Board as the project moves forward.

With there being no more comments from the Public, Member Kelly made a motion, seconded by Member Mento and carried unanimously to close the Public Hearing at 8:11pm.

OTHER BUSINESS

With there being no further business, Member Mento made a motion, seconded by Member Crossett and carried unanimously to adjourn the Regular Meeting at 8:12pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
September 23, 2019

APPROVED

The Town of Manlius Planning Board met at the Manlius Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Ann Kelly, Mike McGrew, Mike LeRoy, Mike McGrew and Frank Mento. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Absent: Member Gilbert

Also, Present: Ellen McGrew, Chelsea Fuller, Corinne Fuller, Harry G. Stewart, Eileen Krell, Sue Oliver, James Horton, Sue & Doug Burns, Elaine Denton, Eileen Bonk?, G. Kascha, Betsy M?

The Pledge of Allegiance was recited.

Minutes

Member Kelly made a motion seconded by Member LeRoy and carried unanimously to approve the minutes of August 26, 2019. Chairman Lupia abstained.

Harry Stewart, 6520 Schepps Corners Road, Kirkville, NY 13082
PUBLIC HEARING - Accessory Use Permit – Treasure Hut – 6520 Schepps Corners Rd.
Tax Map # 050.-02-02

Mr. Stewart, the Applicant explained his business to the Board stating that he repairs jewelry, clocks, watches, etc. and the number of people who visit his business per day. He operates the Accessory Use out of a garage structure on his residential premises.

Member LeRoy made a motion, seconded by Member Kelly and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Sutphen indicated for the record that the action is an Unlisted Action under SEQRA.

Attorney Sutphen reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Mento made a motion, seconded by Member Crossett and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Kelly made a motion, seconded by Member Crossett and carried unanimously to open the Public Hearing at 6:38pm.

With there being no comment from the public, Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to close the Public Hearing at 6:39pm.

Member Kelly made a motion, seconded by Member Mento and carried unanimously to approve the Accessory Use Permit for Harry G. Stewart, prepared by Cottrell Land Surveyors, P.C., dated 2004. for a period of 7 years to expire on September 23, 2026. *See supplement to resolution at "other business" below.*

Woodland Hills Subdivision (Hoag Lane Development), 201 Solar Street, Syracuse, New York 13204
Lead Agency for SEQR Determination - Site Plan - 21-Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Chairman Lupia stated that this project has been before the Board in various forms for almost 2 years. Now that there is a new submission, Lead Agency should be determined.

Member Mento made a motion seconded by Member LeRoy and carried unanimously to declare the Town of Manlius Planning Board Lead Agency for SEQR. Attorney Sutphen stated that this is an Unlisted Action for coordinated review.

Attorney Sutphen stated that other departments such as The Onondaga County Planning Board, the Department of Health and possibly the Department of Environmental Conservation will have a chance to weigh in on this project and notices will be sent.

Member Mento asked if this project is an Unlisted Action. Attorney Sutphen said yes because it does not meet the threshold for a Type 1, however the Applicant has submitted a Long Form EAF at the Planning Boards request. Supplementary information was supplied by the Applicant today. It will be reviewed to determine completion of the application and will undergo Engineering review as well.

OTHER BUSINESS

Chairman Lupia reminded the board that October 14 is a holiday and there will be no meeting. The next meeting will be October 28, 2019.

Member Kelly made a motion seconded by Member McGrew and carried unanimously to revise the previous motion regarding the Accessory Use Permit application to include the following information: The Onondaga County Planning Board sent a resolution concerning the property and there was a recommendation by the Onondaga County Planning Board regarding a requirement that the applicant consult with the Department of Transportation regarding installing a commercial driveway on the premises. The resolution of the Town of Manlius Planning Board regarding the application of Harry Stewart is modified to add that the Planning Board override the recommendation of the Onondaga County Planning Board by a majority plus 1 vote.

With there being no further business, Member Mento made a motion, seconded by Member LeRoy and carried unanimously to adjourn the Regular Meeting at 6:45pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
January 6, 2020

APPROVED

The Town of Manlius Planning Board met in the Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Mike LeRoy, Frank Mento and Arnie Poltenson. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Also, Present: Mike and Ellen McGrew, Elaine Denton and Chris Bollinger

The Pledge of Allegiance was recited.

Supervisor Edmond Theobald presented former member Don Crossett with a Proclamation for his dedicated service to the Planning Board. Member Crossett retired from the Board on December 6, 2019.

Chairman Lupia introduced new member Arnie Poltenson to the Board. Arnie has been appointed to fill Don Crossett's term.

Minutes

Member LeRoy made a motion, seconded by Member Mento and carried unanimously to approve the minutes of September 23, 2019. Member Gilbert abstained.

Organizational Meeting 2020

The Town Board appointed Joseph Lupia Chairman of the Planning Board for a period of 1 year.

The Town Board appointed Arnold Poltenson to a term of 3-years to expire December 31, 2023. (Filling the term of Don Crossett).

Member Mento made a motion, seconded by Member Gilbert and carried unanimously to appoint Baldwin, Sutphen and Frateschi Law Firm as Attorney for the Planning Board for 2020.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to appoint Miller Engineering as the Planning Board Engineer for 2020.

Member Kelly made a motion, seconded by Member Mento and carried unanimously to appoint Lisa Beeman as the Planning Board Clerk for 2020.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to approve the Planning Board 2020 Meeting Schedule, which states that the Board will meet on the 2nd and 4th Mondays of the Month at 6:30 PM and the Board approved the Application Filing Deadline Schedule.

Planning Board Meeting Schedule for 2020	
Meeting Date	**Filing Deadline**
January 6, 2020	December 18, 2019
January 27, 2020	January 16, 2020
February 10, 2020	January 30, 2020
February 24, 2020	February 13,2020
March 9, 2020	February 27, 2020
March 23, 2020	March 12, 2020
April 13, 2020	April 2, 2020
April 27, 2020	April 16, 2020
May 11, 2020	April 20, 2020
June 8, 2020	May 28, 2020
June 22, 2020	June 11, 2020
July 13, 2020	July 2, 2020
July 27, 2020	July 16, 2020
August 10, 2020	July 29, 2020
August 24, 2020	August 13, 2020
September 14, 2020	September 3, 2020
September 28, 2020	September 17, 2020
October 26, 2020	October 15, 2020
November 9, 2020	October 29, 2020
November 23, 2020	November 12, 2020
December 14, 2020	December 3, 2020
December 28, 2020	December 17, 2020

Woodland Hills Subdivision (Hoag Lane Development), 201 Solar Street, Syracuse, New York 13204
Continued - Site Plan - 21-Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2

Chairman Lupia stated that he received word late today that the Applicant requested a postponement for tonight's meeting.

Conversation ensued regarding the memo that was sent to the Applicant by Miller Engineering with specific items to be addressed after the applicants last submittal. There are issues to be addressed. Engineer Miller stated there remain issues about the pond(s) which have yet to be addressed. An appropriate geotechnical report has yet to be provided although it has been asked for over a period of the several years this matter has been pending; a sewer offset plan needs to be addressed and confirmation that the SWPPP is up to date needs to be confirmed, as there was an old date on the submittal.

The amount of dirt being moved, the use of a second pond and the storage of dirt are among the issues that need to be flushed out.

The Board discussed that the engineering design details of the project appear to be the threshold matter to be resolved so this matter can move through the Planning Board process. The Board is of the opinion that before a general work session may be order that the engineering issues be worked through between and among the Town Engineer and applicant engineers. It is understood at this point that the applicant will be addressing the list of items and then the engineers can get together.

OTHER BUSINESS

With there being no further business, Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to adjourn the Regular Meeting at 6:58 pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
February 24, 2020

APPROVED

The Town of Manlius Planning Board met at the Immaculate Conception Church at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Fred Gilbert, Ann Kelly, Mike LeRoy, Frank Mento and Arnie Poltenson. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Also, Present per sign-in sheet: Town Board Member Sara Bollinger, Town Board Member Heather Waters, Ellen & Mike McGrew, Lori Bort, LaShawnda Giuffrida, Daniel Madugno, Elizabeth Bough Martin, Melinda Kopp, Marie Slater, Curtis Slater, Maryann Slater, Tom Kopp, Junmian? Zhang, Sara Bollinger, Dan & Amy DeBlois, B Meuiar?, Nick Koziol, Mark Bort, Victoria Balintfy, Shorn Mennig, All Mennig, Jason Rutkey, Madeline Bort, Kim Gaspari, Lei Tang, Shere Brown, Scott Sugar, Sue Sugar, Kevin Conway, Leah Conway, Jason Boyce, Thomas R. Schepp, Scott Fuller, Samantha Otis, Chris Demers, Sean Brown, Jason Caraher, Kristy Caraher, Karen Green, Carlie Hanson, Timothy Kelly, David Dukat, Sughash C. Das, Robert Schwanke, Kristen Rutkey, Andrew Demers, Nicholas Rhyde, Stephanie Rhyde, Leisha Dukat, Steven Kelly, Amy Barrett, Mark Barrett, Keith Saville, Christine Saville, Eric Gerace, Kim Gerace, John Beecher, Valerie Beecher, Tony L. Waddell, Kim Schwanke, Jason Klaiber, Cheryl Demers, Tom & Jessica Costa-Umina, Josh Eastman, Allison & Eric Sczerbaniewicz, Gina Godier, Christine Kelly, Paul Crescenzi, Dira Elzourkany?, Heather Waters, Brandon Jacobson

The Pledge of Allegiance was recited.

Minutes
Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to approve the minutes of February 10, 2020

COR Development – 540 Towne Drive, Fayetteville, NY 13066
Amended Site Plan – Monument Sign - Towne Drive – Between Pizzeria Uno's and Mary Lou Corcoran's Building
Tax Map # 087.-01-20.0
Carlie Hanson from COR Development was there to explain the project. She stated that Target has asked to install a sign to show traffic where to go. It will be a free-standing sign, 6 feet in height.

Member LeRoy made a motion, seconded by Member Kelly and carried unanimously to approve the monument sign as presented. Chairman Lupia stated that SEQR did not need to be done because this project is of minimal change to the Site Plan.

Member Mento entered the meeting at 6:38pm.

Brolex Properties – 5912 North Burdick Street, East Syracuse, NY 13057
PUBLIC HEARING - Recommendation for Zone Change – Bridle Path/Megnin Farms Apartments – Corner of Strawmount Trail and State Route 5, Chittenango, NY
Tax Map #'s 082.-02-02 and 082.-02-03.0

Brandon Jacobson, Brolex Properties, briefly explained the project that requests a Zone Change for this property from its current mixed zoning status being primarily RA; with a small section of CA zoning along Genesee Street to R-5. He stated that the applicant would like to provide a mixed/commercial/residential use for the property. They would like to construct 5 3-story apartment buildings, with elevators, primarily intended to serve seniors and others who can't move into the area due to price point.

Chairman Lupia noted the significant number of written materials that have been submitted by members of the public in opposition to this project which are part of the public record.

Member Poltenson made a motion, seconded by Member Kelly and carried unanimously to open the Public Hearing at 6:40pm.

Chairman Lupia expressed that although there will be no time limit for the public to speak, he asked that members be aware of time and not be repetitious.

The following members of the public spoke, with a brief summary of each herein:

1. Cheryl Demers – 8855 Haystack Lane – concerns about traffic, stormwater, wetlands and sewers. She referred to a document she prepared which was previously submitted as part of the record.
2. Tom Umina – 8859 Haystack Lane – concerns about water issues, swales are always full, urban sprawl, and traffic concerns.
3. Tony Waddell – 8827 Quarter Horse Run – concerns about overdevelopment, urban sprawl, school overcrowding, safety and security; he would like to see houses built, not apartments.
4. Marie Slater – 5823 Strawmount Trail – traffic and safety concerns.
5. Gina Godier – 5089 Strawmount Trail – traffic and safety concerns.
6. Allison Sczerbaniewicz – 5843 Strawmount Trail – there is no data for Senior housing, traffic concerns, crime and pollution issues, and property values will dramatically decrease.
7. Shere Brown – 8856 Haystack Lane – swales are at capacity, water and runoff issues, no HOA (that they were all promised would be put in place).
8. Leisha Dukat – 5855 Strawmount Trail – concerns about loosing greenspace, density,, the negative impact this project will have on property values, traffic study issues, light and noise pollution.
9. Valerie Beecher – 5799 Strawmount Trail – house will be directly impacted by this project, referred to the Planning Board Minutes and Map of 04-27-09 regarding "Lot 90 is not a buildable lot".

10. Madeline Bort – Elm Street – concerns about the police and fire department impacts, traffic concerns, water runoff issues.
11. Lori Bort – 8812 Quarter Horse Run – concerned about the safety of the children in the neighborhood with potentially more cars, school bus concerns, water issues, pictures were submitted concerning water.
12. Eric Gerace – 8849 Haystack Lane – noise pollution concern, inquired about a Town wide Comprehensive Plan.
13. Elizabeth Bough Martin, Mayor, Village of Chittenango – she is not sure that the waste water treatment plant in Chittenango can handle the capacity of the proposed complex; the developer has not approached the Village with this project so she doesn't have accurate numbers, would like more open communication in the future regarding this project and anything further proposed for the site;
14. Daniel Modugno – 5809 Strawmount Trail – noise and pollution concerns, concerns about wildlife and ticks.
15. Scott Sugar – 5827 Strawmount Trail – stated that this project will impact the school district.
16. Chris Demers – 8855 Haystack Lane – concerned about the wildlife in the area especially the turtles.
17. Tom Schepp – questions about how the property is zoned the way it is, there is a need for Senior Housing in the Town and why is there no Comprehensive Plan.
18. Lei Tang – 5854 Strawmount Trail – flooding concerns.

Many members of the Public noted that when trying to purchase their property they were told by the Developer (Oot) and/or the Home Builder (Ryan Homes) that the property of issue could not be developed. It was agricultural and/or residential land only. They purchased with this knowledge and would not have purchased if the land was zoned otherwise. Each member of the public who spoke expressed great concern over the proposed re-zoning & opposed same; many members explained the unique nature of the Megnin Farms residential area & expressed concern that the unique neighborhood of Megnin Farms would be negatively impacted.

With there being no more comments from the audience, Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to close the Public Hearing at 8:14pm.

Chairman Lupia explained to the audience and the Board that there are now 2 choices in the matter of this project:

1. The Board can vote on a recommendation now or
2. The Board can ask Attorney Sutphen to draw up a resolution to include all the concerns that were heard tonight and comments that the Board may have.

Member Kelly made a motion, seconded by Member Poltenson and carried unanimously to hold off on a final determination until the Town Attorney can work on a resolution with the Board Members including issues raised this evening.

OTHER BUSINESS

Chairman Lupia updated the Board on the Woodland Hills Subdivision, Hoag Lane,. He stated that the applicant has responded to the memo from Town Engineer Doug Miller with a 25-page response. He also stated that there are still many insufficient details that need to be addressed before anyone can move forward. There have also been no new drawings submitted to date.

Chairman Lupia said that Woodland Hills, Hoag Lane, will more than likely be placed on the March 9th Planning Board Agenda.

With there being no further business, Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to adjourn the Regular Meeting at 8:18 pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
March 9, 2020

APPROVED

The Town of Manlius Planning Board met at the Manlius Town Hall at 6:30 PM with Chairman Joseph Lupia presiding and the following Members were present: Ann Kelly, Mike LeRoy, Frank Mento. Also, present were Attorney Tim Frateschi and Town Engineer Douglas Miller.

Absent: Member Poltenson and Member Gilbert

Also, Present per sign-in sheet: Town Board Member Heather Waters, Ellen & Mike McGrew, Madeline Bort, Leisha Dukat, Valerie Beecher, Sue Oliver, James Horton, Chris & Cheryl Demers, Doug & Sue Burns, David Brittain, Warren Linhart, Marlene Blumin, Sean Egan, Madeline Bort, Matt Mulcahy, Chelsea Fuller, Stacey Kelso, 2 names are illegible.

The Pledge of Allegiance was recited.

Minutes
Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to approve the minutes of February 24, 2020.

Brolex Properties – 5912 North Burdick Street, East Syracuse, NY 13057
Recommendation for Zone Change – Bridle Path/Megnin Farms Apartments – Corner of Strawmount Trail and State Route 5, Chittenango, NY
Tax Map #'s 082.-02-02 and 082.-02-03.0
Chairman Lupia stated that the Town Board had received a letter from Brolex Properties requesting that the application be withdrawn, and no further action be taken.

Brolex Properties – 5912 North Burdick Street, East Syracuse, NY 13057
Recommendation for Zone Change – Freeman Estates – 7430 Highbridge Road, Fayetteville, NY 13066
Tax Map # 101.-02-02.1
Chairman Lupia stated that the Town received a phone call from the Applicant asking to be taken off the agenda until further notice.

Woodland Hills Subdivision (Hoag Lane Development), 201 Solar Street Syracuse, New York 13204
Continued Site Plan - 21-Lot Subdivision – 5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2
Chairman Lupia stated that this project has been going on for almost 2.5 years. There have been numerous meetings and we are concerned that there is inadequate movement. Chairman Lupia the project has stalled and asked Engineer Miller if he knew

how many meetings there have been and what type of meetings there have been since the start of this project.

Town Engineer Doug Miller there have been at least 6 meetings and several phone calls with the applicant. The last meeting was in October 2019 to try and wrap up some loose ends. There was an updated submission in December 2019 received.

The following is a list of some of the items Engineer Miller discussed that are still outstanding:

1. To date no GEO Tech report has been submitted – have been asking for 2 years
2. In the 2019 submission, there are concerns with the drainage basin – there is no dedicated overnight discharge – need more detail
3. Waiting for a letter from the DEC regarding whether the impoundment is a dam on the property
4. SWPPP dates are not consistent – the drawings in the SWPPP do not match any of the drawings from December 2019
5. Have asked for a survey – to date we have not yet received one
6. Composting and fill to grade the property were discussed concerning the amount of truck traffic on Hoag Lane

Engineer Miller stated that he received a 25-page memo back from the Applicant dated February 13, 2020, it references a lot of changes that had been made, but there were no drawings, no updated SWPPP and it appears that there is still a lot of information still missing.

Chairman Lupia said that the Board has been holding off on a SEQR determination because the Board feels that they need more information. We don't want to make determination without the additional information. Chairman Lupia said the Board would like to know when it is going to get the items it needs.

Tom Douglas, Applicant, stated that they have reduced the number of lots from 25 to 21; they have created a wooded buffer on the perimeter of the property to further screen the neighbors' property; they have balanced the cut/fill, no material will be coming off of Hoag Lane; they have hired Kenny GEO Tech for the boring holes and they are done; have a letter from the DEC saying that there is no dam on the property; have done a 3rd party traffic study, there will be no traffic impact; have re-designed the project from 1 phase to 7 phases.

Scott Freeman, Landscape Engineer, discussed changes that have been made to the plan; he stated that the project will be 1 stage in 7 phases, he spoke about the timeline for these phases; he talked about bringing compost to work into the existing soils; they will have 2 trees per lot.

Attorney Frateschi asked how much compost needed to be brought in? Mr. Freeman said it depends on what the organic content is. He does not have the details right now so he couldn't tell us the number of truck loads that will be needed.

Rudy Zona, RZ Engineering, spoke about the Engineering issues related to the project. He stated that the retention basin will hold 12' - 14' of water, 14' deep maximum; there will be 6 homes that need grinder pumps, they will be owned by the homeowner, not the Town.

Member Kelly said that she thinks that it is important for the Engineers to get together to discuss the issues.

Member Mento said that he thinks its time for the Applicants team and Engineer Miller to get together to discuss the technical details.

Engineer Miller and Engineer Zona agreed to have a meeting regarding the remaining issues with the project.

Chairman Lupia asked the Applicant to be ready to come back to the Board in 4 weeks. The Applicant asked for 3 weeks, the Chairman agreed that 3 weeks should be sufficient.

OTHER BUSINESS

With there being no further business, Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to adjourn the Regular Meeting at 7:47 pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
July 13, 2020

APPROVED

The Town of Manlius Planning Board convened with the members live streaming from their homes and in accordance with the Executive Order of the Governor to assure compliance with the Open meetings Law. Chairperson Joseph Lupia presided, and the following Members were present: Fred Gilbert, Ann Kelly, Mike LeRoy, Arnie Poltenson and Richard Rossetti. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Absent: Member Mento

Other persons attending the virtual meeting: Drazen Gasic, Andrew Day, Don Hoefler, Allen Olmstead, Chris Danaher, Scott Dumas, Scott Freeman, Madonna Millerschin, Jodi Hunt, Dennis Flynn, Gary Mazurkowitz, Chris Bollinger, Stella and John Penizotto, John Langley, and Greg Sgromo

The Pledge of Allegiance was recited.

Minutes
Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to approve the minutes of June 22, 2020.

Andrew Day, Taft Solar LLC., 41 West Elm St., Suite C, Greenwich, CT 06830
Public Hearing – Site Plan – Solar Array
6966 Taft Road, East Syracuse, NY 13057
Tax Map # 034.-01-20.1
Present for the applicant were Drazen Gasic, LaBella Associates and Andrew Day.

Discussion ensued regarding whether the Town Board had completed SEQR and were Lead Agency for this project. Attorney Sutphen stated that SEQR and Lead Agency were done by the Town Board for Special Permit and she would look into their determination.

Member Rossetti made a motion, seconded by Member Gilbert and carried unanimously to waive the reading of the Public Hearing Notice.

Member Rossetti made a motion, seconded by Member LeRoy and carried unanimously to open the Public Hearing at 6:35pm.

Discussion ensued regarding keeping the Public Hearing open for another meeting because the applicant gave a new map to the Town and the Board felt that the public should have more time if they wanted to comment.

Town Engineer Doug Miller stated that he spoke to the Applicant on Friday and the Applicant said that the change was minor. The change is the location of an additional inverter pad.

Member Rossetti made a motion, seconded by Member Kelly and carried unanimously to adjourn the Public Hearing until July 27, 2020 to give the public further input.

Everland Holding, 8490 Salt Springs Road, Manlius, NY 13104
Public Hearing – 2-Lot Subdivision – 8490 Salt Springs Road, Manlius 13104
Tax Map # 100.-01-11.1

Allen Olmstead was present for the applicant. The proposed subdivision was shared on the zoom screen. Mr. Olmstead advised that the Applicant has 100 acres on Salt Springs Road, and he would like to divide the property: the house and barns on approximately with 15 acres creating one parcel and the remaining 85 acres will be a separate parcel.

Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to waive the reading of the Public Hearing notice.

Member Kelly made a motion, seconded by Member Rossetti and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Sutphen indicated for the record that the action is an Unlisted Action under SEQRA.

Attorney Sutphen reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Kelly made a motion, seconded by Member Rossetti and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Chairman Lupia stated that this matter was referred to the Onondaga County Planning Board and they stated that no Agricultural Data Statement was received. Conversation ensued and the applicant said that he would get the proper materials to the Town as soon as possible.

Member Rossetti made a motion, seconded by Member LeRoy and carried unanimously to open the Public Hearing at 6:50pm.

Member Kelly made a motion, seconded by Member Gilbert and carried unanimously to close the Public Hearing at 6:51pm.

David, member of the public asked what the purpose of the subdivision was? Mr. Olmstead said the purpose is to keep the 15-acre property that contains the house and

4 barns on one piece of land and to eventually sell off the 85-acre parcel.

With the being said, the Board decided to table the application until July 27, 2020 so that a determination with all the proper paperwork (the Agricultural Data Statement) can be made.

5538 North Burdick Street, LLC. – 125 E. Jefferson St., Syracuse, NY 13202
Public Hearing- Site Plan
5538 North Burdick Street, Fayetteville, NY 13066
Tax Map # 086.-02-07.1

Chris Danaher, Scott Dumas, Scott Freeman and Madonna Millershin were present for the applicant and spoke in reference to the project.

Chairman Lupia stated that the Zone Change was granted by the Town Board. SEQR will not be done at this time due to the fact that the Zoning Board of Appeals has not heard this project yet.

Member LeRoy made a motion, seconded by Member Rossetti and carried unanimously to waive the reading of the Public Hearing notice.

Member Rossetti made a motion, seconded by Member Kelly and carried unanimously to open the Public Hearing at 6:56pm.

Chairman Lupia stated that the Board has received 3 letters from residents concerning this project. They are as follows:

1. Patricia Ruggiano Schmidt, Ed.D. - Traffic issues Exist in and out of the Town Center and several other businesses. It is impossible certain times of day; It would be too Near the quarry where a future park or residential site could develop; Many live In the Erie Village, Fremont Hills, Fremont Meadows areas and it is often impossible to get onto North Burdick- traffic is heavy even now and would get much worse; We have plenty of dentists in the area, so there isn't a need; Senior citizen complexes in the area Would find driving Even more challenging.
2. Marcia Philipp - 32 Parkington Circle (Erie Village) and I have lived in Erie Village for over 30 years. Being a lover of nature, walking, hiking and wildlife, Erie Village was a perfect place for me to live. Over the years, the surroundings have become less and less of a wild natural habitat. I watched a family of wild turkeys diminish; they lived in the area of the Retirement Resort, when the land was cleared across from the Towne Center at one point, an incredible amount of bats appeared around us landing on and around our home as they were misplaced from their homes inside of trees, we started having flooding issues coming up over from the wetlands that border our walking trail and path into our lake when all was built across the way (retirement home, condos, Northeast Med.)

There will be so much noise and construction every day in our once peaceful corner of the world as there was when Northeast Medical Center was built as well as the Retirement Resort. Now there will be more traffic to what is already an issue; I feel like soon, all the once treed and wooded area will be gone – wondering why the town feels like they have to make the Fayetteville Village into an Erie Boulevard; I know my letter won't amount to much in the scheme of things but, I feel better that I've shared my concerns as many of the residents share the same concerns.

3. John Rose, 10 Parkington Circle - I am writing to express my opposition to the proposed site project at 5538 N. Burdick St. For the following reasons: **Over development and Environmental Issues.** This project will contribute to an increased carbon footprint. While this plot is presently unkempt and aesthetically unattractive, this area could easily be transformed into a beautiful green naturescape if maintained. I frequently bicycle along the Pools Brook Road which has several maintained open green spaces which contribute to the beauty of this area. Why not here? Green and empty spaces contribute to the beauty of Fayetteville; **Safety concerns**. A. This is already a heavily trafficked area. It is challenging at different times of the day getting out of Fayetteville Towne Centre onto N. Burdick as well as getting onto N. Burdick from Erie Village and other access roads. The demographic of this area is a high concentration of seniors. B. N Burdick St is often used by joggers, walkers, and cyclists. More traffic makes these activities less safe. A commercial ingress/egress on the NW side of N. Burdick will contribute to hazardous travel; **Over saturation of dentist offices**. According to Google there are no less that 30 dentists within 2.5 miles from Erie Village in the Fayetteville area.

4. Mary Teske, Fayetteville - I am concerned about the new dental building proposed for Burdick Street and being able to see it while walking along the Erie Canal just east of Burdick Street. As of now when I am on the Canal between Dewitt and Canastota I am not able to see any similar types of commercial buildings. If you decide to pass this project and you are able to see this building from Canal I would suggest that as part of the approval process the owners plant a border of **VERY** mature landscaping so as not to see the dental building as people walk along the Canal. The Canal is a rich resource in our community, much loved and used. I would hate to see this building in my view as I walk along the Canal.

Chairman Lupia stated that the Town Zoning laws requires 59 parking spaces and the Applicants intent is to put in 95 parking spaces. The determination from the Onondaga County Planning Board states that they are also concerned with the number of parking

spaces, resulting in a decrease of pervious soil and drainage issues. Recommend the Planning Board deal with the issue and try and reduce the number of parking spaces.

Conversation ensued regarding the look of the building and how it does not look like a residential building in the RM Zone.

Member Gilbert made a motion, seconded by Member Poltenson and carried unanimously to send this application to the Zoning Board of Appeals for a positive recommendation for Parking in the front of the building. RM Zoning does not allow for parking in the front of the building. Chairman Lupia voted no because he does not believe that parking in the RM Zone should be allowed in the front of the building.

Chairman Lupia explained to the Board that the Town Board had passed a resolution regarding the Planning Board handling all Special Use Permits at their last meeting.

Falck Renewables, One Bridge Street, Suite 11, Irvington, NY 10533
Special Permit and Site Plan – Solar Array
5062 North Eagle Village Road, Manlius, NY 13104
Tax Map # 098.-01-15.0
Member LeRoy made a motion seconded by Member Rossetti and carried unanimously to hold a Public Hearing for Special Permit and Site Plan on July 27, 2020 at approximately 6:35PM.

Falck Renewables, One Bridge Street, Suite 11, Irvington, NY 10533
Special Permit & Site Plan – Solar Array
8507 Green Lakes Road, Fayetteville, NY 13066
Tax Map # 082.-02-15.1
Member LeRoy made motion seconded by Member Gilbert and carried unanimously to hold a Public Hearing for Special Permit and Site Plan on July 27, 2020 at approximately 6:40pm.

Dennis Flynn – 7418 Kirkville Road, E. Syracuse, NY 13057
Special Permit & Site Plan - Dog Boarding –
7418 Kirkville Road, E. Syracuse, NY 13057
Tax Map # 055.-01-10.2
Dennis Flynn, Applicant, discussed that he would like to Board dogs at his home. The current garage (22x32) on the property will board the dogs and there will be a fenced (20-30 feet back) in area out back for the dogs to run. There will be approximately 0-10 dogs at the home.

The Board adjourned this matter until July 27, 2020. They would like updated signed and stamped survey.

Sarah Williams - Village Groomer- 3370 Oran Gulf Road, Manlius, NY 13104
Special Permit & Site Plan – Dog Grooming and Daycare –
8064 East Genesee Street, Fayetteville, NY 13066

Tax Map # 090.-01-10.2
Gary Mazurkowitz was present for the Applicant.

The Board asked Mr. Mazurkowitz to get the survey stamped and signed by the Architect.

Member Poltenson made a motion, seconded by Member LeRoy and carried to hold a Public Hearing on July 27, 2020 at approximately 6:45pm. Member Rossetti voted no because the applicants survey was not stamped by an Architect therefore the Board did not have a complete application. We need to be consistent; the Board told the last Applicant he had to get an updated survey before we should set a date for a Public Hearing.

Chris Bollinger – 7137 East Genesee Street, Fayetteville, NY 13066
Site Plan Amendment – Roofed Porch and Deck
7137 E. Genesee St. Fayetteville, NY 13066
Tax Map # 085.-07-11.0
Chris Bollinger, Applicant stated that the porch on the front of the office building is in disrepair and needs to be replaced. They would like to put a new deck and a roofed porched with a ramp.

Attorney Sutphen told the Board that this application will be in front of the Zoning Bord of Appeals on July 16 because of setback issues.

The Board adjourned this matter until July 27, 2020, pending approval from the Zoning Board of Appeals.

JS Penizotto – 116 Colony Park Drive, Liverpool, NY 13088
Initial Presentation – Zone Change Recommendation
4581 Enders Road, Manlius, NY 13104
Tax Map #114.-01-13.1
John Langely, Attorney, Stella and John Penizotto, Applicant and Greg Sgromo, Engineer were there to represent the Applicants.

Mrs. Penizotto stated that they would like a Zone Change from RM to CA.

Attorney Langley stated that they were referred to the Planning Board from the Town Board and would like a Zone Change for the property at 4581 Enders Road from RM to CA.

Mr. Sgromo stated that he submitted a traffic study that was done in 2017 when they were considering a gas station and high volume of traffic for the property. The traffic study would still hold today.

Attorney Sutphen explained to the Board that Commercial District CA, some of the things that are allowed, for discussions purposes, all structures and uses permitted in

an R3 and the Neighborhood Shopping District as well as the following: Hotels, Any retail business or personal service carried on in enclosed buildings and such manufacturing which is incidental to the preparation of products to be sold on the premises to the ultimate consumer; Banks, including drive-through services; Retail establishments with associated drive-through services; Indoor theaters; Restaurants serving patrons indoors, Such indoor restaurants may serve patrons outdoors upon the issuance of a special use permit; Outdoor sales on a small scale, as determined by the Town Board, shall be permitted only upon the issuance of a special use permit. This Zoning is slightly less restrictive than CB, which was requested before. CB Zoning has warehouses, commercial repair garages, and drive-in establishments.

The Board adjourned this application until July 27, 2020 pending more information.

OTHER BUSINESS

Attorney Sutphen spoke in regard to the Woodland Hills Subdivision (Hoag Lane). A letter was circulated from Attorney Sutphen and we are scheduling them to be on the Agenda for July 27.

There were documents received on July 1, 2020 from the Applicant and Town Engineer Miller and his team is in the process of reviewing that information. The Board should have everything that the Applicants would like the Planning Board to consider.

Engineer Miller said that the new submission is very voluminous, the SWPPP is over 700 pages, there are over 120 pages of comments, every drawing has been changed, there are at least 4 new drawings; the drawing count is up to 33 as opposed to the 24 that have been looked at before; there is information that is being reviewed regarding the damn. Miller Engineers is requesting $6500 in additional engineering fees to review the project.

With there being no further business, Member Gilbert made a motion, seconded by Member Rossetti, and carried unanimously to adjourn the Regular Meeting at 8:48pm.

Respectfully submitted,
Lisa Beeman, Clerk

TOWN OF MANLIUS
PLANNING BOARD MINUTES
July 27, 2020

APPROVED

The Town of Manlius Planning Board convened with the members live streaming from their homes and in accordance with the Executive Order of the Governor to assure compliance with the Open meetings Law. Chairperson Joseph Lupia presided, and the following Members were present: Fred Gilbert, Ann Kelly, Mike LeRoy, Arnie Poltenson, Frank Mento and Richard Rossetti. Also, present were Attorney Jamie Sutphen and Town Engineer Douglas Miller.

Other persons attending the virtual meeting: Drazen Gasic, Andrew Day, Don Hoefler, Chris Danaher, Scott Dumas, Scott Freeman, Madonna Millerschin, Jodi Hunt, Gary Mazurkowitz, Chris Bollinger, Stella and John Penizotto, John Langley, and Greg Sgromo

The Pledge of Allegiance was recited.

Minutes
Member Rossetti made a motion, seconded by Member Poltenson and carried unanimously to approve the minutes of July 13, 2020. Member Mento abstained.

Everland Holding, 8490 Salt Springs Road, Manlius, NY 13104
Public Hearing – 2-Lot Subdivision – 8490 Salt Springs Road, Manlius 13104
Tax Map # 100.-01-11.1
Chairman Lupia stated that the Planning Board left the Public Hearing open because and Agricultural Data statement needed to be filed. The Ag Data statement was filed.

Member Rossetti made a motion, seconded by Member LeRoy and carried unanimously to close the Public Hearing.

Member Kelly made a motion, seconded by Member Polteson and carried unanimously to approve the 2-Lot Subdivision – Lands of Everland Holding CO., INC. Part of Lots 69, 78, & 79 – Town of Manlius; Prepared by Seguin Land Surveying, P.L.L.C.; Dated 06-10-2020.

Andrew Day, Taft Solar LLC., 41 West Elm St., Suite C, Greenwich, CT 06830
Public Hearing – Site Plan – Solar Array
6966 Taft Road, East Syracuse, NY 13057
Tax Map # 034.-01-20.1
Present for the applicant were Drazen Gasic, LaBella Associates, Andrew Day and Don Hoeffler.

Member Gilbert made a motion, seconded by Member Kelly and carried unanimously to close the Public Hearing.

Member Rossetti made a motion, seconded by Member Kelly and carried unanimously to approve the Site Plan for a Solar Array at 6966 Taft Road with the condition that they meet the driveway requirements per the Onondaga County Planning Board and the Department of Transportation.

Chris Bollinger – 7137 East Genesee Street, Fayetteville, NY 13066
Site Plan Amendment – Roofed Porch and Deck
7137 E. Genesee St. Fayetteville, NY 13066
Tax Map # 085.-07-11.0
Chairman Lupia stated that the Applicant had gone to the Zoning Board of Appeals and received a variance for the front yard setback.

Member Gilbert made a motion, seconded by Member LeRoy and carried unanimously to set a date for a Public Hearing on August 10, 2020 at approximately 6:35pm.

Falck Renewables, One Bridge Street, Suite 11, Irvington, NY 10533
Special Permit and Site Plan – Solar Array
5062 North Eagle Village Road, Manlius, NY 13104
Tax Map # 098.-01-15.0
Member LeRoy made a motion, seconded by Member Rossetti and carried unanimously to waive the reading of the Public Hearing notice.

Member Rossetti made a motion, seconded by Member Poltenson and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Sutphen indicated for the record that the action is an Unlisted Action under SEQRA.

Attorney Sutphen reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed that the action would have no, or a small impact on the environment.

Question 3 of the 11 SEQR questions: Will the proposed action impair the character or quality of the existing community? Members Kelly, Gilbert, LeRoy and Poltenson said yes it would have a large impact on the character of the existing community; Member Rossetti and Chairman Lupia said no it would be a small impact on the existing community.

Based on concerns/comments from the Board Members, Chairman Lupia stated that the SEQR determination will be suspended until the Special Permit Criteria has been reviewed.

Attorney Sutphen went through the Special Permit Criteria with the Planning Board. Will the project have an adverse effect on adjacent lands, the immediate neighborhood or on the character of the community is the ultimate question.

1. Is the community protected from traffic congestion conflicts, flooding and excessive soil erosion? The Board said yes, the community is protected.
2. Is the community protected from unnecessary noise, lighting and odors? The Board said no. Member Gilbert said that the only item brought up by neighbors is the reflection/glare from the Solar Panels. Member Kelly thinks that the panels are too close to the road and should be moved back and there should be more trees (on North Eagle Village) and screening.
3. Does this plan protect the community from inappropriate design and other matters of significance? Member Kelly believes that yes there is an issue, not opposed to the project, but thinks that the Solar array is too close to North Eagle Village Road. Member LeRoy asked what is preventing the Applicant from moving the Solar array back further on the property?
4. Does the plan ensure the proposed use will be in harmony with the appropriate and orderly development of the district in which it is proposed? The Board said it is consistent.
5. Can any adverse impact be mitigated with compliance with reasonable conditions? The Board does not have an answer to this question yet.
6. Does the project conform with the Towns Planning objections, for example, do we need any kind of conditions with respect to operations and are there modifications to the development proposal or design guidelines that can attach reasonable conditions to minimize impacts?

Jodi Hunt, TetraTech, shared the screening plan with the Board and spoke more about the existing screening and what additional screening they are willing to add.

Attorney Sutphen finished the Special Use Permit Criteria questions and resumed the SEQR questions.

Member Rossetti made a motion, seconded by Member Poltenson and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Kelly made a motion, seconded by Member LeRoy and carried unanimously to open the Public Hearing at 7:14pm.

1. Lia Young – In no way did the third party who has a vested interest in the project going through do any type of analysis from the actual vantage point of the neighbors. Again, we do not live on the street; This visual is absolutely in no way what summer looks like on our street; How do we know there is no environmental impact? Where do we anticipate the path of the deer that frequent the property will go? Into town most likely?; During the initial presentation there was a statement the panels produce a low hum. What is that decibel level with the volume of panels planning on being installed?; Why have they considered the panels that are as tall as the proposed panels? I have seen other solar farms that have much lower rise panels; Also, from my previous question, what is the impact to the home values What is the determination on the impact to property

values?; I have previously shared pictures of the visual impact from my property, viewing the property from the street does not provide an accurate perspective on what the neighbors see.

2. Beth Powell - PLEASE READ REGARDING SOLAR ON N EAGLE VILLAGE - Beth and Ron Powell 5090 N Eagle Village Rd. We live just the other side of the church on the same side. We support this project. We do not feel the project will, in any way, negatively impact the value of our home. We believe the owner of the property has the right to use his land in this way and we are in favor of this progressive and environmentally responsible use. It is likely that we will be able to see some of the panels, especially in the winter but are not concerned and even if we were, feel that neighbors do not own the view from their property.
3. Steve Winchelhaus - The 5190 Townsend Road simulation is not completely accurate as it did not account for the hill that the house is on... It is more accurate of halfway down the lawn. Obviously, being higher up than that means the view is greater. During the initial meeting, the presenter stated that the solar glare would be primarily to the East, affecting residents on Townsend Road between the hours of 5 - 7 pm. The solar glare on Townsend Road is of primary concern.
4. Ann Oot – Concerned with the additional hard surfaces that will reduce groundwater absorption with karst topography less than 18" below the surface.
5. Jessy Young - These pictures are not at the angle at which our house is. Come to the top of the hill and you see the entire field. These are clearly at the road level.

Member Rossetti made a motion, seconded by Member Kelly and carried unanimously to close the Public Hearing at 7:19pm.

Chairman Lupia asked the Board what their thoughts were concerning the project.

Member Kelly is not opposed to the project, but she would like to see more screening along the road.

Member Poltenson agrees with Member Kelly, he is not opposed to the project.

Member LeRoy said that he is not opposed to the project either, but the view from North Eagle Village needs some more trees.

The Board decided that they would like to get together with the applicant to discuss further barriers for the project, Member Poltenson made a motion, seconded by Member Kelly can carried unanimously to adjourn the Application until August 10, 2020.

Falck Renewables, One Bridge Street, Suite 11, Irvington, NY 10533
Special Permit & Site Plan – Solar Array
8507 Green Lakes Road, Fayetteville, NY 13066
Tax Map # 082.-02-15.1

Member Rossetti made a motion, seconded by Member LeRoy and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Sutphen indicated for the record that the action is an Unlisted Action under SEQRA.

Attorney Sutphen reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Rossetti made a motion, seconded by Member LeRoy and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Rossetti made a motion, seconded by Member Gilbert and carried unanimously to waive the reading of the Public Hearing notice.

Member LeRoy made a motion, seconded by Member Rossetti and carried unanimously to open the Public Hearing at 7:34pm.

Due to a power outage in the Fayetteville/Manlius area and out of concern for the Public not being able to comment, Member Rossetti made a motion, seconded by Member LeRoy can carried unanimously to adjourn the Public Hearing until August 10, 2020.

Sarah Williams - Village Groomer- 3370 Oran Gulf Road, Manlius, NY 13104
Special Permit & Site Plan – Dog Grooming and Daycare –
8064 East Genesee Street, Fayetteville, NY 13066
Tax Map # 090.-01-10.2
Gary Mazurkowitz was present for the Applicant.

Member Rossetti made a motion, seconded by Member LeRoy and carried unanimously to declare the Planning Board Lead Agency for SEQR.

Attorney Sutphen indicated for the record that the action is an Unlisted Action under SEQRA.

Attorney Sutphen reviewed the 11 questions in Part 2 of the EAF with the Board and the Board agreed unanimously that the action would have no, or a small impact on the environment. The EAF was filled out accordingly.

Member Rossetti made a motion, seconded by Member LeRoy and carried unanimously to issue a Negative Declaration under SEQR and authorized the Chairman to sign the short form EAF.

Member Rossetti made a motion, seconded by Member Gilbert and carried unanimously to waive the reading of the Public Hearing notice.

Member Rossetti made a motion, seconded by Member Kelly and carried unanimously to open the Public Hearing at 7:46pm.

1. Jeff Jones, 8056 Genesee St. just concerned having a business next very close to our home , we understand it's going to be a dog grooming business and hope it will not turn into a dog boarding kennel or any other business? will there be a large sign and 24 lighting? How will having a business next door affect resale on my house?

Mr. Mazurkowitz stated that the hours of operations will be from 7:30am to 5:30pm 5 days a week, no weekends; there will be no Boarding dogs, just grooming; no big signs, maybe an A-Frame out front.

Due to a power outage and out of concern for the Public, the Board decided to adjourn the Public Hearing until August 10, 2020. The Board asked Mr. Mazurkowitz to get them more details regarding the house; details such as what the sign might look like, the lighting plan, what the hose will look like, etc....

5538 North Burdick Street, LLC. – 125 E. Jefferson St., Syracuse, NY 13202
Continued Public Hearing- Site Plan
5538 North Burdick Street, Fayetteville, NY 13066
Tax Map # 086.-02-07.1
Chris Danaher, Scott Dumas, Scott Freeman and Madonna Millershin were present for the applicant and spoke in reference to the project.

Chairman Lupia stated that the Applicant had been referred to the Zoning Board of Appeals for a variance for front yard parking.

Due to the Public Hearing being still open from the last meeting, the following comments were made via, Facebook and Zoom:

1. Buck Quigley - Burdick St. -- The proposed site is contiguous to a historic resource listed on the State and National Registers of Historic Places (Erie Canal). Concerns about potential environmental impact include but are not limited to: Impact on scenic views From a National Register Historic Resource...
2. Concerned Citizen - How can the TH zoning laws limit teaching of music or dance to 5 pupils at a time and allow a 27 chair 96 parking facility; Has parking been moved behind & to the side as per Onondaga County Planning recs; Per RM zoning rules, parking is not allowed in the front yard!; They are currently at 32.56% of impervious surface area, yet no sidewalks shown to L front door & R side door; Are deliveries going to be delivered through the front reception area? No delivery driveway shown.
3. Truth-seeker – This public member commended the Board's continuation of Public Meetings in these unprecedented times. "He" expressed concern however, that all concerns of public are heard. Specifically there was concern about the reasons for the Zoning Change . He asked for clarification regarding

the following: 1). The Zoning change from R-A (Restricted Agriculture) to R-M (Residential Multiple Use). He suggests that this Project seemingly exceeds the intent of the R-M Zoning Law designation due to its size, scope and (for other reasons), its proximity to other unique environmental and historical features that it would be situated near it. Also, he does not think the size of this dental office is what was contemplated in RM. He also requested insight into appropriateness of this Project under this Zoning change. 2). He suggested that 5538 North Burdick Street is situated in a unique site, not comparable to the large shopping, restaurants, banks, and expansive medical complexes that have been used for comparison . The parking lot is large as is the building. 3). 5538 North Burdick Street is also home to an "endangered species" identified by the DEC, the "Northern Long-eared Bat". This should be addressed. 4). There was concern expressed regarding fire and safety and separate entrance for deliveries and the use of highly Flammable/Explosive Gases/Tanks are used in such offices. 5) Issues of drainage and flood plain also brought up as well as hazardous wast disposal.

4. Comment from Concerned Citizens - fmpublicrights@gmail.com – Please see comments attached.

Madonna Millerschin, VIP Structures, spoke about the look of the building. Overall the members were of the opinion that the architecture did not match the RM zoning district; that it needs a more residential feel. In particular, Member Kelly does not prefer the look of the artificial stone on the building and thinks the building looks to commercial. Member Rossetti and Member LeRoy agree that the building looks too commercial, not residential. Chairman Lupia thinks that the 2-story structure as presented is too commercial in appearance. .

Due to a power outage and out of concern for the Public to comment, the Board decided to adjourn the Public Hearing until August 10, 2020. The Board would like to see a better Architectural design of the building so that it does not look so commercial.

JS Penizotto – 116 Colony Park Drive, Liverpool, NY 13088
Initial Presentation – Zone Change Recommendation
4581 Enders Road, Manlius, NY 13104
Tax Map #114.-01-13.1

John Langely, Attorney, Stella and John Penizotto, Applicant and Greg Sgromo, Engineer were there to represent the Applicants.

Attorney Sutphen stated that the Board has heard from the Applicant at the previous meeting and that their Attorney has sent the Board a letter stating their request for the Zone change. This Board is to make a recommendation on the zone change to the Town Board.

Chairman Lupia stated that the Board had received a letter from Assemblyman Al Stirpe urging the Town to approve the project. He also stated that the letter sounded like the Assemblyman knew what the intended use of the property was. Chairman Lupia asked

if the Applicant could tell the Board what the intended use of the property would be. John Langely, Attorney for the Penizotto's said that they do not have an intended use for the property yet.

Member Rossetti stated that in the last meeting the Engineer for the project sated that the DOT had given him a letter stating the right in and right out access from State Route 92. He asked for the correspondence to be sent to the Board. To date, the Board has not seen the letter. Mr. Sgromo said that the right in and right out was absolutely approved. He said he would forward the letter.

Attorney Sutphen noted that the lot where the daycare currently sits will have to have access to the CA lot. Member Rossetti said that if they do not have a right in/right out access, then it should not be Zone CA.
Attorney Sutphen Attorney Sutphen asked if the Board members had received the proposed resolution in advance of the meeting, with opportunity to comment thereon. All answered in the affirmative. The Resolution was read aloud. (*Please see the attached Resolution*)

Member Rossetti made a motion, seconded by Member Poltenson and carried unanimously to adopt the Resolution attached hereto which sends a positive recommendation to the Town Board with a comment to be added to the resolution which cautions the Town Board from changing the Zoning to CA without the right in/right out access to State Route 92.

Brolex Properties – 5912 North Burdick Street, East Syracuse, NY 13057
Initial Presentation – Subdivision – Freeman Estates –
7430 Highbridge Road, Fayetteville, NY 13066
Tax Map # 101.-02-02.1
Brandon Jacobson, Applicant, told the Board that they wanted to build 25-unit Townhomes that would include ¾ greenspace, walking trails and amenities.

Attorney Sutphen said this Board needs to decide if clustering is appropriate and this Board needs to determine if the Conventional Plan is doable.

The Board adjourned this matter for more information.

Woodland Hills Subdivision (Hoag Lane Development), 201 Solar Street, Syracuse, New York 13204
Continued - Site Plan - 21-Lot Subdivision
5290-5320 Hoag Lane, Fayetteville, NY 13066
Tax Map # 104.-01-39.2
Tom Douglas, Scott Freeman and Rudy Zona were present to speak about the development.

Member Kelly asked Engineer Miller if he has received everything that he has asked for. Town Engineer Miller stated that he received a response from the Applicant on July 2, 2020. He anticipates his firm to have a full response later this week.

Attorney Sutphen said that the comments and review are very extensive.

Chairman Lupia stated that there has been an awful lot of work done by the Applicant and the Town Engineer. An example: The Board has a SWPPP that has been amended 7 times, the last amendment was 716 pages. Chairman Lupia would like to get the findings from the Town Engineer into the hands of the Board members and the Applicants hands. He would like to schedule it for the next meeting for a SEQR determination.

Attorney Sutphen told the Board and the Applicant that a Public Hearing was not required for a SEQR determination so we would still at a later point hold a Site Plan Public Hearing if need be.

Accessory Use Permit Renewal – Rosemary Nwawka, Law Office - 7197 E. Genesee St., Fayetteville, NY 13066

Engineer Miller stated that the Code Enforcement Officer has not received any complaints regarding the property being out of conformance with its Special Use Permit. The Board has received a memo from Code Officer Randy Capriotti that states that there are no complaints against the property.

Member Rossetti made a motion, seconded by Member Gilbert and carried unanimously to approve the Accessory Use Permit Renewal as presented by Rosemary Nwawka for a period of 7 years to expire on July 22, 2027.

OTHER BUSINESS

With there being no further business, Member Rossetti made a motion, seconded by Member Kelly and carried unanimously to adjourn the Regular Meeting at 9:29pm.

Respectfully submitted,
Lisa Beeman, Clerk

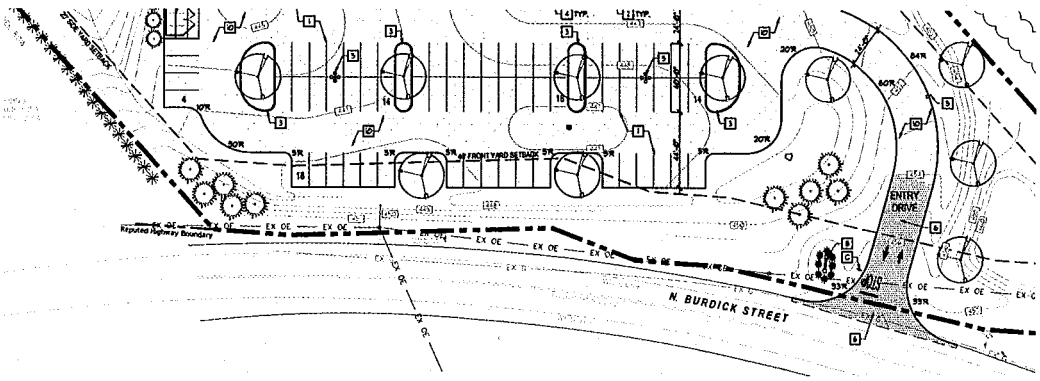
Dear Members of the Manlius Town Planning Board:

There are multiple concerns that we have with the proposed 10,500 sq. ft. dental office at 5538 N. Burdick St.

RM zoning rules specifically state that parking is PROHIBITED in the front yard!. During the last meeting, **Commercially zoned** properties like Target and Town Center businesses were used as a reason to consider the proposed site plan as presented which is in DIRECT violation of this recently changed RM zoning classification. The excerpt below is from the Town of Manlius Zoning Rules for RM zoned properties:

F.
Parking. All uses permitted herein upon receipt of a combined site plan and accessory use permit shall provide a minimum of one parking space for every 200 square feet of floor area for all uses except apartments, which require two parking spaces for every bedroom of an apartment. The Town Planning Board may require additional parking spaces whenever, in its judgment, additional spaces are warranted for the comfort, convenience, safety, health or welfare of the community. Except for all legal nonconforming uses existing at the time this amendment is effective, **parking shall be prohibited in the front yard.**
[Amended 5-23-2012 by L.L. No. 2-2012]

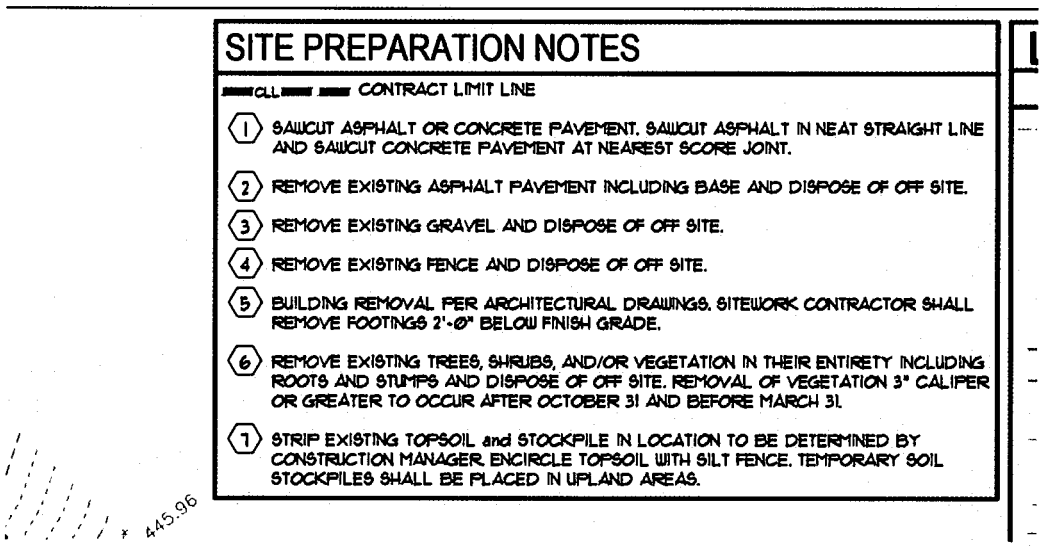
The required 40 ft. front yard setback is also encroached upon by 14 of the proposed parking spaces. Please refer to Layout Plan L3.00 of their site plan which designates the 40 ft. front yard setback location by the dashed line shown below:



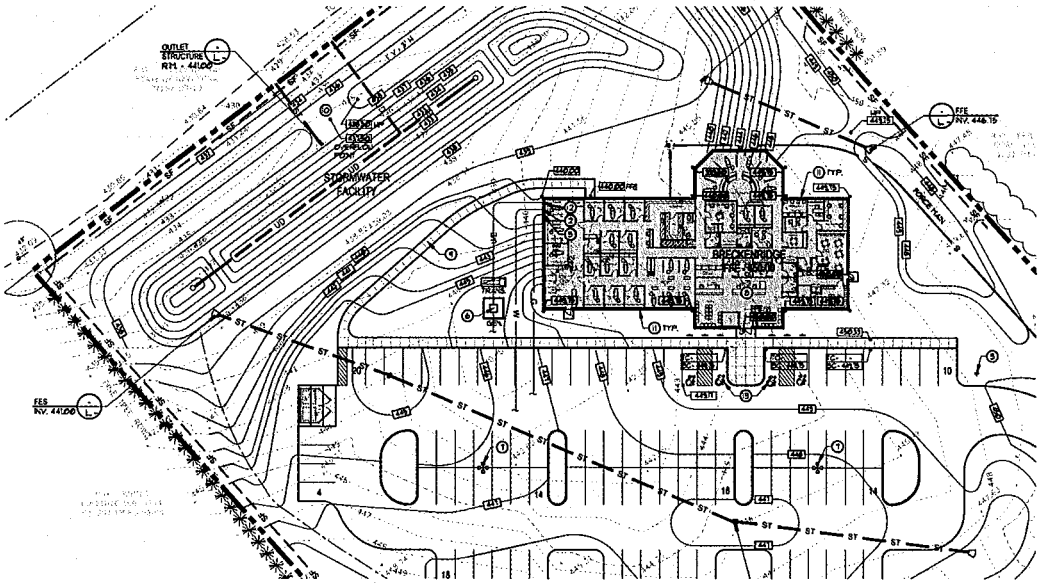
Signage rules for RM zoning state that only an 8sq. ft. sign directly attached to the building is permitted. With the building behind the large 98 car parking lot, the site plan ignores this rule also. They have a ROAD SIDE "monument" sign shown on their site plan.

In their Site Preparation Notes, (Please refer to Site Prep. Plan L1.00, #6) "Removal of vegetation 3" caliper or greater to occur **after 10/31 and before 3/31"** per DEC guidelines regarding the protection of the endangered species Northern Long-eared Bat which the developer's representative has identified to be present in their application to the DEC. Yet the developer is pushing the Town Planning Board for an August

approval and subsequent ground breaking for this "LLC" project. There is also an appearance of a conflict of interest since the LLC Atty, Christian Danaher, is also on the Village of Fayetteville's Planning Board. Please act responsibly and independent of his pressure.



There also is a concern about salt applied in the winter on their proposed sidewalks/parking lot that may contaminate groundwater, the canal, and the quarry lake below. Will their stormwater drainage basin drain into the canal? Please refer to Grading Drainage Utilities Plan L2.00 that designates an outlet structure in the top left of their proposed stormwater facility.

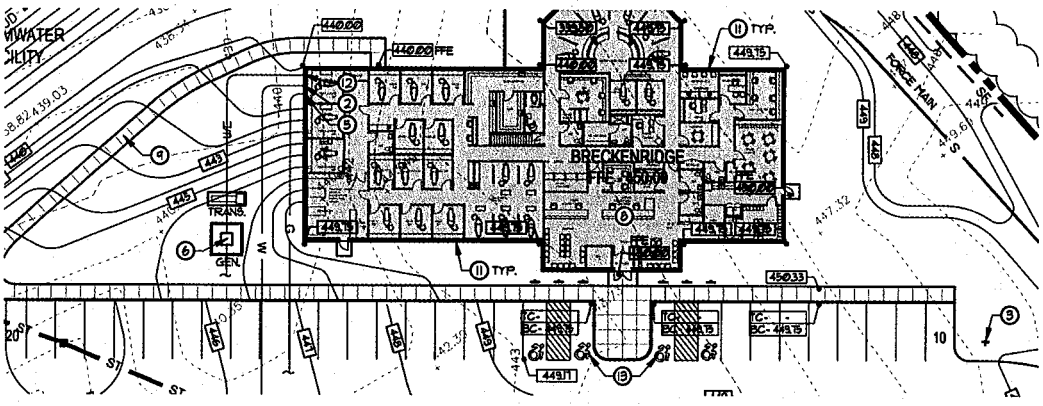


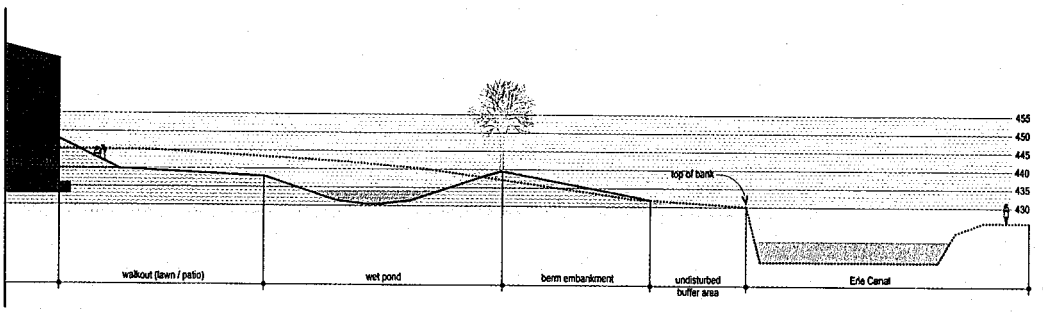
On their "Site Plan Photometric Calculation E-900"
Note 4 states that this analysis **does not comply** with minimal IESNA levels for parking and pedestrian safety.

Note
1. Readings shown are based on a total LLF as shown at grade. Data references the extrapolated performance projections in a 25c ambient based on 10,000 hrrs of LED testing (per IESNA LM-80-08 and projected per IESNA TM-21-11) 2. Please refer to the "luminaire locations" table for mounting heights. 3. Product information can be obtained at www.Lithonia.com or through your local agency. 4. Please note this analysis does not comply with minimal IESNA levels for parking and pedestrian safety. Acuity Brands will not be liable for any safety issues that may arise from the installation of this design.

Do the current structures on the property that are going to be demolished by the developer contain any asbestos or other harmful substances?

The current site plan does not include any sidewalks to the left front and right side doors, nor is there any delivery truck access driveway shown. Is this an oversight or an omission to stay under the required 35% maximum for RM zoning regulations? (Please refer to Grading, Drainage and Utilities Plan L2.00)





There is mention of a walkout lawn/patio which is referenced in L9.00 of their site plan. A patio (size not specified) would also affect this 35% calculation. Since this walkout appears to be from the lower level, does that double the square footage of the building? Based on

this diagram, it appears that the upper half of the building will be visible to canal path users, especially in the winter time. We also don't know the size of the proposed trees and shrubs that they say they will be planting. The tree shown in this diagram is scaled at 25 feet tall.

Lastly, as one Board Member has already expressed concern about, the design **and size** of the building does not resemble the RM zoning requirement (section H) that it "shall be of a design and style that replicates a **traditional single-family home** in its exterior appearance and shall be compatible with the style and type of structures in the neighborhood".

In summary, we feel that this anonymous "LLC developer" has been secretive and is trying to rush this proposal through without adhering to the zoning rules and before the public is fully aware of its impact on the neighborhood. We appreciate all the time and effort you put into making these decisions as responsible members of the Town Planning Board. Respectfully, we request that these and other issues be **fully addressed/remedied** or that the project be denied all together.

Thank you for your consideration of our concerns,
Concerned Citizens of Fayetteville and Manlius

Penizotto recommendation on Zone Change - Town of Manlius Planning Board July 27, 2020

The Town Board has requested that this Board give its recommendation on the application of this applicant to change the zoning district of the property at 4581 Enders Road - tax map number 114.-01-13.1 (the " Parcel") from an RM to a CA zoning classification. For the reasons more specifically stated herein, this Board recommends that the Town Board allow the Parcel to be re-zoned from RM to CA.

This Board takes note of the fact that the Parcel is a single property sought to re-zoned. While the re-zoning of a single parcel may, at times, be considered "spot zoning" , this Parcel has several unique characteristics, not necessarily shared by other properties in its general vicinity. These unique characteristics, therefore, make the Parcel suitable for zone change consideration.

The Parcel is located on the 4th "corner" of a traffic light intersection along busy Route 92. The northeast corner has long been occupied by a hardware store, which presents a commercial use of low to medium intensity, without drive-through traffic and access limited to Route 92. The south-east corner which houses a gas station and convenience store. The south-west corner is the recent home of the Village Manlius Firehouse although it retains its RM zoning designation. Accordingly, the other "corners" possess some "commercial" characteristics, which are of varying intensity.

Notwithstanding the RM designation of the Firehouse corner, there is little likelihood of that corner being converted to a substantial "commercial" use. And, the traffic generated thereon is not of the constant retail, restaurant and commercial type that causes significant constant traffic. This leaves the possibility that a more intense commercial use on the Parcel would not be as disruptive to the area as if the Firehouse corner were otherwise commercially utilized.

The RM zoning designation does already designate some "commercial" uses that are allowed. So the corner is not free from all potential commercial development. Rather, the CA zone is a "step up" from RM to allow more intense commercial uses. However, it is notable that the size of the lot and the potentially restricted accesses thereto, will by reason of such, restrict the nature of the commercial enterprise that would be viable on the Parcel. And, any such proposal for the Parcel would be subject to the requirements this Board's site plan approval process, which will further examine the safety, compatibility and conformance of any structures and accesses thereon. Additionally, the traffic light likely can control the additional commercial traffic that would be present as a CA use, should this single parcel be rezoned. Additionally, while the applicant has presented a "worse case" commercial traffic study scenario, that study has not been scrutinized by this Board. In as much as there is no specific proposal for development at this time, any development of the parcel will require a traffic study to determine the ultimate compatibility of the site plan with the Town and County requirements relating to access and safety. Accordingly, the designation of the parcel as CA zoning should not, in as of itself, present a concern of a commercial use that would be ultimately incompatible

with the area. However, in the event access to the site will only be from Enders Road, and there is no "right-in, right-out" from Route 92, this Board would alter this recommendation and caution the Town Board to not consider changing the zoning to CA without the appropriate right-in, right-out".

In making the recommendation herein, this Board has carefully considered the unique characteristics of the Parcel and this Board is very specific that the recommendation herein, and the CB zoning designation should ***not*** be applied to other properties adjacent to or near the Parcel. This is particularly true even as the property immediately to the north of the Parcel (frontage on Enders Road) is owned by the same or related party to the applicant herein. In order for the zone change recommended herein to be viable and otherwise in conformance with the comprehensive plan of the Town as demonstrated through this Board's decisions over a long period of time, and the various studies undertaken by the Town, only this Parcel is recommended for zone change to CA. In order to maintain conformance with the neighborhood, and most importantly, the residential zones nearby this Parcel and the adjacent parcels, it is critical that re-zoning of those properties not be included for consideration in this Zone Change application.

Given all of the within, this Board also specifically, recommends that the Town Board consider this property as ***not*** suitable for CB designation. Without specifically setting forth all reasoning herein, This Board agrees with the Town Board's 2019 determination that a CB designation is not suitable for this Parcel. Such a designation opens the Parcel to the most intense of commercial uses that would not be and cannot be made to be compatible with the area.

J. Ryan McMahon, II
County Executive

Ben Walsh
Mayor

SYRACUSE - ONONDAGA COUNTY PLANNING AGENCY

Daniel Kwasnowski, AICP
Planning Director

Don Jordan
Deputy Director

TO: Members, Town of Manlius Planning Board

FROM: Dan Kwasnowski, AICP, Planning Director

DATE: December 10, 2018

RE: Informal Review – Site Plan and Preliminary Subdivision Referrals – 5290-5320 Hoag Lane

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Thank you for referring the aforementioned site plan and preliminary subdivision applications to the Onondaga County Planning Board for an informal review as allowed under General Municipal Law 239-l-3. As requested, an informal review of the project by the Onondaga County Planning Board will take place on December 19, 2018 at 11:00am in the 11th floor conference room at the Civic Center.

In the interest of your local board meeting schedule, SOCPA staff and I have reviewed the referral and offer the following comments for your consideration. Please let us know if there is any other way in which we can be helpful to your planning. We would be happy to work with you on developing or refining local laws and development standards if desired.

We commend the Town and applicant on the proposed use of a cluster development plan, particularly given the site's features and its location at the transition from more densely developed residential neighborhoods to vacant, forested and agricultural lands. To more fully embrace the purpose and intent of a cluster or conservation subdivision, SOCPA advises the Town to consider the following in its review of the project and recommended mitigations:

- **Clarify the intention of the subdivision** – the terms 'cluster' and 'conservation' appear to be used interchangeably in the application materials. As such, the Town may benefit from clarification on the true intention of the proposed subdivision. Specifically:
    - a conservation subdivision uses specific formal analyses to identify those lands that have conservation value to be set aside entirely; and
    - a cluster subdivision sets aside land that may be used for a variety of public purposes such as a village or town park, tot lot, common area, trails, etc.

  If a conservation subdivision is indeed the intention, the Town is advised to require a conservation analysis, which is very important for establishing the value of the land being set aside. The letter from the applicant indicates that there are natural drainage features on the site, a wooded ridge, etc. One of the primary purposes of a conservation subdivision is to avoid impacts to natural features such as these. The plan as presented has a very typical cut and fill approach to preparing the site which is out of character with a conservation subdivision.

- **Characterize the conservation easement** – the letter provided further refers to a 'conservation easement.' It is unclear if this is a casual use of the term or a technical use, as in other places, protections are referred to as a protective covenant. Conservation easements are regulated by NYS Environmental Conservation Law and conservation value must be demonstrated. Conservation easements and restrictive covenants with a conservation intention must be inspected every year. It is unclear from the application who would hold the easement and/or enforce it – the town, the proposed HOA, or both. However, a conservation easement must be held by a qualifying conservation organization and cannot be held by the owner. In this instance, an additional benefit of requiring a conservation analysis would be to demonstrate the value of the easement.

- **Explore alternatives** – the Board encourages an alternative layout plan that avoids existing streams/drainage, sets aside steep and/or forested areas, decreases lot sizes further in favor of increased open space, and minimizes infrastructure needs including roads, sewer and water lines, and stormwater management areas. The cut and fill approach, street widths and layout, stormwater infrastructure, etc. being proposed are inconsistent with the intention and benefits to the community and the developer that a cluster or conservation subdivision would provide.

  If the true intention of the project is a conservation subdivision, a conservation analysis that identifies features to be set aside, combined with an approach that minimizes infrastructure (roads, stormwater, sewer and water lines, etc.) and proposes mostly minimum lot sizes alongside one or two larger lots, should produce a result that has a much smaller footprint, reduces costs to the applicant and in the long term the Town, and has a greater return on investment. Homes located next to open space generally sell faster and at a much higher price than comparable homes.

  Alternatively, if the applicant is pursuing a more conventional cluster subdivision, SOCPA would advise the Town to require smaller lots and a smaller footprint. The proposed set asides could be owned in common, or because it is not being considered for conservation purposes, maybe a restrictive covenant could simply be held by the Town, and the areas to be set aside owned by one property. This would preclude public use, but would prohibit future development.

- **Consider future development of the surrounding area** – the Town is advised to consider the potential for development on the 20-acre parcel to the south in the long term. This would likely include consideration of a future street connection to that parcel in the future.

- **Ensure appropriate maintenance and funding for stormwater management** – SOCPA recommends the Town ensure appropriate and sustained maintenance and funding mechanisms are in place for future ownership and care of stormwater management facilities. With only 21 lots proposed it seems unlikely that an HOA will be able to adequately raise funds for the maintenance of the facility. Further, plans indicate that the stormwater facility intends to handle offsite flow from 45 acres which would increase the costs that are intended to be borne by the HOA, though other landowners are benefiting from the infrastructure.

  Following its full intention, a conservation subdivision approach would likely avoid the need for a facility of that size, especially if stormwater runoff were treated in a more dispersed pattern throughout the subdivision with a smaller footprint. Green infrastructure and distributed rain gardens are another alternative that may be more effective and cost less to maintain.

Feel free to contact us at 435-2611 with any questions or for further discussion.

Sincerely,
Dan Kwasnowski

Onondaga County Planning Board

Joanne M. Mahoney
County Executive

RESOLUTION OF THE
ONONDAGA COUNTY PLANNING BOARD
Meeting Date: December 19, 2018
OCPB Case # S-18-88

WHEREAS, the Onondaga County Planning Board, pursuant to General Municipal Law, Section 239 l, m and n, has considered and reviewed the referral for a PRELIMINARY SUBDIVISION from the Town of Manlius Planning Board at the request of Hoag Road Development for the property located at 5290-5320 Hoag Lane; and

WHEREAS, General Municipal Law Section 239-l-3 allows municipalities to refer applications to the County Planning Board for informal review or technical assistance; and

WHEREAS, the applicant is proposing to subdivide a 30.4-acre parcel into 21 variably sized lots as part of a cluster development project in a Restricted Agricultural (RA) zoning district; and

WHEREAS, the Board is concurrently reviewing a site plan referral (Z-18-375) as part of the proposed project; the project under review has been modified from concurrent preliminary subdivision (S-17-72) and site plan (Z-17-370) referrals for which the Board informally reviewed and offered no position with comment in 2017; and

WHEREAS, SOCPA staff informally reviewed the site plan (S-18-375) and preliminary subdivision (S-18-88) referrals for the project and submitted comments to the Town Planning Board under separate cover in observance of the local board's meeting schedule; and

WHEREAS, the site is located along Hoag Lane, a local road, in a transition area from more densely developed residential neighborhoods to vacant, forested and agricultural lands in the Town of Manlius; and

WHEREAS, aerial imagery shows the site is mostly forested and undeveloped land with an existing single-family dwelling occurring towards the northeastern corner of the lot; there is an existing driveway onto Hoag Lane (to be removed) that ends in a large circle in front of the house; and

WHEREAS, the submitted Layout Plan dated December 1, 2017 shows the subdivision will create 20 new construction lots and 1 newly formed lot for the existing house; per the plan, there is a proposed local road network for the site, with a single outlet onto Hoag Lane where Shiraz Lane, a local road, intersects on the northern side; Road #1 generally forms an oval on the site with the lots ranging in size (excluding easements) from 19,810.50 sf to 106,730.12 sf and situated around the new road; building outlines and driveways are shown in the plan, with all driveways accessing Road #1, except Lot 15 which will have a driveway directly onto Hoag Lane; and

WHEREAS, per the Layout Plan, four conservation areas totaling 7.5 acres (25.08% of the site) will be provided on the site; the East Conservation Area (3.92 acres) is shown to abut the lot containing the existing house; the West Conservation Area (2.43 acres) is shown to be separated from the lots by a proposed stormwater management facility; the North (0.54 acres) and South (0.61 acres) Conservation Areas are shown to occur along the north and south property lines, respectively; the Layout Plan indicates existing vegetation will be retained in these areas and

they will be entered into a conservation easement, to be owned and maintained by the Homeowners' Association (HOA); and

WHEREAS, the plans indicate that modifications to a previous version of the cluster plan dated May 14, 2018 have resulted in a decrease in the number of lots created from 23 to 21 and a decrease in the average lot size from 1.34 to 0.80 acres; additionally, the new plan shows decreased amounts of impervious area (15.25% of the site to 12.04%) and disturbed area (76.25% of the site to 68.73%) on the site, and an increase in area going to conservation easements (15.85% of the site to 25.08%); in comparison to the Cluster Plan dated September 1, 2017 that was previously reviewed by the County Planning Board, the current plan shows 4 fewer lots and an increase in conservation area by approximately 2 acres, and now excludes stormwater management from the green space areas; and

WHEREAS, per the New York Town Law §278, a cluster development shall result in a permitted number of building lots which shall not exceed the number which could be permitted in conformance with the minimum lot size and density requirements of the zoning district in which the land is situated; per the plans, zoning criteria for the Residential 1 (R1) district were used to determine the 21-lot conventional plan and the regulations of the Town's Residential 3 (R3) zoning district have been used to dictate the lot area and yard requirements for the 21 lots in the cluster plan; and

WHEREAS, the submitted Environmental Assessment Form (EAF) dated September 1, 2017 states that 23.4 acres of the sites will be physically disturbed by the proposed project and stormwater will be directed towards "on-site stormwater detention areas that comply with NYS stormwater standards"; the Layout Plan shows a proposed wet pond to occur on the western side of the subdivision with a maintenance access easement connecting the area to Road #1, all of which will be added to a stormwater easement to be owned and maintained by the HOA; additional drainage easements are shown to occur throughout the site, generally at the rear of the proposed lots; a letter to the Town Attorney dated November 30, 2018 indicates that the stormwater management facility will mitigate 30 acres and 45 acres of on-site and off-site stormwater runoff, respectively; additionally, some of the drainage easements will include reconstructed swales for existing intermittent streams on the site;
ADVISORY NOTE: any project that cumulatively disturbs one acre or more of land must be covered under the NYS SPDES Permit; the municipality is advised to ensure that the applicant has obtained the appropriate permits from the NYS Department of Environmental Conservation prior to municipal approval; and

WHEREAS, the site has access to public drinking water and sewers and is located in the Meadowbrook-Limestone Wastewater Treatment Plant service area; new connections to the public infrastructure are proposed; per the letter to the Town Attorney, 7 lots will require private sanitary pumps and "grinder pumps", to be located within each residence and connect to a low pressure sewer force main within the Town's right-of-way; per the letter, the alternative, a municipal pumping station, is not feasible given the number of houses proposed;
ADVISORY NOTES: the applicant is advised to contact OCWA's Engineering Department to determine the activities and structures permitted within OCWA easements/right-of-ways, water availability and service options, obtain hydrant flow test information, evaluate backflow prevention requirements, and/or request that the Authority conduct hydrant flow testing to assess fire flow availability; the Onondaga County Department of Water Environment Protection asks that the

applicant contact the Department's Flow Control office to determine sewer availability and capacity; and

WHEREAS, per the Onondaga County Department of Water Environment Protection, the submitted project is located in an area designated as flow constrained or impacted by excessive wet weather flow or is tributary to a Combined Sewer Overflow (CSO);
ADVISORY NOTE: per the Onondaga County Department of Water Environment Protection, the applicant must develop a 1 gallon to 1 gallon sanitary flow offset plan/project in coordination with the municipal engineer; and

WHEREAS, the site may contain the Northern long-eared bat, or its associated habitat, which has been listed by the state or federal government as a threatened or endangered animal species (per EAF Mapper); impacts to bat species are often associated with tree clearing and from aerial imagery it appears that some significant wooded areas on site would need to be removed to allow for development of the single-family lots;
ADVISORY NOTE: per the NYS Department of Environmental Conservation (DEC), if the site contains a threatened or endangered species and/or associated habitat, and the project requires review under the State Environmental Quality Review Act (SEQRA), a request for a project screening should be submitted to the New York Natural Heritage Program or to the regional DEC Division of Environmental Permits office; and

NOW THEREFORE BE IT RESOLVED, that the Onondaga County Planning Board has determined that said referral will have no significant adverse inter-community or county-wide implications. The Board has offered the following COMMENT(S) in regards to the above referral:

1. The Board commends the applicant and municipality on their proposed use of a cluster development plan, particularly given the site's features and its location at the transition from more densely developed residential neighborhoods to vacant, forested and agricultural lands.

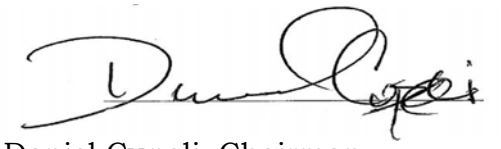
2. To more fully embrace the purpose and intent of a cluster subdivision, the Board encourages a revised approach including a conservation analysis to demonstrate available resources on the site and a subsequent layout plan based on demonstrated conservation value. The alternative layout plan should avoid existing streams, set aside steep and/or forested areas, decrease lot sizes further in favor of increased open space, and minimize infrastructure needs including roads, sewer and water lines and stormwater management areas.

3. The Town and applicant are encouraged to consider options for road connections to the adjacent 20-acre lot to the south which may help to provide access for emergency services and evenly distribute any added stress to the local road networks given any future development of the adjacent parcel.

4. The Board recommends that the municipality ensure appropriate and sustained maintenance and funding mechanisms are in place for future ownership and care of green space area(s) and stormwater management facilities, given the small number of units within the proposed homeowner's association.

5. The Board offers this local example of guidelines for selecting land for

conservation: http://dryden.ny.us/wp-content/uploads/2017/01/Methods-Criteria-for-Land-Protection-12-30-14.pdf



Daniel Cupoli, Chairman
Onondaga County Planning Board
Transmittal Date: 12-19-2018

GML 239 Report of Final Action

NYS GML § 239-m.6. and n.6. require the referring body to file a report of the final action it has taken on a referred matter with the county planning agency within 30 days after the final action (separate from the minutes taken at the meeting). A referring body which acts contrary to a County Planning Board recommendation of MODIFICATION or DISAPPROVAL of a referred matter shall also set forth the reasons for the contrary action in such report.

This section to be completed by the Syracuse-Onondaga County Planning Agency

To: Onondaga County Planning Board **From:** Town of Manlius Planning Board

Fax: 435-2439 **Phone:** 435-2611

Re:

Applicant:	Hoag Road Development
Address:	at 5290-5320 Hoag Lane
Referral Type:	PRELIMINARY SUBDIVISION
OCPB Date:	December 19, 2018
OCPB Action:	No Position With Comment
OCPB Case #:	S-18-88

The local board took the following action regarding the above referenced referral (Check one box. If checking Other, please specify the final action taken. Use the space at the bottom of the report to identify reasons if acting contrary to the OCPB recommendation.):

☐ Approved the proposed action with regard to the OCPB's No Position or No Position with Comment.
☐ Approved the proposed action as modified by the OCPB.
☐ Approved the proposed action contrary to some of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to all of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to the disapproval recommended by the OCPB.*

☐ Disapproved the proposed action with regard to the OCPB's no position or no position with comment.
☐ Disapproved the proposed action with regard to the recommended modification(s) by the OCPB.
☐ Disapproved the proposed action as recommended and for reasons set forth by the OCPB.
☐ Disapproved the proposed action as recommended but for reasons other than those set forth by the OCPB. (Please list reasons below for local disapproval.)

☐ Other _____

Local Board Date: _____

*List reasons for acting contrary to the OCPB recommendation and include a copy of the local board resolution. Attach additional reasons on a separate sheet of paper as necessary.

_____

_____

_____

_____

1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439

E-mail Address: countyplanning@ongov.ne

J.Ryan McMahon II
County Executive

Onondaga County Planning Board

RESOLUTION OF THE
ONONDAGA COUNTY PLANNING BOARD

Meeting Date: July 17, 2019
OCPB Case # S-19-49

WHEREAS, the Onondaga County Planning Board, pursuant to General Municipal Law, Section 239 l, m and n, has considered and reviewed the referral for a PRELIMINARY SUBDIVISION from the Town of Manlius Planning Board at the request of Hoag Road Development for the property located at 5290-5320 Hoag Lane; and

WHEREAS, General Municipal Law Section 239-l-3 allows municipalities to refer applications to the County Planning Board for informal review or technical assistance; and

WHEREAS, the applicant is proposing to subdivide a 30.4-acre parcel into 21 variably sized lots as part of a cluster development project in a Restricted Agricultural (RA) zoning district; and

WHEREAS, the Board is concurrently reviewing a site plan referral (Z-19-190) as part of the proposed project; two previous iterations of the project were reviewed by the Board, one in 2017 (S-17-72, Z-17-370) and one in 2018 (S-18-88, Z-18-375), for which the Board offered no position with comment; as part of the 2018 review, SOCPA staff also informally reviewed the site plan (S-18-375) and preliminary subdivision (S-18-88) referrals for the project and submitted comments to the Town Planning Board under separate cover in observance of the local board's meeting schedule; and

WHEREAS, the site is located along Hoag Lane, a local road, in a transition area from more densely developed residential neighborhoods to vacant, forested and agricultural lands in the Town of Manlius; aerial imagery shows the site is mostly forested and undeveloped land with an existing single-family dwelling occurring towards the northeastern corner of the lot; there is an existing driveway onto Hoag Lane (to be removed) that ends in a large circle in front of the house; and

WHEREAS, the submitted plan (undated) shows the subdivision will create 20 new construction lots and 1 newly formed lot for the existing house; per the plan, there is a proposed local road network for the site, with a single outlet onto Hoag Lane where Shiraz Lane, a local road, intersects on the northern side; the internal road generally forms an oval on the site with the lots ranging in size from 0.54 to 3.41 acres and situated around the new road; building outlines and driveways are shown in the plan, with all driveways accessing the internal road; the submitted Environmental Assessment Form (EAF) dated June 14, 2019 indicates the internal roadway will be constructed to Town specifications and offered for dedication to the Town; a Traffic Impact Study dated 10/23/17 was included with the referral materials and concludes that the proposed development will not have a notable effect on traffic operations and safety on the adjacent highway system; and

WHEREAS, the Cluster/Conventional Data Chart indicates that modifications to the 2018 iteration of the project, seen in referrals S-18-88 and Z-18-375, have resulted in an increase in the average lot size from 0.80 acres to 1.04 acres, an increase in overall impervious area from 12.04% of the site to 13.01%, and an increase in overall disturbed area from 68.73% of the site to 69.86%; additionally, the

amount of area going to conservation easements increased from 7.5 acres to 9.15 acres; per the plan, conservation areas (equal to 30.45% of the site) appear to include strips of land along the north and south lot lines of the site, and larger areas occuring to the east and west; these conservation areas appear to partially fall on the proposed lots occurring at the outside of the internal road; only the western conservation area occurs on a separate lot, which appears to also contain the stormwater management facilities; the previous referrals (S-18-88, Z-18-375) for the project indicated that existing vegetation will be retained in these areas and they will be entered into a conservation easement, to be owned and maintained by the Homeowners' Association (HOA); it is not clear from the current referral materials if that is still true; and

WHEREAS, per the New York Town Law §278, a cluster development shall result in a permitted number of building lots which shall not exceed the number which could be permitted in conformance with the minimum lot size and density requirements of the zoning district in which the land is situated; per the Cluster/Conventional Data Chart, zoning criteria for the Residential 1 (R1) district were used to determine the 21-lot conventional plan and the regulations of the Town's Residential 3 (R3) zoning district have been used to dictate the lot area and yard requirements for the 21 lots in the cluster plan; and

WHEREAS, per the EAF, 20.89 acres of the sites will be physically disturbed by the proposed project and stormwater will be directed to a stormwater retention pond claiming onsite and offsite water; the plan shows one large stormwater management facility and two smaller forebays to occur on the western side of the subdivision with an easement connecting the area to the internal road; additional easements are shown to occur throughout the site, generally at the rear of the proposed lots; the Cluster/Conventional Data Chart indicates that the stormwater management facility will mitigate 30 acresof on-site and 32 acres of off-site stormwater runoff; a Stormwater Pollution Prevention Plan (SWPPP) dated 1/26/2018, revised 6/4/2019, was included with the referral materials;
ADVISORY NOTE: any project that cumulatively disturbs one acre or more of land must be covered under the NYS SPDES Permit; the municipality is advised to ensure that the applicant has obtained the appropriate permits from the NYS Department of Environmental Conservation prior to municipal approval; and

WHEREAS, the site has access to public drinking water and sewers and is located in the Meadowbrook-Limestone Wastewater Treatment Plant service area; new connections to the public infrastructure are proposed;
ADVISORY NOTES: the applicant is advised to contact OCWA's Engineering Department to determine the activities and structures permitted within OCWA easements/right-of-ways, water availability and service options, obtain hydrant flow test information, evaluate backflow prevention requirements, and/or request that the Authority conduct hydrant flow testing to assess fire flow availability; the Onondaga County Department of Water Environment Protection asks that the applicant contact the Department's Flow Control office to determine sewer availability and capacity; and

WHEREAS, per the Onondaga County Department of Water Environment Protection, the submitted project is located in an area designated as flow constrained or impacted by excessive wet weather flow or is tributary to a Combined Sewer Overflow (CSO);
ADVISORY NOTE: per the Onondaga County Department of Water Environment Protection, the applicant must develop a 1 gallon to 1 gallon sanitary flow offset

plan/project in coordination with the municipal engineer; and

WHEREAS, a letter from the NYS Department of Environmental Conservation (DEC) to a representative for the applicant, dated April 6, 2018, indicates that the project site is within 3.5 miles of a documented winter hibernaculum for the Northern long-eared bat, which is a state and federally listed threatened animal species; per the EAF, no clear cutting of DEC identified potential nesting or roosting trees will occur outside of the October to April time frame; and

WHEREAS, a letter from the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) to a representative for the applicant, dated March 26, 2018, indicates that the project has been reviewed by OPRHP and will have no impact on archaeological and/or historic resources listed in or eligible for the New York State or National Registers of Historic Places; and

WHEREAS, a letter dated June 13, 2019 from Environmental Resources, LLC to the applicant indicates a wetland delineation was conducted; results of the delineation are shown on an attached survey map and appear to include a 745' intermittent stream channel on the west portion of the site, a portion of which appears to occur on Lot 12, and a 0.10-acre ground water seep wetland that appears to be located on Lot 14; per the letter, the delineated areas are federal jurisdictional water resources subject to US Army Corps of Engineers permitting; ADVISORY NOTE: the municipality is advised to ensure the delineated wetlands are confirmed by the U.S. Army Corps of Engineers and any necessary permits are obtained from the Corps for any proposed development of or placement of fill in, or drainage of the federal wetlands on site; and

WHEREAS, a letter dated June 13, 2019 from Kenney Geotechnical Engineering Services, PLLC to the applicant indicates a subsurface investigation of the project site was performed to provide data for road design and a preliminary screening for karst features; the review concludes that there are no apparent distinct karst topographic features in the immediate project vicinity; and

NOW THEREFORE BE IT RESOLVED, that the Onondaga County Planning Board has determined that said referral will have no significant adverse inter-community or county-wide implications. The Board has offered the following COMMENT(S) in regards to the above referral:

The Board reiterates its comments from prior reviews and encourages the Town to revisit the comments submitted by SOCPA staff in December 2018 (attached):

1. The Board commends the applicant and municipality on their proposed use of a cluster development plan, particularly given the site's features and its location at the transition from more densely developed residential neighborhoods to vacant, forested and agricultural lands.

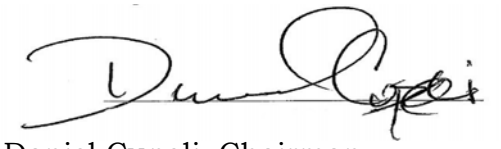
2. To more fully embrace the purpose and intent of a cluster subdivision, the Board encourages a revised approach including a conservation analysis to demonstrate available resources on the site and a subsequent layout plan based on demonstrated conservation value. The alternative layout plan should avoid existing streams, set aside steep and/or forested areas, decrease lot sizes further in favor of increased open space, and minimize infrastructure needs including roads, sewer and water lines and stormwater management areas.

3. The Town and applicant are encouraged to consider options for road

connections to the adjacent 20-acre lot to the south which may help to provide access for emergency services and evenly distribute any added stress to the local road networks given any future development of the adjacent parcel.

4. The Board recommends that the municipality ensure appropriate and sustained maintenance and funding mechanisms are in place for future ownership and care of green space area(s) and stormwater management facilities, given the small number of units within the proposed homeowner's association.

5. The Board offers this local example of guidelines for selecting land for conservation: http://dryden.ny.us/wp-content/uploads/2017/01/Methods-Criteria-for-Land-Protection-12-30-14.pdf



Daniel Cupoli, Chairman
Onondaga County Planning Board
Transmittal Date: 07-17-2019

GML 239 Report of Final Action

NYS GML § 239-m.6. and n.6. require the referring body to file a report of the final action it has taken on a referred matter with the county planning agency within 30 days after the final action (separate from the minutes taken at the meeting). A referring body which acts contrary to a County Planning Board recommendation of MODIFICATION or DISAPPROVAL of a referred matter shall also set forth the reasons for the contrary action in such report.

This section to be completed by the Syracuse-Onondaga County Planning Agency

To: Onondaga County Planning Board **From:** Town of Manlius Planning Board

Fax: 435-2439 **Phone:** 435-2611

Re:

Applicant:	Hoag Road Development
Address:	at 5290-5320 Hoag Lane
Referral Type:	PRELIMINARY SUBDIVISION
OCPB Date:	July 17, 2019
OCPB Action:	No Position With Comment
OCPB Case #:	S-19-49

The local board took the following action regarding the above referenced referral (Check one box. If checking Other, please specify the final action taken. Use the space at the bottom of the report to identify reasons if acting contrary to the OCPB recommendation.):

☐ Approved the proposed action with regard to the OCPB's No Position or No Position with Comment.
☐ Approved the proposed action as modified by the OCPB.
☐ Approved the proposed action contrary to some of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to all of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to the disapproval recommended by the OCPB.*

☐ Disapproved the proposed action with regard to the OCPB's no position or no position with comment.
☐ Disapproved the proposed action with regard to the recommended modification(s) by the OCPB.
☐ Disapproved the proposed action as recommended and for reasons set forth by the OCPB.
☐ Disapproved the proposed action as recommended but for reasons other than those set forth by the OCPB. (Please list reasons below for local disapproval.)

☐ Other _____

Local Board Date: _____

*List reasons for acting contrary to the OCPB recommendation and include a copy of the local board resolution. Attach additional reasons on a separate sheet of paper as necessary.

_____

_____

_____

_____

1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439

E-mail Address: countyplanning@ongov.ne

Joanne M. Mahoney
County Executive

Onondaga County Planning Board

RESOLUTION OF THE
ONONDAGA COUNTY PLANNING BOARD
Meeting Date: December 19, 2018
OCPB Case # Z-18-375

WHEREAS, the Onondaga County Planning Board, pursuant to General Municipal Law, Section 239 l, m and n, has considered and reviewed the referral for a SITE PLAN from the Town of Manlius Planning Board at the request of Hoag Road Development for the property located at 5290-5320 Hoag Lane; and

WHEREAS, General Municipal Law Section 239-l-3 allows municipalities to refer applications to the County Planning Board for informal review or technical assistance; and

WHEREAS, the applicant is proposing a residential cluster development on 30.4 acres in a Restricted Agricultural (RA) zoning district; and

WHEREAS, the Board is concurrently reviewing a preliminary subdivision referral (S-18-88) as part of the proposed project; the project under review has been modified from concurrent preliminary subdivision (S-17-72) and site plan (Z-17-370) referrals for which the Board informally reviewed and offered no position with comment in 2017; and

WHEREAS, SOCPA staff informally reviewed the site plan (S-18-375) and preliminary subdivision (S-18-88) referrals for the project and submitted comments to the Town Planning Board under separate cover in observance of the local board's meeting schedule; and

WHEREAS, the site is located along Hoag Lane, a local road, in a transition area from more densely developed residential neighborhoods to vacant, forested and agricultural lands in the Town of Manlius; and

WHEREAS, aerial imagery shows the site is mostly forested and undeveloped land with an existing single-family dwelling occurring towards the northeastern corner of the lot; there is an existing driveway onto Hoag Lane (to be removed) that ends in a large circle in front of the house; and

WHEREAS, the submitted Layout Plan dated December 1, 2017 shows the subdivision will create 20 new construction lots and 1 newly formed lot for the existing house; per the plan, there is a proposed local road network for the site, with a single outlet onto Hoag Lane where Shiraz Lane, a local road, intersects on the northern side; Road #1 generally forms an oval on the site with the lots ranging in size (excluding easements) from 19,810.50 sf to 106,730.12 sf and situated around the new road; building outlines and driveways are shown in the plan, with all driveways accessing Road #1, except Lot 15 which will have a driveway directly onto Hoag Lane; and

WHEREAS, per the Layout Plan, four conservation areas totaling 7.5 acres (25.08% of the site) will be provided on the site; the East Conservation Area (3.92 acres) is shown to abut the lot containing the existing house; the West Conservation Area (2.43 acres) is shown to be separated from the lots by a proposed stormwater management facility; the North (0.54 acres) and South (0.61 acres) Conservation Areas are shown to occur along the north and south property lines, respectively; the Layout Plan indicates existing vegetation will be retained in these areas and they will be entered into a conservation easement, to be owned and maintained

by the Homeowners' Association (HOA); and

WHEREAS, the plans indicate that modifications to a previous version of the cluster plan dated May 14, 2018 have resulted in a decrease in the number of lots created from 23 to 21 and a decrease in the average lot size from 1.34 to 0.80 acres; additionally, the new plan shows decreased amounts of impervious area (15.25% of the site to 12.04%) and disturbed area (76.25% of the site to 68.73%) on the site, and an increase in area going to conservation easements (15.85% of the site to 25.08%); in comparison to the Cluster Plan dated September 1, 2017 that was previously reviewed by the County Planning Board, the current plan shows 4 fewer lots and an increase in conservation area by approximately 2 acres, and now excludes stormwater management from the green space areas; and

WHEREAS, per the New York Town Law §278, a cluster development shall result in a permitted number of building lots which shall not exceed the number which could be permitted in conformance with the minimum lot size and density requirements of the zoning district in which the land is situated; per the plans, zoning criteria for the Residential 1 (R1) district were used to determine the 21-lot conventional plan and the regulations of the Town's Residential 3 (R3) zoning district have been used to dictate the lot area and yard requirements for the 21 lots in the cluster plan; and

WHEREAS, the submitted Environmental Assessment Form (EAF) dated September 1, 2017 states that 23.4 acres of the sites will be physically disturbed by the proposed project and stormwater will be directed towards "on-site stormwater detention areas that comply with NYS stormwater standards"; the Layout Plan shows a proposed wet pond to occur on the western side of the subdivision with a maintenance access easement connecting the area to Road #1, all of which will be added to a stormwater easement to be owned and maintained by the HOA; additional drainage easements are shown to occur throughout the site, generally at the rear of the proposed lots; a letter to the Town Attorney dated November 30, 2018 indicates that the stormwater management facility will mitigate 30 acres and 45 acres of on-site and off-site stormwater runoff, respectively; additionally, some of the drainage easements will include reconstructed swales for existing intermittent streams on the site;
ADVISORY NOTE: any project that cumulatively disturbs one acre or more of land must be covered under the NYS SPDES Permit; the municipality is advised to ensure that the applicant has obtained the appropriate permits from the NYS Department of Environmental Conservation prior to municipal approval; and

WHEREAS, the site has access to public drinking water and sewers and is located in the Meadowbrook-Limestone Wastewater Treatment Plant service area; new connections to the public infrastructure are proposed; per the letter to the Town Attorney, 7 lots will require private sanitary pumps and "grinder pumps", to be located within each residence and connect to a low pressure sewer force main within the Town's right-of-way; per the letter, the alternative, a municipal pumping station, is not feasible given the number of houses proposed;
ADVISORY NOTES: the applicant is advised to contact OCWA's Engineering Department to determine the activities and structures permitted within OCWA easements/right-of-ways, water availability and service options, obtain hydrant flow test information, evaluate backflow prevention requirements, and/or request that the Authority conduct hydrant flow testing to assess fire flow availability; the Onondaga County Department of Water Environment Protection asks that the applicant contact the Department's Flow Control office to determine sewer

availability and capacity; and

WHEREAS, per the Onondaga County Department of Water Environment Protection, the submitted project is located in an area designated as flow constrained or impacted by excessive wet weather flow or is tributary to a Combined Sewer Overflow (CSO);
ADVISORY NOTE: per the Onondaga County Department of Water Environment Protection, the applicant must develop a 1 gallon to 1 gallon sanitary flow offset plan/project in coordination with the municipal engineer; and

WHEREAS, the site may contain the Northern long-eared bat, or its associated habitat, which has been listed by the state or federal government as a threatened or endangered animal species (per EAF Mapper); impacts to bat species are often associated with tree clearing and from aerial imagery it appears that some significant wooded areas on site would need to be removed to allow for development of the single-family lots;
ADVISORY NOTE: per the NYS Department of Environmental Conservation (DEC), if the site contains a threatened or endangered species and/or associated habitat, and the project requires review under the State Environmental Quality Review Act (SEQRA), a request for a project screening should be submitted to the New York Natural Heritage Program or to the regional DEC Division of Environmental Permits office; and

NOW THEREFORE BE IT RESOLVED, that the Onondaga County Planning Board has determined that said referral will have no significant adverse inter-community or county-wide implications. The Board has offered the following COMMENT(S) in regards to the above referral:

1. The Board commends the applicant and municipality on their proposed use of a cluster development plan, particularly given the site's features and its location at the transition from more densely developed residential neighborhoods to vacant, forested and agricultural lands.

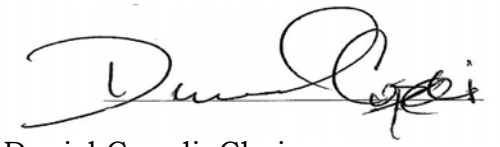
2. To more fully embrace the purpose and intent of a cluster subdivision, the Board encourages a revised approach including a conservation analysis to demonstrate available resources on the site and a subsequent layout plan based on demonstrated conservation value. The alternative layout plan should avoid existing streams, set aside steep and/or forested areas, decrease lot sizes further in favor of increased open space, and minimize infrastructure needs including roads, sewer and water lines and stormwater management areas.

3. The Town and applicant are encouraged to consider options for road connections to the adjacent 20-acre lot to the south which may help to provide access for emergency services and evenly distribute any added stress to the local road networks given any future development of the adjacent parcel.

4. The Board recommends that the municipality ensure appropriate and sustained maintenance and funding mechanisms are in place for future ownership and care of green space area(s) and stormwater management facilities, given the small number of units within the proposed homeowner's association.

5. The Board offers this local example of guidelines for selecting land for conservation: http://dryden.ny.us/wp-content/uploads/2017/01/Methods-

Criteria-for-Land-Protection-12-30-14.pdf



Daniel Cupoli, Chairman
Onondaga County Planning Board
Transmittal Date: 12-19-2018

1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439

E-mail Address: countyplanning@ongov.ne

GML 239 Report of Final Action

NYS GML § 239-m.6. and n.6. require the referring body to file a report of the final action it has taken on a referred matter with the county planning agency within 30 days after the final action (separate from the minutes taken at the meeting). A referring body which acts contrary to a County Planning Board recommendation of MODIFICATION or DISAPPROVAL of a referred matter shall also set forth the reasons for the contrary action in such report.

This section to be completed by the Syracuse-Onondaga County Planning Agency

To: Onondaga County Planning Board **From:** Town of Manlius Planning Board

Fax: 435-2439 **Phone:** 435-2611

Re:

Applicant:	Hoag Road Development
Address:	at 5290-5320 Hoag Lane
Referral Type:	SITE PLAN
OCPB Date:	December 19, 2018
OCPB Action:	No Position With Comment
OCPB Case #:	Z-18-375

The local board took the following action regarding the above referenced referral (Check one box. If checking Other, please specify the final action taken. Use the space at the bottom of the report to identify reasons if acting contrary to the OCPB recommendation.):

☐ Approved the proposed action with regard to the OCPB's No Position or No Position with Comment.
☐ Approved the proposed action as modified by the OCPB.
☐ Approved the proposed action contrary to some of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to all of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to the disapproval recommended by the OCPB.*

☐ Disapproved the proposed action with regard to the OCPB's no position or no position with comment.
☐ Disapproved the proposed action with regard to the recommended modification(s) by the OCPB.
☐ Disapproved the proposed action as recommended and for reasons set forth by the OCPB.
☐ Disapproved the proposed action as recommended but for reasons other than those set forth by the OCPB. (Please list reasons below for local disapproval.)

☐ Other _____

Local Board Date: _____

*List reasons for acting contrary to the OCPB recommendation and include a copy of the local board resolution. Attach additional reasons on a separate sheet of paper as necessary.

_____

_____

_____

_____

1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439

E-mail Address: countyplanning@ongov.ne

J.Ryan McMahon II
County Executive

Onondaga County Planning Board

RESOLUTION OF THE
ONONDAGA COUNTY PLANNING BOARD

Meeting Date: July 17, 2019
OCPB Case # Z-19-190

WHEREAS, the Onondaga County Planning Board, pursuant to General Municipal Law, Section 239 l, m and n, has considered and reviewed the referral for a SITE PLAN from the Town of Manlius Planning Board at the request of Hoag Road Development for the property located at 5290-5320 Hoag Lane; and

WHEREAS, General Municipal Law Section 239-l-3 allows municipalities to refer applications to the County Planning Board for informal review or technical assistance; and

WHEREAS, the applicant is proposing a residential cluster development on 30.4 acres in a Restricted Agricultural (RA) zoning district; and

WHEREAS, the Board is concurrently reviewing a preliminary subdivision referral (S-19-49) as part of the proposed project; two previous iterations of the project were reviewed by the Board, one in 2017 (S-17-72, Z-17-370) and one in 2018 (S-18-88, Z-18-375), for which the Board offered no position with comment; as part of the 2018 review, SOCPA staff also informally reviewed the site plan (S-18-375) and preliminary subdivision (S-18-88) referrals for the project and submitted comments to the Town Planning Board under separate cover in observance of the local board's meeting schedule; and

WHEREAS, the site is located along Hoag Lane, a local road, in a transition area from more densely developed residential neighborhoods to vacant, forested and agricultural lands in the Town of Manlius; aerial imagery shows the site is mostly forested and undeveloped land with an existing single-family dwelling occurring towards the northeastern corner of the lot; there is an existing driveway onto Hoag Lane (to be removed) that ends in a large circle in front of the house; and

WHEREAS, the submitted plan (undated) shows the subdivision will create 20 new construction lots and 1 newly formed lot for the existing house; per the plan, there is a proposed local road network for the site, with a single outlet onto Hoag Lane where Shiraz Lane, a local road, intersects on the northern side; the internal road generally forms an oval on the site with the lots ranging in size from 0.54 to 3.41 acres and situated around the new road; building outlines and driveways are shown in the plan, with all driveways accessing the internal road; the submitted Environmental Assessment Form (EAF) dated June 14, 2019 indicates the internal roadway will be constructed to Town specifications and offered for dedication to the Town; a Traffic Impact Study dated 10/23/17 was included with the referral materials and concludes that the proposed development will not have a notable effect on traffic operations and safety on the adjacent highway system; and

WHEREAS, the Cluster/Conventional Data Chart indicates that modifications to the 2018 iteration of the project, seen in referrals S-18-88 and Z-18-375, have resulted in an increase in the average lot size from 0.80 acres to 1.04 acres, an increase in overall impervious area from 12.04% of the site to 13.01%, and an increase in overall disturbed area from 68.73% of the site to 69.86%; additionally, the amount of area going to conservation easements increased from 7.5 acres to 9.15 acres; per the plan, conservation areas (equal to 30.45% of the site) appear to

include strips of land along the north and south lot lines of the site, and larger areas occuring to the east and west; these conservation areas appear to partially fall on the proposed lots occurring at the outside of the internal road; only the western conservation area occurs on a separate lot, which appears to also contain the stormwater management facilities; the previous referrals (S-18-88, Z-18-375) for the project indicated that existing vegetation will be retained in these areas and they will be entered into a conservation easement, to be owned and maintained by the Homeowners' Association (HOA); it is not clear from the current referral materials if that is still true; and

WHEREAS, per the New York Town Law §278, a cluster development shall result in a permitted number of building lots which shall not exceed the number which could be permitted in conformance with the minimum lot size and density requirements of the zoning district in which the land is situated; per the Cluster/Conventional Data Chart, zoning criteria for the Residential 1 (R1) district were used to determine the 21-lot conventional plan and the regulations of the Town's Residential 3 (R3) zoning district have been used to dictate the lot area and yard requirements for the 21 lots in the cluster plan; and

WHEREAS, per the EAF, 20.89 acres of the sites will be physically disturbed by the proposed project and stormwater will be directed to a stormwater retention pond claiming onsite and offsite water; the plan shows one large stormwater management facility and two smaller forebays to occur on the western side of the subdivision with an easement connecting the area to the internal road; additional easements are shown to occur throughout the site, generally at the rear of the proposed lots; the Cluster/Conventional Data Chart indicates that the stormwater management facility will mitigate 30 acres and 32 acres of on-site and off-site stormwater runoff, respectively; a Stormwater Pollution Prevention Plan (SWPPP) dated 1/26/2018, revised 6/4/2019, was included with the referral materials;
ADVISORY NOTE: any project that cumulatively disturbs one acre or more of land must be covered under the NYS SPDES Permit; the municipality is advised to ensure that the applicant has obtained the appropriate permits from the NYS Department of Environmental Conservation prior to municipal approval; and

WHEREAS, the site has access to public drinking water and sewers and is located in the Meadowbrook-Limestone Wastewater Treatment Plant service area; new connections to the public infrastructure are proposed;
ADVISORY NOTES: the applicant is advised to contact OCWA's Engineering Department to determine the activities and structures permitted within OCWA easements/right-of-ways, water availability and service options, obtain hydrant flow test information, evaluate backflow prevention requirements, and/or request that the Authority conduct hydrant flow testing to assess fire flow availability; the Onondaga County Department of Water Environment Protection asks that the applicant contact the Department's Flow Control office to determine sewer availability and capacity; and

WHEREAS, per the Onondaga County Department of Water Environment Protection, the submitted project is located in an area designated as flow constrained or impacted by excessive wet weather flow or is tributary to a Combined Sewer Overflow (CSO);
ADVISORY NOTE: per the Onondaga County Department of Water Environment Protection, the applicant must develop a 1 gallon to 1 gallon sanitary flow offset plan/project in coordination with the municipal engineer; and

WHEREAS, a letter from the NYS Department of Environmental Conservation (DEC) to a

representative for the applicant, dated April 6, 2018, indicates that the project site is within 3.5 miles of a document winter hibernaculum for the Northern long-eared bat, which is a state and federally listed threatened animal species; per the EAF, no clear cutting of DEC identified potential nesting or roosting trees will occur outside of the October to April time frame; and

WHEREAS, a letter from the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) to a representative for the applicant, dated March 26, 2018, indicates that the project has been reviewed by OPRHP and will have no impact on archaeological and/or historic resources listed in or eligible for the New York State or National Registers of Historic Places; and

WHEREAS, a letter dated June 13, 2019 from Environmental Resources, LLC to the applicant indicates a wetland delineation was conducted; results of the delineation are shown on an attached survey map and appear to include a 745' intermittent stream channel on the west portion of the site, a portion of which appears to occur on Lot 12, and a 0.10-acre ground water seep wetland that appears to be located on Lot 14; per the letter, the delineated areas are federal jurisdictional water resources subject to US Army Corps of Engineers permitting; ADVISORY NOTE: the municipality is advised to ensure the delineated wetlands are confirmed by the U.S. Army Corps of Engineers and any necessary permits are obtained from the Corps for any proposed development of or placement of fill in, or drainage of the federal wetlands on site; and

WHEREAS, a letter dated June 13, 2019 from Kenney Geotechnical Engineering Services, PLLC to the applicant indicates a subsurface investigation of the project site was performed to provide data for road design and a preliminary screening for karst features; the review concludes that there are no apparent distinct karst topographic features in the immediate project vicinity; and

NOW THEREFORE BE IT RESOLVED, that the Onondaga County Planning Board has determined that said referral will have no significant adverse inter-community or county-wide implications. The Board has offered the following COMMENT(S) in regards to the above referral:

The Board reiterates its comments from prior reviews and encourages the Town to revisit the comments submitted by SOCPA staff in December 2018 (attached):

1. The Board commends the applicant and municipality on their proposed use of a cluster development plan, particularly given the site's features and its location at the transition from more densely developed residential neighborhoods to vacant, forested and agricultural lands.

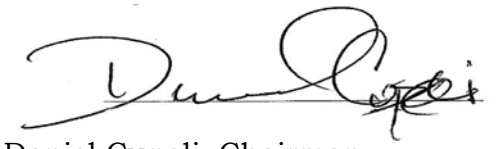
2. To more fully embrace the purpose and intent of a cluster subdivision, the Board encourages a revised approach including a conservation analysis to demonstrate available resources on the site and a subsequent layout plan based on demonstrated conservation value. The alternative layout plan should avoid existing streams, set aside steep and/or forested areas, decrease lot sizes further in favor of increased open space, and minimize infrastructure needs including roads, sewer and water lines and stormwater management areas.

3. The Town and applicant are encouraged to consider options for road connections to the adjacent 20-acre lot to the south which may help to provide access for emergency services and evenly distribute any added stress to the local

road networks given any future development of the adjacent parcel.

4. The Board recommends that the municipality ensure appropriate and sustained maintenance and funding mechanisms are in place for future ownership and care of green space area(s) and stormwater management facilities, given the small number of units within the proposed homeowner's association.

5. The Board offers this local example of guidelines for selecting land for conservation: http://dryden.ny.us/wp-content/uploads/2017/01/Methods-Criteria-for-Land-Protection-12-30-14.pdf



Daniel Cupoli, Chairman
Onondaga County Planning Board
Transmittal Date: 07-17-2019

GML 239 Report of Final Action

NYS GML § 239-m.6. and n.6. require the referring body to file a report of the final action it has taken on a referred matter with the county planning agency within 30 days after the final action (separate from the minutes taken at the meeting). A referring body which acts contrary to a County Planning Board recommendation of MODIFICATION or DISAPPROVAL of a referred matter shall also set forth the reasons for the contrary action in such report.

This section to be completed by the Syracuse-Onondaga County Planning Agency

To: Onondaga County Planning Board **From:** Town of Manlius Planning Board

Fax: 435-2439 **Phone:** 435-2611

Re:

Applicant:	Hoag Road Development
Address:	at 5290-5320 Hoag Lane
Referral Type:	SITE PLAN
OCPB Date:	July 17, 2019
OCPB Action:	No Position With Comment
OCPB Case #:	Z-19-190

The local board took the following action regarding the above referenced referral (Check one box. If checking Other, please specify the final action taken. Use the space at the bottom of the report to identify reasons if acting contrary to the OCPB recommendation.):

☐ Approved the proposed action with regard to the OCPB's No Position or No Position with Comment.
☐ Approved the proposed action as modified by the OCPB.
☐ Approved the proposed action contrary to some of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to all of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to the disapproval recommended by the OCPB.*

☐ Disapproved the proposed action with regard to the OCPB's no position or no position with comment.
☐ Disapproved the proposed action with regard to the recommended modification(s) by the OCPB.
☐ Disapproved the proposed action as recommended and for reasons set forth by the OCPB.
☐ Disapproved the proposed action as recommended but for reasons other than those set forth by the OCPB. (Please list reasons below for local disapproval.)

☐ Other _____

Local Board Date: _____

*List reasons for acting contrary to the OCPB recommendation and include a copy of the local board resolution. Attach additional reasons on a separate sheet of paper as necessary.

_____

_____

_____

_____

1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439

E-mail Address: countyplanning@ongov.ne

June 15th, 2020 – REVISED

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KEPLINGER FREEMAN ASSOCIATES
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Re: Hoag Lane Cluster Development

Response letter to Town of Manlius Engineer Letter

Dear Mr. Miller,

Our office has reviewed your Engineering comments related to the Hoag Lane dated on **December 18th, 2019** and received on **January 6th, 2020.** Below is our response to each comment received**.** Your comments are listed below followed by the design team response in bold italics.

HOAG LANE CLUSTER DEVELOPMENT

Reviewed Documents: Miller Engineers received updated drawing set dated 12/18/19 and an updated project SWPPP dated 12/18/19.

1) Additional Comments

Miller Engineers has completed a review of submission received by the Town of Manlius dated December **18th**, 2019. Areas of immediate concern include the following follow:

- 1 - Confirm in Writing with a formal submission of the plan, determination from NYSDEC of any requirements for a dam permit at this location

  RESPONSE: On page 8 of the SWPPP text as part of our 9/19/19, 12/17/19 submissions we previously included the NYSDEC criteria for exemptions for dam permitting. We clearly meet two of the three exemption criteria. During our June 2018 submission the Town Planning Board requested we provide 12 copies of a 3 ring binder to contain all pertinent correspondence and important documentation. As part of our Upon request, the Project Team then provided an email from NYSDEC regarding our projects exemption from dam permitting in our most recent submission on 12/18/19. This email was provided to Planning Board Clerk for inclusion in the Town's 12 copies of this binder. The previous submission and NYSDEC email dated 10/18/19 was an actual review of our current Grading and Drainage plan included in our project drawings. Additionally, as of 3/25/20, the DEC (Jennifer Ross) has provided email final resolution that this project is NOT considered a Dam and that no permitting will be required. It is agreed that within the NYS Stormwater Design Manual it states that ALL SWMF designed and constructed in NYS must adhere to the NYS Dam Guidelines. Email references have been provided in Appendix V of the SWPPP provided with this submission.

- 2 - Wet Pond 1 appears to have boring refusal/rock at a depth of 14 feet. Bottom of pond is depicted as 18 feet below grade. As designed pond does not appear to meet design requirements
  RESPONSE: According to plans submitted in December of 2019, our grading plan proposed bottom of Pond to be 665. The highest existing grade causing the most significant cut would lie at elevation 680. This would indicate a maximum cut of at 15'. However, this condition only existed for a small 1000sf area at the easternmost bottom of the proposed SWMF. Grades have further been adjusted as part of this submission to reduce cuts to ± 13 feet or less. A review of the most recent soil investigation by Kenney Geotechnical for borings in the pond area does not include any refusal and contains borings to depths of approximately 15 feet.

- 3 - New sedimentation pond (volume 66,000 CF) is shown as 13 feet deep +/-. No details on safety, depth to rock or influence of ground water
  RESPONSE: The temporary basin has been regraded to create a shallower area of less than 4 feet. Grades are 3:1 or mowable and surrounding borings and Kenney Geotechnical reports do not raise concern for groundwater, stability or depth to bedrock.

- 4 - Excavation from new sedimentation pond not clearly shown staged on staging plans

  RESPONSE: Excavated cut/fill material will not be stockpiled. Material will be tested and placed in lifts and compacted to construct the sedimentation basin and balance earthwork within stage. Refer to Construction Staging Plan – Stage 1 L-102.

- 5 - Staging plans do not address storage (with clear delineation of volumes to be staged) or use of following materials
  a. Compost
  b. Planting Soil
  c. CU Structural Soil
  d. Sedimentation Pond Excavation

  RESPONSE:
  <u>Compost -</u> Stockpiling will not be required per DEC guidance. Soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 03/11/2020, see revised SWPPP provided with this submission, Appendix I and drawing L-101.
  <u>Planting Soil</u> – This section was removed (It is a City of Syracuse specification section utilized for right of way planters). Topsoil and Planting specifications sections were added to meet the needs of the project for the street tree plantings and monument sign planting.
  <u>CU Structural Soils</u> - This section is not required for the project and was removed (It is a City of Syracuse specification section utilized for right of way planters).
  <u>Sedimentation Pond Excavation</u> – See Additional Comment 1) bullet point 4, page 2, for response.

- 6 - Project is no longer one phase as described for several years by applicant
  RESPONSE: Project continues to be one phase as discussed by the owner. The single phase has been broken into 7 stages to limit disturbance and manage construction and erosion. The Town engineer has directed us to create construction documents for staged construction to

reduce the areas of open construction. All plans are identified as stages of the singular phase of the project. The seven stages of project construction are shown on drawings L-102 thru L-108.

- 7 - Time of Concentration assumptions by the applicant do not assist with local run-off issues. A more conservative approach is recommended by our review to increase mitigation of the proposed activity
  RESPONSE: This comment appears to refer to open soil conditions during construction as discussed in our clarification phone conversation on March 19, 2020. Page 15 of the SWPPP submitted in December of 2019 outlines the proposed sediment ponds and their design. As noted in the SWPPP on pages 15 thru 17, this design which will be employed for approximately 3 months will accommodate for the interim open soil conditions, higher runoff coefficients and adjusted time of concentration associated with open soils. Included in Appendix T of the December 2019 submission and the SWPPP provided with this submission are calculations and routing of the sediment ponds for stages 2 and 3 which verify that the sediment pond and SWMF adequately decrease runoff to downstream areas during open soil conditions during those stages of construction. Language has been added to sections on pages 15-17 on stage 2 and 3 sediment basins to outline the short duration we anticipate these conditions to be present.

- 8 - No definite QA/QC plan for structural fills has been submitted

  RESPONSE: A testing schedule has been added to the staged construction plans on drawing L-102 which is based off of Kenney Geotechincal's recommendations.

- 9 - Through use of cluster development and as discussed at public meetings applicant to provide architectural renderings of homes and landscape plans of parcels. Planning Board should also review merits of grinder pumps verses a traditional municipal duplex pump station at this location.

  <u>RESPONSE- ARCHITECTURAL</u>: Developer has presented architectural renderings at several meetings and has included these images within drawing L-901. Thomas Allen Homes will be constructing all of the homes within the subdivision. Landscape plans will be developed by each individual homeowner based on the custom homes constructed and individual family preferences for each of the lots. Street trees, a monument entry sign with plantings and wetland plantings will be installed as part of the project along with the establishment of lawn in all disturbed non paved areas. Refer to drawing L-401 entitled Planting Plan.

  <u>RESPONSE – GRINDER PUMPS</u>: Several lots cannot obtain gravity sewer service. Just like all over Central New York, not all sites reside in a location capable of gravity service for sewers. Individual grinder pumps will be owned and maintained by the private homeowner with no maintenance or responsibility by the town. This is* not *an atypical condition in that many septic systems utilize pumps to transmit effluent from septic tanks to leachfields and from basements to septic tanks. Homes in this subdivision are no different than other systems in Onondaga County and around Central New York that use pumps to discharge sewage into

their septic systems or low pressure sewers. In addition, a review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 (provided with this submission) and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station. Based on an email from Christ Dietman at WEP, dated 6/2/20, a traditional duplex municipal pumping station is not an economically viable solution for this development.

Details of the review of each drawing and the proposed SWPPP follow:

2) General

1. No sewer offset plan included in submission

RESPONSE: Sanitary Sewer offsets and correspondence from Chris Deitman at WEP have been provided to the town previously. On 4/2/18 OCWEP provided a letter (previously submitted to the board and readily available to the public under the FOIA) stating the current system and receiving WWTP contain sufficient capacity to support the proposed development. It should be noted that at the time the developer had proposed 25 lots and the letter is reflective of 25 lots which would indicate the existing facilities contain more than enough capacity for the current 21 lot proposal. Once WEP and the town coordinate the requirements of such plan the developer will make any arrangements to comply.

2. No district formation information for proposed special use districts

RESPONSE: We had requested clarification from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. We have received no other guidance to date.

3. Correspondence from Kenney Geotechnical dated September 17, 2019 appears to indicate incomplete work tasks

RESPONSE: A supplemental report on earthwork evaluation (5/18/20) and another supplemental report on the SWMF berm and soils (5/27/20) which have been provided with this submission for your review.

4. No updates received for geotechnical report for current proposed work

RESPONSE: Geotechnical report has been provided in last submission for proposed work. During our June 2018 submission the Town Planning Board requested we provide 12 copies of a 3 ring binder to contain all pertinent correspondence and important documentation. Updated report has been provided within binder. See Additional comment #1, bullet point 1 for distribution. Additionally, A supplemental report on earthwork evaluation (5/18/20) and another supplemental report on the SWMF berm and soils (5/27/20) which have been provided with this submission for your review **as well as Appendix A of the *SWPPP provided with this submission.***

5. On site bore hole completed by Kenney Geotechnical indicates refusal/rock at an elevation 14 feet below surface inside limits of the proposed wet pond on 12/13/19. Pond is proposed to be at least 18 feet at this location

RESPONSE: See Additional comment #1, bullet point 2 for response.

6. Site has significant cuts and fills in areas of infrastructure to be dedicated to Town, no approvable QA/QC plan submitted for this scope of work

   RESPONSE: Refer to drawing L-202 entitled Right of Way Basement Slab, and Footer summary. The average cut or fill for the entire 1,924 linear foot road and right of way (with the exception of stations 4+25 through 5+50 and Station 15+30 through Station 16-30) averages approximately 4'-6" depth. A limited 125' long section (Station 4+25 to 5+50) will require fill in the 8' to 10' range and a 100' section (Station 15+30 to 16+30) will require a 6' to 8' fill depth as shown on drawing L-202. No road areas require more than ± 9 feet, only right of way areas require up to 10 feet. The suggestion that significant cuts and fills for more than just a minor area is misleading and does not reflect the vast majority of the project. In addition, the report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use within rights of way as backfill. Weekly testing will be coordinated with the developers engineer and town engineer.

7. Map plan and report missing for district formations

   RESPONSE: it is our understanding that these documents are prepared after engineering review and SEQR during final approval. The developer will provide these documents at the appropriate time if the project is approved. Design Team requested feedback on this issue from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue.

8. No updates on revised plans from OCWA, OCDOH nor OCDWEP

   RESPONSE: Our team is of the opinion that updates are not required from above agencies due to the consistent usage of the 21 home subdivision in all correspondence with agencies. Once site plan is approved, final drawings will be shared with these agencies to allow them to complete their designs and obtain necessary approvals.

9. No survey provided with submission

   RESPONSE: Site survey is provided as part of this submission.

10. As a function of relief upon use of cluster development. The Planning Board should place strong consideration and review upon the use of private grinder pumps at this location. The proposed use of grinder pumps is an anomaly in the Town of Manlius. This proposal will nearly double the applications of grinder pumps in the community. If used pumps shall be private with generator back up & required holding tanks on private property with double access valves. USEPA fact sheet on grinder pumps is attached herewith. Installation of grinder pumps is not consistent with current Town O&M maintenance.

    RESPONSE: The statement that the use of grinder pumps is an anomaly in the Town of Manlius or Onondaga County for that matter appears misleading. A large portion of the Town of Manlius and Onondaga County do not have access to Public Sewers. Grinder and Effluent pumps are utilized frequently for septic system distribution throughout the area in places where gravity is not feasible. Other local areas utilize low pressure sewers with

grinder pumps such as in the Town of Pompey (Abutus Park) and other towns like Dewitt, Lysander and Manlius according to WEP. Any septic system that does not operate by gravity in the county would also include a similar pump. As an experienced designer of these systems, most residences served by septic systems do not contain generator backups and do not require holding tanks. In addition, review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station. In addition, email correspondence from Christopher Deitman, dated 6/2/20 verifies that a municipal pumping station is not economically beneficial to this project or other residents of this sewer district. Therefore, the proposed low pressure sewer is the preferred alternative. See Additional Comment #1, Bullet point 9 for additional information.

11. Architectural review compliance discussed at public meetings not addressed or depicted. Typical architectural rendering for proposed houses should be submitted for review

RESPONSE: Project Team has provided sample architectural within this submission. Client has built several homes in the Manlius community and submitted photos of work previously to the board at several presentations. Refer to architectural response #9 on page 2.

12. Landscape review parameters discussed at public meetings not addressed or depicted. Typical landscape rendering for proposed houses should be submitted for review

RESPONSE: Landscaping design parameters including recommended native plant materials, hardscape materials and green/permeable pavement items to be included in HOA document. Each house will have a custom footprint and will have a unique and custom landscape based on the needs of families moving into the houses. Each homeowner will address the landscape design and installation. Since each home is to be constructed with a unique footprint we feel that a typical landscape plan is not warranted.

13. Land marking monuments not depicted on drawings as requested

RESPONSE: Individual lot corners to be located with iron pipes during stage 7 (L-108, Construction Staging note E) of construction in coordination with the project surveyor Forrest Seguin.

14. No blasting nor rock removal allowed on project site, no rock removal required as discussed at public meetings by applicant

RESPONSE: Agreed. Project team has performed a thorough investigation of the site and is ready to construct the site without blasting or rock removal. No rock was encountered during any of the multiple soil investigations on the site. Notes outlining this request have been added to the staging plans.

15. Security to be provided for capital improvements for utility and road installation by applicant for all infrastructure to be dedicated to the Town.

RESPONSE: Agreed. Project Attorney, Tom Blair, and project developer, Tom Douglas, are ready to meet with the town to discuss required security requirements.

16. Engineering observation during construction will be required. A developers deposit will be required for this activity.

    RESPONSE: Agreed. Project Attorney, Tom Blair, and project developer, Tom Douglas, are ready to meet with the town to discuss the level of services required and the compensation amount required.

17. Testing for structural fills and NYSDOH certification of sewers will be required through a developer's deposit for all work to be dedicated to the Town. Requested that the applicant submit actual QA/QC plan to help better define scope of testing services costs

    RESPONSE: Kenny Geotechnical has provided a scope of testing services for the project. Refer to staged drawings (L-102) for construction duration and specification section 31 2301 shown on L-503 for testing requirements. Specification Section 33 02722 also outlines inspection and testing of sewers.

18. Drawings L-201, L-700, L-701, L-702, L-703, L-704, L-705 not submitted with this submission and require additional coordination as a total review

    RESPONSE: These drawings were previously submitted and have not been updated. The design team forwarded a list of drawings to be submitted for the last submission. List did not include these drawings and a response to our list of drawings was not provided. Design team will include these drawings within the next submission set. It is our understanding that the 21 lot count shown (20 new/1 existing) is an agreed upon count. All drawings for the project have been provided within this submission.

19. Drawings show only revisions 5-11. Where are revisions 1-4

    RESPONSE: KFA to show complete list of revisions.

20. Wet pond appears to be a dam over 10' tall and impoundment area of over 3.07-acre feet (16.5': 676.5 crest, 660.0 toe of slope pond bottom 664.0 & 3.3-acre feet impoundment) Pond profile requires location of borings, location of rock, location of water table, 25' buffer from perimeter of high water impoundment area to wetland boundaries, documentation of no undue influence of discharges to ACOE wetland area, landscaping plan, removable trash rack, access turnaround for maintenance, fence gate sizing for proposed equipment if fencing is proposed and location of safety bench

    RESPONSE: See Additional Comment #1, Bullet point #1 for comments on dam and impoundment. We have previously provided a pond "section" as requested. A pond profile has been provided, see drawing L-502 and Appendix P of the SWPPP provided with this submission. See Additional Comment #1, Bullet point #2 for discussion on borings, depths etc. A buffer larger than 25'-0" has been provided from perimeter of high water impoundment area to wetland boundaries mapped by wetland professionals and located by the Licensed Land Surveyor. The pond itself allows the maintenance road to loop the facility and no turn arounds are required. Pond grades are 4:1 which allow for elimination of any safety bench per page 6-12 of the stormwater design manual, in response to your offices previous comments.

21. Foundation drain around footing not a part of this approval and shall be removed

RESPONSE: Foundation drain detail has been removed. Note added to L-200 and L-503 noting that all foundation drain and basement information is for coordination purposes only.

22. All drawings marked not for construction, unacceptable for approval submission

RESPONSE: Drawings to be marked "for construction".

23. SWPPP submission dated 12/17/19 accepted by applicant on 1/10/18 and certified by engineer on 12/26/17

RESPONSE: Appendix H of the SWPPP has been updated with current signatures and dates along with page 26 of the SWPPP narrative.

24. Project specifications provided by developer require the following which have not been incorporated into drawings or plans
    a. Compost (220,000 CF required for reclamation of site (3" thick))
    b. CU Structural soil
    c. Planting Soils
    d. Basement spoils (35,000 CF)
    e. Additional staging for new additional sediment pond (66,000 CF)

RESPONSE: See Additional comment #1, bullet point 5 for response.

25. No drawings in 12/17/19 SWPPP match current submission subdivision drawings of 12/17/19

RESPONSE: RZE Drawings in 12/17 SWPPP shall be updated to match submission package.

26. The proposed conditions plans in the SWPPP do not match the grading plan in the plan set.

RESPONSE: RZE Proposed conditions plans have been updated to match grading plans.

27. Are the calculations in the SWPPP based on the old drawings in the SWPPP or the new drawing set? This needs clarification.

RESPONSE: Calculations and SWPPP have been updated.

28. We believe more water quality volume will be required as there is more than 4 acres of impervious on site.

RESPONSE: WQv calcs have been updated to reflect off site impervious per discussion with town engineer, see Appendix G of the SWPPP provided with this submission.

29. A response letter is required on the items addressed herewith as it is very difficult to follow what has been changed with so many revisions.

RESPONSE: Agreed.

3) Sheet L-100

1. Boring information does not include logs nor elevations for borings

   RESPONSE: Boring information is located within Kenney Geotechnical Report which is located within the 3 ring binder, Appendix A of the SWPPP provided in the most recent submission. In addition, elevations locations and data appear on drawing L-100. See bullet point #2, additional comment #1.

2. Notes indicate removing all vegetation and hauling off site contrary to public discussions

   RESPONSE: Notes have been revised and note that all vegetation removed will be chipped and placed on site as mulch or blended with topsoil. Note #3 within the chart entitled EXISTING CONDITIONS AND REMOVAL/DEMOLITION NOTES located on drawing L-100 has been updated to address this comment.

3. What is the purpose of site preparation plan?

   RESPONSE: Site preparation plan shows the boring locations, existing survey information and includes a project legend and survey notes.

4. A site-specific survey is required for the proposed project

   RESPONSE: Site survey has been provided several times including the initial binder submission. Project team has included a survey within this submission.

5. Finished floor elevations depicted in notes but not shown on drawings

   RESPONSE: Finish floor elevations are shown on drawings L-200, L-300, L-400 and L-401.

6. General note referencing U.F.P.O., the agency no longer exists

   RESPONSE: Official agency name is now Dig Safely and has been updated.

7. Open cut of Hoag Lane for sewer connection unacceptable, provide detail for road boring at this location

   RESPONSE: KFA/ RZ has provided a boring detail 14, drawing L-500 for sewer connection at Hoag lane. However, contractor /developer would like to discuss open cut approach to ensure accurate elevation control and avoidance of existing utilities.

8. Decommissioning of Water Pit, provide insight or detail

   RESPONSE: Water Pit will be decommissioned in accordance with all OCWA requirements during OCWA's construction of the project.

9. Dust monitoring provide detailed QA/QC Dust Monitoring Plan

RESPONSE: A Dust monitoring plan was provided within the SWPPP under section 12.1 within the 12/17/19 submission. Pages 26-29 and Appendix R are dedicated to outlining the plan, frequency, monitoring practices and corrective action. The project staging plans provide information on the locations of monitoring devices.

10. Stage 6 not as directed by owner, plan needs to be on drawing

RESPONSE: Updated staging plans have been provided as shown with drawings L-102 thru L-108.

4) Sheet L-101

1. Wet pond borings appear to have been taken to a depth of 14 feet (168") where refusal was met. The proposed pond appears to be over 18 feet deep from existing land contours Confirm depth of rock consistent for final design

   RESPONSE: See Additional Comments #1, Bullet points 1 & 2 and item 20 for responses.

2. All wetland areas shall be delineated and protected during construction activities. Suggest orange construction fence to protect wetlands and all areas to remain forever wild to be shown on drawings

   RESPONSE: Agreed. Orange construction fence has been added around all wetland and protected wild areas.

3. L-101 does not match reference L-1 in SWPPP. Perc tests not taken in area of proposed pond nor at proposed elevations of construction of pond

   RESPONSE L-101: RZ/KFA have updated the SWPPP and Plans. All testing data and locations are provided on drawing L-100 and within Appendix A of the SWPPP. RESPONSE PERC TESTS: Provided within updated Kenney Geotechnical reports dated 5/18/20 and 5/27/20. See additional comment #1, bullet point #2.

4. Lot 12 appears to have an 8 foot +/- retaining wall, provide detail and ownership of same\staging plan wording is depicted on sheet L-101. Should be on sheet L-102 and in SWPPP

   RESPONSE: The proposed grading plan has been revised to reflect a 3-4 foot high boulder wall. Boulder wall detail and profile has been added to drawing L-502. Wall construction shall occur in Stage 1 of construction as noted on plans. Notes regarding wall will be included in construction staging plans.

5. Stormwater note indicates 20 homes not 21 per drawings

   RESPONSE: Notes to be updated to reference the 20 proposed lots and one existing residential lot.

6. Stockpile notes on drawings contradicts public discussions and drawings

   RESPONSE: KFA/RZ have updated notes based on public discussion. However, staging plans were developed after public discussion comments were made relative to stockpiling of materials. Sitework contractor, Tobin Construction, is in agreement with the locations.

7. Describe top soiling compost operation and acceptance criteria of same, specification for compost. Show staging area for composting operation

   RESPONSE: Site contractor will dress and final grade the site per NYSDEC email correspondence shown on drawing L-101 and within Appendix I of the SWPPP provided with this submission.

5) Sheet L-102

1. Transitions to forebay & Wet pond ground contours are needed in detail to confirm plans and profiles coordination with existing site contours

   RESPONSE: Proposed grades of forebays and spillways have been provided on drawing L-102 and L-200. An updated profile of the basin has been provided as details, 1-4 on drawing L-502.

2. Stockpile notes on drawings contradicts public discussions and drawings

   RESPONSE: Refer to response on 4) Sheet L-101, bullet point 6.

3. No longer a one phase project as discussed with public

   RESPONSE: Duplicate comment, Refer to response 1) Additional comment, bullet point #6.

4. Project appears to be at least 5-6 years in duration

   RESPONSE: Project is to be constructed in one phase. The stages shown are within one phase and laid out on drawing L-102 within the Stage Chart.

5. Staging plan does not consider winter shutdowns and securing site environmentally

   RESPONSE: Project continues to be one phase as indicated by all plans.

6. Confirm soil from pond being moved to staging area, stability factors of the large staged area nor haul roads

   RESPONSE: All soil removed from construction of pond will be retained on site in designated staging areas or moved directly to it's new location in accordance with grading provided on L-200 or L-102. All filling activity will be In accordance with drawing L-102 and the Kenney Geotechnical report provided on 5/27/20.

7. Work outlined in phasing plan appears to require a waiver from NYSDEC

   RESPONSE: Agreed. A 5 acre letter (Appendix W of the SWPPP) is provided within the SWPPP and will be submitted to NYSDEC/ MS-4 at the appropriate time.

8. Final wear course topping for roads is required to be placed within one year of base & binder installation per Town of Manlius

   RESPONSE: Additional note added to detail 1/L-503 (Typical Road Section).

9. All required erosion control for each phase of work to be included and detailed in drawings and SWPPP

   RESPONSE: Project is to be constructed within one phase with multiple stages. Additional staging drawings have been added to the set as requested. Each stage has detail references showing the erosion control measures required on Drawings L-102 thru L-108. Language has also been added to the 5 acre disturbance letter provided in the SWPPP, Appendix W).

10. Staging Plan requires discussion for schedule of dedicated facilities. Developer proposes 2-year warranty of all dedicated roads and infrastructure, timeline of each phase needed for acceptance.

    RESPONSE: According to the Town of Manlius specifications provided and shown on drawing L-503 (Section 31 23 01 (1.6F) – Sitework Excavation, Backfilling and Compaction) the pavement guarantee is for a one year period. The Asphalt Pavement specification section 32 1216, 3.2 includes a pavement guarantee which is contrary to the Town of Manlius specifications has been removed from drawing L-800.

11. Phasing plan appears to require a NYSDEC waiver

    RESPONSE: Agreed. See comment response for sheet L-102 bullet point 7 above.

12. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public

    RESPONSE: SWPPP mailbox has been relocated to project entrance where it will be located throughout construction.

13. Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials

    RESPONSE: Sitework contractor has provided an earthwork analysis for the entire project which balances as well as stages 1 and 2. Stockpiled materials areas will be shown on the plans. However specific quantities for the stockpiles materials cannot be shown in specific quantities according to Tobin.

14. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted

RESPONSE:
<u>GPS Coordinates</u> – Layout of project work to be performed by a licensed surveyor throughout construction. Tobin's construction equipment includes GPS mounted units with the project grading information to ensure proper grade control. During our 3/19/20 phone conversation with the town engineer and attorney it was determined that GPS coordinates for staging limits and fencing were not required.

<u>Fencing</u> – KFA to show detailed fencing for all staged areas. Silt fence and orange construction fencing will be shown within each stage as presented on Drawings L-102 thru L-108. The SWPPP document includes language which allows the SWPPP inspector to require movement of or additional erosion control measures based upon field and weather conditions. These modifications will be noted within the weekly SWPPP inspection reports which will be shared with the Town, developer, designers and contractors.

15. Provide a preliminary schedule for the work

    RESPONSE: Refer to staging plans for duration of each stage. Exact calendar dates cannot be provided until site plan approval has been granted and a construction start date can be established.

16. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.

    RESPONSE: KFA has shown extents of silt fence and orange construction fence around soil disturbance areas as shown on the staging plans drawings L-102 through drawing L-108. Silt fence is not necessary for placement uphill of disturbance areas.

17. NOTE: Install road pavement subgrade …. In lifts per Town of Manlius…" Unacceptable Note

    RESPONSE: Unacceptable note removed. KFA has added testing requirements the schedule on L-102. The specifications are based upon the Town of Manlius specifications provided by the Town of Manlius department of Public Works. In addition, the applicant has obtained a licensed Geotechnical engineer to provide a procedure and testing plan for areas to be dedicated to the town. It should be noted that the majority of areas within the right of way to be dedicated to the town requires cut or fill within 4'-6" of existing grade.

18. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage

    RESPONSE: Staging area provided is adequate for a sitework developer according to Tobin Construction. According to sitework contractors there is adequate space within staging areas to store equipment and construction materials. Contractor is aware of project requirement to keep all stockpiled materials, construction materials, equipment and employee cars on site. Duration of storage is not an item the design team has the ability to

provide. The staging area will be monitored weekly (and for some time bi-weekly) by the Qualified Professional responsible for SWPPP inspections. All inspections and mitigation measures will be in conformance with the SWPPP.

19. Provide hammerhead turn around at end of road construction

    RESPONSE: KFA has shown Town of Manlius turnaround at end of road at each phase per detail 9/L-501, where needed.

20. Staging Plan grades do not appear to meet final grading plans

    RESPONSE: Staging plans include transitional grades between stages and temporary measures which require removal moving into the next stage of construction.

6) Sheet L-103

1. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public

   RESPONSE: see response to duplicate item L-102 bullet point #12.

   Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials

   RESPONSE: Duplicate comment see response to L-102, item 13 above.

2. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted

   RESPONSE:
   <u>GPS Coordinates</u> – See response L-102 note #14.
   <u>Staging Fencing</u> - See response L-102 note #14.

3. Provide a preliminary schedule for the work

   RESPONSE: See response L-102 note #15.

4. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.

   RESPONSE: Detailed limits of silt and orange construction fencing are shown on the staging plans L-1-2 through L-108.

5. NOTE: Install road pavement subgrade …. In lifts per Town of Manlius…" Unacceptable Note

   RESPONSE: See response L-102 note #17.

6. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage

   RESPONSE: See response L-102 note #18.

7. Provide hammerhead turn around at end of road construction

   RESPONSE: Duplicate comment see response to L-102, item 19 above.

8. Provide details, sections and basis of design for 66.712 CF sedimentation basin

   RESPONSE: Site Plan documents include basin grading plans, erosion control plans, layout plans and sections including staged construction. Calculations for sizing and design of temporary basin including routing of outlet structure have been provided in Appendix T of the 12/17/19 and current SWPPP submitted.

9. Show location of excavation of 66,712 CF of spoil for the work

   RESPONSE: According to earthwork estimated by Tobin Construction the excavated material from the sedimentation basin will be utilized to construct the west side of the basin and fill areas within Stage 2.

10. Show depth to rock and depth to water table. Include safety precautions and any need for security fencing during the work

    RESPONSE: As previously noted within 1) Additional Comments, bullet point #2, an updated Geotechnical Investigation was provided within the submission on 12/17/19. All testing data, locations and information is included on drawing L-102. Additionally, supplemental geotechnical reports (earthwork 5/18/20 and pond analysis 5/27/20) have been provided. Safety Precautions - Contractor to excavate and trench in accordance with OSHA safety requirements. All deep trenches and excavated areas will be fenced in accordance with OSHA standards. Contractor to provide security fencing as needed.

11. Discuss where wood chips have been incorporated into the work formerly shown on drawing L-102

    RESPONSE: Wood chips to be utilized on site for erosion control measures and mulch.

12. Storm pipe el 695.5 to el 687.5 has no sedimentation basin attached

    RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. The pipe currently is proposed to discharge to a temporary sedimentation basin from a temporary swale on lot 10 within stage 2.

13. Staging Plan grades do not appear to meet final grading plans

    RESPONSE: See response L-102 note #20.

7) Sheet L-104

1. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public

   RESPONSE: See response to duplicate item L-102 bullet point #12.

2. Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials

   RESPONSE: See response L-102 note #13.

3. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted

   RESPONSE:

   GPS Coordinates – See response L-102 note #14.

   Staging Fencing - See response L-102 note #14.

4. Provide a preliminary schedule for the work

   RESPONSE: Duplicate note. See response L-102 note #15.

5. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.

   RESPONSE: KFA to show extents of silt fence around soil disturbance areas.

6. NOTE: Install road pavement subgrade …. In lifts per Town of Manlius…" Unacceptable Note

   RESPONSE: Duplicate note. See response L-102 note #17.

7. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage

   RESPONSE: Duplicate note. See response L-102 note #18.

8. Provide hammerhead turn around at end of road construction

   RESPONSE: Duplicate note. See response L-102 note #19.

9. NOTE: Fill temporary basin – No basin depicted

   RESPONSE: Basin not depicted within Stage 4 because it would be removed and filled at the end of stage 3. Refer to previous stages 2 and 3 for temporary basin location and Appendix T for sizing and design.

10. Staging Plan grades do not appear to meet final grading plans

    RESPONSE: Duplicate note. See response L-102 note #20.

8) Sheet L-105

1. Staging Plan 4,5, &6 does not provide any detail on staging requirements. Drawings looks quite similar to sheets L-101; L-200; L-300

   RESPONSE: KFA has provided additional drawings for stages 4, 5, 6 and 7 as drawing numbers L-105 to L-108.

9) Sheet L-200

1. Stormwater piping: No line or grade shown on plan, no delineation of pipe sizes lacking in several locations on plan, several unacceptable 90-degree or greater bends with problematic head loss, no stationing shown on plan

RESPONSE: Plan revised to comply with comment.

2. South side swale indicates apparent check dams. Das require detail and stationing location

RESPONSE: Check Dams are not required based on design calculations (Appendix F) but are provided as an additional protection in larger storm events. Locations have been chosen by the engineer who is a Certified Professional in Erosion and Sediment Control, a Certified Professional in Water Quality and a Certified Erosion, Sediment and Stormwater Inspector by professional councils in each discipline. No additional detail or stationing is required.

3. Geotech to include centerline of road ways for road and utility installation & all ponds

RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. KFA has added right of way and road centerline to drawings .

10) Sheet L-300

1. Air release valve locations

RESPONSE: Force Main sewer runs are short and do not include any locations for air release valves. None are required since no line crests exist.

2. MH #3 and MH#6 are unacceptable with greater than 90-degree bends depicted on drawings as shown are problematic for gravity flow.

RESPONSE: Pipe configuration has been amended to prevent greater than 90 degree bends.

3. Provide details for sump pump connections directly to storm sewers with backflow connections to compensate for overland discharges described in SWPP

RESPONSE: Information on sump pumps and discharge points is presented as Note 20 on Drawing L-200. No sump pumps are proposed to discharge to storm sewer; sump pumps to drain to daylight.

4. Show location of 10 – 15" caliper trees on lot 4

RESPONSE: Any of the larger caliper trees located within the buffer/forever wild area will be preserved. Those located beyond the buffer will be removed to construct the required drainage swales and construct housing lots. Most of the trees beyond the forever wild area as shown on the Site Preparation and Boring Location plan have been removed. We do not feel that location of the existing trees is necessary.

5. Lot 4 diagonal 125 sewer lateral across road is unacceptable

RESPONSE: Manhole has been relocated and lateral has been modified.

6. Show locations for proposed grinder pumps tanks and emergency generators disconnect valves off Town ROW

RESPONSE: Grinder pump chambers are within the residence as outlined in the E-One system design guidance. No emergency generators are provided unless desired by the individual property owners. A connection valve is provided at each property line per detail 7/L-501.

7. No open cut allowed across Hoag Lane

   RESPONSE: Duplicate note. See response L-100 note #7.
8. Provide detail for odor control for septage transport from grinder pumps and mechanism for grinder pump owners to pay in map plan and report for sewer district

   RESPONSE: All pumps are privately owned and not part of the municipal system. The E-One sewage system is a closed system and no odor control is required. Grinder pumps are not part of the municipal system and will not be identified in the map plan and report. Only payments for the municipal main will be required.
9. Laterals specified as 6" some shown as 4" confirm all are 6" and correct drawings

   RESPONSE: Plans have been updated to show all gravity laterals as 6" diameter.

10. Note 5 indicates incomplete submission with no easements in place for work

    RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. Easements are typically granted after construction.
11. Note 23: provide detail on agridrain in-line water structure

    RESPONSE: A specification on agri-drain has been provided as detail 5 on drawing L-504. The spec has also been added to Appendix P of the SWPPP provided with this submission.

11) Sheet L-400

1. Cleary show limits and stationing of jute mesh requirements in southerly swale

   RESPONSE: The jute mesh detail shows a width of 6 feet. Hatching on drawings has been altered to reflect this width. Layout Note 6 on drawing states that the surveyor will layout the drainage easement prior to installation.

2. List all proposed traffic signs

   RESPONSE: KFA has provided a proposed signage schedule and two stop signs on the Layout Plan, drawing L-400.
3. Show locations of stone dust walkways and ownership of the same

   RESPONSE: There are not any stone dust walkways included within the current site plans. During early design review meetings with the town the design team was directed to remove the walkways.

4. Confirm NYS Pool requirements vs Town BOCA requirements for pools

RESPONSE: Detention basin fencing detail has been modified to a 4 foot height chain link fence which meets NYS Pool and Town requirements.

5. Fence detail references NYSHD pool code. Confirm fence meets BOCA requirements adopted state wide for pools

   RESPONSE: Detention basin fencing detail has been modified to a 4 foot height chain link fence which meets NYS Pool and Town requirements.

6. Provide detail on subdivision sign

   RESPONSE: Subdivision sign detail has been added to the Planting Plan, drawing L-401.

7. Show required monument locations

   RESPONSE: Monuments to be provided within stage 7 (drawing L-108, construction note 7) of construction and to be coordinated with the surveyor, town and contractor.

12) Sheet L-401

1. L-401 Rain Gardens: Show specific locations as discussed at public meetings

   RESPONSE: Rain Gardens have not been a part of project for several submissions. All rain garden references have been removed from plans.

2. L-401 wet pond plantings show detail, fencing, access to pond, maintenance around pond and equipment turn around areas

   RESPONSE: Wet pond planting locations, specifications and detail has been added to drawing L-401. Fenc

3. L-401 details 5&6 seeded and sodded lawns show locations for detail application

   RESPONSE: Project staged construction drawings and planting plan show seeded lawn locations. There will not be any sodded areas unless as deemed necessary for stabilization by the qualified inspector or desired by the individual homeowner within Stage 7.

4. Show locations of proposed rain gardens

   RESPONSE: No rain gardens are proposed for this project. See L-401 item #1 above

5. Show pond landscaping

   RESPONSE: Pond landscaping has been updated, see L-401, item #2 above.

6. Describe landscaping plans and a schematic for each house as discussed at public meetings

   RESPONSE: All of the 20 proposed homes for the project will be custom homes and have a customized footprint. Each landscape design will also be customized to meet the home footprint and the needs of the individual homeowner. Project plans include (2) street trees for each home. Images of the homes which were previously presented to the Town will be included within the next submission set.

7. Note 3 stating planting scheme for entrance at later date is unacceptable

RESPONSE: Note has been removed. A planting plan for the monument sign area has been provided, detail 2/L-401.

13) Sheet L-500

1. Sheet L-500 indicates traffic sign detail. Plan requires location of all signs

RESPONSE: KFA has added two stop signs (L-400) to the plan along with detail references and locations.

2. Detail 14 L-500 does not match detail 7 L-501. Compaction effort required. Lift height of fill/cut operations required. Proctor or modified proctor testing. Number and frequency of testing

RESPONSE: KFA has revised detail 1/503 to match criteria outlined in the Kenney Geotechnical report dated 5/18/20. Detail 14/L-500 has been removed along with detail 7/L501. Detail 1/L-503 now includes all pavement section information.

3. Detail A L-500 siltation sock use not referenced in SWPPP

RESPONSE: SWPPP has been updated to include siltation sock, see section 12.0.

4. Construction entrance 3 L-500 not detailed in staging/phasing plans

RESPONSE: KFA to show construction entrance location detail on all phasing plans L-102 thru L-108. During weekly/bi-weekly SWPPP inspections the condition of the entrance and cleanliness of Hoag Road at the entrance will be reviewed.

5. Detail 8 L-500 asphalt kick up detail does not match detail 14 L-500 nor detail 7 L-501

RESPONSE: Duplicate comment. See response to 13) Sheet L-500, item #2

6. Wet pond detail not to scale unacceptable requires scaled drawing with details

RESPONSE: See SWPPP comment 20 above for response to profile.

7. Confirm need for 2'-0" manhole sumps

RESPONSE: KFA has decreased sump depth to 1'-0". 2'-0" depth is not needed.

8. Concrete washout detail does not match plan sheet L-104 or L-105 nor NYSDEC suggested requirements

   RESPONSE: Detail has been updated to comply with the NYSDEC blue book, per detail 19, drawing L-500.

9. Lot Erosion Control Lacks detail i.e. curb, gutter and site silt fence

RESPONSE: KFA has updated NYSDEC Lot erosion control detail (detail 2, drawing L-108) to match the NYSDEC blue book plan for residential lots.

10. Catch basins depicted on undisturbed earth, confirm this requirement and discuss subbase compaction where required

RESPONSE: Detail 1 on drawing L-503 now addresses how to install catch basins in places where they are on fill.

14) Sheet L-501

1. Sheet L-501 dust monitoring device cut sheets to be included in SWPPP with dust plan. Dust plan data to be submitted daily to Town of Manlius Code department during work activities

RESPONSE: Dust monitoring cut sheets included in SWPPP within appendix R but they are also presented as Detail 8 drawing L-501. Site contractor to submit dust monitoring data daily to Town of Manlius. Section 12.1 of the previous (December 2019) SWPPP submission on page 22 outlines reporting techniques and requirements. Daily reports are required to be recorded within the SWPPP and kept in the SWPPP binder within the mailbox on site. We have added that reports should be transmitted to the Town of Manlius weekly to the SWPPP page 23 and drawings L-101 & L-501.

2. Applicant has indicated no blasting or rock removal required for the project. This statement shall be placed on all drawings

RESPONSE: Note added to Earthwork Field Testing Notice on all phasing plans l-102 thru L-108. See 2) General Comments, item #14.

3. Detail 7 L-501 indicates road to be placed on undisturbed subbase. This does not match drawings. Road construction requires a detailed QA/QC plan

RESPONSE: Detail 7/L-501 is for a sanitary pump station. Detail 1/L-503 refers to construction in cut and fill conditions.

4. Pond requires easement access

RESPONSE: The wet pond is located within a HOA Forever Wild easement area controlled by the HOA in addition to, an HOA access easement which includes a 15 foot wide easement for the HOA to access the SWMF for maintenance. According to the surveyor all easements will be shown on a final survey at a later date.

5. Confirm basis for 14' maintenance berm. The maintenance bench does appear to be continuous. No safety bench indicated on drawings. Maintenance bench is bisected by overflow spillways. Maintenance bench requires a turnaround required by NYSDEC

RESPONSE: See SWPPP comment 20 above for response.

6. Provide detail on coarse aggregate fill around manhole detail

RESPONSE: Manhole details 1 & 10 on L-501 updated to show placement around manhole in conformance which Town of Manlius specifications.

7. Pond seep collar

RESPONSE: A pond seep collar detail has been added to the plans, see detail 16/L-500.

8. Fence detail references NYSHD pool code. Confirm fence meets BOCA requirements adopted state wide for pools

RESPONSE: Duplicate comment. See 11)Sheet L-400 bullets 4 and 5 for response.

9. Sanitary notes contradict project specifications on sheets L-800 and L-801

RESPONSE: Sanitary notes on L-501 and L-801 amended to not conflict with specifications.

10. Show location and requirement for Hydrant installation detail

RESPONSE: Preliminary hydrant locations are shown on drawing L-200 as discussed and detailed (drawing L-501, detail 4) per OCWA and fire department requests.

11. Detail 2-L501 sanitary lateral does not match plan details on utility drawings

RESPONSE: Laterals have edited to match plan details.

12. What is detail 5 L-501 depicting? Where is plan detail for this applied

RESPONSE: Detail 5/L-501 is for the sanitary lateral (House Trap-Gravity Lateral) and has been included per recent updates with Onondaga County Department of Health Guidance.

13. Detail 6 L-501 all fence posts to be noted as 4'-0" as shown

RESPONSE: KFA has shown all fence posts @ 4'-0" Height. Detail has been modified to a 4'-0" height chain link fence and gate which meets state and Town of Manlius code requirements.

14. Town will not accept ownership nor operation and maintenance of grinder pumps. Remove Detail 7 L-501

RESPONSE: Detail 7/L-501 has been updated to clarify the work.

15) Sheet L-502

1. Detail 2 L-502
    a. Show existing grades.
    b. Boring locations – depth & profile locations
    c. Distance barrier of proposed construction to wetlands
    d. Provide detail on "limits of cut"
    e. Provide vertical and horizontal stationing on drawings
    f. Coordinate outlet structure detail w/ 20-L-500 and details in project SWPPP
    g. Depth to rock, confirm need for any lining materials and maintenance thereof
    h. Pond profile requires reference to a plan section for clarification and constructability

RESPONSE:
See Additional Comment item #1, bullet points 1 & 2 and swppp item 20 above for response.

2. Detail 1 L-502
    a. Illegible provide drawing to scale at a legible size
    b. Drawing contours do not appear to match others in grading plans nor staging plans

RESPONSE: KFA/ JK TOBIN to provide a revised earthwork plan at a larger scale.

16) Sheet L-503

1. Delete basement details and footer details they are dictated by building permit applications

   RESPONSE: KFA to removed basement/footer details. Notes have been added to drawing L-503 stating that basement slab and footings are shown for coordination purposes and illustrative purposes only.

2. Confirm where is section "Fill Location" taken

   RESPONSE: Plans revised to show fill location on grading plan with section reference to drawing L-202.

3. Section 31 2301 is unacceptable when project moves forward Town will contract a testing agency using developer deposit for cost reimbursement and testing agency will use specifications and QA/QC plan developed by applicant initial indications are for an initial testing deposit of $50,000

   RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. Town Attorney and developer to discuss with town.

4. Typical road sections are confusing coordinate with other similar details 14 L-500 and 8 L-500

   RESPONSE: KFA has consolidated road detailing information within drawing set. Much of the information has been added to the road section details shown on drawing L-503.

5. Please provide professional design credentials for JK Tobin Construction referenced in the plans

   RESPONSE: JK Tobin credentials to be provided at a later date. Our office has worked on many successfully constructed projects with Tobin Construction over the years including the Hamlet Housing neighborhood – Clay NY, Harbor Height Housing Neighborhood and DeWitt Community Library.

6. Provide QA/QC plan for all structural fills in Town proposed Rights of Way. Plan shall include but not be limited to the following, all lifts to be 6" as depicted by applicant in project specifications:
   a. Each proposed Manhole: Compaction results for embankment, subgrade, subbase and base in 6" lifts
   b. Each Catch Basin Compaction results for embankment, subgrade, subbase and base in 6" lifts
   c. Each Sanitary Sewer: Compaction results for embankment, subgrade, subbase and base in 6" lifts every 500 LF

d. Each Storm Sewer: Compaction results for embankment, subgrade, subbase and base in 6" lifts every 500 LF
e. All Roadways to be dedicated to Town: Compaction results for embankment, subgrade, subbase and base in 6" lifts every 500 LF

RESPONSE: A construction duration column has been added to the Construction Staging chart shown on the Staging plans (drawing L-102). A testing summary chart, provided by Kenny Geotechnical, has also been added to each stage to summarize the testing required for each phase (drawings L-102 thru L-108). Testing criteria items a through e have been added to the specifications section 31 2301 SITEWORK EXCAVATION BACKFILL AND COMPACTING , 3.8 Field Quality Control, item 3 on Specification drawing L-503.

17) Sheet L-600

1. Stationing on profiles do not correlate to any plan views

   RESPONSE: Stationing now appears on drawings within the plan set and correlates to the profile on drawing L-600.

2. Storm lines have unacceptable cover of less than 1 foot at the following locations
   a. STA 0+50
   b. STA 1+50
   c. STA 6+00
   d. STA 7+25

   RESPONSE: Inverts have been adjusted to provide cover greater than 1'-0".

18) Sheet L-800

1. Road Specification 32 1100 Calls for 6" lifts for all road embankment. Please coordinate on all drawings

   RESPONSE: All drawings include reference to installation of materials in 6" lifts. See drawing L-503 for compaction in road areas.

2. Road Specification 32 1216 calls for 2-year warranty on all roads. Please coordinate on all drawings

   RESPONSE: Specification section 32 1216, 3.2, Pavement Guarantee, has been removed since it is in conflict with Town of Manlius specification section 312301, 1.6, F Highway Agreement Guarantee.
3. Many specification references are missing including Division 1 referenced on sheet L-800. Strongly suggest a specification book complete with table of contents and material and performance criteria. Many specifications included herewith appear as duplications.

   RESPONSE: All construction specification sections shown within the revised construction set of drawings have been coordinated with drawings and Town of Manlius provided specifications. Town of Manlius specifications have been incorporated into section 31 2301 Sitework

Excavation, Compaction and Backfilling. Design Team discussed this item with both the town engineer and attorney during our phone call on 3/19/20. It was determined that Division 1 specifications were not required for this project.

19) Sheet L-801

1. Planting Soils: Show locations & account for impacts on cut and fill calculations

   RESPONSE: <u>Planting Soils</u> specification section is from a different project, is not required for this project and has been removed. <u>Plantings</u> specification section has been added to address the required installation of two street trees at each home and the plant bed for the monument sign. The amount of soil removed to install trees and the monument planter is minimal and will not have a significant impact on the earthwork calculations.

2. Structural Soil (CU): Show locations & account for impacts on cut and fill calculations

   RESPONSE: Structural soil section is from a different project, is not required for this project and has been removed. Structural soils are utilized within the city right of ways where trees are planted within small tree pits surrounded by sidewalk. Trees planted within the Hoag neighborhood will be surrounded by lawn and not require structural soils.
3. Pressure & Leakage Tests: Confirm locations of this specification requirement

   RESPONSE: As is customary with all sewer installations, all lines will be pressure and leakage tested per specification section 02722 and sanitary note 10 on drawing L-501.
4. Disinfection: Confirm locations of this specification requirement

   RESPONSE: As is customary with all water installations, all lines will be pressure and leakage tested in accordance with OCWA requirements and DOH regulations and per specification section 02722 and sanitary note 10 on drawing L-501 .
5. Provide detailed QA/QC plan for NYSDOH acceptance of sanitary sewer acceptance

   RESPONSE: see previous comments L-801, items 3 and 4.

6. Section 33 31000 – Sanitary- Does not match drawing requirements nor Section 02722 – Sanitary Sewer

   RESPONSE: Specification sections have been revised to focus on this project specifically.
7. Section 02722 Sanitary Sewers – Does not match drawings nor Section 33 31000 – Sanitary –

   RESPONSE: Specification sections will be revised to conform to each other and this project.
8. Section 33 4000 – Storm Drainage – Drawings do not comply nor match the specification

   RESPONSE: Specification sections have been updated to comply with project work shown within drawings.
9. Many specification references are missing including Division 1 referenced on sheet L-800. Strongly suggest a specification book complete with table of contents and material and performance criteria. Many specifications included herewith appear as duplications.

RESPONSE: Duplicate comment. See 18) Sheet L-800, item 3 for response.

20) SWPPP

Appendix A

1. Soils investigation depicts soil investigation in area now to be forever wild and not in areas of stormwater capture area

RESPONSE: The data in Appendix A is reflective of all testing done at the site, including initial testing. The data is important and reflective of the general soil profile in the area showing limited to no encounters with bedrock or other impedances. We plan to leave this information within the report. The most recent Kenney Geotechnical report(s) have also been included in Appendix A of the SWPPP provided in this submission. Appendix A also now includes drawing L-100 depicting all soil testing data and locations.

2. Soil investigative activity currently on three separate non project maps. All to be coordinated on one map and one table boring locations and elevations to be tied to USGS elevations and coordinates by surveyor

RESPONSE: see response to SWPPP comment #1 above, however, drawing L-100, Site Preparation and Boring Plan has been included in the drawing set and Appendix A of the SWPPP provided in this submission to clarify all testing locations.

3. Boring info of 12/13/19 indicates refusal/rock at elevation 14 feet below existing grade. No certification of elevation nor longitude/latitude location

RESPONSE: See drawing L-100 and 1) Additional Comments, bullet point #2 above for response.

4. Site specific dust plan to supersede all other regulations shall be noted on site drawings as reference to all site activity

RESPONSE: A note has been added to L-102 thru L-108 and L-501 which states 'Site specific dust plan to supercede all other regulations to all site activity'.

5. SWPPP dated 12/17/19 appears pre-certified by engineer and owner 1/11/18

RESPONSE: the signature page and NOI signatures have been updated.

6. Dust plan wording to be changed from proposed recommended etc. to required and to be submitted daily to Town of Manlius and posted on site as part of SWPPP reporting. Action limits and action plans to be included

RESPONSE: the SWPPP language has been updated to reflect "Required". Action plan and measures are included on page 23 of the SWPPP text.

7. Dust monitoring devices to be included in SWPPP documentation and describe depiction of locations of dust monitoring at each perimeter of the site

RESPONSE: Dust Monitoring device locations are shown on phasing plans (drawings L-102 thru L-108). Specific dust monitoring device is presented as detail 8, drawing L-501 and this cut sheet has also been included in the SWPPP appendix R.

8. No borings or documentation of 66,000 CF sedimentation pond. Information required for basis of design, pond appears to be 13 feet deep +/-.

RESPONSE: duplicate comment, see Additional Comment #1, bullet point 3 for response.

Appendix H

1. Confirm existing impervious as 1.2 acres and future impervious as 4.1 acres with new drawings of 12/17/19 as NOI has a preparers signature of 12/26/17

RESPONSE: Updated SWPPP has verified total impervious coverage and the NOI, hydrocadd and page 4 of the swppp have been updated as necessary.

2. Start and end dates for the project depicted as 2019 – 2020. Proposed schedule from drawings indicates a proposed schedule of development of 2020 through at least 2026. Start date of 11/1/19 has passed and is incorrect. NOI dated and signed by RZ Engineering 12/26/17 incorrectly with above information superseding the document.

RESPONSE: The planning process for this project has been extended and therefore, we will update forms however, based on future planning timetable this may require further updates. We will update accordingly as the process moves forward.

3. Long Term O&M WILL NOT be Town of Manlius as shown on page 12 of 14 on NOI

RESPONSE: Correct, the HOA will perform long term O&M, SWPPP pages have been updated along with the NOI.

4. Owner signature on NOI is 1/10/18

RESPONSE: Form signature has been updated

5. Preparer certified the SWPPP on 1/8/18 but SWPPP was not prepared until 12/17/19 nearly two years later. Please confirm and revise

RESPONSE: see response to Appendix H comment 2 above

Appendix I

1. Details in Appendix I do not match details shown on submitted subdivision drawings.

RESPONSE: As is typical in a swppp, our office provides the NYSDEC hand drawn details from the DEC's Blue Book and the NYSDEC Stormwater Design manual in our SWPPP manuals for the project. Our project plans include details prepared by our office, manufacturers and other sources which are based off of the NYSDEC manual. Our office requested clarification (specifically what if any, discrepancies were found between the NYSDEC details and our details so that we can update the drawings) on this item during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

Appendix J

1. Why is this included. This is a copy of NYSDEC regulations SPDES General Permit

RESPONSE: It is included in every SWPPP we prepare so there is no confusion about what the permit requirements are. This was specifically suggested by NYSDEC personnel to our office. Is there any objection to the DEC's request? Our office requested clarification on this item during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

Appendix K

1. Confirm O&M procedures, resubmit using proposed agreement and develop site specific reporting criteria. Current data appears to be NYSDEC suggested tally of forms

RESPONSE: The information provided is the DEC's documented data. Is there a reason the DEC's information is not sufficient for this project or any specific requirement the town requires over and above the NYSDEC's requirements? Our office requested clarification on this item during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

2. Maintenance does not address site specific maintenance criteria nor site specific costs nor site ownership and easement responsibilities. Costs and set aside deposits shall also be addressed. Inclusion of maintenance agreement is also required

RESPONSE:. see Appendix K item #1 for response

3. Post maintenance construction plan missing from SWPPP see attached for possible reference material and sample plan

RESPONSE: see Appendix K item #1 for response

Appendix L

1. Worksheets do not match NOI in Appendix H

RESPONSE: it's unclear the relevancy of this comment. Our office requested clarification on this item (specifically how the calculation does not meet the DEC requirement) during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

Appendix M

1. Soil stockpiling shall not be at direction of contractor. Stockpiling shall be as per SWPPP and drawings

   RESPONSE: Soil Stockpiling locations are shown within the staging plans (drawings L-102 through L-108).

2. No changes in staging areas as directed by contractor. Staging areas to be completed in accordance with SWPPP and drawings approved

   RESPONSE: see Appendix M item 1 for response.

3. Topsoil required across entire site aerated to a depth of 6" as required by NYSDEC also as required on drawings. Provide a separate sheet depicting areas to be topsoiled with QA/QC requirement including placement of compost as specified

   RESPONSE: Soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 03/11/2020, see revised SWPPP provided with this submission, Appendix I and drawing L-101.

4. Show topsoil storage area of 18,000 +/- cubic yards to be stored and placed on site in drawings and SWPPP

   RESPONSE: see Appendix M item 3 for response

Appendix N

1. Confirm all cut/fill and topsoil calculations

RESPONSE: Tobin Construction and KFA have spent a considerable amount of time developing the staging of the single phased construction project. The construction staging and completed project site balances. Earthwork analysis has also been provided for stages and 2 which also balances.

2. Confirm slope stability and erosion stability of storage piles of soils

RESPONSE: A 1'v:3' h max slope note has been added to the staging plans. Stockpiles will be seeded and strawed. The stockpiled areas will also be monitored and reviewed during SWPPP inspections.

Appendix P

1. Pond profile not to scale

RESPONSE: Pond profile has been redrawn to scale. See comment L-102 item #1 for response

21) Traffic Study

1. Traffic study: No figure 6. Statement that the study information is valid for 3 years from data collection of October 11, 2017 (expires October 11, 2020)

RESPONSE: Agreed.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

MEMORANDUM

To: Town of Manlius Planning Board

Subj: Hoag Lane Subdivision

Submission Date December 17, 2019

Date: December 31, 2019

From: DA Miller

Miller Engineers has completed a review of submission received by the Town of Manlius dated December 17, 2019. Areas of immediate concern include the following follow:

- Confirm in Writing with a formal submission of the plan, determination from NYSDEC of any requirements for a dam permit at this location
- Wet Pond 1 appears to have boring refusal/rock at a depth of 14 feet. Bottom of pond is depicted as 18 feet below grade. As designed pond does not appear to meet design requirements
- New sedimentation pond (volume 66,000 CF) is shown as 13 feet deep +/-. No details on safety, depth to rock or influence of ground water
- Excavation from new sedimentation pond not clearly shown staged on staging plans
- Staging plans do not address storage (with clear delineation of volumes to be staged) or use of following materials
  a. Compost
  b. Planting Soil
  c. CU Structural Soil
  d. Sedimentation Pond Excavation
- Project is no longer one phase as described for several years by applicant
- Time of Concentration assumptions by the applicant do not assist with local run-off issues. A more conservative approach is recommended by our review to increase mitigation of the proposed activity
- No definite QA/QC plan for structural fills has been submitted
- Through use of cluster development and as discussed at public meetings applicant to provide architectural renderings of homes and landscape plans of parcels. Planning Board should also review merits of grinder pumps verses a traditional municipal duplex pump station at this location.

Details of the review of each drawing and the proposed SWPPP follow:

General

1. No sewer offset plan included in submission
2. No district formation information for proposed special use districts
3. Correspondence from Kenney Geotechnical dated September 17, 2019 appears to indicate incomplete work tasks
4. No updates received for geotechnical report for current proposed work
5. On site bore hole completed by Kenney Geotechnical indicates refusal/rock at an elevation 14 feet below surface inside limits of the proposed wet pond on 12/13/19. Pond is proposed to be at least 18 feet at this location
6. Site has significant cuts and fills in areas of infrastructure to be dedicated to Town, no approvable QA/QC plan submitted for this scope of work
7. Map plan and report missing for district formations
8. No updates on revised plans from OCWA, OCDOH nor OCDWEP
9. No survey provided with submission
10. As a function of relief upon use of cluster development. The Planning Board should place strong consideration and review upon the use of private grinder pumps at this location. The proposed use of grinder pumps is an anomaly in the Town of Manlius. This proposal will nearly double the applications of grinder pumps in the community. If used pumps shall be private with generator back up & required holding tanks on private property with double access valves. USEPA fact sheet on grinder pumps is attached herewith. Installation of grinder pumps is not consistent with current Town O&M maintenance.
11. Architectural review compliance discussed at public meetings not addressed or depicted. Typical architectural rendering for proposed houses should be submitted for review
12. Landscape review parameters discussed at public meetings not addressed or depicted. Typical landscape rendering for proposed houses should be submitted for review
13. Land marking monuments not depicted on drawings as requested
14. No blasting nor rock removal allowed on project site, no rock removal required as discussed at public meetings by applicant
15. Security to be provided for capital improvements for utility and road installation by applicant for all infrastructure to be dedicated to the Town.
16. Engineering observation during construction will be required. A developers deposit will be required for this activity.
17. Testing for structural fills and NYSDOH certification of sewers will be required through a developer's deposit for all work to be dedicated to the Town. Requested that the appliant submit actual QA/QC plan to help better define scope of testing services costs
18. Drawings L-201, L-700, L-701, L-702, L-703, L-704, L-705 not submitted with this submission and require additional coordination as a total review
19. Drawings show only revisions 5-11. Where are revisions 1-4
20. Wet pond appears to be a dam over 10' tall and impoundment area of over 3.07-acre feet (16.5': 676.5 crest, 660.0 toe of slope pond bottom 664.0 & 3.3-acre feet impoundment) Pond profile requires location of borings, location of rock, location of water table, 25' buffer from perimeter of high water impoundment area to wetland boundaries, documentation of

no undue influence of discharges to ACOE wetland area, landscaping plan, removable trash rack, access turnaround for maintenance, fence gate sizing for proposed equipment if fencing is proposed and location of safety bench

21. Foundation drain around footing not a part of this approval and shall be removed
22. All drawings marked not for construction, unacceptable for approval submission
23. SWPPP submission dated 12/17/19 accepted by applicant on 1/10/18 and certified by engineer on 12/26/17
24. Project specifications provided by developer require the following which have not been incorporated into drawings or plans
    a. Compost (220,000 CF required for reclamation of site (3" thick))
    b. CU Structural soil
    c. Planting Soils
    d. Basement spoils (35,000 CF)
    e. Additional staging for new additional sediment pond (66,000 CF)
25. No drawings in 12/17/19 SWPPP match current submission subdivision drawings of 12/17/19
26. The proposed conditions plans in the SWPPP do not match the grading plan in the plan set.
27. Are the calculations in the SWPPP based on the old drawings in the SWPPP or the new drawing set? This needs clarification.
28. We believe more water quality volume will be required as there is more than 4 acres of impervious on site.
29. A response letter is required on the items addressed herewith as it is very difficult to follow what has been changed with so many revisions.

SheetL-100

1. Boring information does not include logs nor elevations for borings
2. Notes indicate removing all vegetation and hauling off site contrary to public discussions
3. What is the purpose of site preparation plan?
4. A site-specific survey is required for the proposed project
5. Finished floor elevations depicted in notes but not shown on drawings
6. General note referencing U.F.P.O., the agency no longer exists
7. Open cut of Hoag Lane for sewer connection unacceptable, provide detail for road boring at this location
8. Decommissioning of Water Pit, provide insight or detail
9. Dust monitoring provide detailed QA/QC Dust Monitoring Plan
10. Stage 6 not as directed by owner, plan needs to be on drawing

Sheet L-101

1. Wet pond borings appear to have been taken to a depth of 14 feet (168") where refusal was met. The proposed pond appears to be over 18 feet deep from existing land contours Confirm depth of rock consistent for final design
2. All wetland areas shall be delineated and protected during construction activities. Suggest orange construction fence to protect wetlands and all areas to remain forever wild to be shown on drawings
3. L-101does not match reference L-1 in SWPPP. Perc tests not taken in area of proposed pond nor at proposed elevations of construction of pond
4. Lot 12 appears to have an 8 foot +/- retaining wall, provide detail and ownership of same\staging plan wording is depicted on sheet L-101. Should be on sheet L-102 and in SWPPP
5. Stormwater note indicates 20 homes not 21 per drawings
6. Stockpile notes on drawings contradicts public discussions and drawings
7. Describe top soiling compost operation and acceptance criteria of same, specification for compost. Show staging area for composting operation

Sheet L-102

1. Transitions to forebay & Wet pond ground contours are needed in detail to confirm plans and profiles coordination with existing site contours
2. Stockpile notes on drawings contradicts public discussions and drawings
3. No longer a one phase project as discussed with public
4. Project appears to be at least 5-6 years in duration
5. Staging plan does not consider winter shutdowns and securing site environmentally
6. Confirm soil from pond being moved to staging area, stability factors of the large staged area nor haul roads
7. Work outlined in phasing plan appears to require a waiver from NYSDEC
8. Final wear course topping for roads is required to be placed within one year of base & binder installation per Town of Manlius
9. All required erosion control for each phase of work to be included and detailed in drawings and SWPPP
10. Staging Plan requires discussion for schedule of dedicated facilities. Developer proposes 2-year warranty of all dedicated roads and infrastructure, timeline of each phase needed for acceptance.
11. Phasing plan appears to require a NYSDEC waiver
12. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public
13. Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials
14. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted
15. Provide a preliminary schedule for the work
16. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.
17. NOTE: Install road pavement subgrade …. In lifts per Town of Manlius…" Unacceptable Note

18. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage
19. Provide hammerhead turn around at end of road construction
20. Staging Plan grades do not appear to meet final grading plans

Sheet L-103

1. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public
2. Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials
3. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted
4. Provide a preliminary schedule for the work
5. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.
6. NOTE: Install road pavement subgrade …. In lifts per Town of Manlius…" Unacceptable Note
7. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage
8. Provide hammerhead turn around at end of road construction
9. Provide details, sections and basis of design for 66.712 CF sedimentation basin
10. Show location of excavation of 66,712 CF of spoil for the work
11. Show depth to rock and depth to water table. Include safety precautions and any need for security fencing during the work
12. Discuss where wood chips have been incorporated into the work formerly shown on drawing L-102
13. Storm pipe el 695.5 to el 687.5 has no sedimentation basin attached
14. Staging Plan grades do not appear to meet final grading plans

Sheet L-104

1. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public
2. Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials
3. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted
4. Provide a preliminary schedule for the work
5. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.
6. NOTE: Install road pavement subgrade …. In lifts per Town of Manlius…" Unacceptable Note
7. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage
8. Provide hammerhead turn around at end of road construction
9. NOTE: Fill temporary basin – No basin depicted
10. Staging Plan grades do not appear to meet final grading plans

Sheet L-105

1. Staging Plan 4,5, &6 does not provide any detail on staging requirements. Drawings looks quite similar to sheets L-101; L-200; L-300

Sheet L-200

1. Stormwater piping: No line or grade shown on plan, no delineation of pipe sizes lacking in several locations on plan, several unacceptable 90-degree or greater bends with problematic head loss, no stationing shown on plan
2. South side swale indicates apparent check dams. Das require detail and stationing location
3. Geotech to include centerline of road ways for road and utility installation & all ponds

Sheet L-300

1. Air release valve locations
2. MH #3 and MH#6 are unacceptable with greater than 90-degree bends depicted on drawings as shown are problematic for gravity flow
3. Provide details for sump pump connections directly to storm sewers with backflow connections to compensate for overland discharges described in SWPP
4. Show location of 10 – 15" caliper trees on lot 4
5. Lot 4 diagonal 125 sewer lateral across road is unacceptable
6. Show locations for proposed grinder pumps tanks and emergency generators disconnect valves off Town ROW
7. No open cut allowed across Hoag Lane
8. Provide detail for odor control for septage transport from grinder pumps and mechanism for grinder pump owners to pay in map plan and report for sewer district
9. Laterals specified as 6" some shown as 4" confirm all are 6" and correct drawings
10. Note 5 indicates incomplete submission with no easements in place for work
11. Note 23: provide detail on agridrain in-line water structure

Sheet L-400

1. Cleary show limits and stationing of jute mesh requirements in southerly swale
2. List all proposed traffic signs
3. Show locations of stone dust walkways and ownership of the same
4. Confirm NYS Pool requirements vs Town BOCA requirements for pools
5. Fence detail references NYSHD pool code. Confirm fence meets BOCA requirements adopted state wide for pools
6. Provide detail on subdivision sign
7. Show required monument locations

Sheet L-401

4. L-401 Rain Gardens: Show specific locations as discussed at public meetings
5. L-401 wet pond plantings show detail, fencing, access to pond, maintenance around pond and equipment turn around areas
6. L-401 details 5&6 seeded and sodded lawns show locations for detail application

7. Show locations of proposed rain gardens
8. Show pond landscaping
9. Describe landscaping plans and a schematic for each house as discussed at public meetings
10. Note 3 stating planting scheme for entrance at later date is unacceptable

Sheet L-500

1. Sheet L-500 indicates traffic sign detail. Plan requires location of all signs
2. Detail 14 L-500 does not match detail 7 L-501. Compaction effort required. Lift height of fill/cut operations required. Proctor or modified proctor testing. Number and frequency of testing
3. Detail A L-500 siltation sock use not referenced in SWPPP
4. Construction entrance 3 L-500 not detailed in staging/phasing plans
5. Detail 8 L-500 asphalt kick up detail does not match detail 14 L-500 nor detail 7 L-501
6. Wet pond detail not to scale unacceptable requires scaled drawing with details
7. Confirm need for 2'-0" manhole sumps
8. Concrete washout detail does not match plan sheet L-104 or L-105 nor NYSDEC suggested requirements
9. Lot Erosion Control Lacks detail i.e. curb, gutter and site silt fence
10. Catch basins depicted on undisturbed earth, confirm this requirement and discuss subbase compaction where required

Sheet L-501

1. Sheet L-501 dust monitoring device cut sheets to be included in SWPPP with dust plan. Dust plan data to be submitted daily to Town of Manlius Code department during work activities
2. Applicant has indicated no blasting or rock removal required for the project. This statement shall be placed on all drawings
3. Detail 7 L-501 indicates road to be placed on undisturbed subbase. This does not match drawings. Road construction requires a detailed QA/QC plan
4. Pond requires easement access
5. Confirm basis for 14' maintenance berm. The maintenance bench does appear to be continuous. No safety bench indicated on drawings. Maintenance bench is bisected by overflow spillways. Maintenance bench requires a turnaround required by NYSDEC
6. Provide detail on coarse aggregate fill around manhole detail
7. Pond seep collar
8. Fence detail references NYSHD pool code. Confirm fence meets BOCA requirements adopted state wide for pools
9. Sanitary notes contradict project specifications on sheets L-800 and L-801
10. Show location and requirement for Hydrant installation detail
11. Detail 2-L501 sanitary lateral does not match plan details on utility drawings
12. What is detail 5 L-501 depicting? Where is plan detail for this applied
13. Detail 6 L-501 all fence posts to be noted as 4'-0" as shown
14. Town will not accept ownership nor operation and maintenance of grinder pumps. Remove Detail 7 L-501

Sheet L-502

1. Detail 2 L-502
    a. Show existing grades
    b. Boring locations – depth & profile locations
    c. Distance barrier of proposed construction to wetlands
    d. Provide detail on “limits of cut”
    e. Provide vertical and horizontal stationing on drawings
    f. Coordinate outlet structure detail w/ 20-L-500 and details in project SWPPP
    g. Depth to rock, confirm need for any lining materials and maintenance thereof
    h. Pond profile requires reference to a plan section for clarification and constructability
2. Detail 1 L-502
    a. Illegible provide drawing to scale at a legible size
    b. Drawing contours do not appear to match others in grading plans nor staging plans

Sheet L-503

1. Delete basement details and footer details they are dictated by building permit applications
2. Confirm where is section “Fill Location” taken
3. Section 31 2301 is unacceptable when project moves forward Town will contract a testing agency using developer deposit for cost reimbursement and testing agency will use specifications and QA/QC plan developed by applicant initial indications are for a n initial testing deposit of $50,000
4. Typical road sections are confusing coordinate with other similar details 14 L-500 and 8 L-500
5. Please provide professional design credentials for JK Tobin Construction referenced in the plans
6. Provide QA/QC plan for all structural fills in Town proposed Rights of Way. Plan shall include but not be limited to the following, all lifts to be 6” as depicted by applicant in project specifications:
    a. Each proposed Manhole: Compaction results for embankment, subgrade, subbase and base in 6” lifts
    b. Each Catch Basin Compaction results for embankment, subgrade, subbase and base in 6” lifts
    c. Each Sanitary Sewer: Compaction results for embankment, subgrade, subbase and base in 6” lifts every 500 LF
    d. Each Storm Sewer: Compaction results for embankment, subgrade, subbase and base in 6” lifts every 500 LF
    e. All Roadways to be dedicated to Town: Compaction results for embankment, subgrade, subbase and base in 6” lifts every 500 LF

Sheet L-600

1. Stationing on profiles do not correlate to any plan views
2. Storm lines have unacceptable cover of less than 1 foot at the following locations
    a. STA 0+50
    b. STA 1+50
    c. STA 6+00
    d. STA 7+25

Sheet L-800

1. Road Specification 32 1100 Calls for 6" lifts for all road embankment. Please coordinate on all drawings
2. Road Specification 32 1216 calls for 2-year warranty on all roads. Please coordinate on all drawings
3. Many specification references are missing including Division 1 referenced on sheet L-800. Strongly suggest a specification book complete with table of contents and material and performance criteria. Many specifications included herewith appear as duplications.

Sheet L-801

1. Planting Soils: Show locations & account for impacts on cut and fill calculations
2. Structural Soil (CU): Show locations & account for impacts on cut and fill calculations
3. Pressure & Leakage Tests: Confirm locations of this specification requirement
4. Disinfection: Confirm locations of this specification requirement
5. Provide detailed QA/QC plan for NYSDOH acceptance of sanitary sewer acceptance
6. Section 33 31000 – Sanitary- Does not match drawing requirements nor Section 02722 – Sanitary Sewer
7. Section 02722 Sanitary Sewers – Does not match drawings nor Section 33 31000 – Sanitary –
8. Section 33 4000 – Storm Drainage – Drawings do not comply nor match the specification
9. Many specification references are missing including Division 1 referenced on sheet L-800. Strongly suggest a specification book complete with table of contents and material and performance criteria. Many specifications included herewith appear as duplications.

SWPPP

Appendix A

1. Soils investigation depicts soil investigation in area now to be forever wild and not in areas of stormwater capture area
2. Soil investigative activity currently on three separate non project maps. All to be coordinated on one map and one table boring locations and elevations to be tied to USGS elevations and coordinates by surveyor
3. Boring info of 12/13/19 indicates refusal/rock at elevation 14 feet below existing grade. No certification of elevation nor longitude/latitude location
4. Site specific dust plan to supersede all other regulations shall be noted on site drawings as reference to all site activity
5. SWPPP dated 12/17/19 appears pre-certified by engineer and owner 1/11/18
6. Dust plan wording to be changed from proposed recommended etc. to required and to be submitted daily to Town of Manlius and posted on site as part of SWPPP reporting. Action limits and action plans to be included
7. Dust monitoring devices to be included in SWPPP documentation and describe depiction of locations of dust monitoring at each perimeter of the site

8. No borings or documentation of 66,000 CF sedimentation pond. Information required for basis of design, pond appears to be 13 feet deep +/-.

Appendix H

1. Confirm existing impervious as 1.2 acres and future impervious as 4.1 acres with new drawings of 12/17/19 as NOI has a preparers signature of 12/26/17
2. Start and end dates for the project depicted as 2019 – 2020. Proposed schedule from drawings indicates a proposed schedule of development of 2020 through at least 2026. Start date of 11/1/19 has passed and is incorrect. NOI dated and signed by RZ Engineering 12/26/17 incorrectly with above information superseding the document.
3. Long Term O&M WILL NOT be Town of Manlius as shown on page 12 of 14 on NOI
4. Owner signature on NOI is 1/10/18
5. Preparer certified the SWPPP on 1/8/18 but SWPPP was not prepared until 12/17/19 nearly two years later. Please confirm and revise

Appendix I

1. Details in Appendix I do not match details shown on submitted subdivision drawings.

Appendix J

1. Why is this included. This is a copy of NYSDEC regulations SPDES General Permit

Appendix K

1. Confirm O&M procedures, resubmit using proposed agreement and develop site specific reporting criteria. Current data appears to be NYSDEC suggested tally of forms
2. Maintenance does not address site specific maintenance criteria nor site specific costs nor site ownership and easement responsibilities. Costs and set aside deposits shall also be addressed. Inclusion of maintenance agreement is also required
3. Post maintenance construction plan missing from SWPPP see attached for possible reference material and sample plan

Appendix L

1. Worksheets do not match NOI in Appendix H

Appendix M

1. Soil stockpiling shall not be at direction of contractor. Stockpiling shall be as per SWPPP and drawings
2. No changes in staging areas as directed by contractor. Staging areas to be completed in accordance with SWPPP and drawings approved
3. Topsoil required across entire site aerated to a depth of 6” as required by NYSDEC also as required on drawings. Provide a separate sheet depicting areas to be topsoiled with QA/QC requirement including placement of compost as specified
4. Show topsoil storage area of 18,000 +/- cubic yards to be stored and placed on site in drawings and SWPPP

Appendix N

1. Confirm all cut/fill and topsoil calculations
2. Confirm slope stability and erosion stability of storage piles of soils

Appendix P

1. Pond profile not to scale

Traffic Study

1. Traffic study: No figure 6. Statement that the study information is valid for 3 years from data collection of October 11, 2017 (expires October 11, 2020)

Fayetteville-Manlius Central Schools



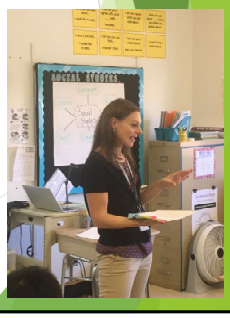
Instructional Hiring Report

2017

1

New Instructional Staff

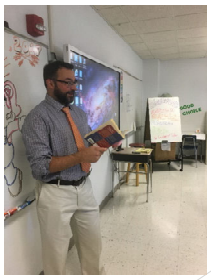
- 31 teaching positions filled (23 in 2016)
- 22 probationary appointments (9 in 2016)
- 15 openings due to teacher retirements (3 in 2016)
- 2 teachers resigned for various other reasons (6 in 2016)



2

New Instructional Staff

- 87% of the teachers hired for this school year already hold a master's degree. (78% in 2016)
- This new cohort has an average of 5.5 years of teaching experience prior to employment at F-M. (5.3 in 2016)



3

Enrollment Trends

	Enders Road	Fay El.	Mott Road	Eagle Hill	Wellwood	HS	District
2011 Enrollment	531	481	395	718	698	1585	4408
2012 Enrollment	519	470	411	694	699	1549	4342
2013 Enrollment	526	445	379	670	698	1552	4270
2014 Enrollment	561	445	385	645	673	1470	4179
2015 Enrollment	567	449	413	650	666	1455	4200
2016 Enrollment	601	472	403	653	652	1454	4235
2017 Enrollment	603	486	417	661	636	1434	4237

4

Summer Registration Trends

	Enders Road	Fay El	Mott Road	Eagle Hill	Wellwood	HS	District
Summer Registrations 2012	32	25	32	24	22	29	164
Summer Registrations 2013	35	35	26	21	24	19	160
Summer Registrations 2014	55	35	47	31	34	22	224
Summer Registrations 2015	72	51	39	38	43	43	286
Summer Registrations 2016	73	68	36	38	44	55	314
Summer Registrations 2017	63	79	46	29	26	35	278

5

Kindergarten

Kindergarten Enrollment	Enders Road	Fay El.	Mott Road	Total
Actual 2011-12	74	72	63	209
Actual 2012-13	93	85	91	269
Actual 2013-14	86	83	68	237
Actual 2014-15	88	84	66	238
Actual 2015-16	111	78	83	272
Actual 2016-17	97	91	70	258
Actual 2017-18	108	92	86	286

6

Elementary Sectioning

Z khq#glvfxvvlqj#fdsdflw|#dw#hdnp hqwdu|#exlogljjv/#lwv#
dnvv#dq#lvvxh#ri#hqurop hqw#dqg#p ruh#dq#lvvxh#ri#wkh#wrwdo#
qxp ehu#ri#vhfwlrqvl#Hdfk#vhfwlrq#qhhgv#d#ixo#fodvvurrp #
vsdfh#dqg#hdfk#vhfwlrq#dggv#wr#wkh#vshfldo#duhdv#
vfkhgxdn#z h#kdyh#rqo|#rqh#j|p /#rqh#duw#urrp /#rqh#
deudu|#dqg#rqh#p xvlf#urrp #lq#hdfk#hdnp hqwdu|#exlogljj,

	2015-16	2016-17	2017-18
Enders Road	25	28	27
Fayetteville Elementary	22	21	23
Mott Road	20	19	20

7

Fayetteville-Manlius Schools

8199 East Seneca Turnpike, Manlius, NY 13104-2140

Phone: (315) 692-1200 • Fax: (315) 692-1227

www.fmschools.org

Progress • Responsibility • Integrity • Determination • Excellence

Dr. Craig Tice
Superintendent

RECEIVED
FEB 14 2018
TOWN OF MANLIUS
SUPERVISOR'S OFFICE

February 13, 2018

Mayor Mark Olson
Village of Fayetteville
425 E. Genesee Street
Fayetteville, NY 13066

Mayor Paul Whorrall
Village of Manlius
One Arkie Albanese Avenue
Manlius, NY 13104

Supervisor Ed Theobald
Town of Manlius
301 Brooklea Drive
Fayetteville, NY 13066

Dear Mayor Olson, Mayor Whorrall, and Supervisor Theobald,

I am writing to all of you on behalf of the Fayetteville-Manlius School District Board of Education so that we may go on record that the three elementary schools within the Fayetteville-Manlius Central School District are at (or nearing) capacity. As you may already be aware, our elementary schools ran out of any excess space when the district moved to full-day kindergarten while ever-increasing government mandates required that smaller classrooms be reserved for required programs (such as ENL - English for New Learners).

This letter is not intended to address a particular housing development currently under consideration, but rather to clear up any misconceptions about the capacity within the Fayetteville-Manlius CSD. We want to ensure that the Town and Village Planning and/or Zoning Boards are able to make informed decisions, especially when developers and/or their representatives repeatedly make claims that they are in receipt of information from the school district that the district has the capacity to accommodate an influx of students. Such statements are simply not accurate. Assuming that new developments are approved, we anticipate having to ask taxpayers to support the construction of new spaces at our three elementary schools. Please know that the recently approved $45.2 M capital building project will add only four classrooms to Enders Road Elementary as most of the planned work is dedicated to updating the aging infrastructure at Wellwood Middle School.

It would be mutually beneficial if school officials were asked to provide information on how any of the proposed projects would impact our district. Unfortunately, we have not been asked to provide the developers and or their representatives with any information on that topic. While we believe that we could find room for students at the middle and high school levels, we do have significant data-driven concerns about our buildings' capacity at the elementary levels. How that capacity would be affected by the proposed projects is an area we would be happy to discuss with the respective municipal boards when appropriate.

As always, we look forward to continuing the positive relationship between our organizations that we currently enjoy. While we understand the desire to increase the tax base in an effort to strengthen the vitality of our community, we are always willing and eager to collaborate and partner with our local municipalities and government officials on topics of mutual interest. We anxiously wait to hear back from you as to how best start a dialogue regarding the potential impact of these new developments on our schools.

Sincerely,

Craig J. Tice, Ph.D.
Superintendent of Schools

cc: Zoning Board chairs: Joe Basile, Henry McIntosh, Francis Marlowe; Planning Board chairs: Jane Rice, Joseph Lupia, John Urciuoli

Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

June 13, 2019

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Subsurface Investigation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed additional subsurface investigation at the Woodland Hills project site. The purpose of the additional subsurface investigation was to provide data for road design and to provide a preliminary screening for karst features. The scope of the additional investigation included eight soil borings (designated as B-1 through B-8), a site reconnaissance, and a review of publically available mapping and geologic information.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Subsurface investigations were performed at the locations designated on mapping prepared by Keplinger Freeman Associates Landscape Architecture. The site was heavily vegetated at the time of this investigation. The investigation was performed using a track-mounted Geoprobe 7822DT drill rig. Hollow stem augering techniques were utilized to advance the test borings to a maximum depth of 10 feet or auger refusal. Standard penetration testing (ASTM D1586) was performed with an automatic hammer to obtain soil samples. Boreholes were back-filled with cuttings and sealed with a two foot lift of bentonite hole plug.

Subsurface Conditions Encountered- Road Borings

Based on our review of the recovered samples, standard penetration testing, and drilling observations, the subsurface conditions encountered by the test borings generally consisted of:

- 0.5 to 2.0 feet of topsoil, overlying

- Soft to medium stiff silty clay with gravel to depths of approximately two to ten feet, overlying
- Hard glacial till.

Underlying the soft to medium silty clay in several borings (B-4 and B-6) was a layer of sandy silt with some gravel and possible weathered rock. "N" values in the sandy silt layer ranged from 9 bpf to greater than 100 bpf.

Glacial till was encountered in half of the borings (B-1, B-2, B-5, B-8) and consisted of sandy silty clay with gravel. "N" values in the till were typically greater than 30 bpf.

In general, it appears that after stripping topsoil the road subgrade will consist of silty clay ranging from stiff to hard in stiffness. The silty clay will be susceptible to strength loss due to saturation and excessive vibration if not properly managed during construction. The subgrade should be sealed with a pass of a smoothdrum roller at the end of each working day, and before rain events, to prevent unnecessary saturation during construction.

The silty clay will generally have a low permeability, so proper drainage of the subgrade will be an important influence on roadway longevity. The subgrade should be sloped to drain, and perimeter under drains may be necessary.

Given the conditions encountered, we would suggest a California Bearing Ratio of 5 is utilized for roadway design. However, the road subgrade should be thoroughly reviewed during construction for the presence of soft areas that may required undercutting and replacement with structural fill.

Karstic Conditions Reconnaissance

The Hoag Lane Subdivision lies within the Appalachian Plateau physiographic province. Major topographic and geologic features in this area were formed during the last glacial advance and retreat, which ended approximately 12,000 years ago. Regional surficial geologic mapping suggests that natural soils in the site vicinity generally consist of glacial till and kame moraine deposits. Bedrock mapping suggests that Manlius formation limestone underlies soil in the area.

The term 'karst' has traditionally been used to refer solely to regions of exposed soluble bedrock having an abundance of surface landforms, such as sinkholes, sinking streams, and springs, that reflect the presence of subsurface voids or caves. The Town of Manlius has apparently identified areas in the vicinity of the project site as Critical Environmental Areas with "Sinkholes, sinking streams, and seasonal streams, which are indicative of karst topography" (Town of Manlius, 2009).

We asked to see the mapping associated with this declaration, but the Town would not provide us with the mapping without a formal Freedom of Information Law (FOIL) request. We have submitted the FOIL request but have not received a response as of the date of this report.

Karstic conditions are often revealed through a review of topography. Steep elevations changes, circular depressions, and sinkholes would be typical indicators.

We performed a walking site reconnaissance of the site, and also utilized USGS topographic mapping and publically available aerial imagery to search for possible topographic indicators of karstic conditions. In general, the site slopes gently downward to the west, with elevations ranging between 670 and 770 feet above sea level (USGS National Map, Accessed 2019). No distinct karst topographic features (i.e. sinkholes, circular depressions, steep elevation changes, etc.) are apparent in the immediate project vicinity.

Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
Kenney Geotechnical Engineering Services PLLC

Christopher M. Kenney

Christopher M. Kenney, P.E.
President

Attachments,
Figure 1: Boring Location Plan
Figure 2: Soil Boring Logs
Figure 3: USGS Topographic Mapping

References:

Weary, D.J., and Doctor, D.H., 2014, Karst in the United States: A digital map compilation and database: U.S. Geological Survey Open-File Report 2014–1156, 23 p., https://dx.doi.org/10.3133/ofr20141156.

USGS, National Geologic Map Database: Geolex – Unit Summary. Geologic Unit: Manlius, Accessed 6/11/2019.

https://ngmdb.usgs.gov/Geolex/UnitRefs/ManliusRefs_2619.html

Town of Manlius, Town Code, 2009. Part II, Chapter 66, Appendix A: Geographic Extent of Critical Environmental Areas. Accessed 6/11/2019.

"Surficial Geologic Map of New York – Finger Lakes Sheet", New York State Museum, 1970, Reprinted 1995.

USGS National Map, Accessed 6/11/2019, https://viewer.nationalmap.gov/advanced-viewer/

HOAG LANE BORING LOCATION PLAN



Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

KEY TO SYMBOLS

CLIENT _____ **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)

- CL-ML: USCS Low Plasticity Silty Clay
- MLS: USCS Sandy Silt
- SM: USCS Silty Sand
- TILL: Glacial Till
- TOPSOIL: Topsoil

SAMPLER SYMBOLS

- Standard Penetration Test

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
-200 - PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)

TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION

- Water Level at Time Drilling, or as Shown
- Water Level at End of Drilling, or as Shown
- Water Level After 24 Hours, or as Shown

KEY TO SYMBOLS - GINT STD US LAB.GDT - 6/10/19 14:50 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

Project: WOODLAND HILLS - HOAG LANE SUBDIVISION
Project Location: MANLIUS, NY
Project Number: 2019-089

Key to Soil Symbols and Terms

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very stiff	200 to 400	15 to 30
Hard	> 400	> 30

GENERAL NOTES

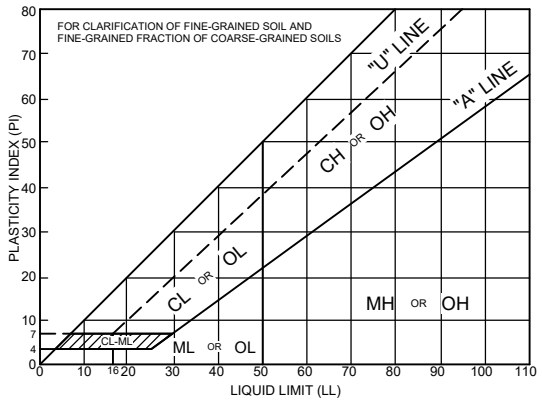
1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. Surface elevations are based on topographic maps and estimated locations.

3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times.

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravel (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravel with fines (Appreciable amount of fines)	GM* d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4; Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-silt mixtures	Atterberg limits above "A" line or P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly-graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM* d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4; Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. greater than 7
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Silts and Clays (Liquid limit less than 60)		ML	Inorganic silts and very fine sands, rock floor, silty or clayey fine sands or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and Clays (Liquid limit greater than 60)		MH	Inorganic silts, micaceous or diato-maceous fine sandy or silty soils, organic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly Organic Soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain size curve, Depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows:
Less than 5 percent..... GW, GP, SW, SP
More than 12 percent..... GM, GC, SM, SC
6 to 12 percent..... Borderline case4s requiring dual symbols**



Plasticity Chart

Particle Size	Sieve sizes	mm
Material		
Silt or clay	< #200	< 0.074
Sand		
Fine	#200 to #40	0.074 to 0.42
Medium	#40 to #10	0.42 to 2.00
Coarse	#10 to #4	2.00 to 4.76
Gravel		
Fine	#4 to 3/4 in.	4.76 to 19.1
Coarse	3/4 in. to 3 in.	19.1 to 76.2
Cobble	3 in. to 12 in.	76.2 to 304.8
Boulders	12 in. to 36 in.	304.8 to 914.4

* Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg Limits: suffix d used when L.L. is 23 or less and the P.I. is 6 or less; the suffix is used when L.L. is greater than 26.

** Borderline classifications used for soils possessing characteristics of two groups are designated by combinations of groups symbols. For example; GW-GC, well-graded gravel-sand mixture with clay binder.

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

BORING NUMBER B-1

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT BROWN SILTY CLAY WITH SAND, GRAVEL AND ROOT FRAGMENTS, MOIST	SPT 1	70	1-1-2-2 (3)	2.5	
2.5		(CL-ML) MEDIUM STIFF TO VERY STIFF BROWN SILTY CLAY WITH SAND AND GRAVEL, MOIST	SPT 2	75	3-7-7-7 (14)	4	
5.0			SPT 3	80	7-11-12-15 (23)	4.5	
7.5			SPT 4	55	11-15-14-15 (29)	3.5	
		(CL-ML) HARD RED-BROWN RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 5	30	20-22-20-17 (42)	4.5	
10.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

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Kenney Geotechnical Engineering Services, PLLC
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Syracuse, NY 13209
315-638-2706

BORING NUMBER B-2

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT TO STIFF BROWN-RED SANDY SILTY CLAY WITH ROOT FRAGMENTS AND GRAVEL, MOIST	SPT 1	60	1-2-1-2 (3)	1	
2.5			SPT 2	55	3-3-5-6 (8)	.5	
		(CL-ML) STIFF BROWN-RED SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 3	70	4-10-16-16 (26)	4.5	
5.0							
		(CL-ML) HARD RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 4	75	19-27-25-25 (52)	4.5	
7.5							
			SPT 5	65	23-25-25-24 (50)	4.5	
10.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

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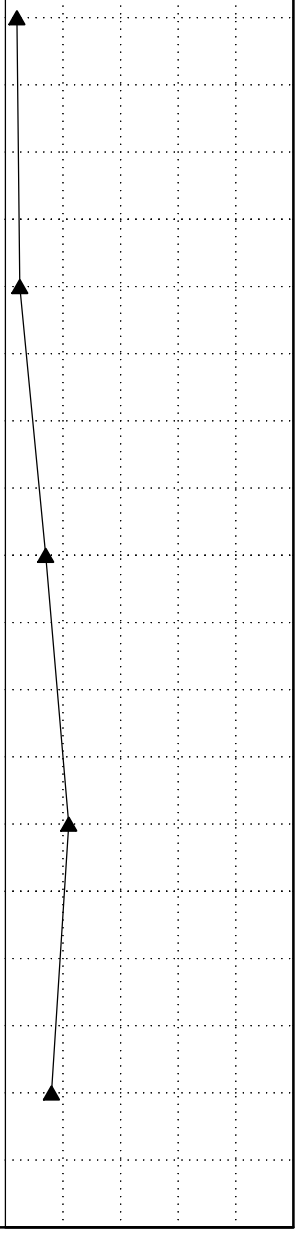
BORING NUMBER B-3

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT TO STIFF BROWN SANDY SILTY CLAY WITH GRAVEL AND ROOT FRAGMENTS, MOIST	SPT 1	55	1-2-2-2 (4)		
2.5			SPT 2	90	2-2-3-4 (5)	1	
5.0			SPT 3	45	3-5-9-12 (14)		
		(CL-ML) VERY STIFF BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 4	35	9-11-11-12 (22)		
7.5			SPT 5	65	10-8-8-10 (16)	1.75	
10.0		Bottom of borehole at 10.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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BORING NUMBER B-4

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT RED-BROWN SANDY SILTY CLAY WITH GRAVEL AND ROOT FRAGMENTS, MOIST	SPT 1	65	1-1-2-2 (3)		
2.5		(ML) MEDIUM DENSE TO DENSE RED-BROWN SANDY SILT, MOIST	SPT 2	55	4-4-5-7 (9)	1.25	
5.0			SPT 3	75	9-7-8-9 (15)	2.25	
7.5			SPT 4	45	12-15-12-15 (27)	3	
10.0			SPT 5	10	10-12-14-14 (26)	4.5	

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

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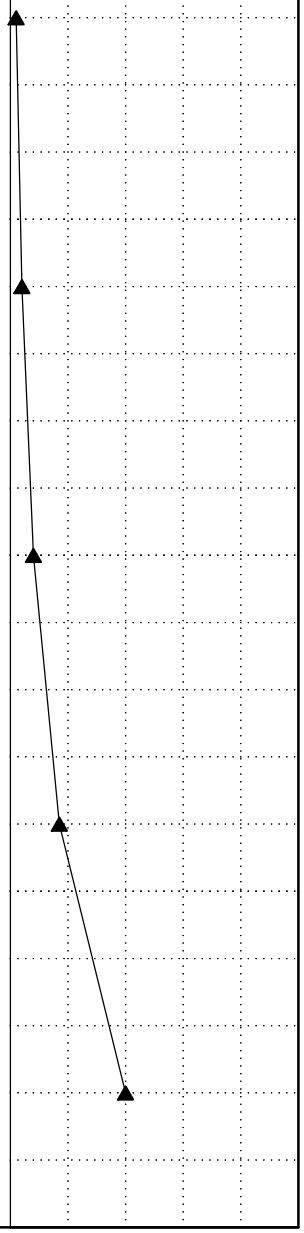
BORING NUMBER B-5

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL	SPT 1	50	1-1-1-1 (2)		
2.5		(CL-ML) SOFT TO VERY STIFF RED-BROWN SANDY SILTY CLAY, MOIST	SPT 2	70	2-2-2-3 (4)	1	
5.0			SPT 3	60	2-2-6-5 (8)	1.5	
7.5			SPT 4	50	6-8-9-21 (17)	2.5	
		(CL-ML) HARD RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 5	20	16-19-21-20 (40)		
10.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Bottom of borehole at 10.0 feet.

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BORING NUMBER B-6

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT BROWN SANDY SILTY CLAY WITH ROOT FRAGMENTS, MOIST	SPT 1	55	1-2-1-2 (3)	0.5	
2.5		(CL-ML) MEDIUM STIFF TAN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 2	75	2-3-4-8 (7)	1.25	
5.0		(ML) DENSE TO VERY DENSE TAN SANDY SILT WITH GRAVEL AND POSSIBLE WEATHERED ROCK, MOIST	SPT 3	65	11-16-30-38 (46)		
7.5			SPT 4	85	20-18-22-16 (40)		
			SPT 5	100	20-50/5"		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

>>

Bottom of borehole at 9.9 feet.

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BORING NUMBER B-7

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT BROWN-RED SANDY SILTY CLAY, MOIST	SPT 1	55	2-2-2-4 (4)	2	
2.5		(CL-ML) STIFF TO HARD BROWN-RED SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 2	65	4-5-5-6 (10)	3.5	
5.0			SPT 3	70	5-6-8-8 (14)	2.5	
			SPT 4	85	8-8-50/4"	4.5	

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

>>

Bottom of borehole at 7.3 feet.

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BORING NUMBER B-8

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) MEDIUM STIFF RED-BROWN SANDY SILTY CLAY WITH ROOT FRAGMENTS, MOIST	SPT 1	70	1-2-3-2 (5)		
2.5		(CL-ML) MEDIUM STIFF TO STIFF RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 2	85	2-3-3-6 (6)	2	
5.0			SPT 3	80	3-5-5-7 (10)	2.5	
7.5		(CL-ML) VERY STIFF RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 4	95	9-14-15-15 (29)	3.5	
10.0			SPT 5	90	13-15-14-15 (29)	4.5	

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

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Figure 3: USGS Topographic Mapping

