

Town of Manlius
Planning Board Agenda
August 26, 2019
6:30 pm

1. Pledge Of Allegiance
2. Harry G. Stewart - 6520 Schepps Corners Road, Kirkville, NY 13082 Accessory Use Permit
– Treasure Hut – 6520 Schepps Corners Rd. Tax Map # 050.-02-02

Documents:

[TREASURE HUT - ACCESSORY USE PERMIT.PDF](#)

3. 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
All of the attached documents are from the July 22, 2019 meeting. To date, no new items have been received.

Documents:

[L-200 GRADING AND DRAINAGE PLAN_37050.PDF - JULY 22, 2019.PDF](#)
[L-400 LAYOUT PLAN_37050.PDF - JULY 22, 2019.PDF](#)
[L-702 CONVENTIONAL GRADING PLAN_37050.PDF - JULY 22, 2019.PDF](#)
[L-705 CONVENTIONAL LAYOUT PLAN_37050.PDF - JULY 22, 2019.PDF](#)
[SWPPP_17061 HOAG LANE 07-22-19.PDF](#)

4. Other Business
5. Adjournment

**TOWN OF MANLIUS
ACCESSORY USE PERMIT
APPLICATION**

RECEIVED

AUG 08 2019

TOWN OF MANLIUS
PLANNING AND DEVELOPMENT

PERMIT FEE: \$300
DATE COLLECTED: 8-8-19

Tax Map Number 50.-02.-02

155-29A – "All permitted accessory uses requiring an Accessory Use Permit from the Town Planning Board shall have a site plan review and recommendation before such use shall be permitted. A public hearing shall be at the discretion of the Planning Board. The application shall be submitted by the owner of the subject property ..."

Please include

- Owner Name: Harry G. Stewart Phone 315-345-9192
- Address: (Permit Location) 6520 Schepps Corner Rd, Kirkville NY
- Requested permitted use: (type of business of operation, brief description of operation) 130P2
Fix Jewelry, Watches, Clocks, Glasses Frames, Also
construct hand made jewelry (50 yrs experience locally)
- Location within building: (basement, 1st floor, 2nd floor, garage)
Garage
- Approximate square footage of floor area of entire structure: 4500
- Approximate Sq. footage of floor area to be utilized: 500
(Maximum of 25% or 500 square feet allowed)
- Hours of operation: Noonish-6 PM Days of operation: Mon-Sat.
- Operator's Name: Harry G. Stewart & Mom
- What provisions are made for parking: Plenty of paved parking.
- Number of employees: 0
- Average number of customer/clients to visit the property daily: 4
- Site plan drawing of the property or survey indicating where the structure is located along with driveway location (length and width), additional parking, dimension of parking areas, landscaping, and sign location. A floor plan of the building is also required, showing the entire building and the area to be utilized with this permit.
- Optional indication of approval from adjacent neighbors.

If approved, the Town will prepare an Accessory Use Permit Resolution including conditions and time period, to be signed by the applicant and the Town.

Sign request must be on a separate application and in conformance with the Town of Manlius Sign Ordinance, 155-25.

SCHEPPS CORNERS ROAD

N. 07°45'00"E 120.00'

WEST LINE F.L. 26

USERS: THIS MAP IS NOT USABLE NOR CERTIFICATIONS EXTENDABLE FOR UNSPECIFIED PURPOSES OR FOR SUBSEQUENT TRANSACTIONS EXCEPT BY THE WRITTEN CONSENT OF OR BY SURVEY UPDATE BY THE ORIGINAL SURVEYING ENTITY ONLY.

S 82°20'30"E

350.00'

"NO CHANGE" AFFIDAVITS ISSUED ON THIS MAP VOID THE CERTIFICATION, INFRINGE ON COPYRIGHT AND REPRESENT UNLICENSED SURVEY PRACTICE!

COPYRIGHT © 2004
BY COTTRELL LAND SURVEYORS, P.C.
ALL RIGHTS RESERVED
COPIES WITHOUT THE EMBOSSED SEAL ARE UNAUTHORIZED AND HAVE BEEN ALTERED.

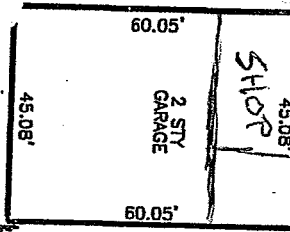
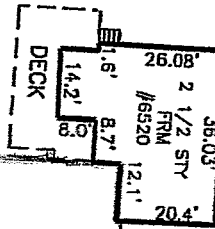
S 07°45'00"W 120.00'

N 82°20'30"W

350.00'

PAVED

PAVED DRIVE



SHOP

SURVEYORS: REFERENCE TO, USE OF OR RELIANCE ON THIS MAP WITHOUT THE WRITTEN CONSENT FOR WHATEVER PURPOSE VIOLATES MY COPYRIGHT AND ABSOLVES ME OF ANY LIABILITY FOR LATENT OMISSIONS AND ERRORS AND OF ANY RESPONSIBILITY FOR RESULTANT DAMAGES.

S.W. COR F.L. 26

RECERTIFIED ON:

THE UNDERSIGNED HEREBY CERTIFIES THAT THIS WAS MADE FROM AN ACTUAL SURVEY ON 11.3x

FOR CONVEYANCE AND/OR MORTGAGE PURPOSES ON WITHIN ONE YEAR OF THE LATEST CERTIFICATION DATE

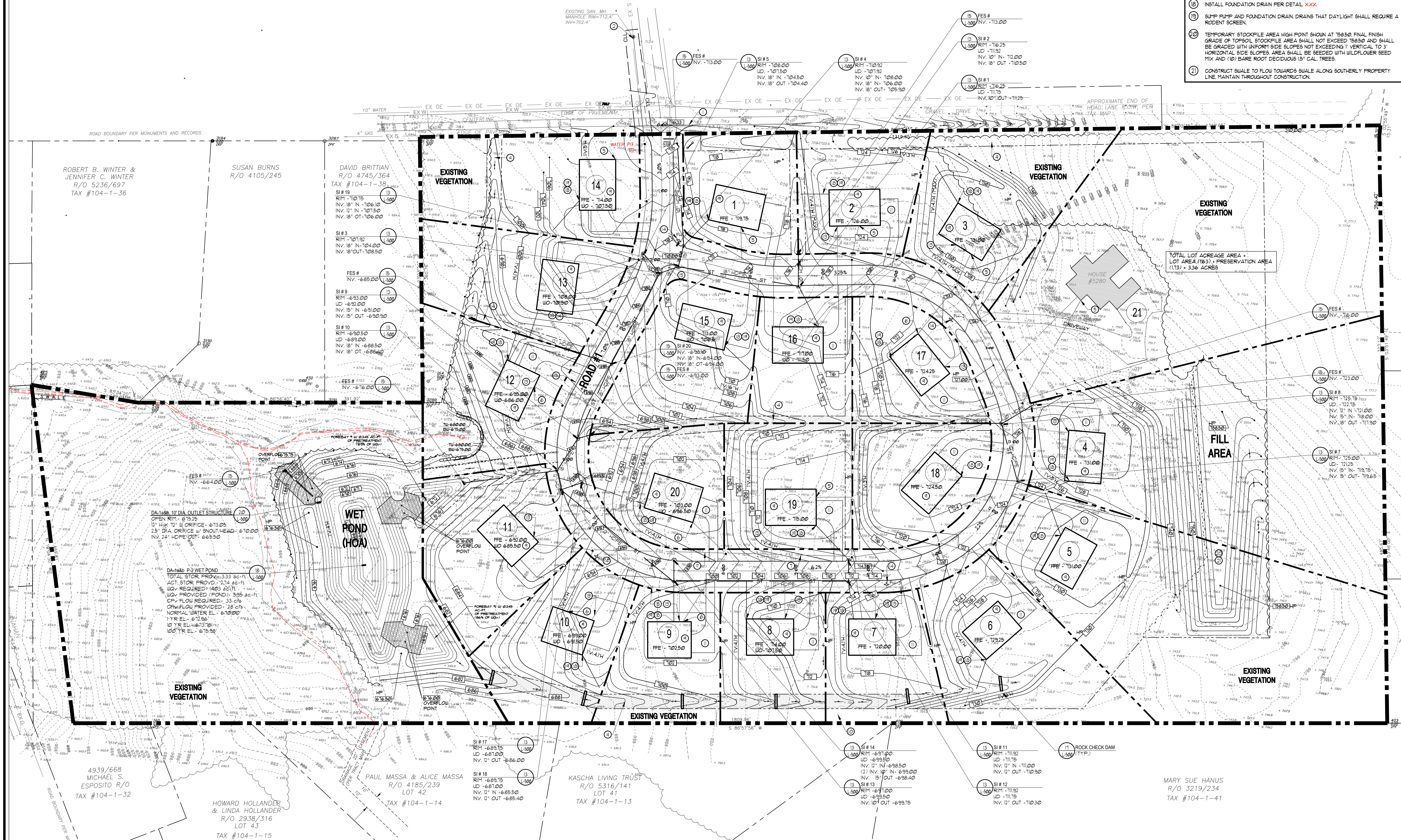
PART OF LOT 26 - TOWN OF MANLIUS
ONONDAGA COUNTY, N. Y.

SCALE: 1" = 40'
NOV. 30, 2004

COTTRELL LAND SURVEYORS, P.C.
MANLIUS, NY - (315) 682-8121

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.
6. E-I 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-I MANUFACTURER OR APPROVED EQUAL.
9. ROOF DRAINS TO DAYLIGHT TO ADJACENT LAWN AREAS AT EXISTING GRADE.
10. INSTALL JUTE MESH SHALES 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 OCM 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 788.50 FINAL FINISH GRADE OF TOPSOIL. STOCKPILE AREA SHALL NOT EXCEED 188.50' AND SHALL BE GRADED WITH UNIFORM 8% SLOPES NOT EXCEEDING 1' VERTICAL TO 3' HORIZONTAL. SIDE SLOPES AREA SHALL BE SEEDED WITH WILDFLOWER SEED MIX AND (10) BARE ROOT DECIDUOUS 1 1/2" CAL. TREES.
21. CONSTRUCT SWALE TO FLOW TOWARDS ROAD ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.



HOAG LANE SUBDIVISION 5280 HOAG LANE, MANLIUS, NY

CLIENT:

No.	Rev.	Description	Date
1	1	PUBLIC HEARING-MANLIUS	03/20/18
2	1	PUBLIC HEARING-MANLIUS	05/04/18
3	1	PUBLIC HEARING-MANLIUS	06/01/18
4	1	TOWN REV-21 LOTS-MANLIUS	10/23/18
5	1	MANLIUS-21 HOME LOTS-PL-BD	11/30/18
6	1	21 LOT SITE PLAN REVISIONS	01/04/19
7	1	MANLIUS-PLAN SUBMISSION	06/14/19

Drawn By:	VER
Checked By:	SF
REA Proj. No.:	31050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Cluster
Grading and
Drainage Plan-
21 Lots

L-200

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

X-HOAG-ZONING-REVISED

1. ZONING

- TAX MAP #104-01-392 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 918). 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 SAGUN LAND SURVEYING, PLLC. AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KFA. [HTTPS://WWW.DOS.NY.GOV/LEG/PUBLICATIONS/SUBDIVISIONREVIEW.HTM](https://www.dos.ny.gov/leg/publications/subdivisionreview.htm)

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

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.

FRONTAGE: 150'-0" MIN. 150'-0"	FRONTAGE: 100'-0" MIN. 100'-0" AVG. 110'-0"
LOT AREA: MINIMUM 40,000 SF	LOT AREA: MINIMUM 16,000 SF

LEGEND NOTES

- STORMWATER EASEMENT AREAS
- CONSERVATION EASEMENT AREAS

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.

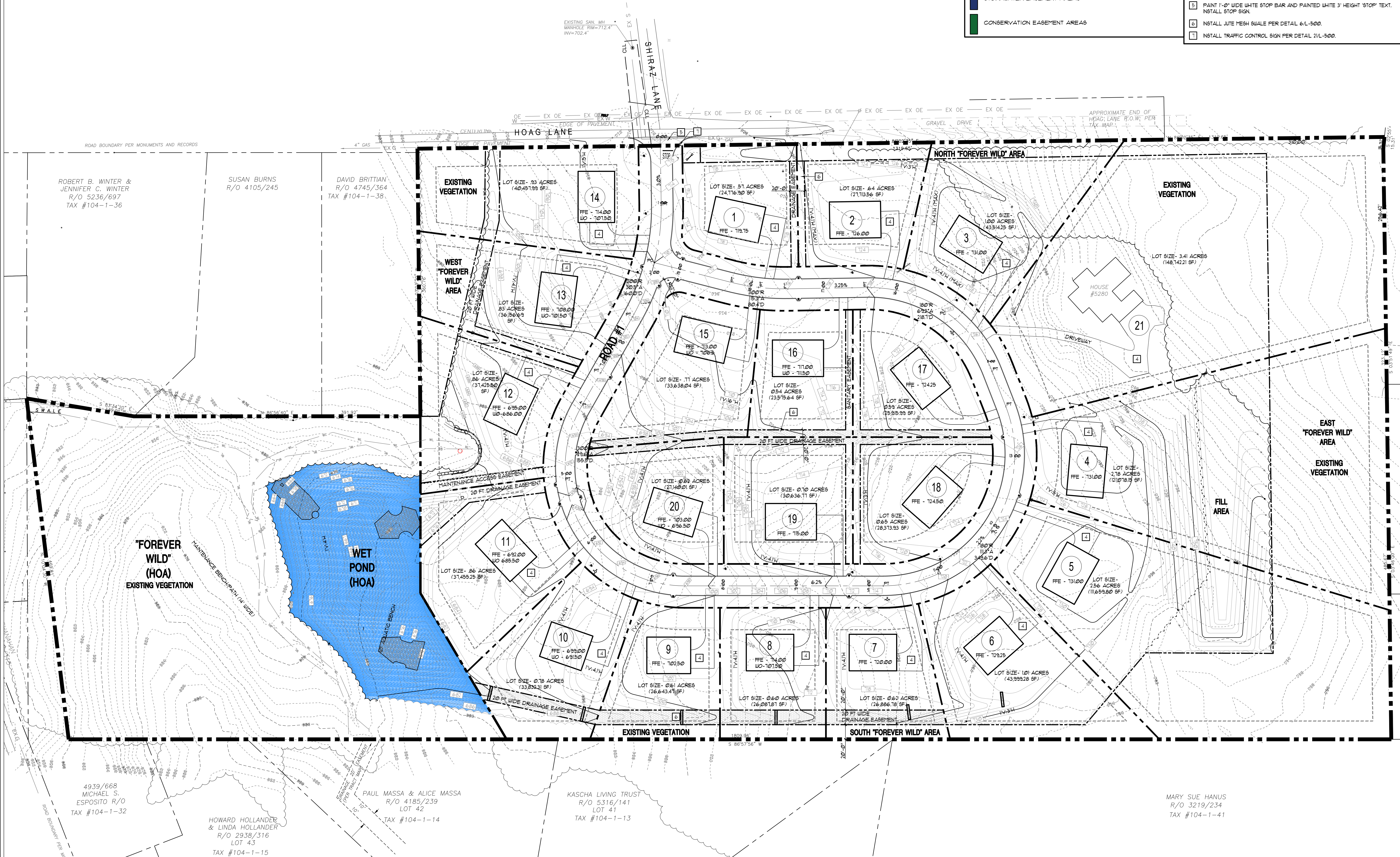
"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1,324,224.00
"FOREVER WILD" AREA	9.15	398,915.09
(A) EAST "FOREVER WILD" AREA	3.00	131,029.23
(B) SOUTH "FOREVER WILD" AREA	1.02	44,411.09
(C) WEST "FOREVER WILD" AREA	5.6	245,76.91
(D) NORTH "FOREVER WILD" AREA	.41	16,005.91
(E) HOA "FOREVER WILD" AREA	4.15	180,763.89

NOTES:
1. 30.45% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/14/2019.

LAYOUT NOTES

X-LAYOUT-NOTES

- DIMENSIONS ARE PARALLEL AND PERPENDICULAR TO THE PROPERTY LINE.
- 6" DEPTH STONE DUST WALKWAY ON FILTER FABRIC.
- OMITTED.
- INSTALL ASPHALT DRIVEWAY PAVEMENT PER DETAIL 1/L-500.
- PAINT 1'-0" WIDE WHITE STOP BAR AND PAINTED WHITE 3' HEIGHT STOP TEXT. INSTALL STOP SIGN.
- INSTALL JUTE MESH SWALE PER DETAIL 6/L-500.
- INSTALL TRAFFIC CONTROL SIGN PER DETAIL 2/L-500.



HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:

ISSUED AND REVISIONS NOTIFICATION	No	Rev	Description	Date
1	4	1	PUBLIC HEARING-MANLIUS	05/04/18
2	5	1	PUBLIC HEARING-MANLIUS	06/01/18
3	6	1	TOWN REV-21 LOTS-MANLIUS	10/23/18
4	7	1	MANLIUS-21 HOME LOTS-PL-BD	11/30/18
5	8	1	21 LOT SITE PLAN REVISIONS	01/04/19
6	9	1	MANLIUS-PLAN SUBMISSION	05/14/19
7	10	1	MANLIUS-PLAN SUBMISSION	07/12/19

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

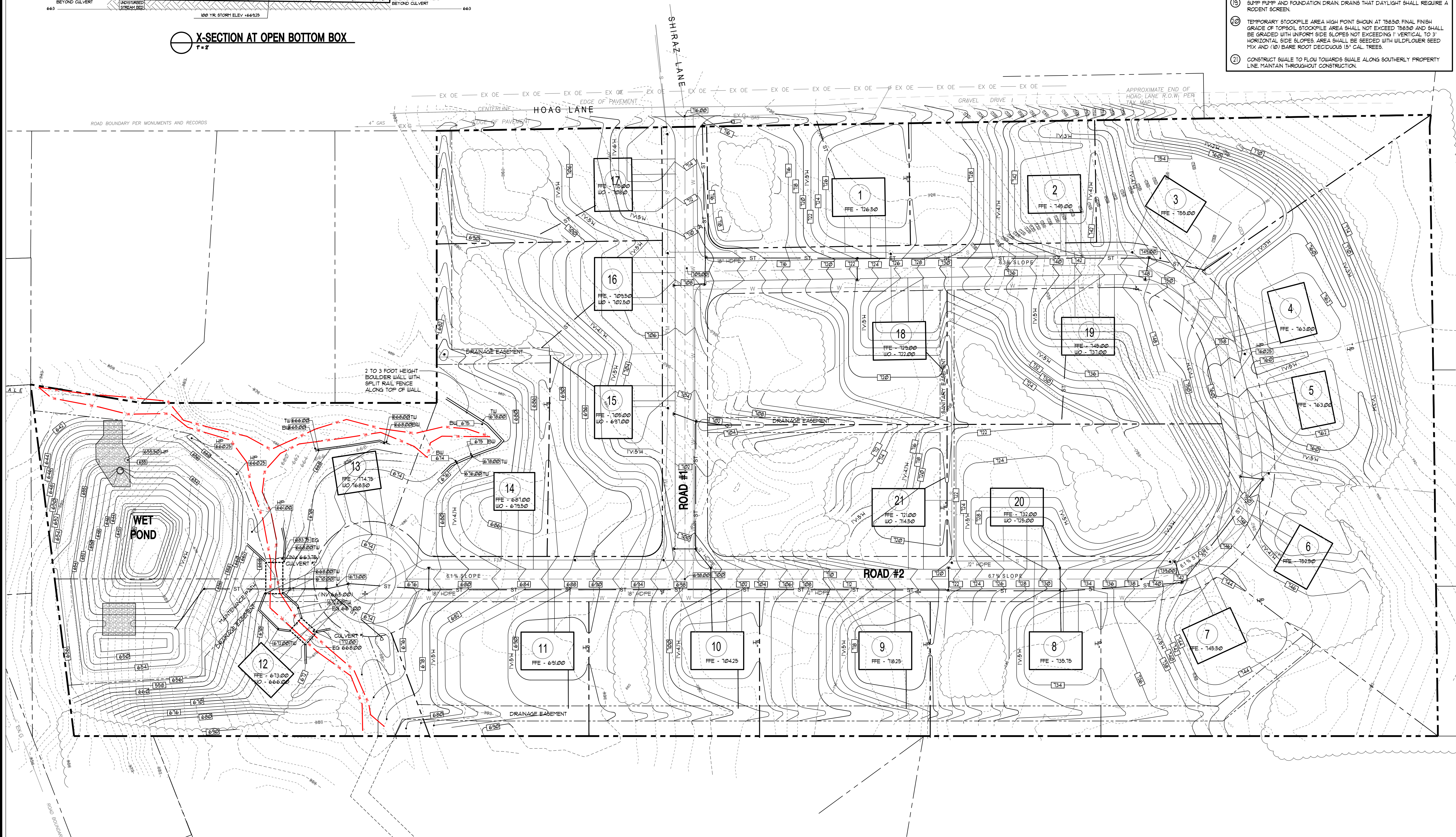
LAYOUT PLAN

L-400

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.
6. E-I 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-I MANUFACTURER OR APPROVED EQUAL.
9. ROOF DRAINS TO DAYLIGHT TO ADJACENT LAWN AREAS AT EXISTING GRADE.
10. INSTALL JUTE MESH SUELES 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 O&A 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 158.50. FINAL FINISH GRADE OF TOPSOIL STOCKPILE AREA SHALL NOT EXCEED 158.50 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 1/2" CAL. TREES.
21. CONSTRUCT SUELE TO FLOW TOWARDS SUELE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.

X-SECTION AT OPEN BOTTOM BOX T=Z



HOAG LANE SUBDIVISION 5280 HOAG LANE, MANLIUS, NY

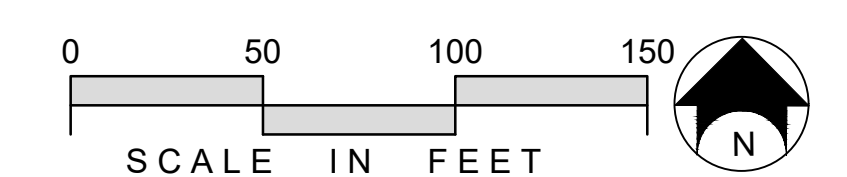
CLIENT:

No	Rev	Description	Date
1	1	PUBLIC HEARING-MANLIUS	05/04/18
2	1	PUBLIC HEARING-MANLIUS	06/01/18
3	1	TOWN REV-21 LOTS-MANLIUS	10/23/18
4	1	MANLIUS-21 HOME LOTS-PL-BD	11/30/18
5	1	MANLIUS-21 HOME LOTS-PL-BD	01/04/19
6	1	MANLIUS-21 HOME LOTS-PL-BD	05/14/19
7	1	MANLIUS-21 HOME LOTS-PL-BD	07/12/19

Drawn By: VER
Checked By: SF
MFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL
GRADING AND
DRAINAGE PLAN
-21 LOT

L-702



1
L-702
CONVENTIONAL GRADING PLAN

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

X-HOAG-ZONING-REVISED

1. ZONING

- TAX MAP #04-01-392 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 97B). 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 SEGUN LAND SURVEYING, P.L.L.C. AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KFA. <https://www.dosny.gov/government/publications/subdivisionreview/sny/snyra.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.

FRONTAGE: 150'-0" MIN: 150'-0"	FRONTAGE: 100'-0" MIN: 100'-0" AVG: 110'-0"
LOT AREA: MINIMUM 40,000 SF	LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

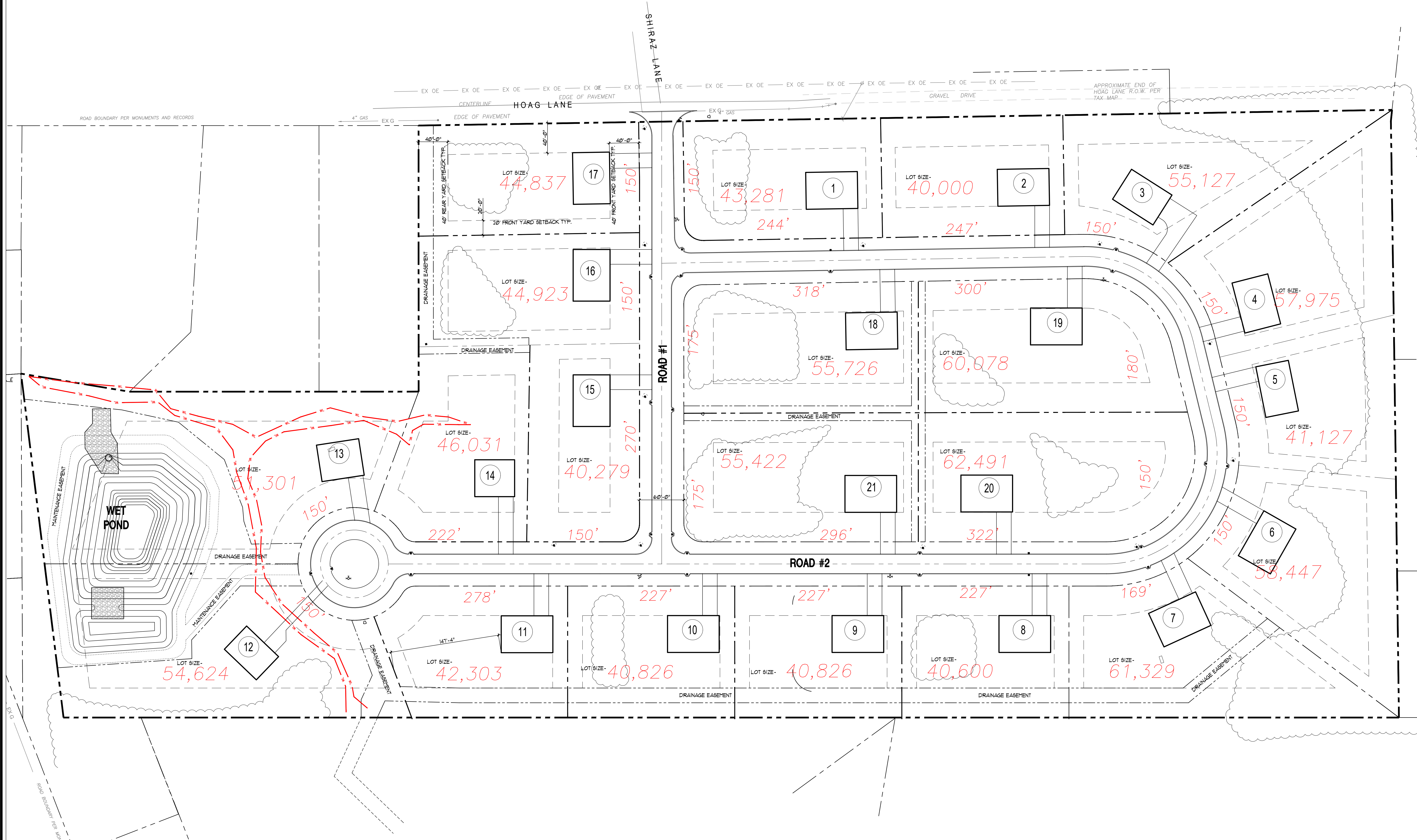
- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1314224.00
"FOREVER WILD" AREA	9.15	388,915.09
(A) EAST "FOREVER WILD" AREA	3.00	131,019.23
(B) SOUTH "FOREVER WILD" AREA	1.02	44,411.09
(C) WEST "FOREVER WILD" AREA	.56	24,516.91
(D) NORTH "FOREVER WILD" AREA	.41	16,809.91
(E) HOA "FOREVER WILD" AREA	4.15	180,763.89

NOTES:
1. 30.45% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/14/2015.

LEGEND NOTES

- STORMWATER EASEMENT AREAS
- CONSERVATION EASEMENT AREAS



HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT: _____

ISSUED AND REVISIONS NOTIFICATION	No	Rev	Description	Date
1	1	1	PUBLIC HEARING MANLIUS	05/24/18
2	2	1	PUBLIC HEARING MANLIUS	06/01/18
3	3	1	TOWN REV-21 LOTS-MANLIUS	10/23/18
4	4	1	MANLIUS-21 HOME LOTS-PL-BD	11/30/18
5	5	1	MANLIUS-21 HOME LOTS-PL-BD	01/04/19
6	6	1	MANLIUS-21 HOME LOTS-PL-BD	06/14/19
7	7	1	MANLIUS-21 HOME LOTS-PL-BD	07/12/19

Drawn By: _____
Checked By: _____
KFA Proj. No.: _____
Date: _____
Scale: _____

DECEMBER 1, 2017
AS NOTED

CONVENTIONAL
LAYOUT PLAN
-21 LOTS

L-705

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

Prepared for:
Hoag Road Properties LLC
201 Solar Street
Syracuse, NY 13204

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

Table of Contents

- 1.0 – Summary**
- 2.0 – Objective**
- 3.0 – Existing Site Conditions**
- 4.0 – Proposed Site Use and Improvements**
- 5.0 – Runoff Computations**
- 6.0 – Stormwater Mitigation and BMP's**
- 7.0 – Stormwater Drainage Facilities**
- 8.0 – Stormwater Quality Volume**
- 9.0 – Phosphorous Removal**
- 10.0 – Soil Restoration Practices**
- 11.0 – Possible Contaminants from Construction Activities**
- 12.0 – Erosion Control Measures**

- Figure 1 – Topographic Map – USGS**
- Figure 2 – Aerial Map – Google Earth**
- Figure 3 – Site Soils Map – Web Soil Survey**
- Figure 4a – Pre-Development Watershed Map with USGS**
- Figure 4b – Pre-Development Watershed Map with Aerial**
- Figure 5 – Post-Development Watershed Map**
- Figure 6 – NYSDEC Stormwater Map**
- Figure 7 – HydroCAD Analysis Diagram**
- Figure 8 – SHPO Map**
- Figure 9 – NYSDEC Wetlands and Endangered Species Map**
- Figure 10 – Federal Wetlands Map**
- Figure 11 – National Flood Insurance Program (NFIP) FIRM**

- Appendix A – Site Soils Information**
- Appendix B – Site Rainfall Data**
- Appendix C – Pre-Development Watershed Analysis**
- Appendix D – Post-Development Watershed Analysis**
- Appendix E – Stormwater BMP Calculations**
- Appendix F – Drainage Facilities Basis**
- Appendix G – Water Quality Calculations**
- Appendix H – Stormwater Inspection Forms, Notice of Intent, Notice of Termination**
- Appendix I – Erosion Control Measures**
- Appendix J – SPDES General Permit**
- Appendix K – Maintenance Procedures**
- Appendix L – RRV Calculation**
- Appendix M – Grading and Drainage Plan**
- Appendix N – Cut-Fill Analysis**
- Appendix O – Watershed Areas**

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 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. This report tested 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 at greater depths at the proposed pond bottom elevation revealed unsatisfactory infiltration rates.

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 within the site parcel limits and account for the drainage easement in the proposed watershed. The watershed EXDA-1a consists of the runoff east of drainage swale within the site parcel limits. and off-site neighboring parcels to the south and east. EXDA-1b consists of all the offsite stormwater entering into the site through the 20' drainage easement located to the southwest of the site. EXDA-1c consists of the runoff west of the swale within the site parcel. Stormwater runoff enters the project site from several off-site points. EXDA-1d contains of offsite stormwater from the housing and pavement located southwest of the site parcel draining to the 20' drainage easement that is proposed for bypass of the proposed stormwater system.

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 – 14.36± ac
- 2 acre lots, 12% Imp, HSG B, CN 65 – 10.64± ac
- Woods, Good, HSG B, CN 70 – 16.34± ac
- Existing Pavement, CN 98 – 1.79± ac
- Woods, Good, HSG C, CN 70 – 28.81± ac
- Grass Cover, Good, HSG C, CN 74 – 4.15± ac

4.0 – PROPOSED SITE USE AND IMPROVEMENTS

Proposed Site Use

The site improvements proposed for the proposed developments will require stormwater quality controls for all drainage areas. For purposes of analysis, the site disturbed area watershed was 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 was updated, but the discharge point remains the same. The Tc flow-path start offsite to provide complete watershed analysis.

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. Runoff from the northeastern portion of the property will be directed west via drainage structures, and discharge into the Wet Pond via the existing natural swale running along the property boundary behind the Brittan, Burns, and Winter properties with frontage on Hoag Ln. Off-site runoff from parcels in the Churchill Ct Cul-de-sac, parcels with frontage on Cahill Road will drain to the southwest and bypasses the Wet Pond. Parcels with frontage on Duguid Road will enter the subject site from the south and east and will also be directed to the Pond via proposed swales and piping.

Presently, there are no flood control measures for the total 59.4± acre watershed. The total acreage of offsite area contributing into the onsite stormwater system is 32.4± acres. The total onsite acreage contributing is 26.86± acres, with a total of 59.4± 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 – 14.36± ac
- 2 acre lots, 12% Imp, HSG B, CN 65 – 10.64± ac
- Woods, Good, HSG B, CN 70 – 16.28± ac
- Proposed Site Impervious, CN 98 – 3.87± ac
- Woods, Good, HSG C, CN 70 – 11.94± ac

- Grass Cover, Good, HSG C, CN 74 – 16.79± ac
- Existing Pavement, CN 98 – 1.27± 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

<u>Drainage Area</u>	<u>Area</u>	<u>1 Year</u> <u>Storm</u>	<u>2 Year</u> <u>Storm</u>	<u>5 Year</u> <u>Storm</u>	<u>10 Year</u> <u>Storm</u>	<u>25 Year</u> <u>Storm</u>	<u>50 Year</u> <u>Storm</u>	<u>100 Yr</u> <u>Storm</u>
<u>(I.D.)</u>	<u>(Acres)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>
EXDA-1a (subject site)	27.70	2.58	5.00	10.20	15.89	26.15	36.67	49.59
DA-1b (offsite)	32.34	0.59	1.53	3.98	7.05	13.2	19.89	28.39
DA-1c (subject site)	3.220	0.40	0.74	1.45	2.23	3.61	5.00	6.70
DA-1d (offsite)	12.83	9.08	12.66	18.93	24.98	34.95	44.43	55.53
Pre-Swale 3	76.09	10.11	15.19	25.28	36.06	55.26	74.81	98.91

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

<u>Drainage Area</u>	<u>Area</u>	<u>1 Year</u> <u>Storm</u>	<u>2 Year</u> <u>Storm</u>	<u>5 Year</u> <u>Storm</u>	<u>10 Year</u> <u>Storm</u>	<u>25 Year</u> <u>Storm</u>	<u>50 Year</u> <u>Storm</u>	<u>100 Yr</u> <u>Storm</u>
<u>(I.D.)</u>	<u>(Acres)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>	<u>Peak</u> <u>Flow</u> <u>(cfs)</u>
PRDA-1a (subject site)	27.07	5.80	9.24	15.72	22.27	33.49	44.51	57.70
DA-1b (offsite)	32.34	0.57	1.46	3.73	6.57	12.24	18.4	26.26
DA-1c (subject site)	3.220	0.4	0.74	1.45	2.23	3.61	5	6.7
DA-1d (offsite)	12.83	9.08	12.66	18.93	24.98	34.95	44.43	55.53
Post-Swale 3	75.46	12.02	17.97	29.14	40.42	59.86	79.23	102.79

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)

			<u>1 Year Storm</u>		<u>2 Year Storm</u>		<u>5 Year Storm</u>		<u>10 Year Storm</u>		<u>25 Year Storm</u>		<u>50 Year Storm</u>		<u>100 Yr Storm</u>	
<u>Drainage Area</u>	<u>Drainage Area (ac)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>	
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
<u>(I.D.)</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>
DA-1a (subject site)	27.70	27.07	2.58	5.80	5.00	9.24	10.20	15.72	15.89	22.27	26.15	33.49	36.67	44.51	49.59	57.70
Swale 3	76.09	75.46	10.11	12.02	15.19	17.97	25.28	29.14	36.06	40.42	55.26	59.86	74.81	79.23	98.91	102.79

The above table reflects increases in peak runoff conditions of the subject site watershed for all storms. Runoff increase is due to an overall decrease in Time of Concentration while increasing impervious area. The watershed size remained similar in size between pre-and post-development conditions. Due to site development, DA-1 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 53,620± (27,216± cf from both forebays and 25,924± cf in pond) cubic feet of inactive storage and 119,185± of active storage – 145,109± cf of total storage. The total required WQv for the site watershed is 0.403 ac-ft or 17,566 cf, see Appendix G. The total WQv/inactive storage provided below the invert of the 2.8" orifice, and in the forebays is 53,620 cf, or 1.23 ac-ft. Therefore, the design is successful in meeting WQv requirements. The side slopes of the pond are set at 4:1. A 10' aquatic bench has been provided between elevations 670.00 and 669.00. A 14' 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 27,216± cf volume or 155% pretreatment of the WQv (10% required). A proposed 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 2.5" orifice is proposed at invert at 670.00 to mitigate the 1-yr storm discharge levels to meet channel protection volume requirements, CPv. The required CPv discharge rate of the watershed is 0.33 cfs. As can be seen in the table below, the 1-yr post-routed discharge rate is 0.28 cfs. Therefore, CPv requirements have been met. The 2.5" orifice is proposed with external protection through the use of a trash rack or approved equal. A second orifice with

dimensions 12"H x 72"W is proposed at invert 673.05 to handle the larger storms. The outlet structure has a proposed 24" diameter open grate rim at 675.25. A proposed 24" HDPE outlet culvert is set at invert out 665.50 to discharge from the proposed outlet control structure. An emergency spillway has been proposed at invert 675.75 to allow for extreme storm passage. 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)

<u>Drainage Area</u>	<u>Drainage Area (ac)</u>		<u>1 Year Storm</u>		<u>2 Year Storm</u>		<u>5 Year Storm</u>		<u>10 Year Storm</u>		<u>25 Year Storm</u>		<u>50 Year Storm</u>		<u>100 Year Storm</u>	
	<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>		<u>Peak Flow (cfs)</u>	
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
<u>(I.D.)</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>	<u>Site</u>
Pond (DA1a & 1b)	27.70	27.07		0.28		1.52		6.79		14.65		28.89		40.42		52.56
Pre vs. Post Swale 3	76.09	75.46	10.11	9.17	15.19	12.98	25.28	19.79	36.06	26.41	55.26	37.43	74.81	48.44	98.91	62.48

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 denoting all onsite and offsite runoff from non-routed flows and routed flows from pond.

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. The location, size, and type of all existing and proposed pipes are 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)

$$R_v = 0.05 + 0.009(I), \text{ where } I \text{ is the percent of impervious cover}$$

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. 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

<u>PRACTICE</u>	<u>WATERSHEDS</u>	<u>TYPE OF REDUCTION</u>
• 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 original 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, aesthetically pleasing landscapes
- Enhances direct groundwater recharge
- Promotes successful long term revegetation 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 during dry periods

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 in order 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 highlights these requirements and provides guidance on when to implement soil restoration techniques. Also included is the NYS Stormwater Design Manual section on Practice implementation, Maintenance 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
2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractormounted disc, or tiller,

Figure 5. 16 Soil aerator implement



Figure 5. 17 Soil aerator implement



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 town 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		
<u>Material</u>	<u>Media Released To</u>	<u>Reportable Quantity</u>
Engine oil, fuel, hydraulic and brake fluid	Land	25 gallons
	Water	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.

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-0-15-002 (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.

Dust Control

Construction activities should be scheduled to minimize the amount of disturbed area at a single time. If vegetated areas can be left intact to serve as a buffer zone these areas should be maintained where practical. During dry conditions, open soil areas may require hosing down with water to prevent excessive dust. Spray adhesives may be utilized as outlined in the NYS Standards and Specifications for Erosion and Sediment Control. Fences or vegetation may be required to minimize dust pollution to adjacent properties and should be incorporated into the site erosion control plan as required.

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.

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 insure 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 Town 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 insure 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-0-15-002.

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-0-15-002. 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 if disturbing more than 1 acre and at least twice per week if 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-0-15-002 (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.

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-0-15-002.

"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: 1/11/18
Steven M. Rahn
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

Reviewed By:  Date: 1/11/18
Rudy L. Zona, P.E.
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

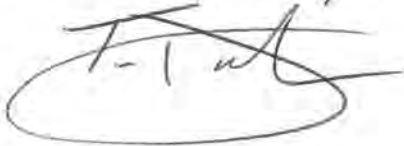
Owner's Certification

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-0-15-002. 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-0-15-002.

Owner: HOAG LAKE DEVELOPMENT

Owner's Representative: TOM DOUGLAS Date: 1-10-18

Title: DEVELOPER/OWNER

A handwritten signature in black ink, appearing to read 'T. Douglas', is written over a horizontal line. The signature is stylized with a large loop at the end.

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: _____

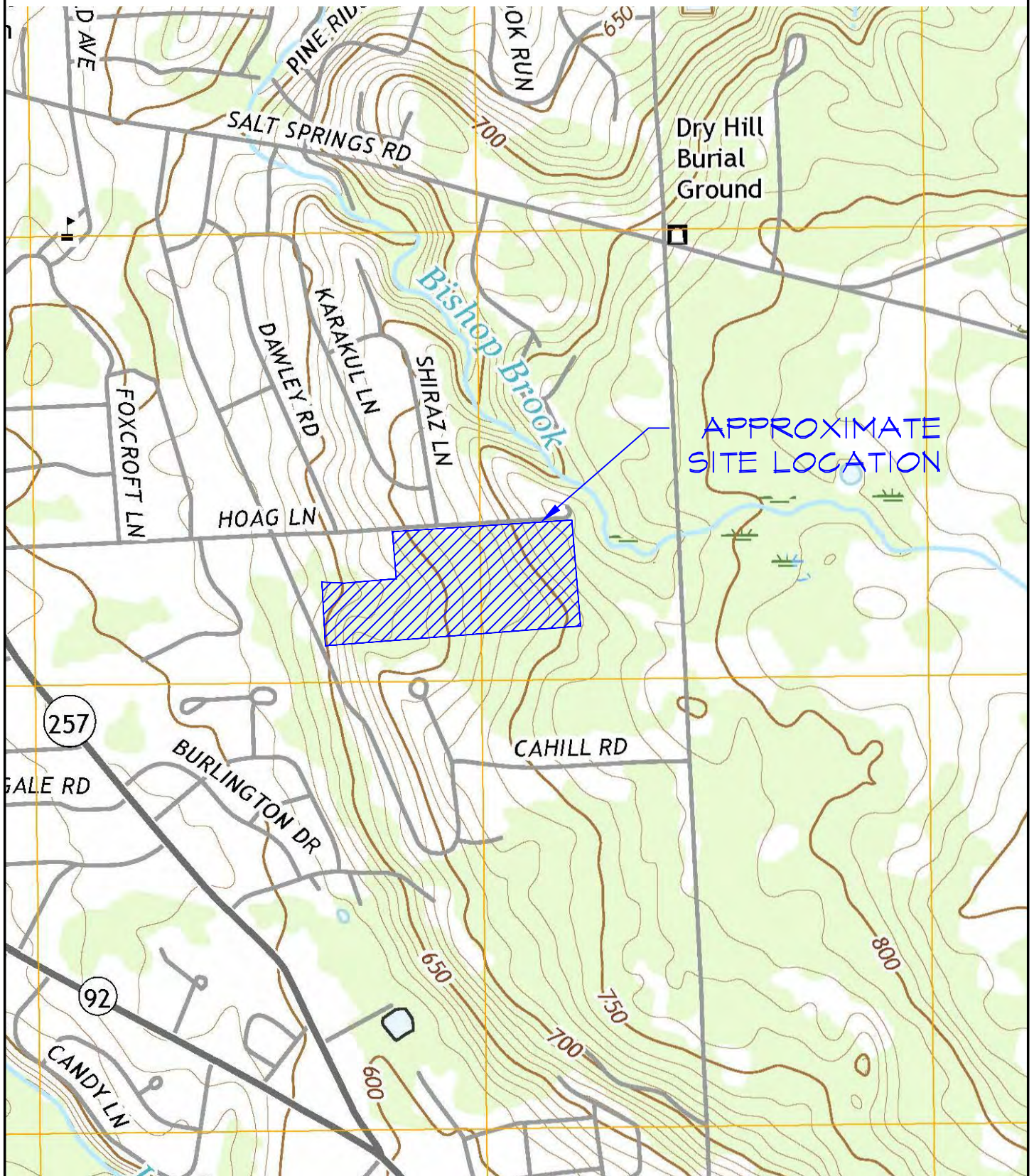
Sub-Contractor's "trained contractor": _____ Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)

Sub-Contractor is responsible for SWPPP components identified:

Address: _____

Phone: _____

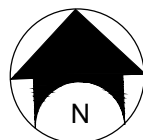
Fax: _____



RZ Engineering, PLLC

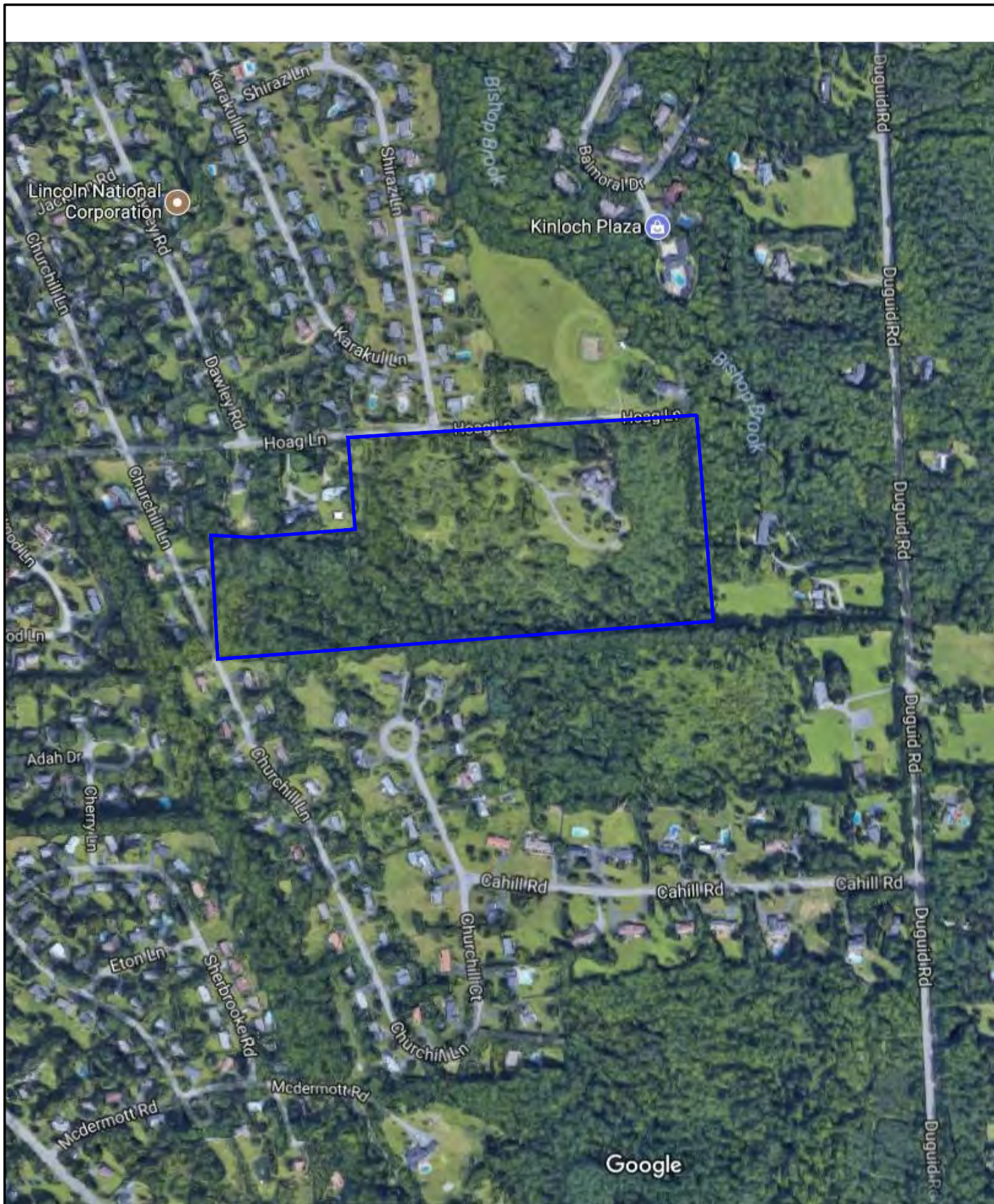
STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision
USGS MAP
SCALE 1:1000

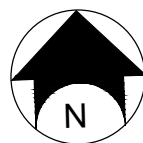
FIGURE 1



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
AERIAL MAP
SCALE 1:500

FIGURE 2

Hydrologic Soil Group—Onondaga County, New York



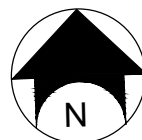
be valid at this scale.

If printed on A landscape (11" x 8.5") sheet

RZ Engineering, PLLC

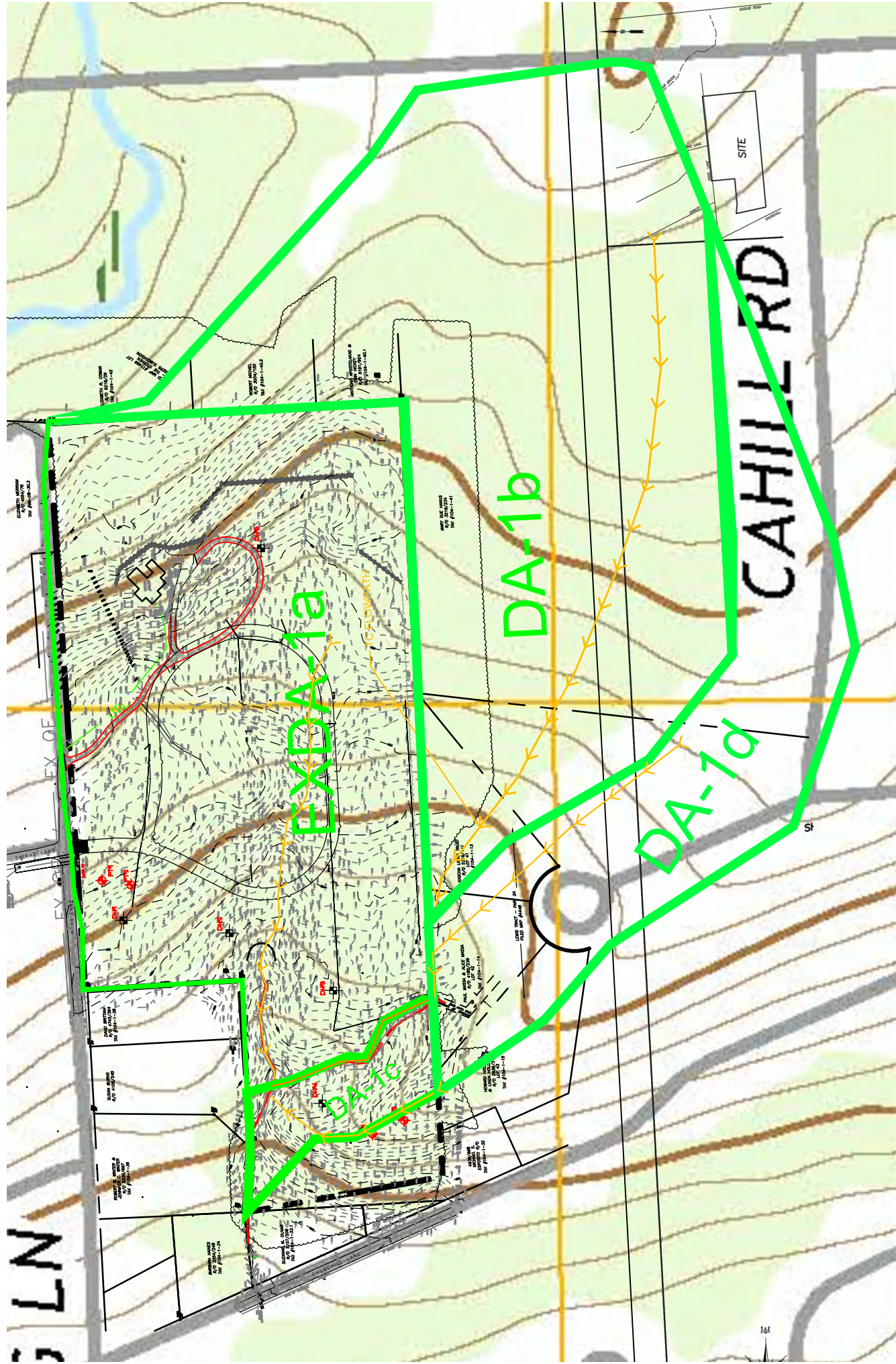
STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision
SOILS MAP
SCALE 1:400

FIGURE 3



Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY



Figure 4a: Existing Site Watershed with USGS

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

SCALE: 1:300

Updated: 07/11/19



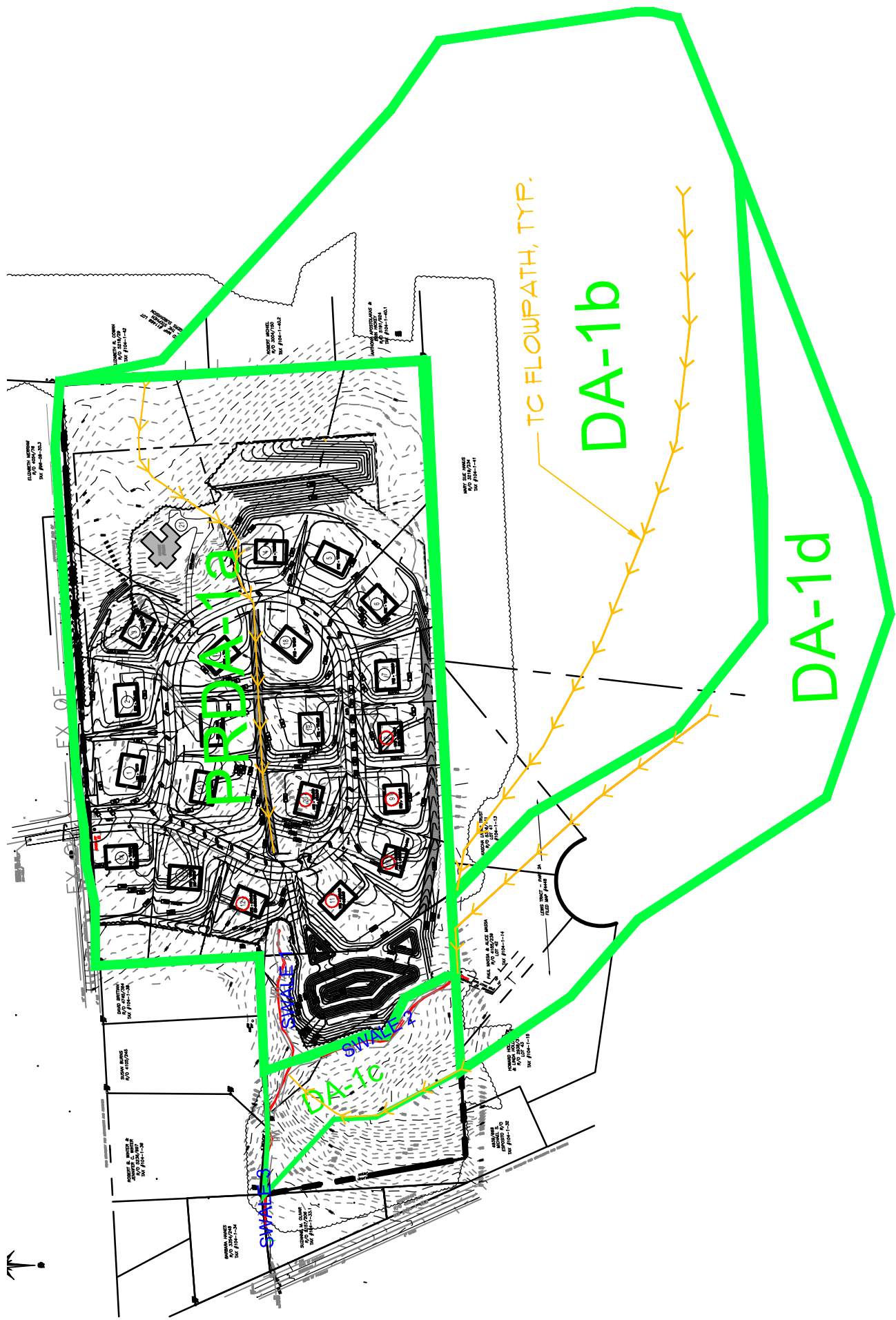
Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY



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 4b: Existing Site Watershed with Aerial

SCALE: 1:300
Updated: 07/11/19

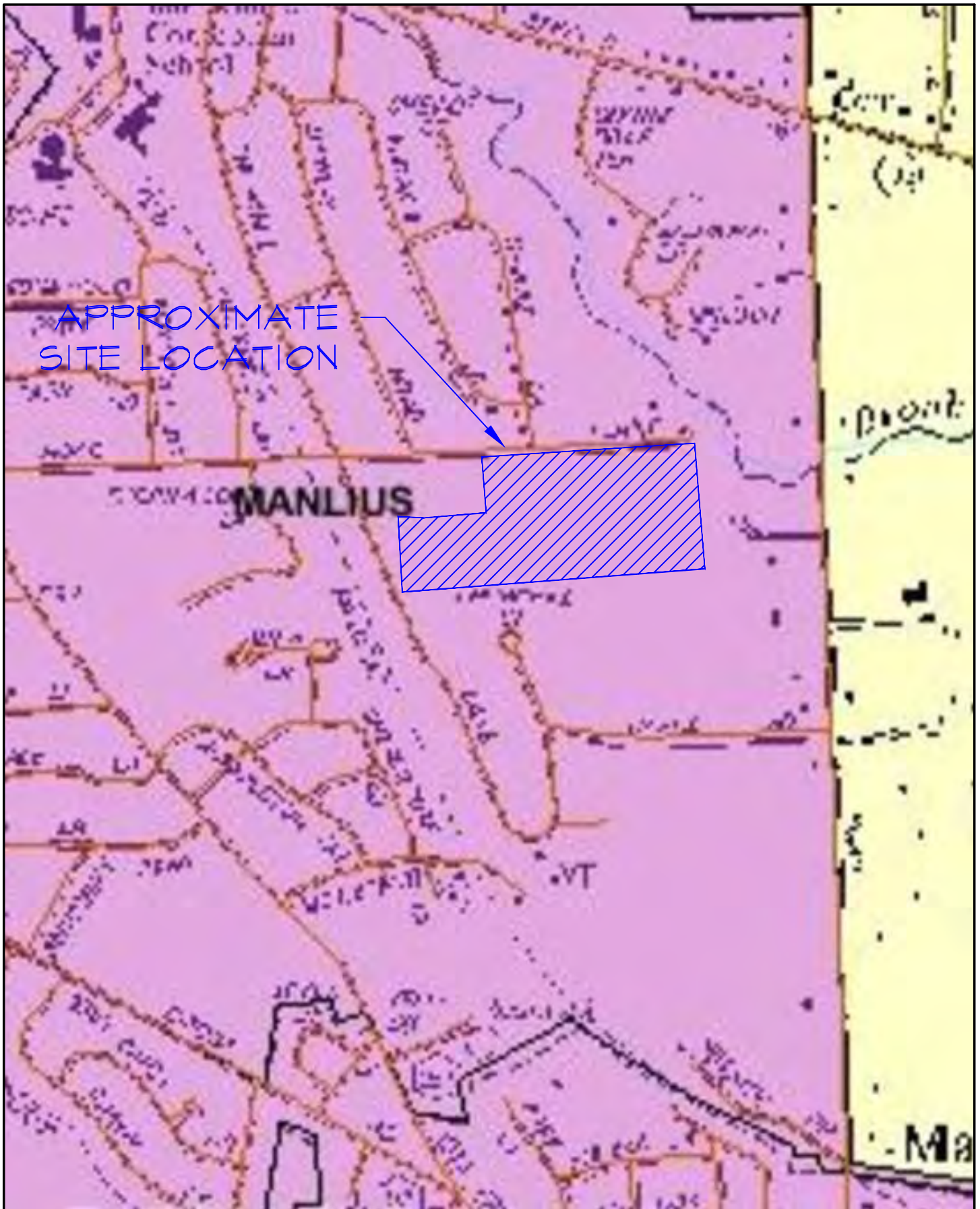


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY



Figure 5: Proposed Watershed

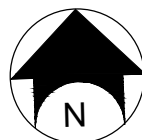
SCALE: 1:300
Updated: 07/11/19



RZ Engineering, PLLC

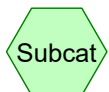
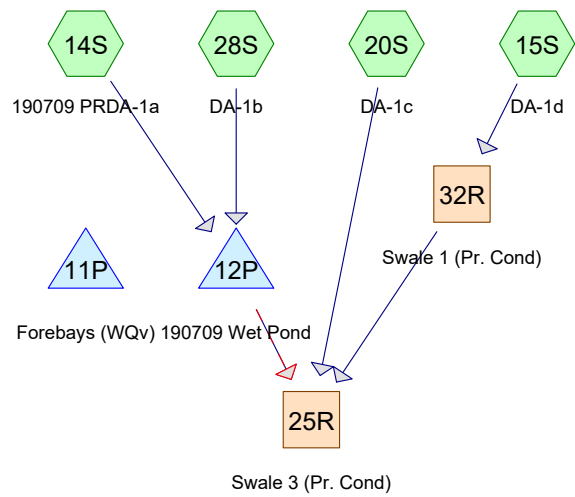
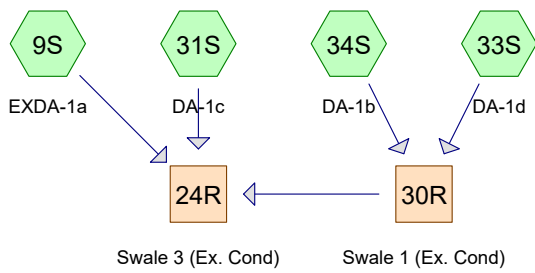
STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision
NYSDEC STORMWATER MAP
SCALE 1:800

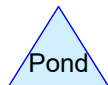
FIGURE 6



Subcat



Reach



Pond



Link

Routing Diagram for 17061 Hoag Lane

Prepared by Microsoft, Printed 7/11/2019

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

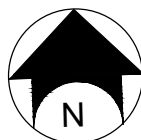


APPROXIMATE
SITE LOCATION

RZ Engineering, PLLC

STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

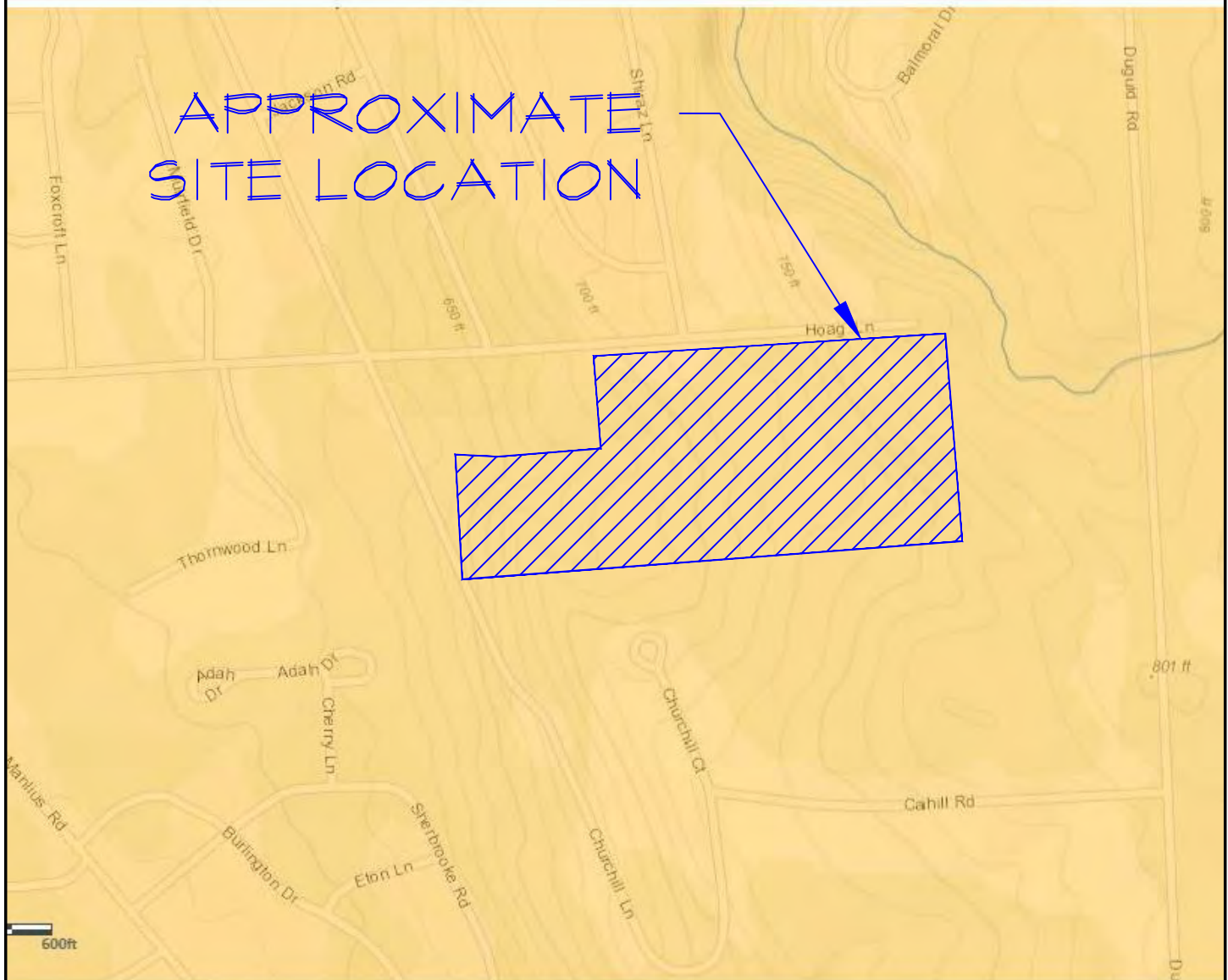
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision
SHPO MAP
SCALE 1:800

FIGURE 8

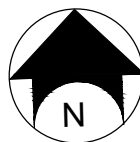
APPROXIMATE
SITE LOCATION



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
NYSDEC WETLANDS AND
ENDANGERED SPECIES MAP
SCALE 1:600

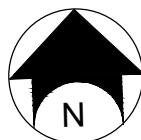
FIGURE 9



RZ Engineering, PLLC

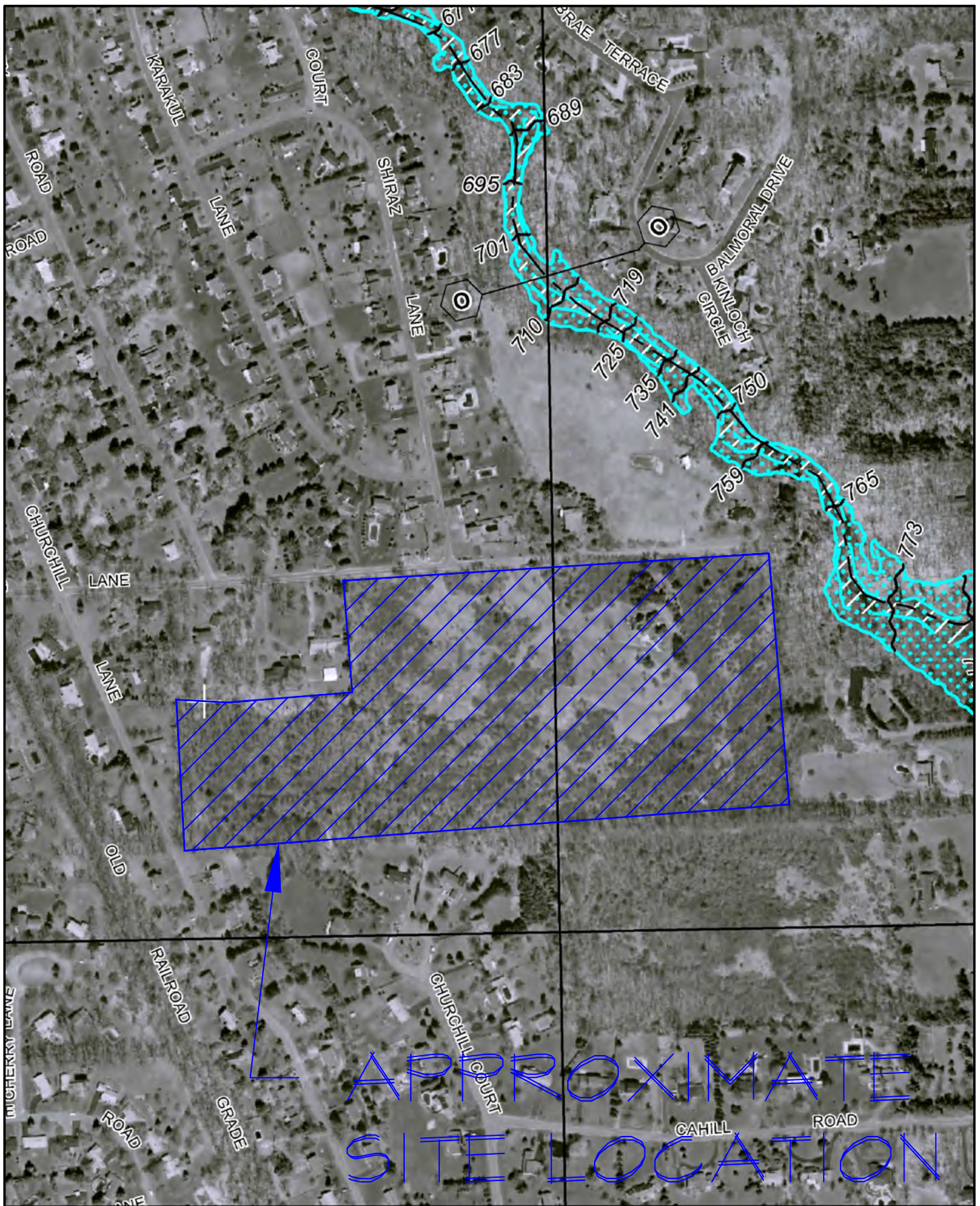
STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision
FEDERAL WETLANDS MAP
SCALE 1:400

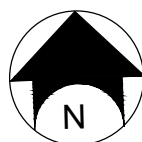
FIGURE 10



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

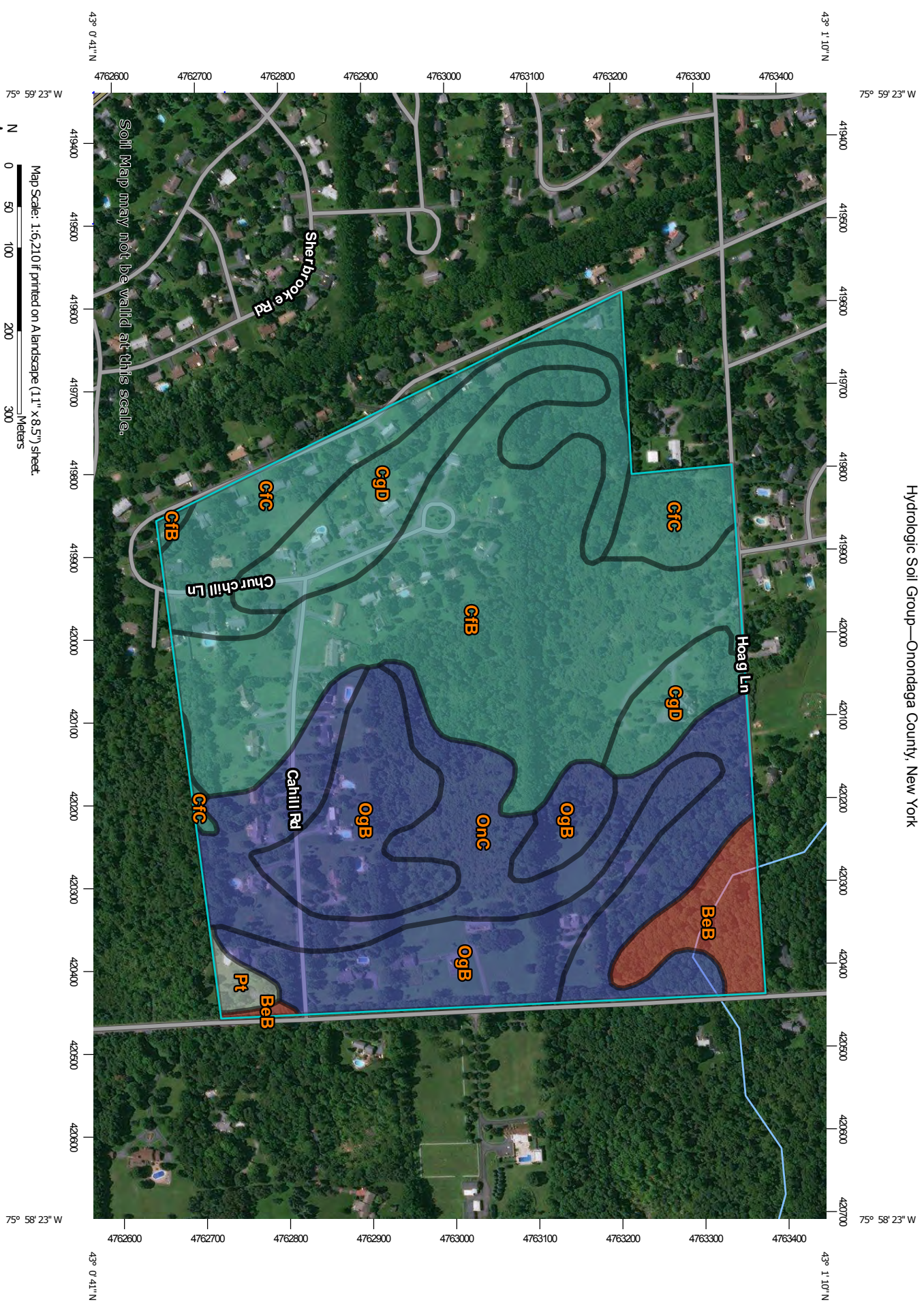


Hoag Lane Subdivision
NATIONAL FLOOD INSURANCE MAP
SCALE 1:400

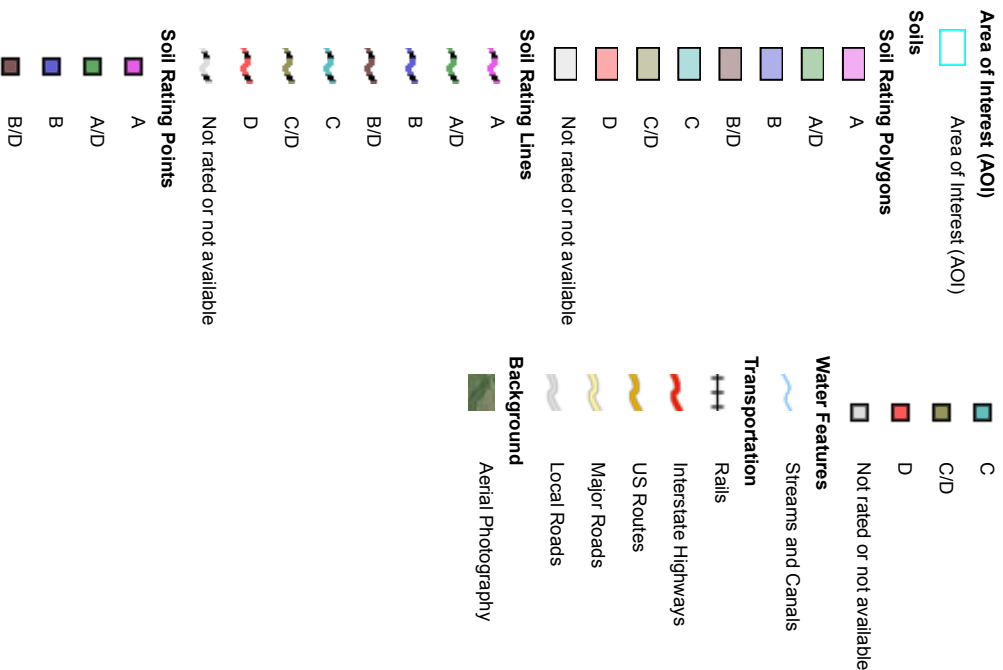
FIGURE 11

APPENDIX A

Hydrologic Soil Group—Onondaga County, New York



MAP LEGEND



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: _____

ADDRESS OF PROPERTY: 5740-5320 HOG LAKE

TOWN: FAYETTEVILLE

TEST PERFORMED BY: STEVEN RATH

REPRESENTING: RZ ENGINEERING

Weather: CLOUDY 70°F

DATE: 10/10/17

Test hole	Soil Description and Depth	Results of Presoaking	Time	Percolation Test Results								FINAL RESULT		
				1	2	3	4	5	6	7	8			
PT #1	24"		Finish	1:28	2:07	2:43								
	Sandy loam		Start	1:10	1:32	2:08								
			Time	18 MIN	35 MIN	35 MIN						35 MIN		
				Finish										
PT #2	24"		Start	2:30										
	Silt loam		Time	>60								FAIL		
				Finish										
				Start										
DH #1	0"-12" TOPSOIL		Time											
	12"-36" SANDY SILT LOAM		Finish											
			Start											
			Time											
DH #1	36"-66" SANDY LOAM		Finish											
	0"-12" TOPSOIL		Start											
			Time											
				Finish										
DH #1	12"-36" Gr LOAM		Start											
	36"-80" SILT LOAM		Time											
				Finish										
				Start										

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

1/2

RZ Engineering, PLLC

RZE# 17061

STORMWATER

SANITARY

WATER

ENVIRONMENTAL

TRANSPORTATION

OWNERS NAME: _____

ADDRESS OF PROPERTY: _____

TOWN: PAVERTVILLE

TEST PERFORMED BY: Steve 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								FINAL RESULT
				1	2	3	4	5	6	7	8	
PT #3	24"		Finish	11:08	11:12	11:16						
			Start	11:06	11:09	11:13						
			Time	2 min	3 min	3 min						3 min
			Finish	12:01	12:22	12:44						
PT #4	24"		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

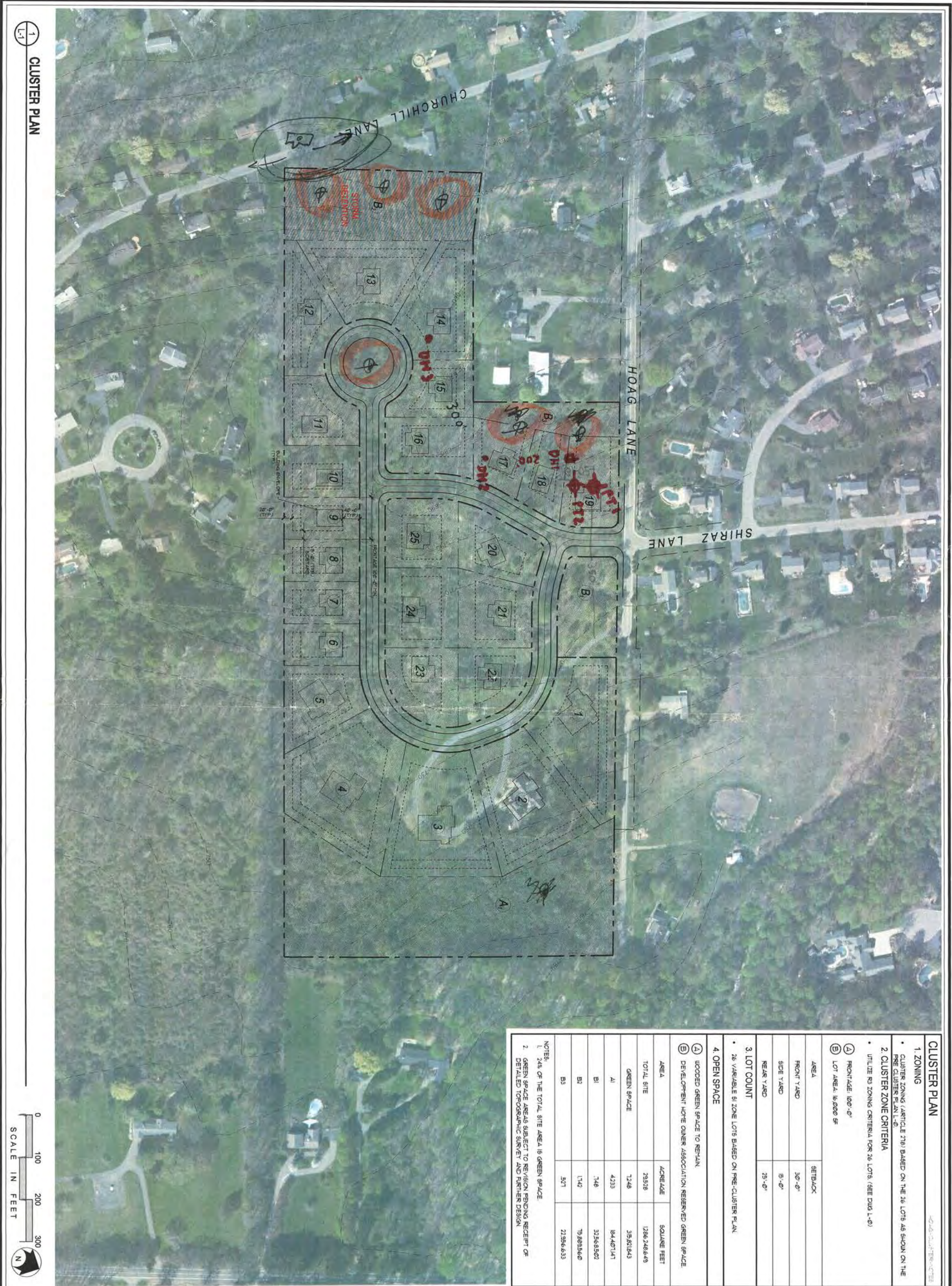
Paid on site ☐

Mottling Witnessed: ☐ No Mottling

☐ Yes at _____" Deep

Restrictive Layer: ☐ No layer

☐ Yes _____layer at _____" Deep

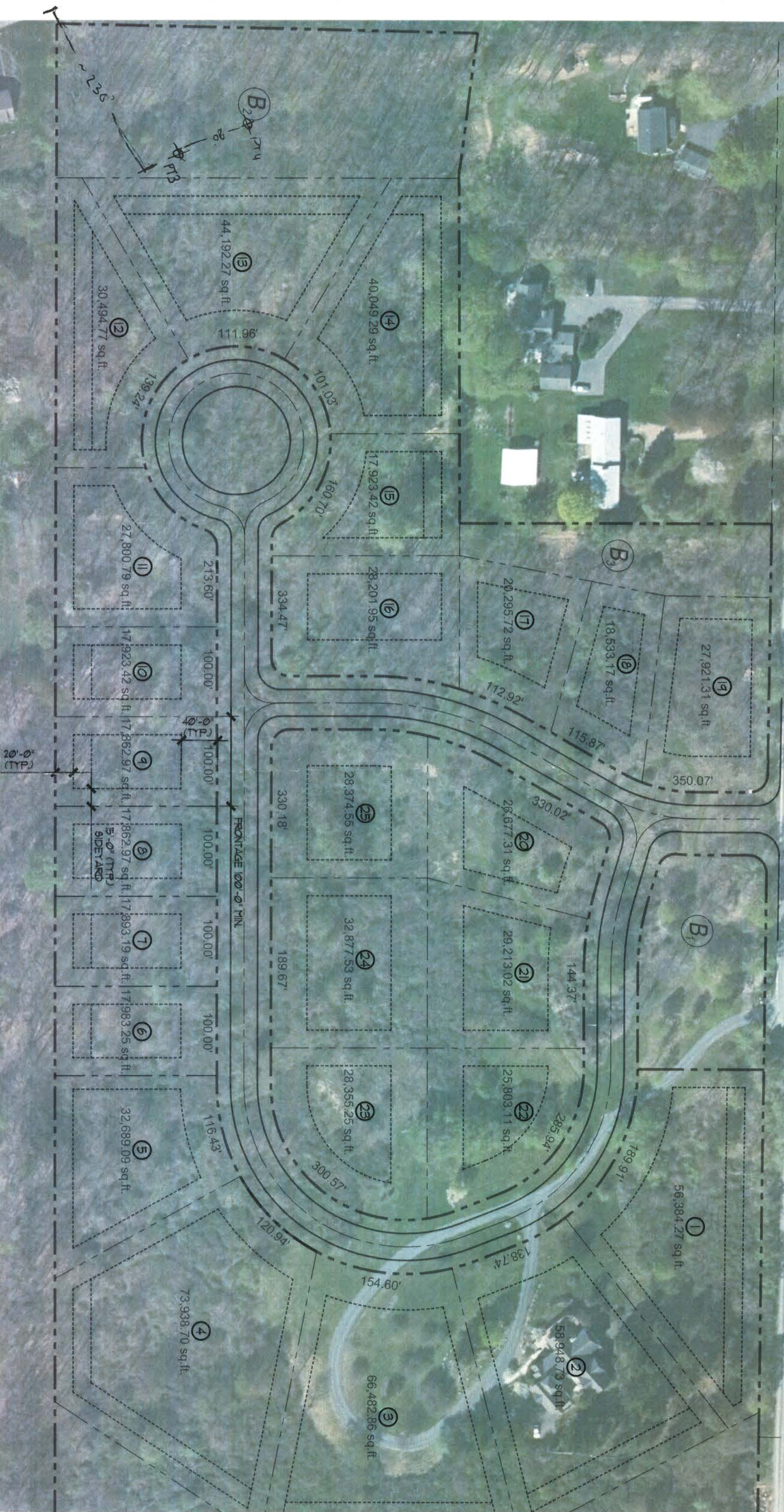


CLUSTER PLAN	
1. ZONING	
CLUSTER ZONING (ARTICLE 21B) BASED ON THE 26 LOTS AS SHOWN ON THE PRE CLUSTER PLAN L-0	
2. CLUSTER ZONE CRITERIA	
UTILIZE R3 ZONING CRITERIA FOR 26 LOTS (SEE DIAG L-0)	
3. LOT COUNT	
26 VARIABLE R3 ZONE LOTS BASED ON PRE CLUSTER PLAN	
4. OPEN SPACE	
A) WOODED GREEN SPACE TO REMAIN	
B) DEVELOPMENT HOME OWNER ASSOCIATION RESERVED GREEN SPACE	
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	
AREA	
ACREAGE	SQUARE FEET
TOTAL SITE	28578
GREEN SPACE	1248
A1	4233
B1	7148
B2	1742
B3	5271

SCALE - 1:100

HOAG LANE

LANE



Kenney Geotechnical Engineering Services, PLLC

Office: 6901 Herman Road, Syracuse, NY 13209

Mail :P.O. Box 156 Baldwinsville, N.Y. 13027

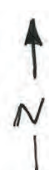
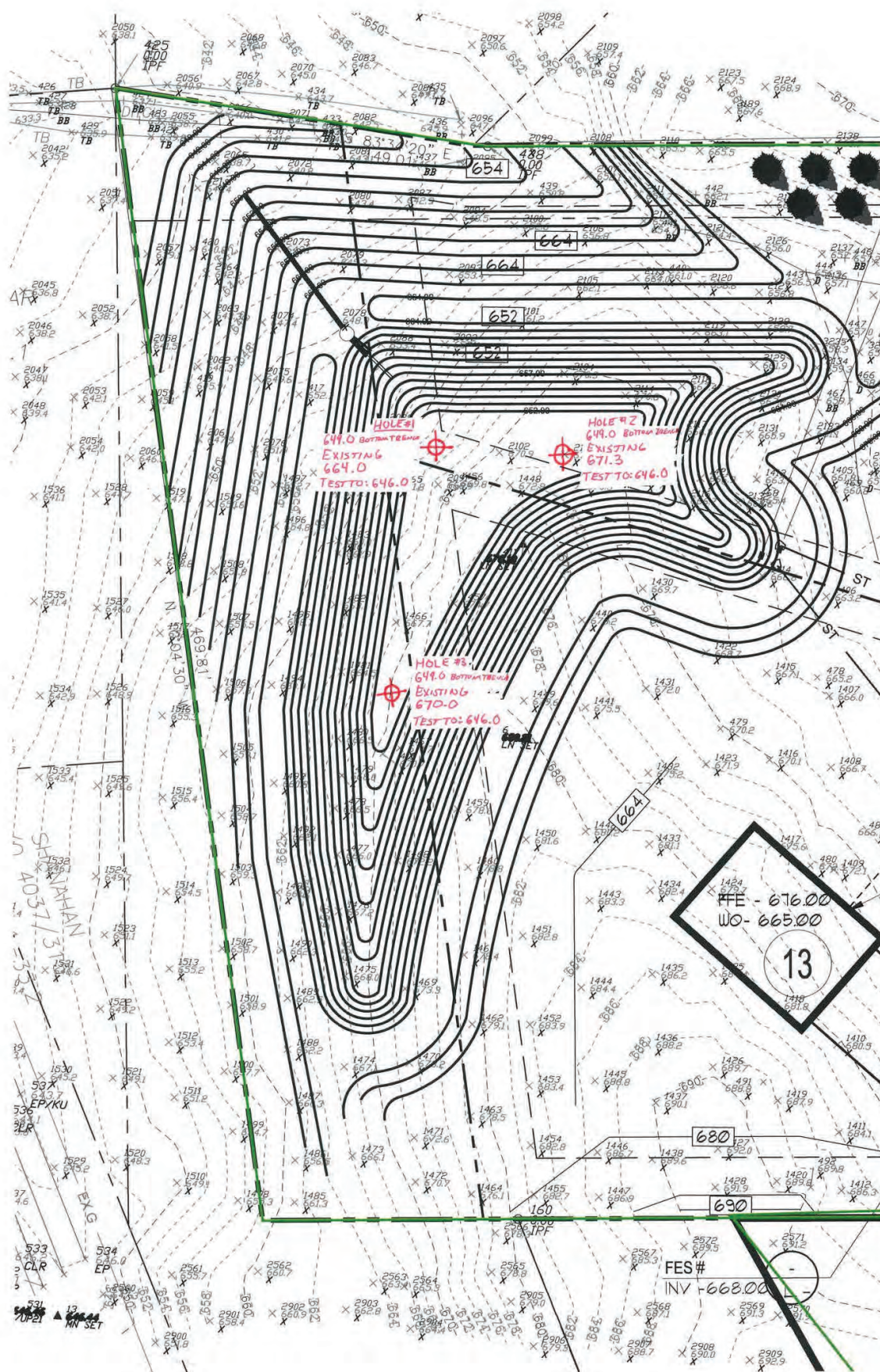
Phone: (315) 638-2706 Fax: (315) 638-1544



INFILTRATION TESTING LOG						
PROJECT:	HOAG LANE SUBDIVISION, FAYETTEVILLE 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, FAYETTEVILLE 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, FAYETTEVILLE 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:						



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

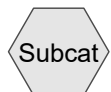
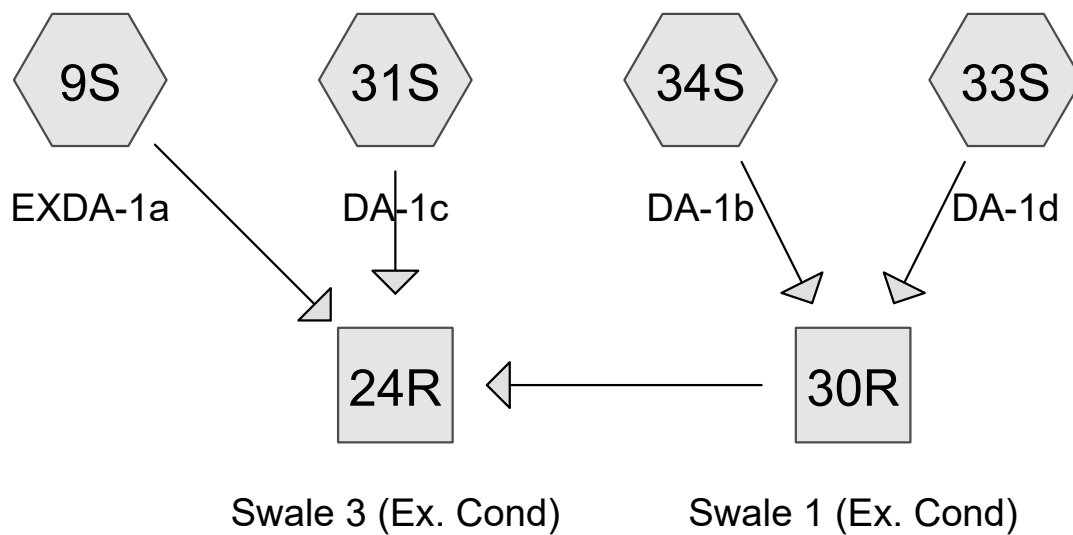
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.38	0.46	0.62	0.76	0.87	1yr	0.66	0.85	0.92	1.10	1.40	1.65	2.02	1yr	1.46	1.94	2.38	2.79	3.35	1yr
2yr	0.32	0.49	0.61	0.82	1.01	1.13	2yr	0.87	1.11	1.26	1.56	1.90	2.33	2.61	2yr	2.06	2.51	2.94	3.56	4.12	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

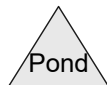
APPENDIX C



Subcat



Reach



Pond



Link

Routing Diagram for 17061 Hoag Lane

Prepared by Microsoft, Printed 7/11/2019

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 2

Summary for Subcatchment 9S: EXDA-1a

Runoff = 49.59 cfs @ 12.38 hrs, Volume= 5.903 af, Depth= 2.56"

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
*	22,651	98	Existing Impervious
	175,111	55	Woods, Good, HSG B
	828,076	70	Woods, Good, HSG C
	180,774	74	>75% Grass cover, Good, HSG C
	1,206,612	69	Weighted Average
	1,183,961		98.12% Pervious Area
	22,651		1.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.2	100	0.0490	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.39"
8.0	670	0.0776	1.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.6	304	0.0460	3.22		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
39.8	1,074	Total			

Summary for Reach 24R: Swale 3 (Ex. Cond)

Inflow Area = 76.095 ac, 7.80% Impervious, Inflow Depth = 2.53" for 100-yr event
 Inflow = 98.96 cfs @ 12.20 hrs, Volume= 16.064 af
 Outflow = 98.91 cfs @ 12.22 hrs, Volume= 16.064 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= 11.53 fps, Min. Travel Time= 0.5 min
 Avg. Velocity= 4.18 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2,676 cf @ 12.21 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'

17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 3

**Summary for Reach 30R: Swale 1 (Ex. Cond)**

Inflow Area = 45.175 ac, 12.00% Impervious, Inflow Depth = 2.51" for 100-yr event
 Inflow = 59.89 cfs @ 12.11 hrs, Volume= 9.451 af
 Outflow = 59.69 cfs @ 12.14 hrs, Volume= 9.451 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 8.91 fps, Min. Travel Time= 0.8 min

Avg. Velocity= 3.17 fps, Avg. Travel Time= 2.4 min

Peak Storage= 3,037 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.76'

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'

**Summary for Subcatchment 31S: DA-1c**

Runoff = 6.70 cfs @ 12.31 hrs, Volume= 0.710 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
3.220	70	Woods, Good, HSG C
3.220		100.00% Pervious Area

17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 4

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 = 55.53 cfs @ 12.10 hrs, Volume= 3.958 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
11.560	79	1 acre lots, 20% imp, HSG C
1.270	98	Paved parking, HSG C
12.830	81	Weighted Average
9.248		72.08% Pervious Area
3.582		27.92% 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: DA-1b

Runoff = 28.39 cfs @ 12.89 hrs, Volume= 5.493 af, Depth= 2.04"

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
2.802	79	1 acre lots, 20% imp, HSG C
10.640	65	2 acre lots, 12% imp, HSG B
12.324	55	Woods, Good, HSG B
6.579	70	Woods, Good, HSG C
32.345	63	Weighted Average
30.508		94.32% Pervious Area
1.837		5.68% Impervious Area

17061 Hoag Lane*Type II 24-hr 100-yr Rainfall=5.80"*

Prepared by Microsoft

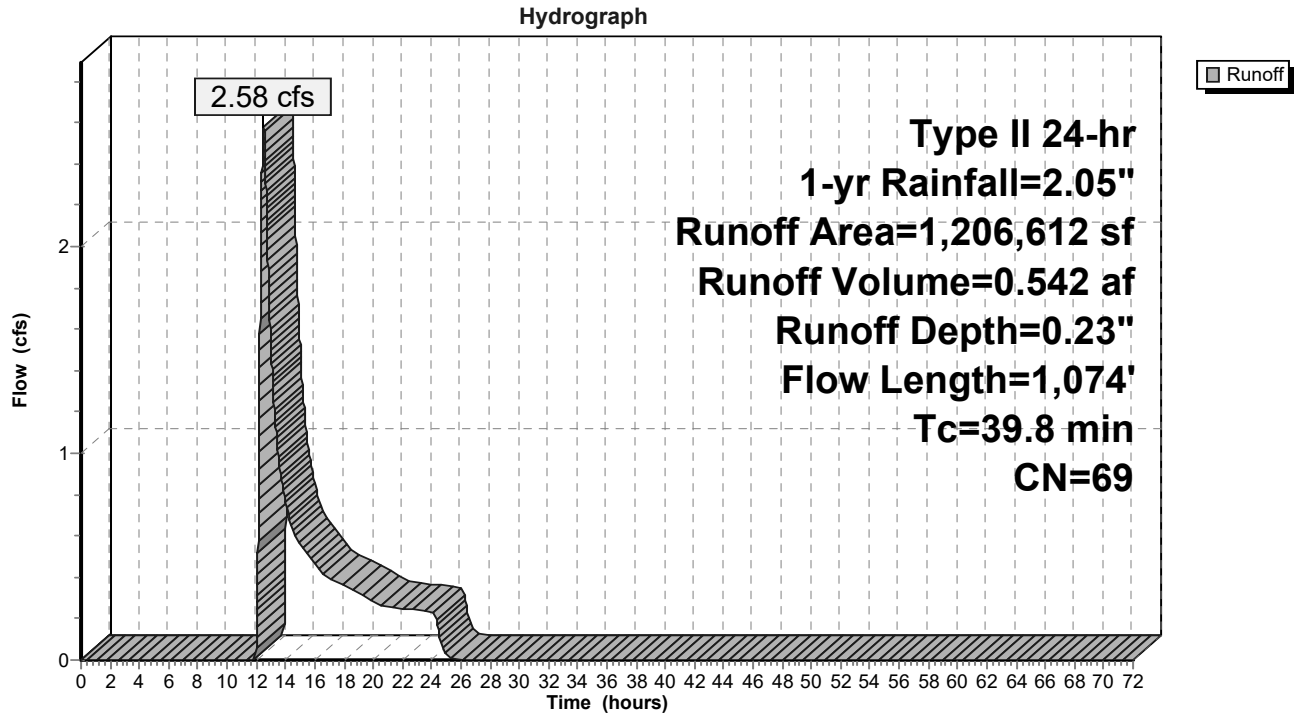
Printed 7/11/2019

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

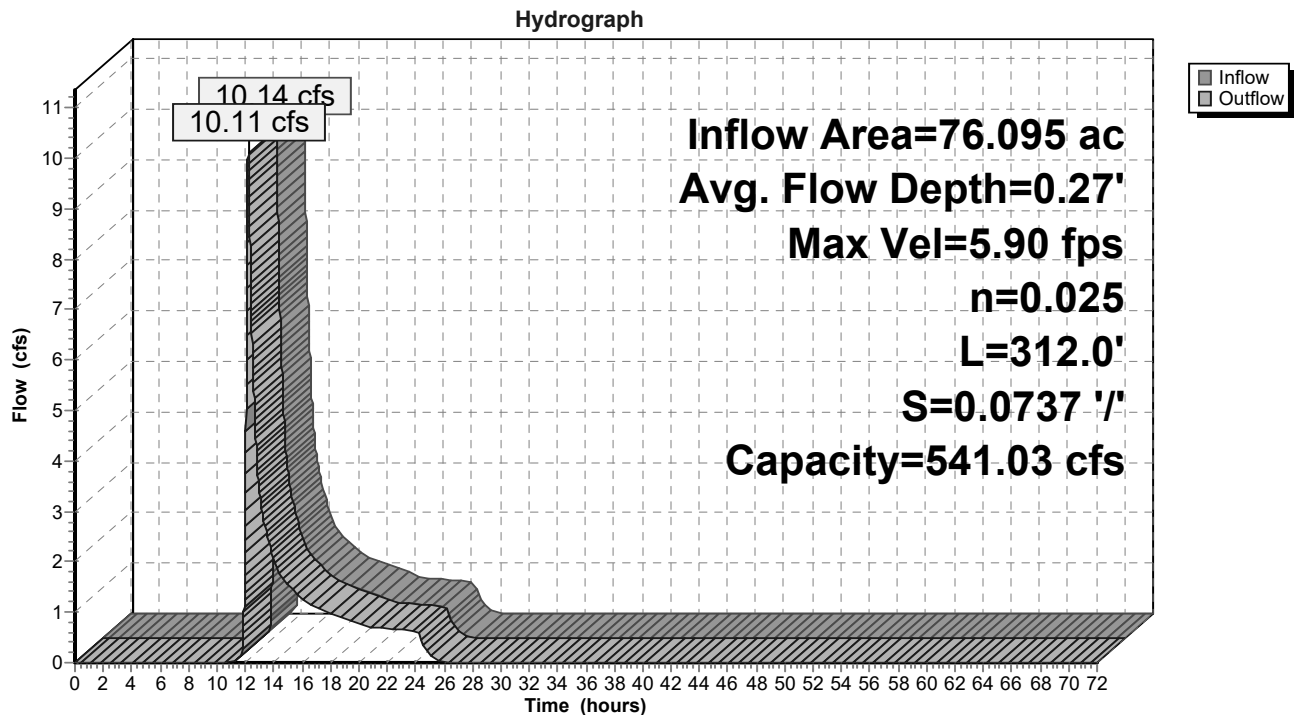
Page 5

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
57.1	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.39"
13.5	1,015	0.0630	1.25		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	295	0.0847	2.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
73.0	1,410	Total			

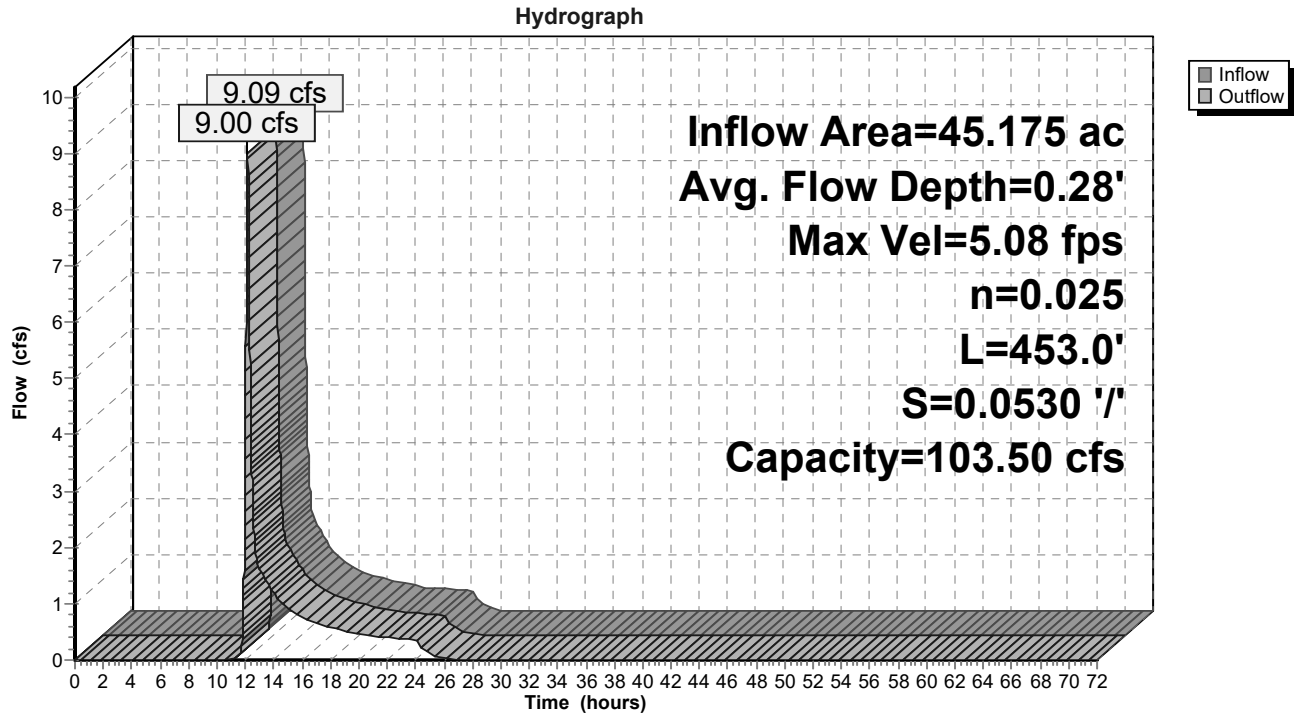
Subcatchment 9S: EXDA-1a



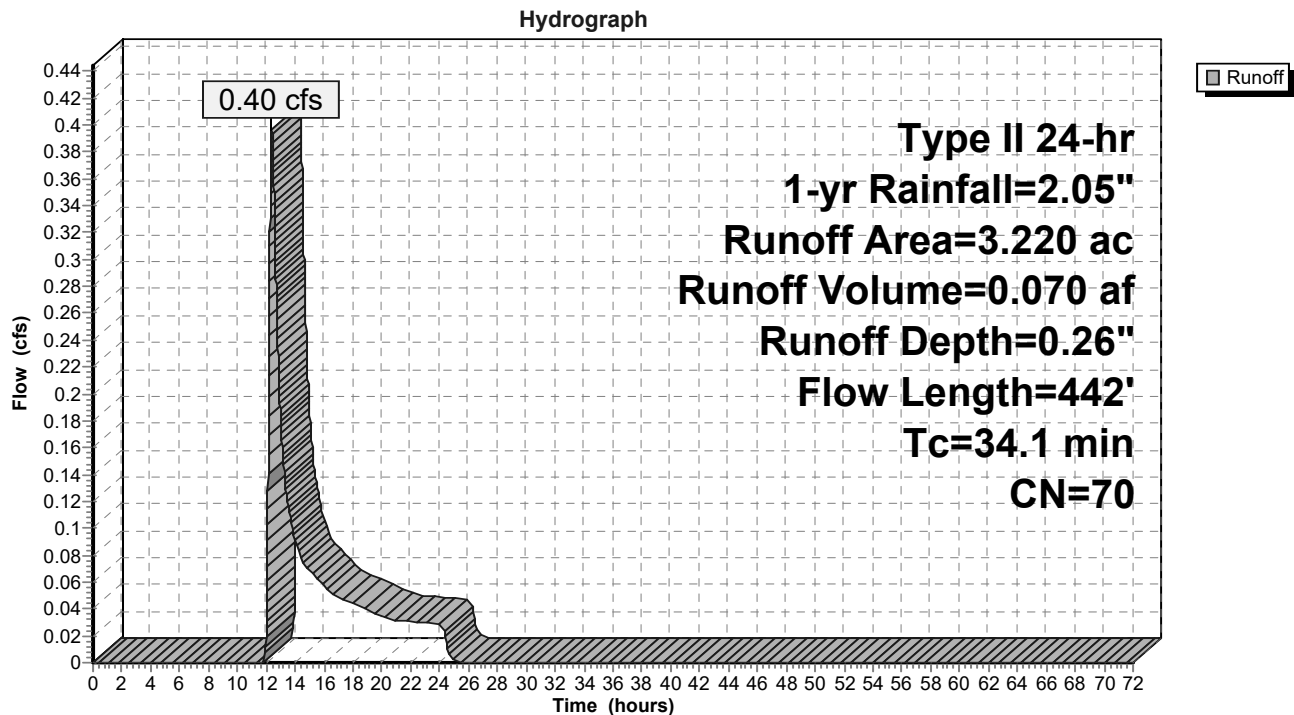
Reach 24R: Swale 3 (Ex. Cond)



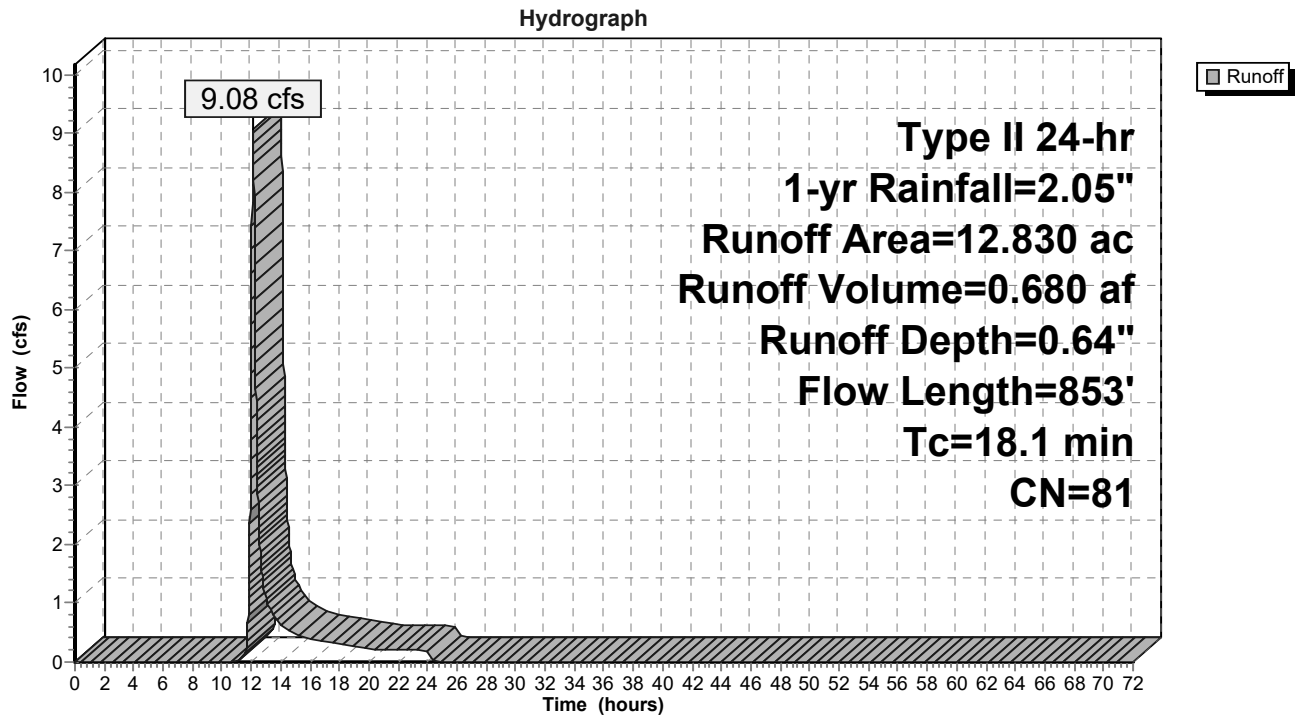
Reach 30R: Swale 1 (Ex. Cond)



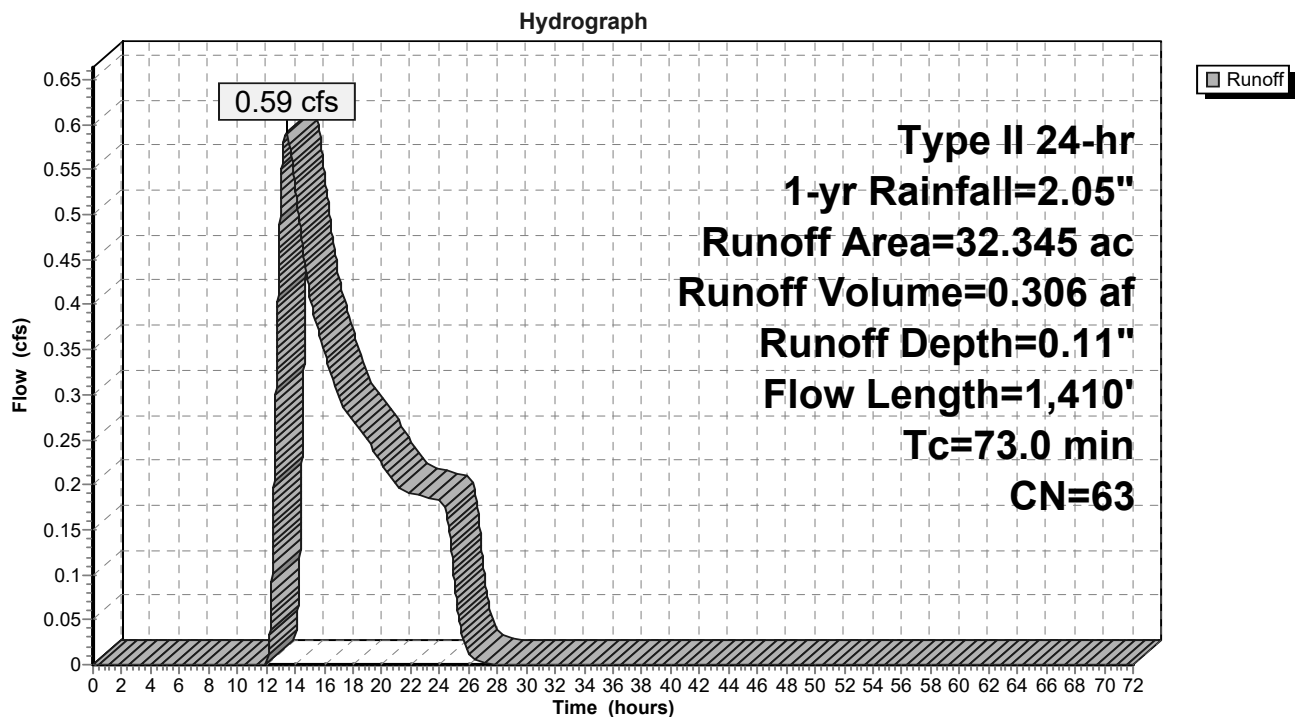
Subcatchment 31S: DA-1c



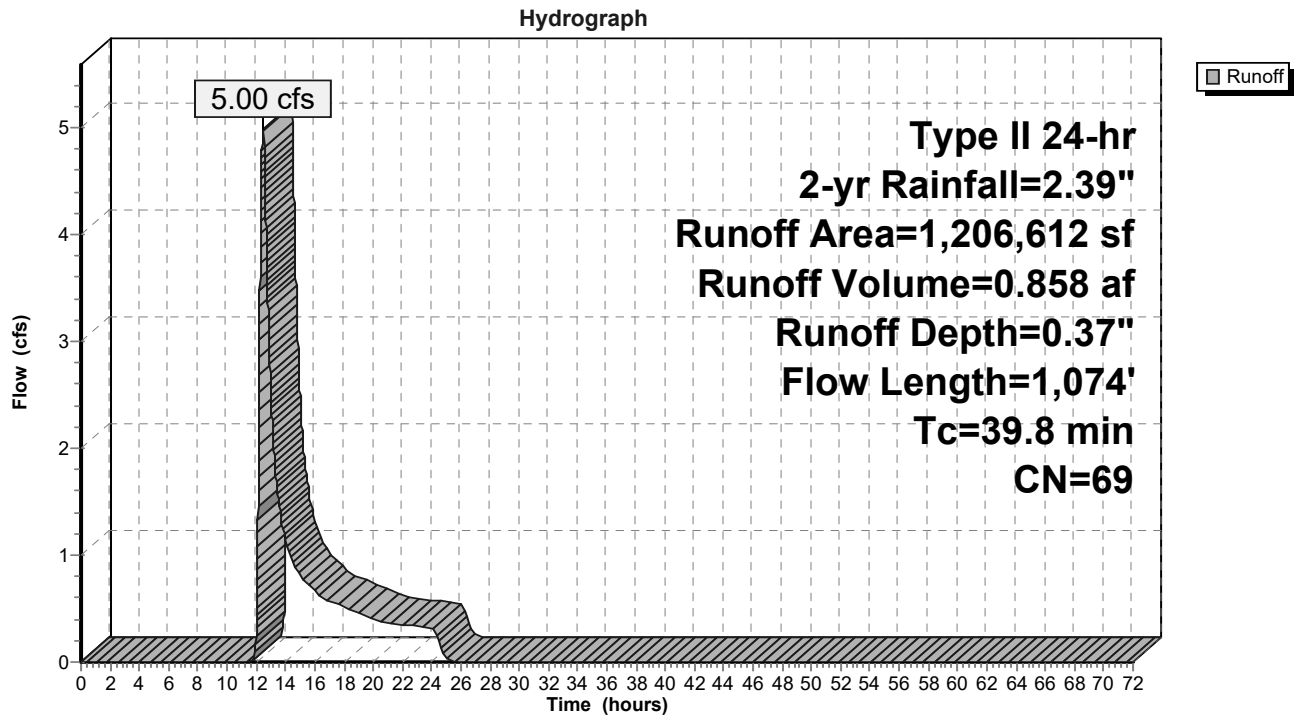
Subcatchment 33S: DA-1d



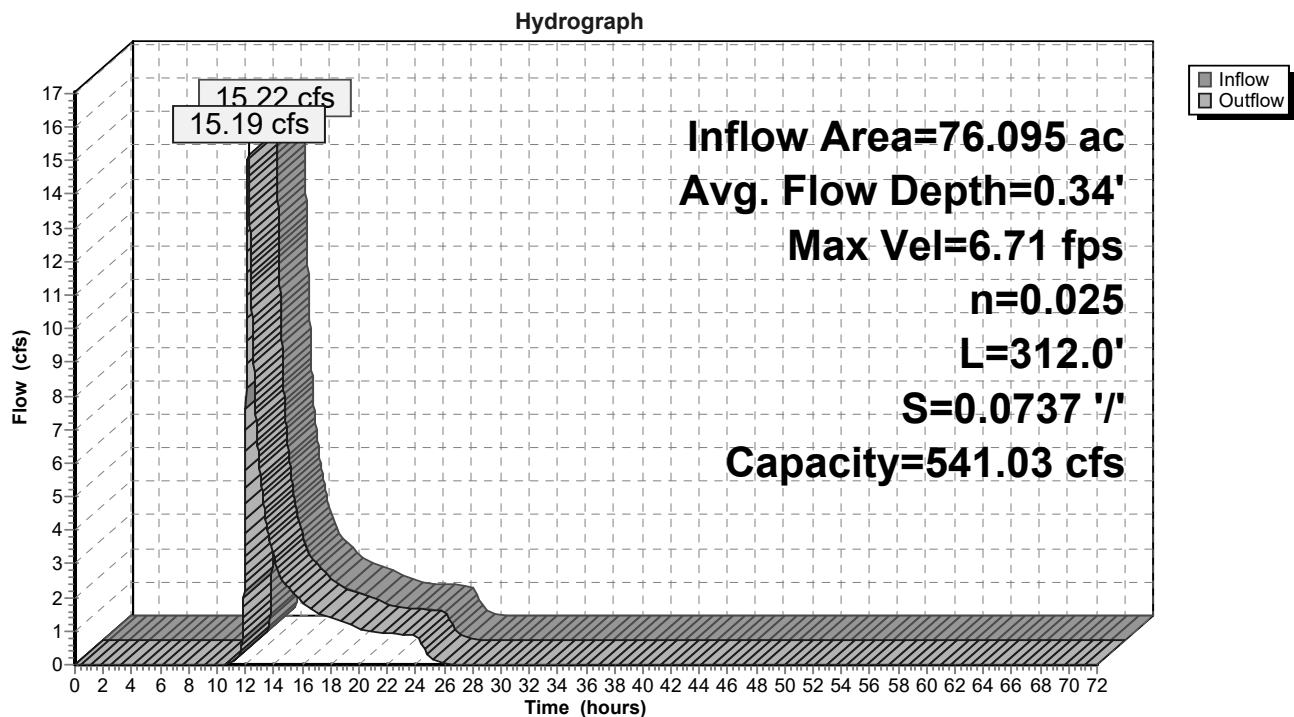
Subcatchment 34S: DA-1b



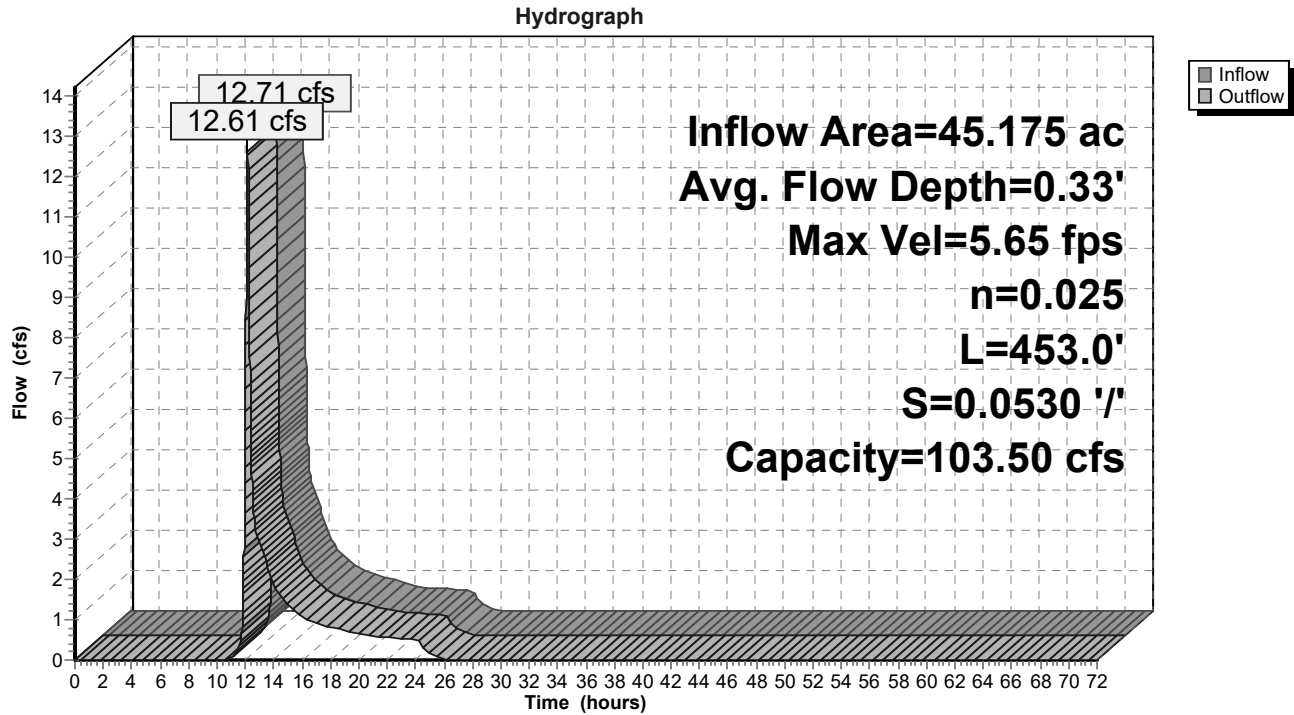
Subcatchment 9S: EXDA-1a



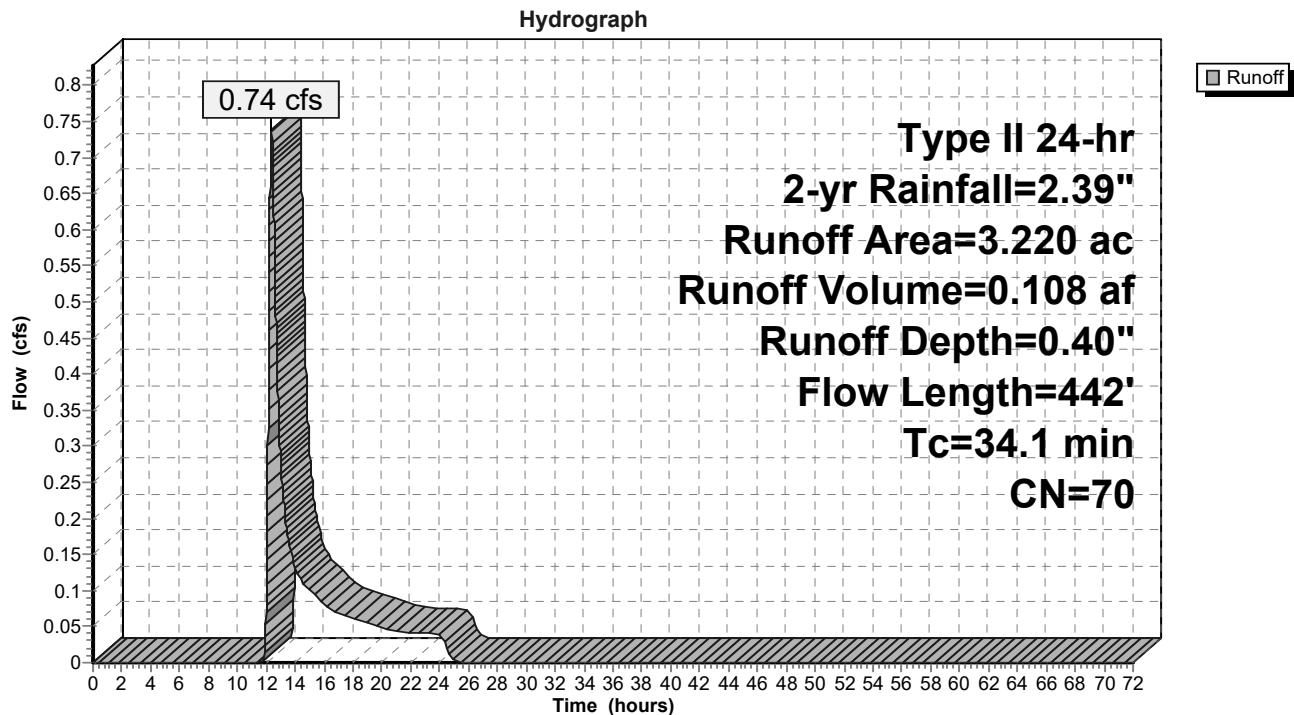
Reach 24R: Swale 3 (Ex. Cond)



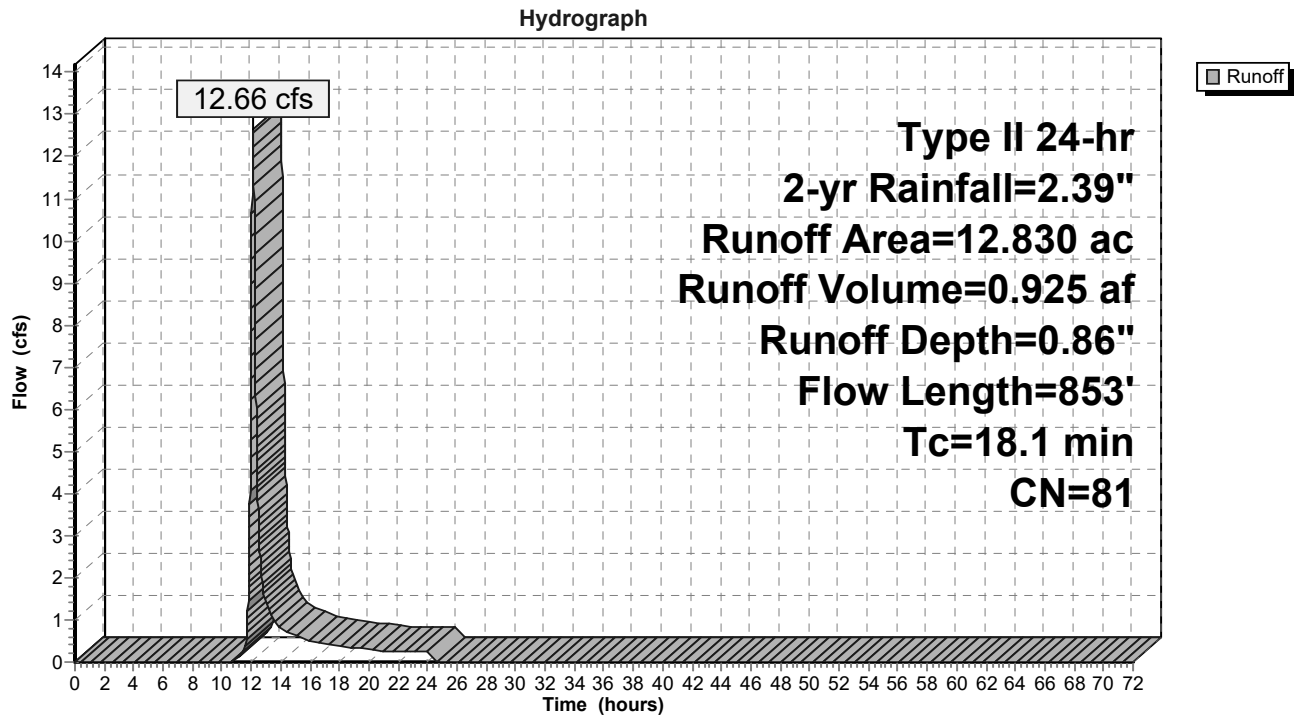
Reach 30R: Swale 1 (Ex. Cond)



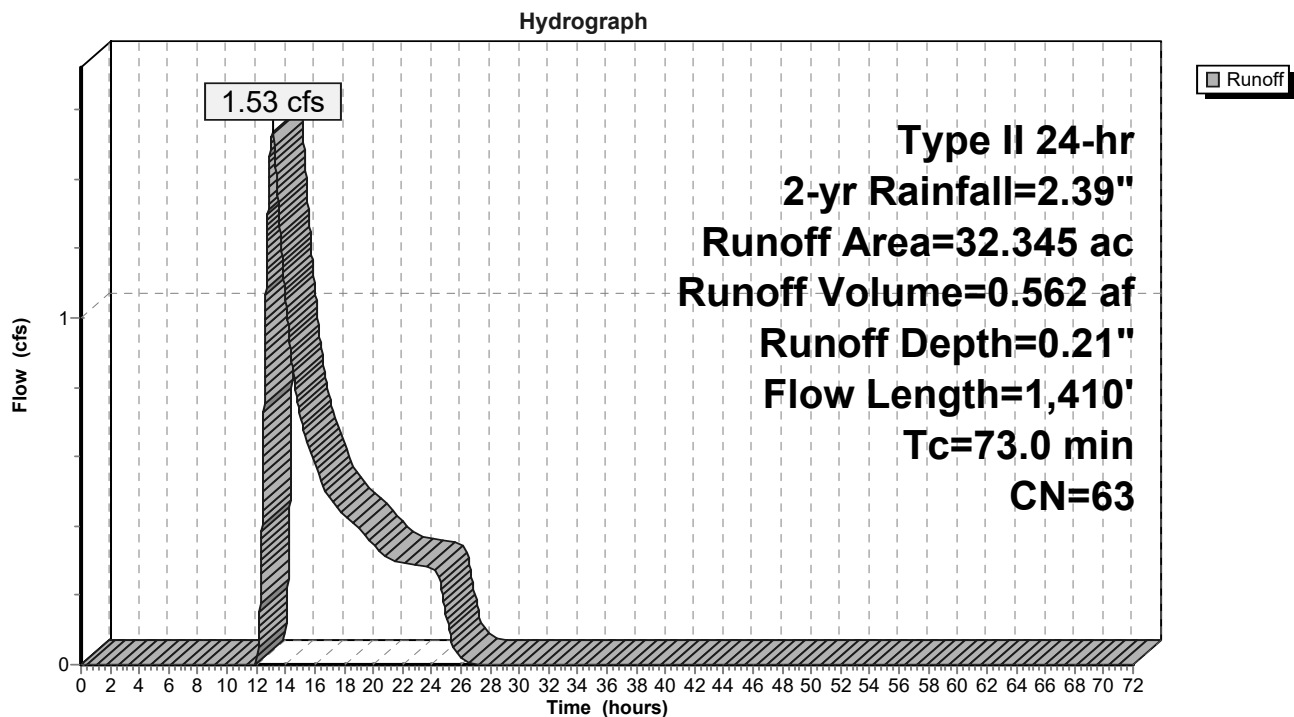
Subcatchment 31S: DA-1c



Subcatchment 33S: DA-1d

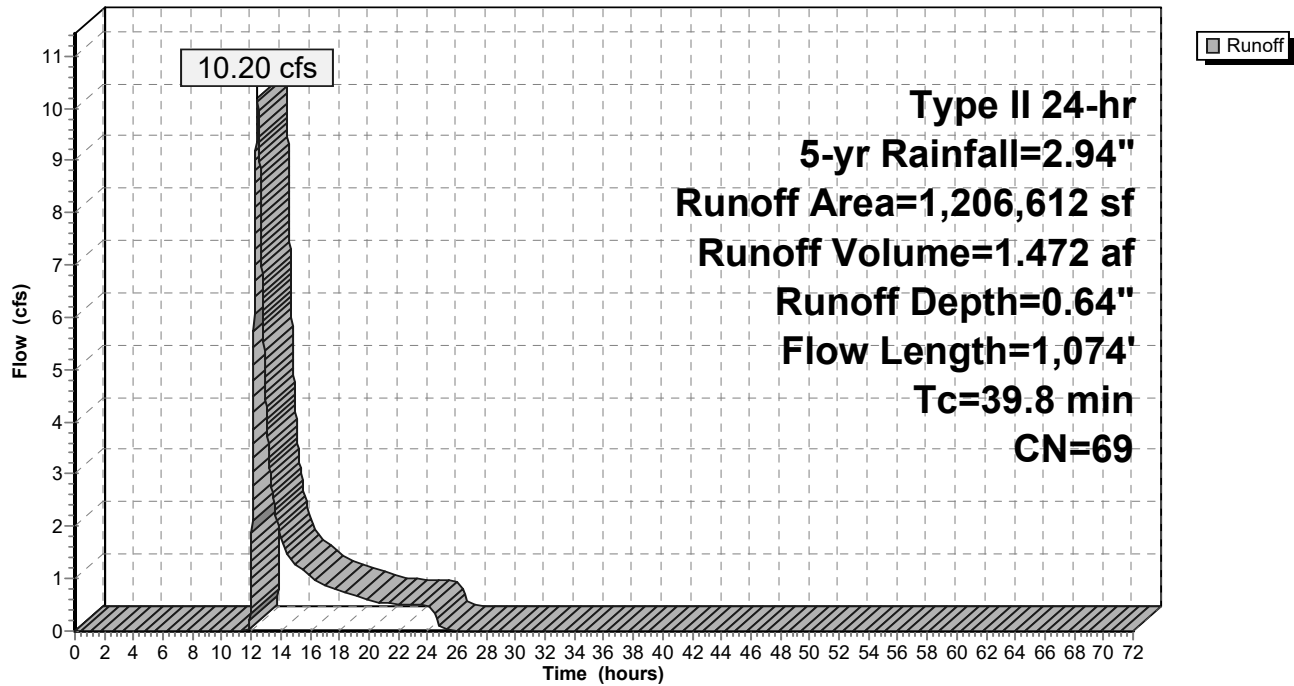


Subcatchment 34S: DA-1b



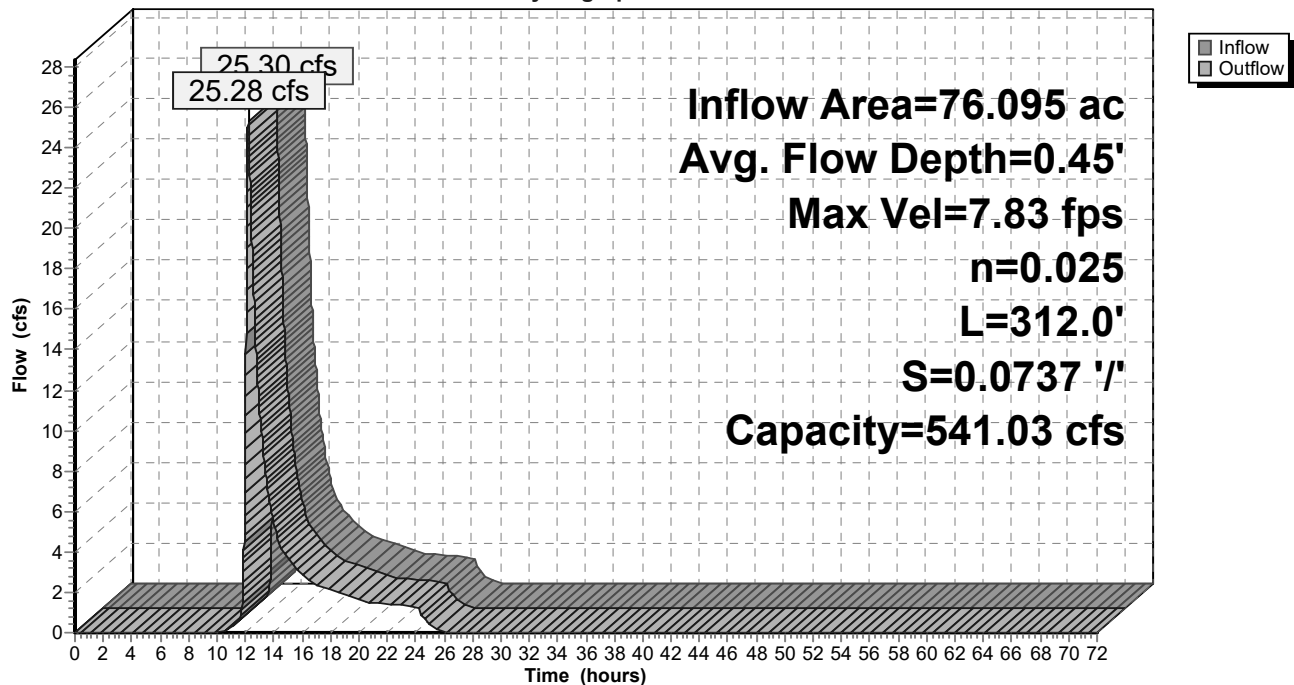
Subcatchment 9S: EXDA-1a

Hydrograph

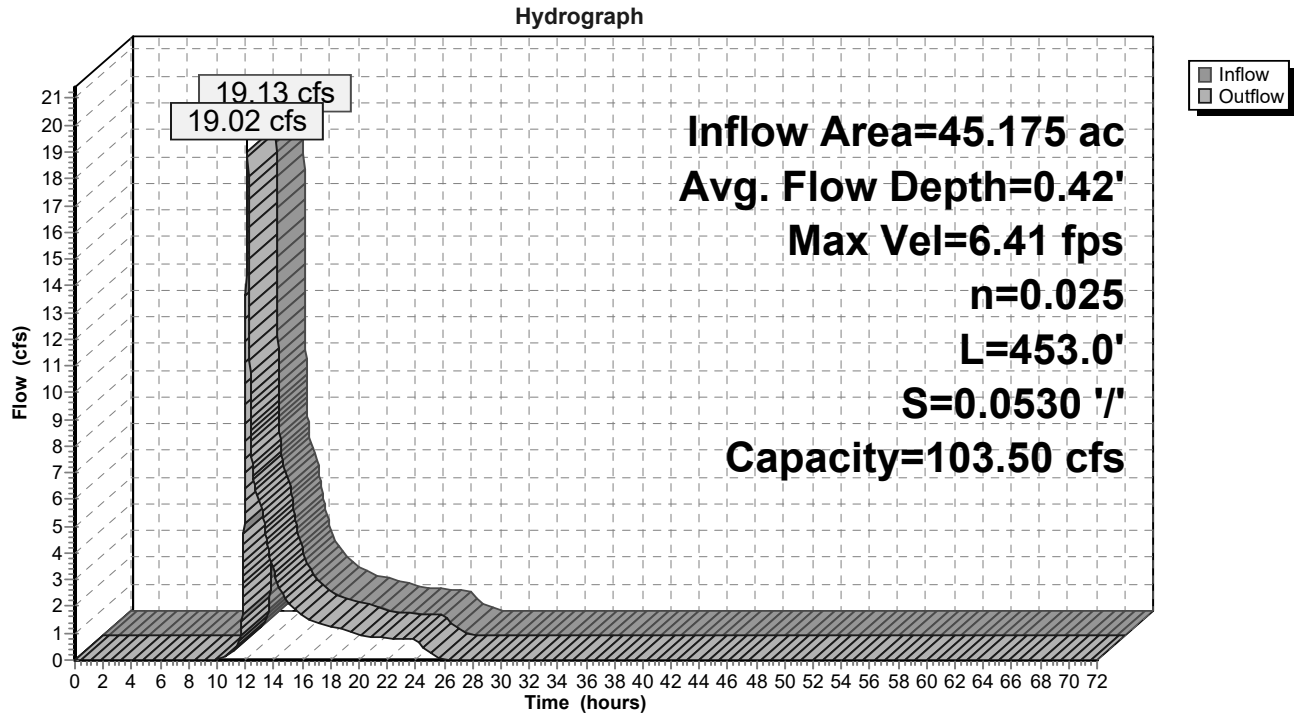


Reach 24R: Swale 3 (Ex. Cond)

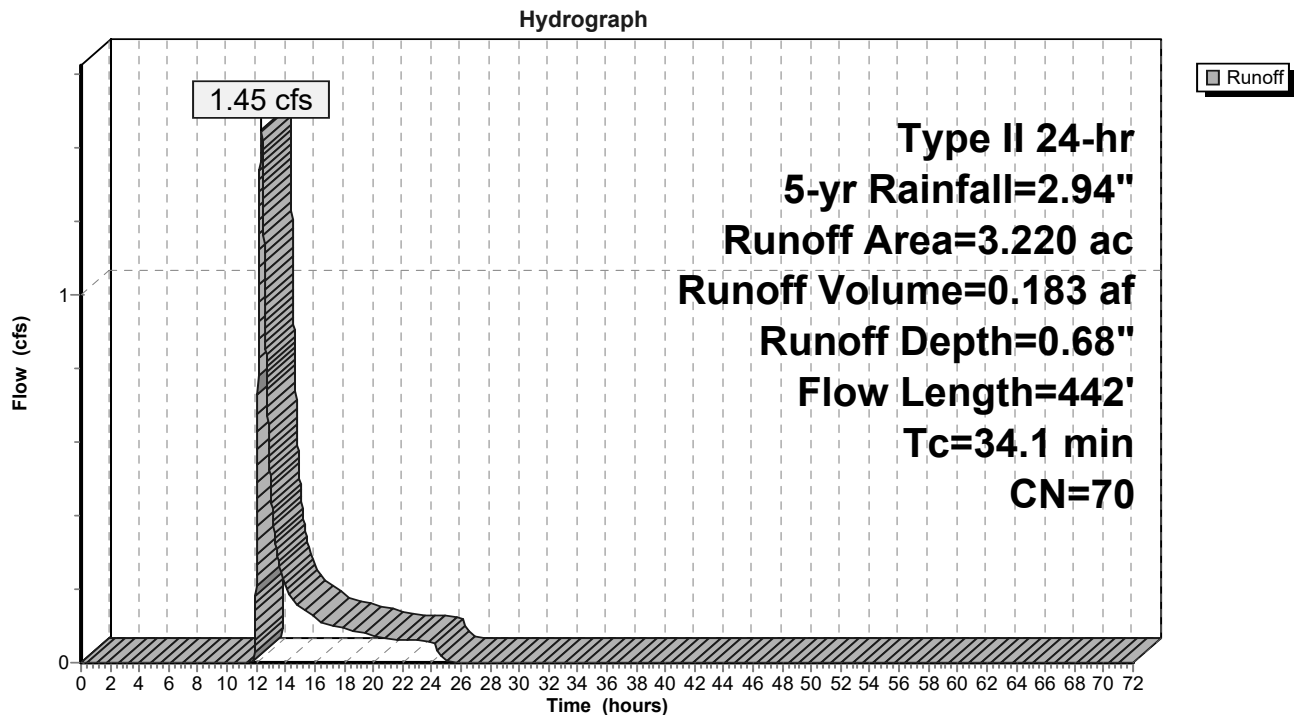
Hydrograph



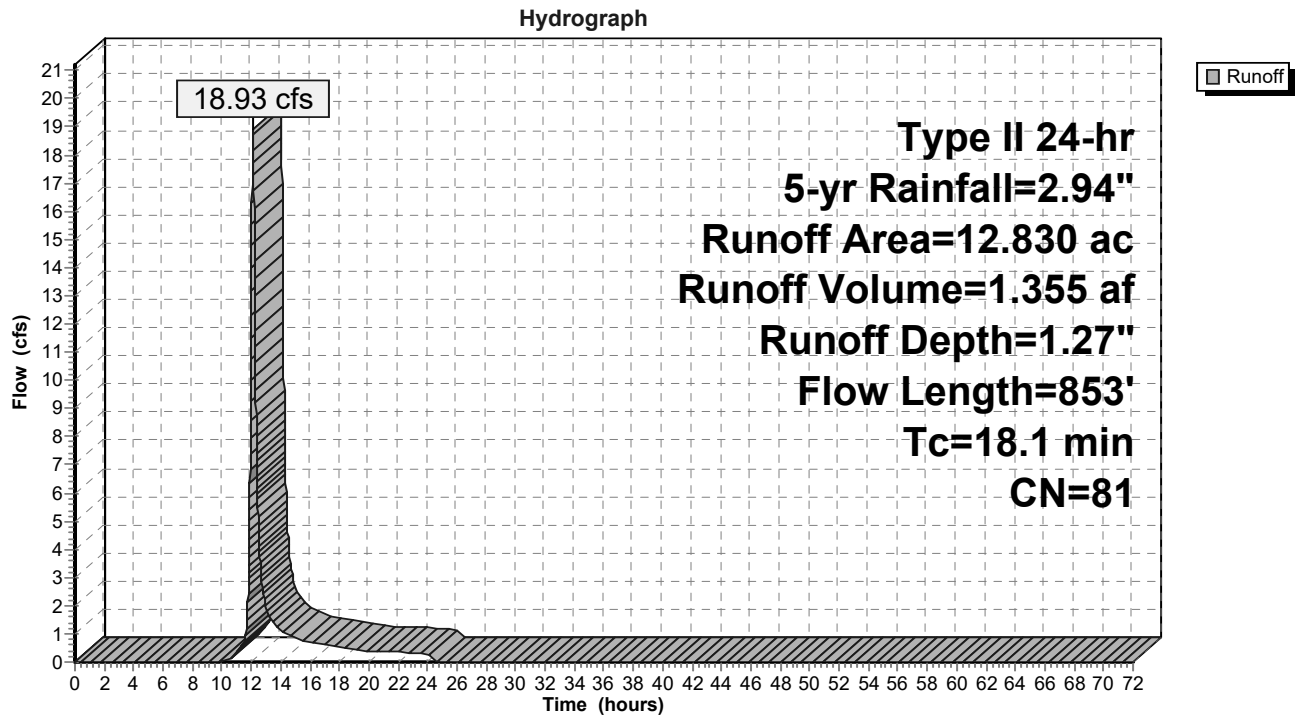
Reach 30R: Swale 1 (Ex. Cond)



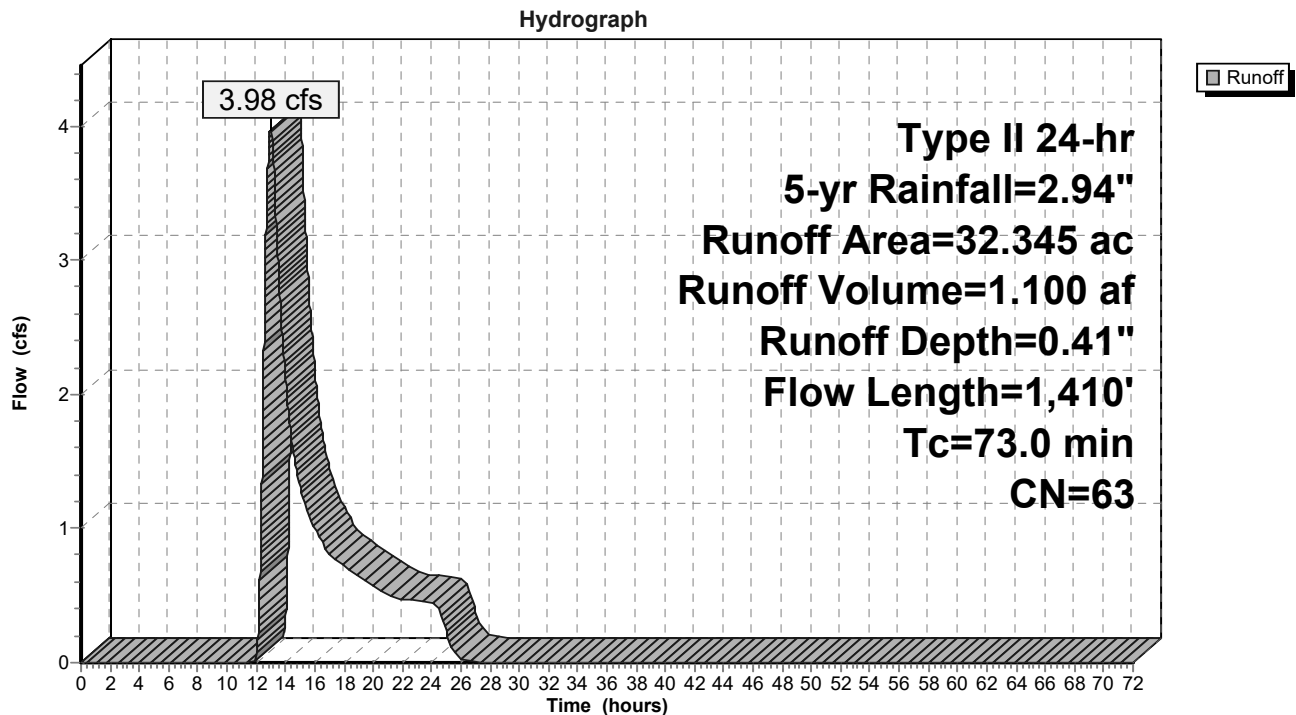
Subcatchment 31S: DA-1c



Subcatchment 33S: DA-1d

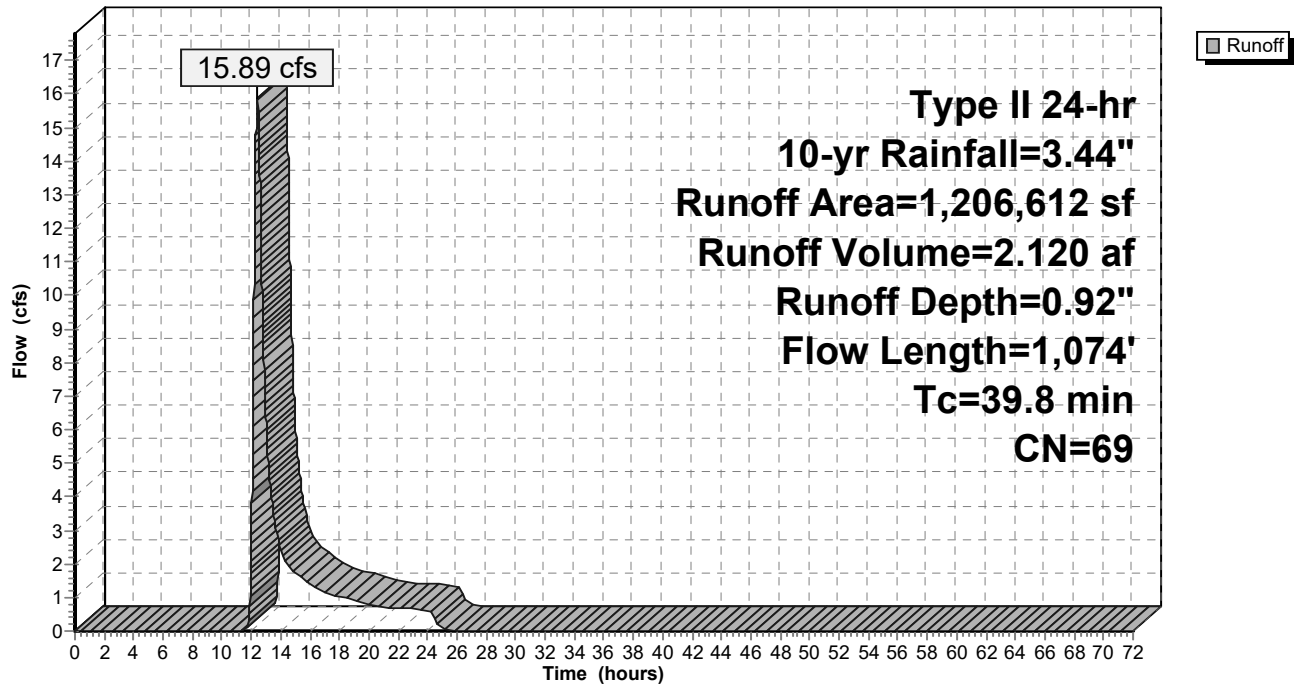


Subcatchment 34S: DA-1b



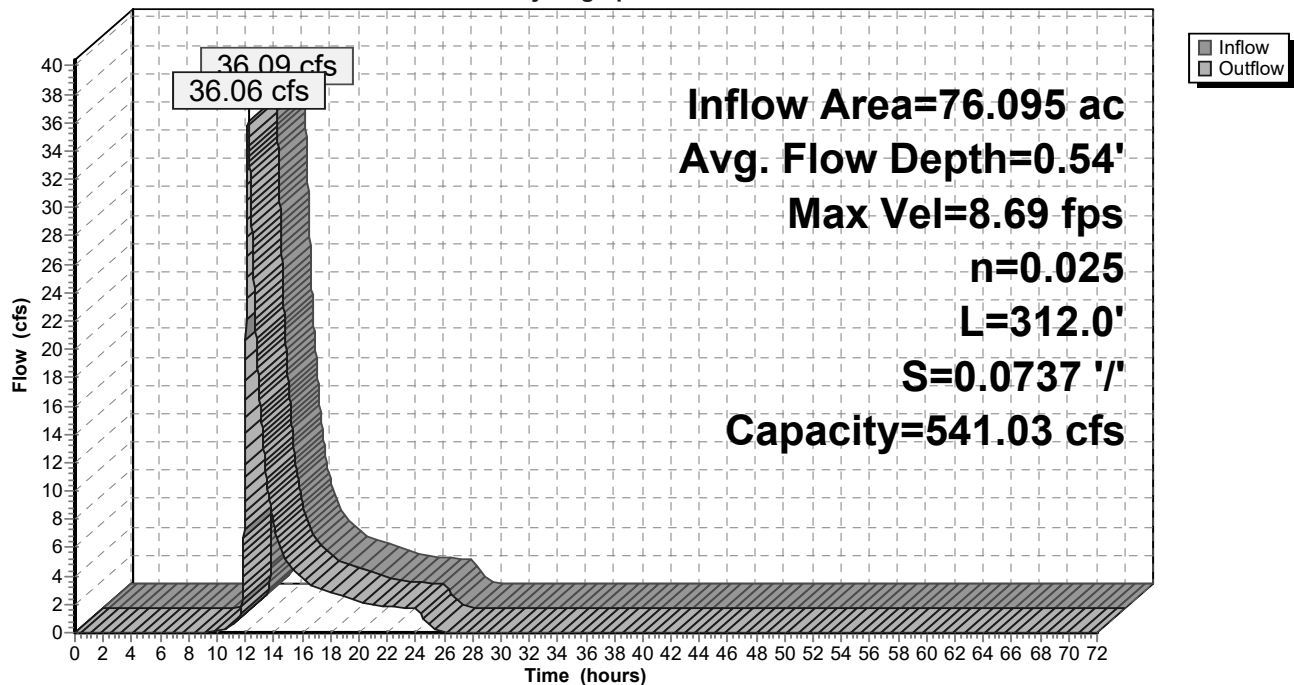
Subcatchment 9S: EXDA-1a

Hydrograph

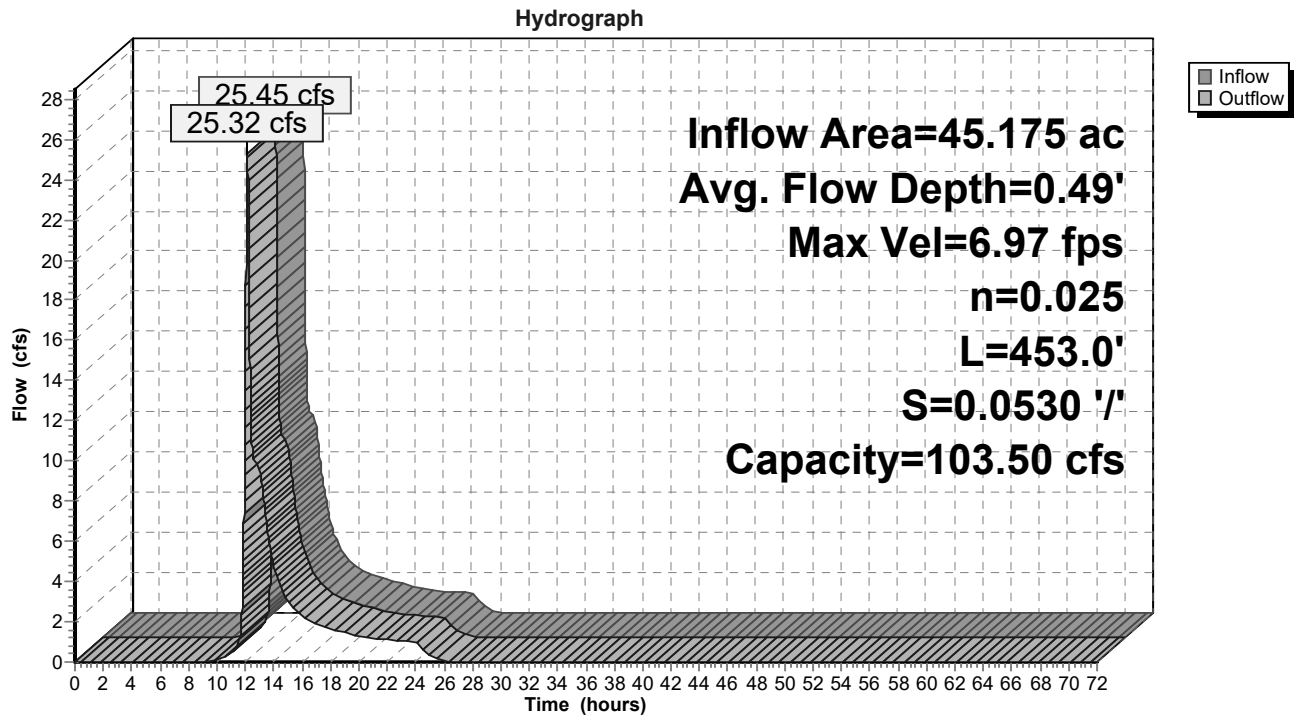


Reach 24R: Swale 3 (Ex. Cond)

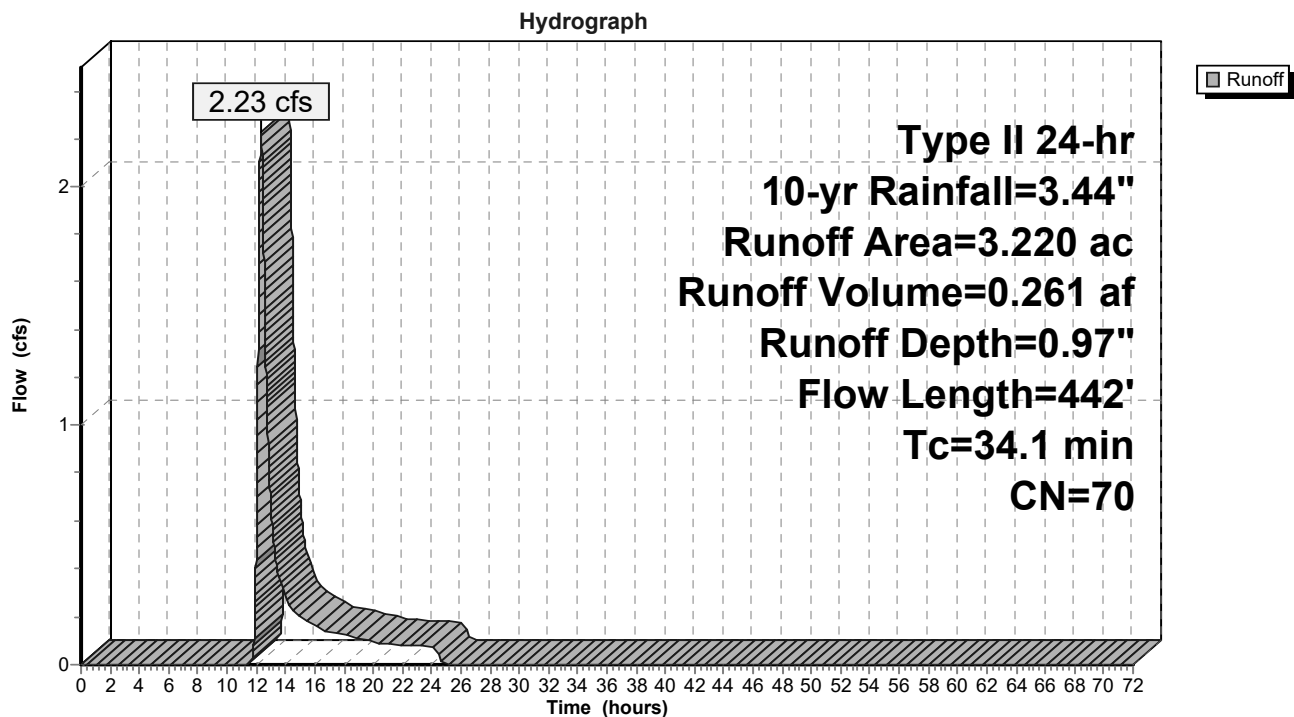
Hydrograph



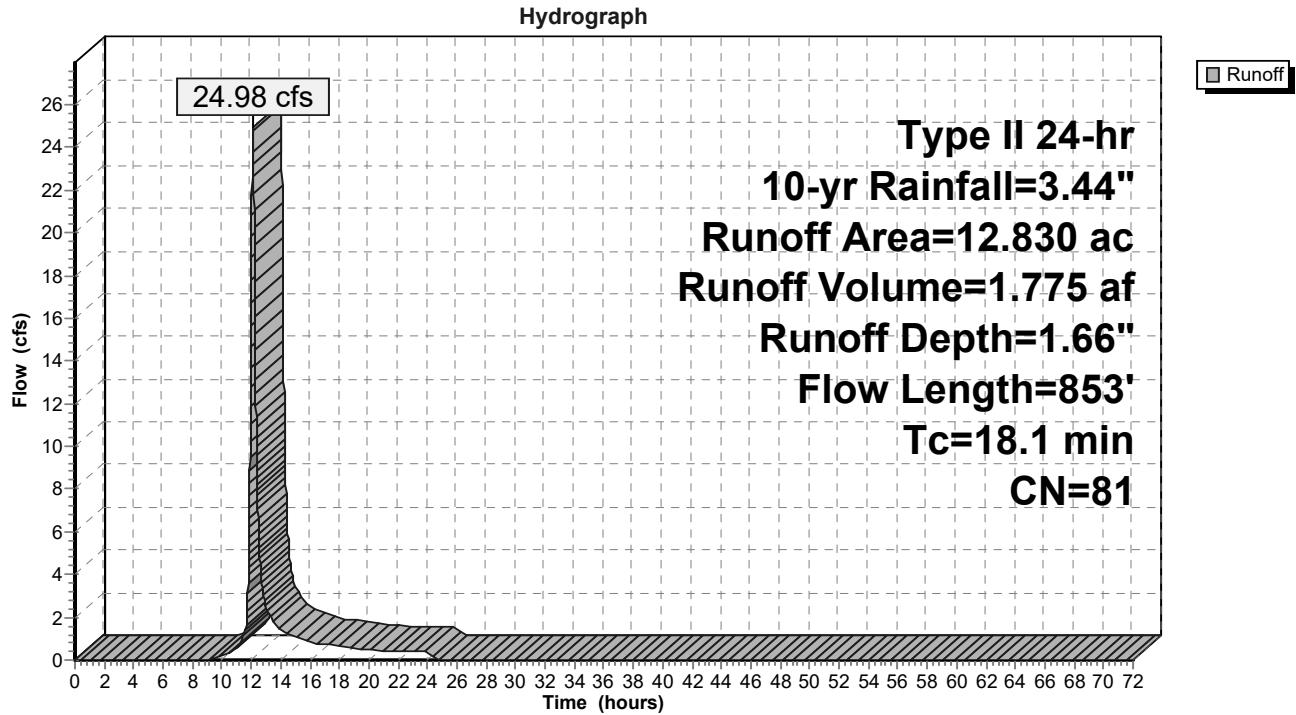
Reach 30R: Swale 1 (Ex. Cond)



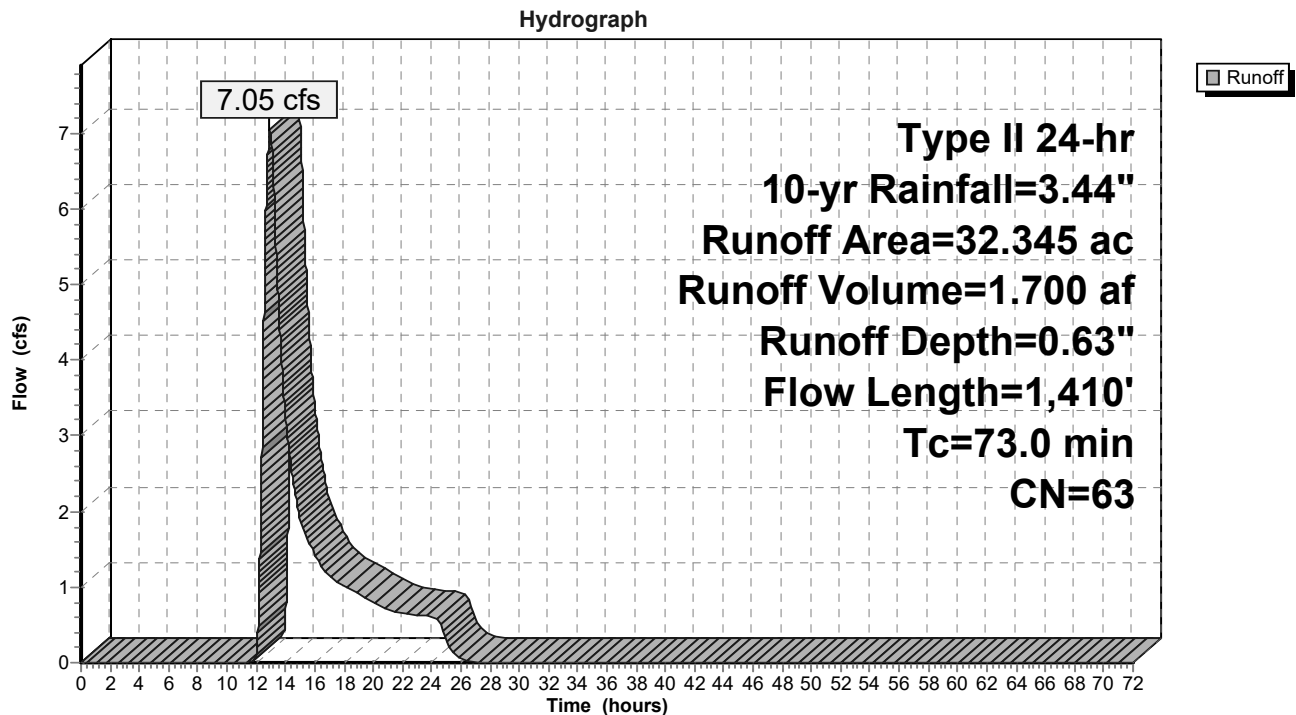
Subcatchment 31S: DA-1c



Subcatchment 33S: DA-1d

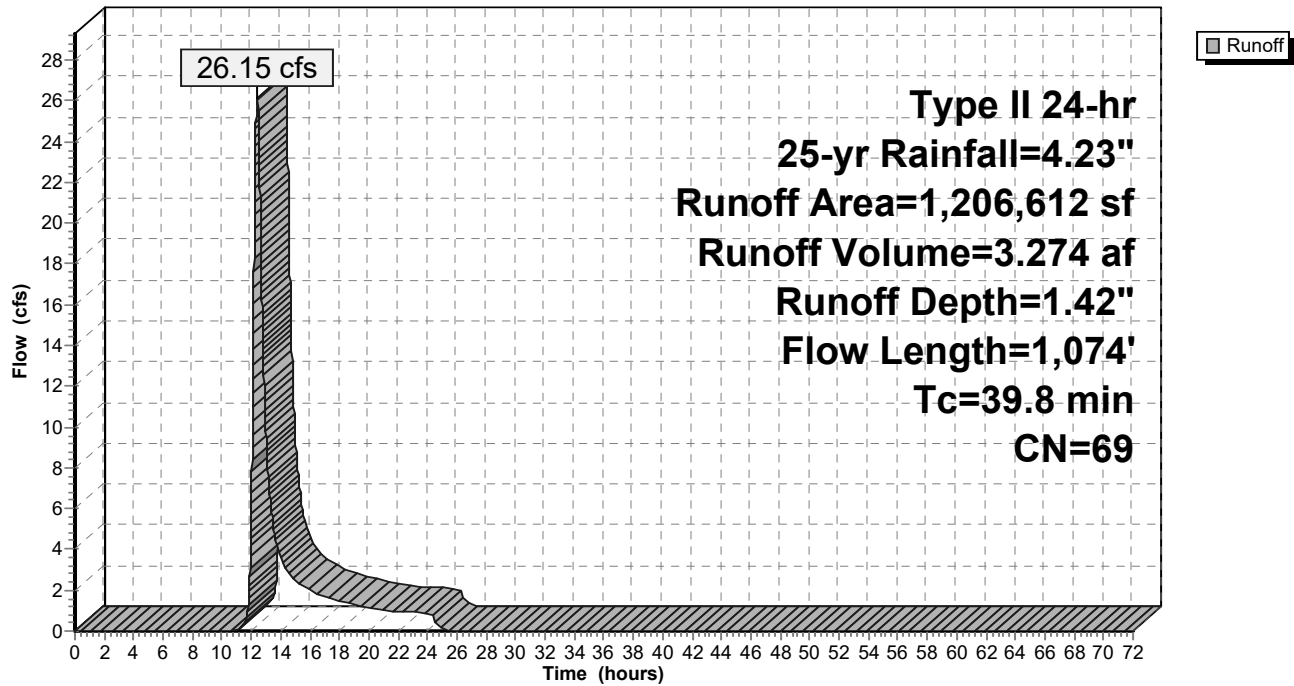


Subcatchment 34S: DA-1b

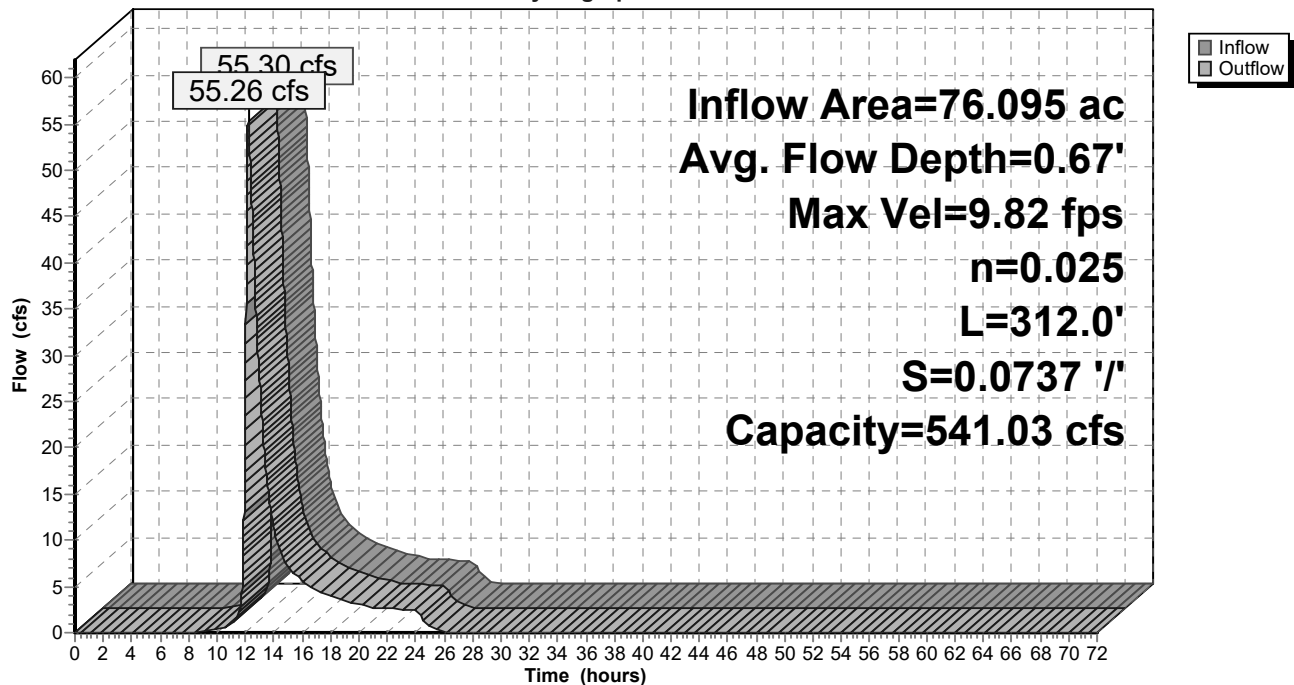


Subcatchment 9S: EXDA-1a

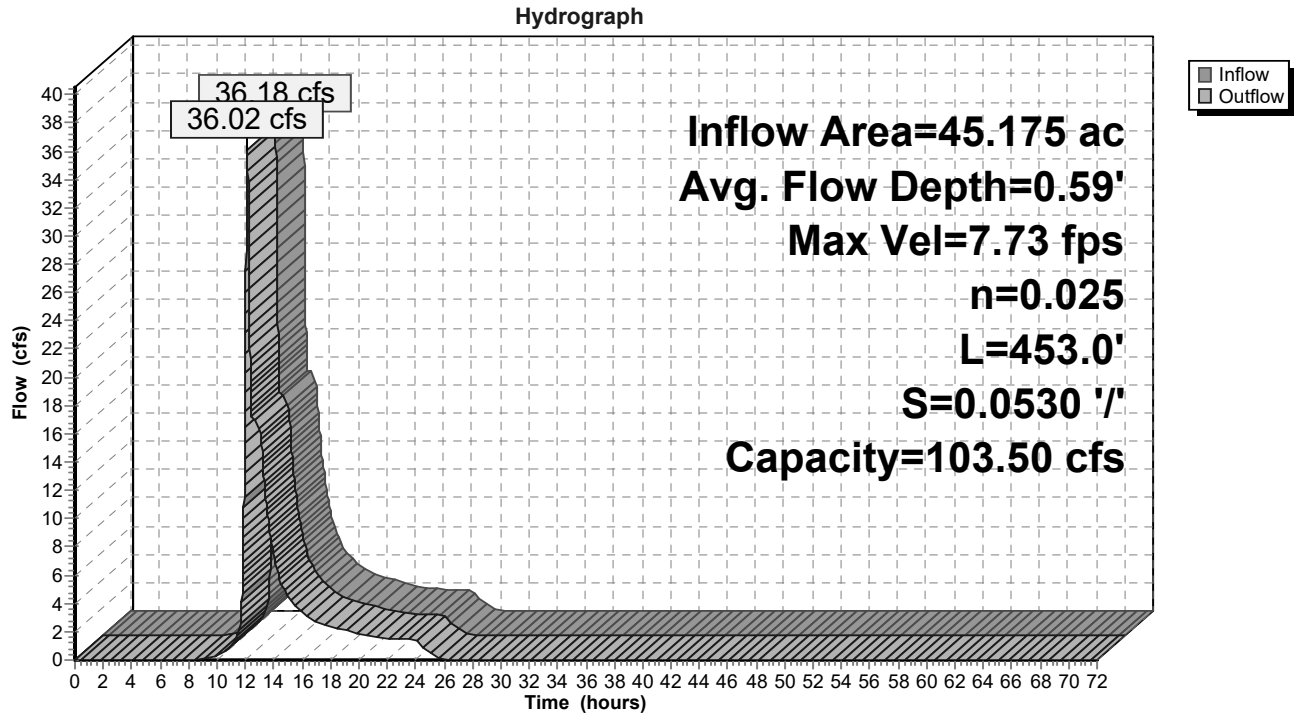
Hydrograph

**Reach 24R: Swale 3 (Ex. Cond)**

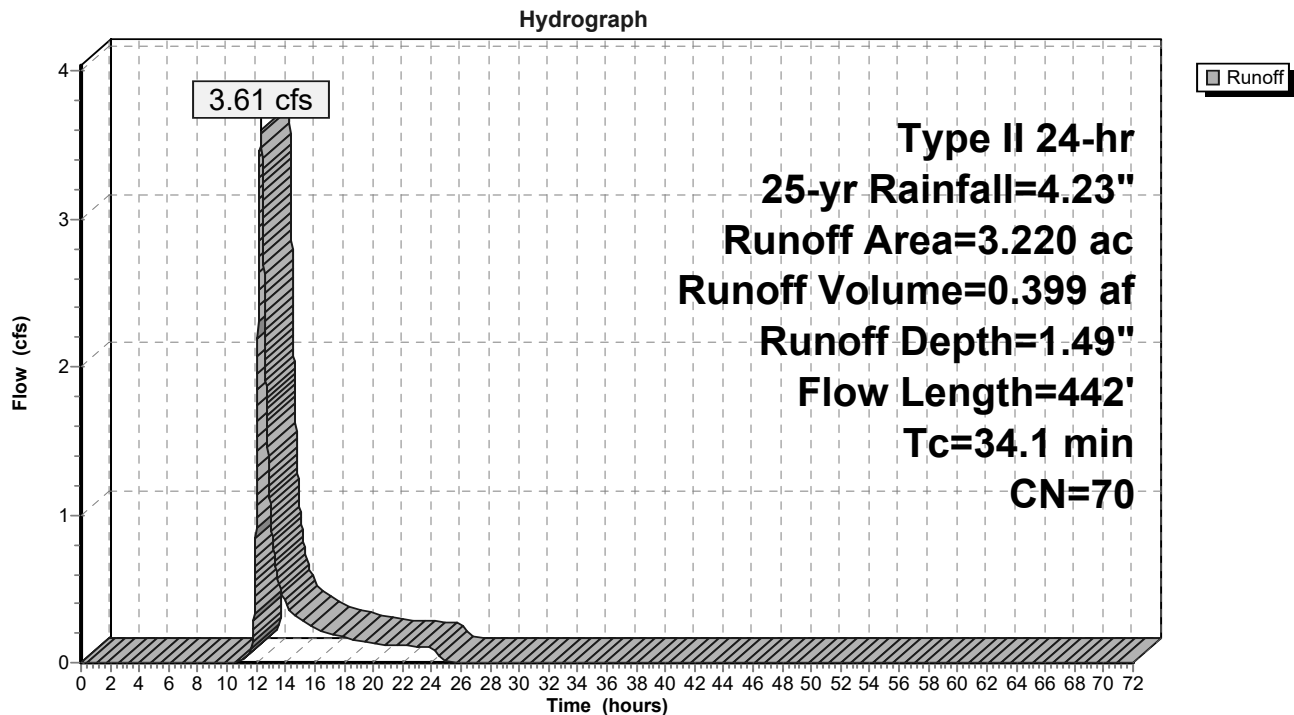
Hydrograph



Reach 30R: Swale 1 (Ex. Cond)

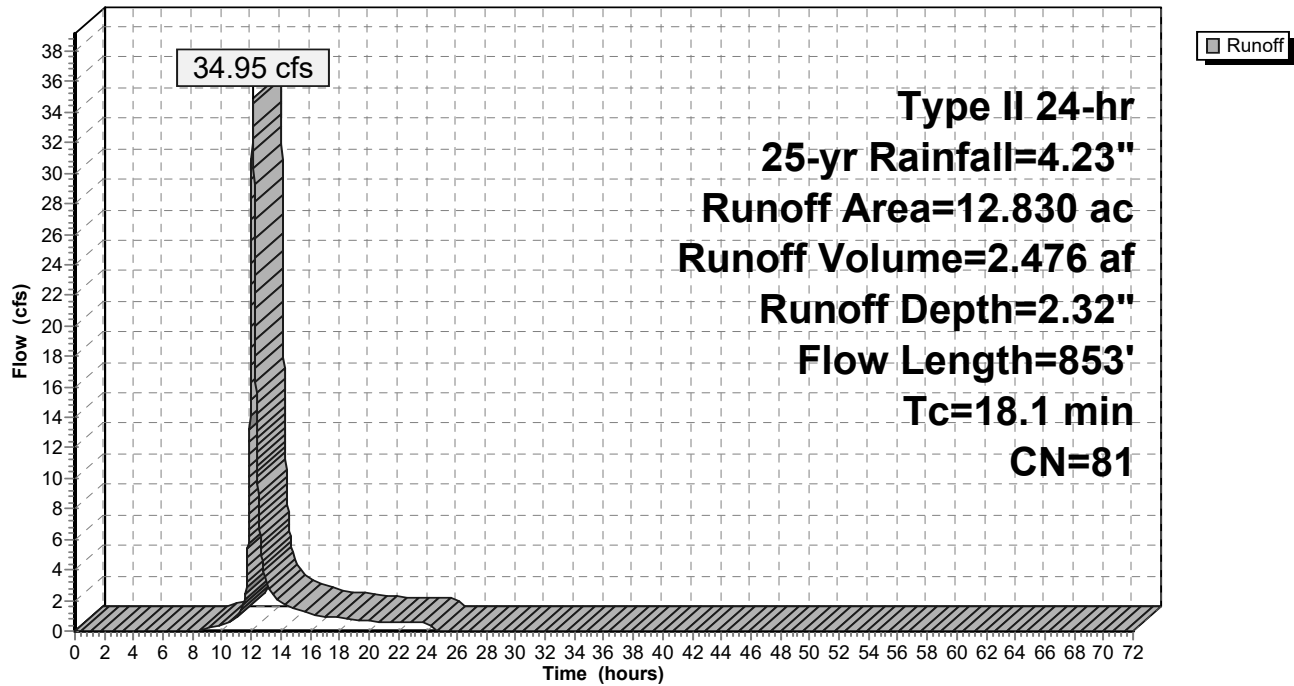


Subcatchment 31S: DA-1c



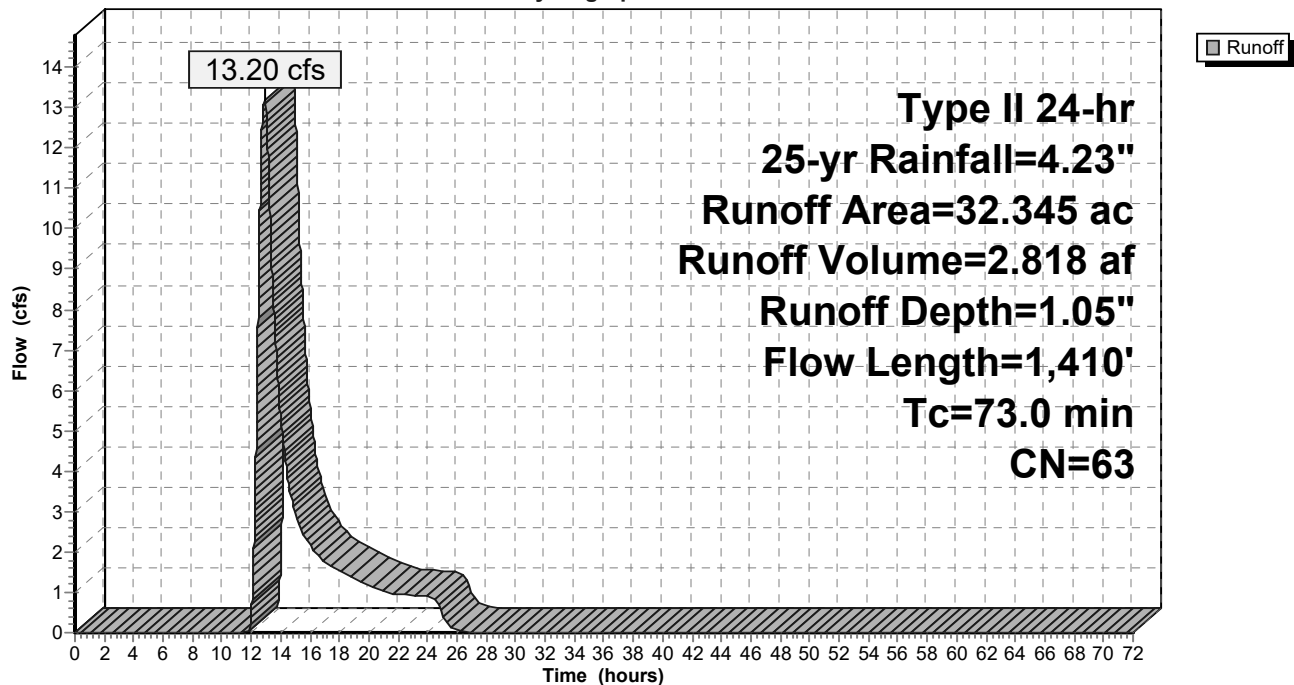
Subcatchment 33S: DA-1d

Hydrograph



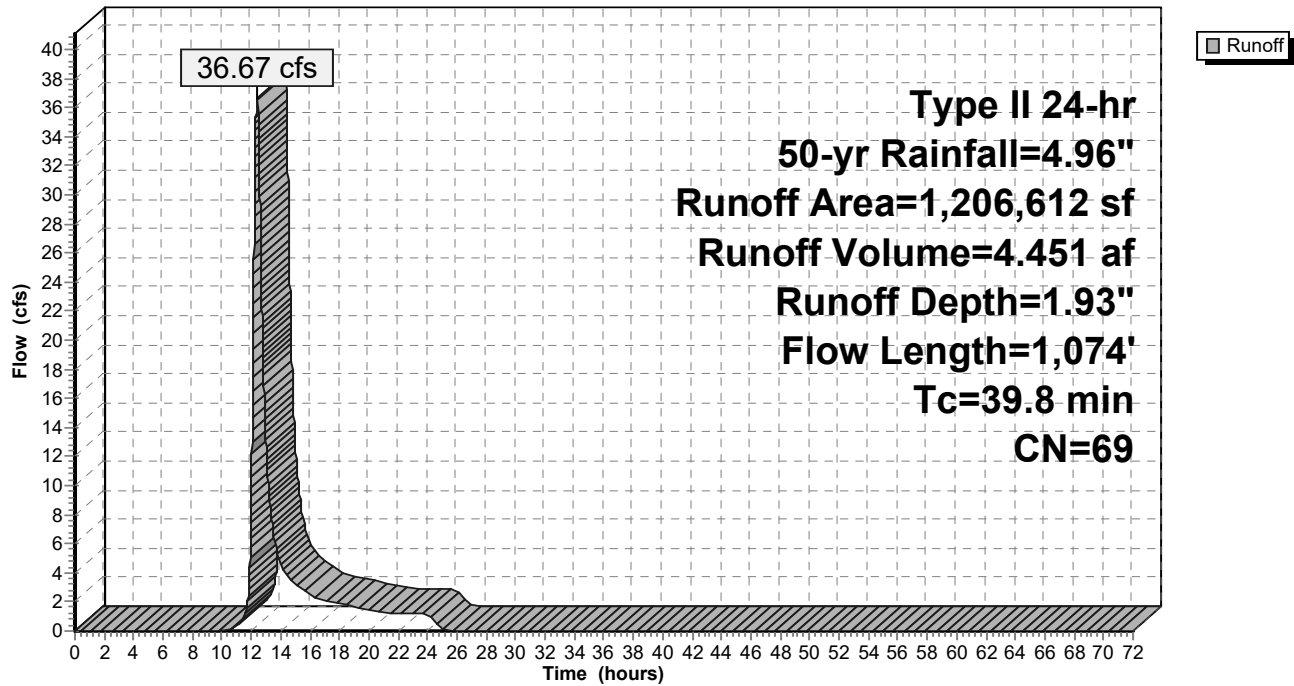
Subcatchment 34S: DA-1b

Hydrograph

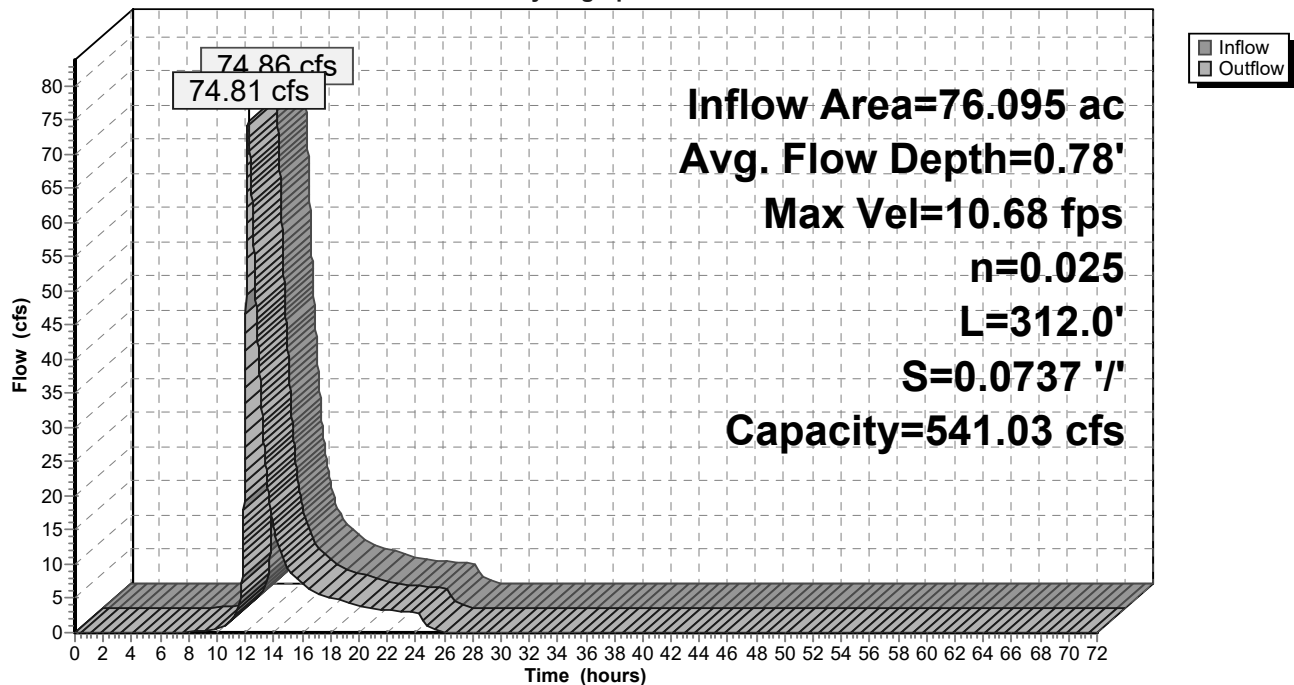


Subcatchment 9S: EXDA-1a

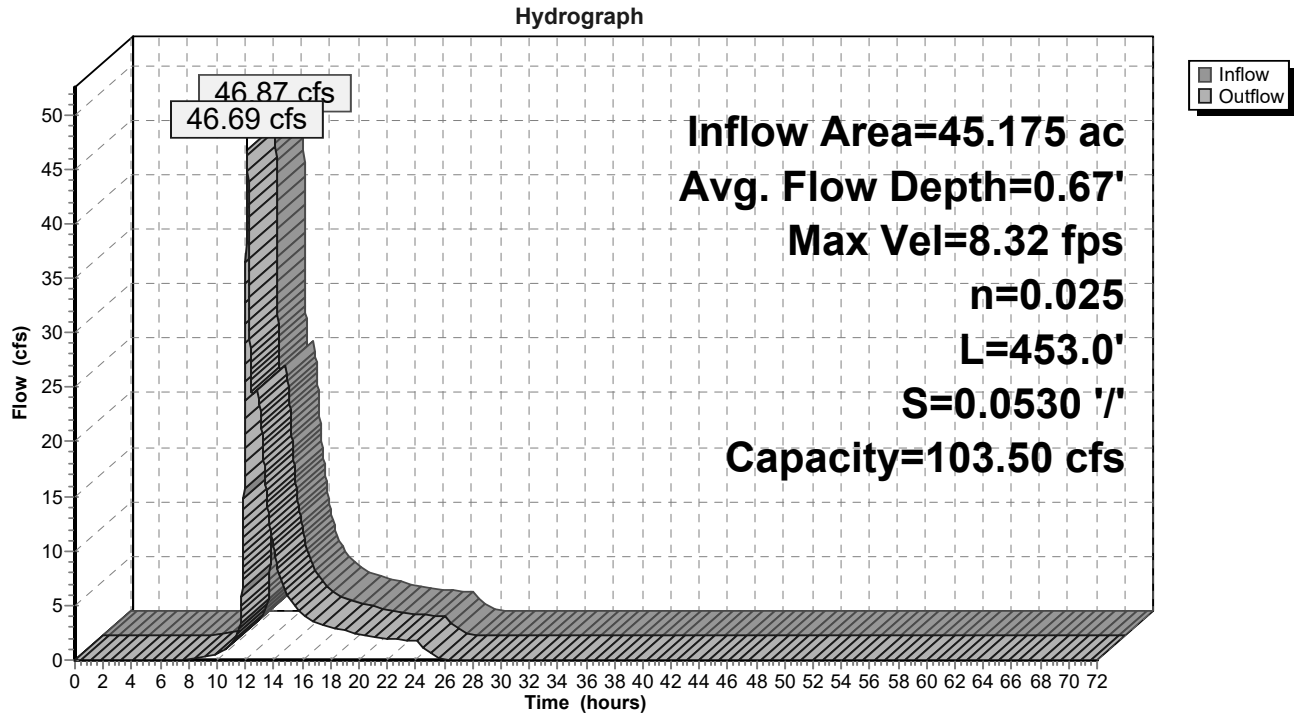
Hydrograph

**Reach 24R: Swale 3 (Ex. Cond)**

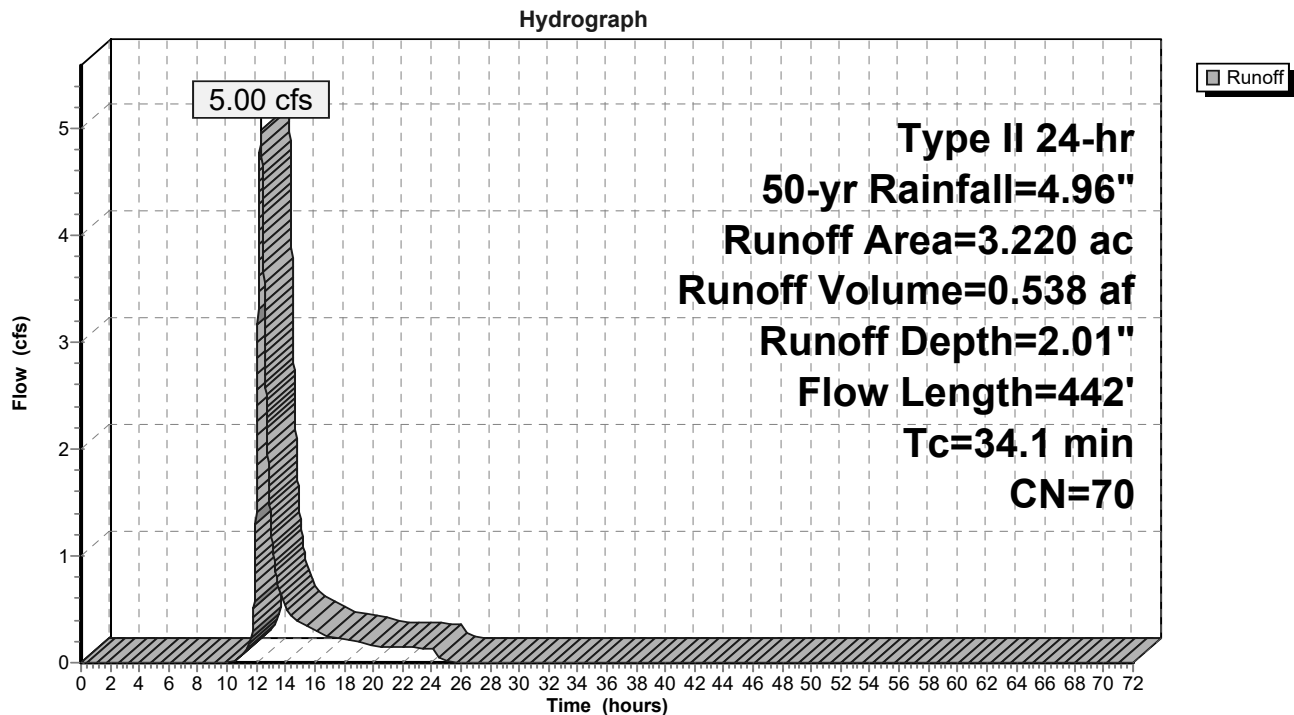
Hydrograph



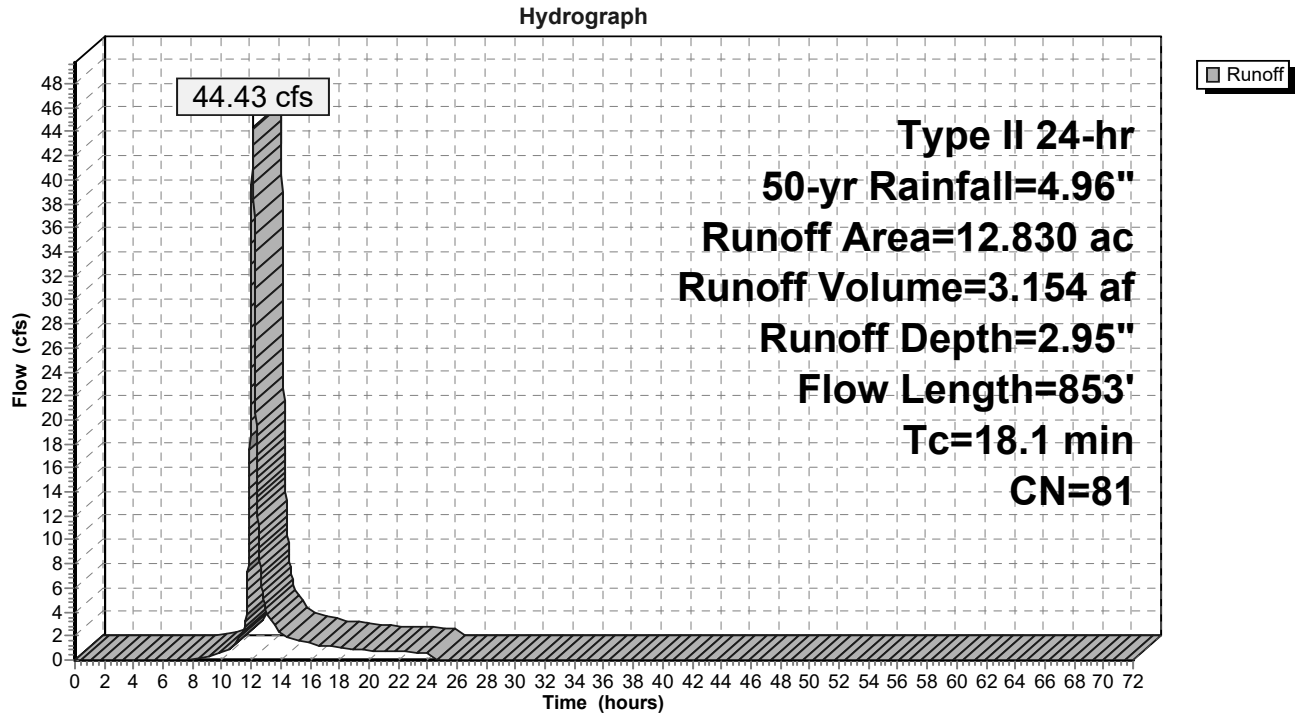
Reach 30R: Swale 1 (Ex. Cond)



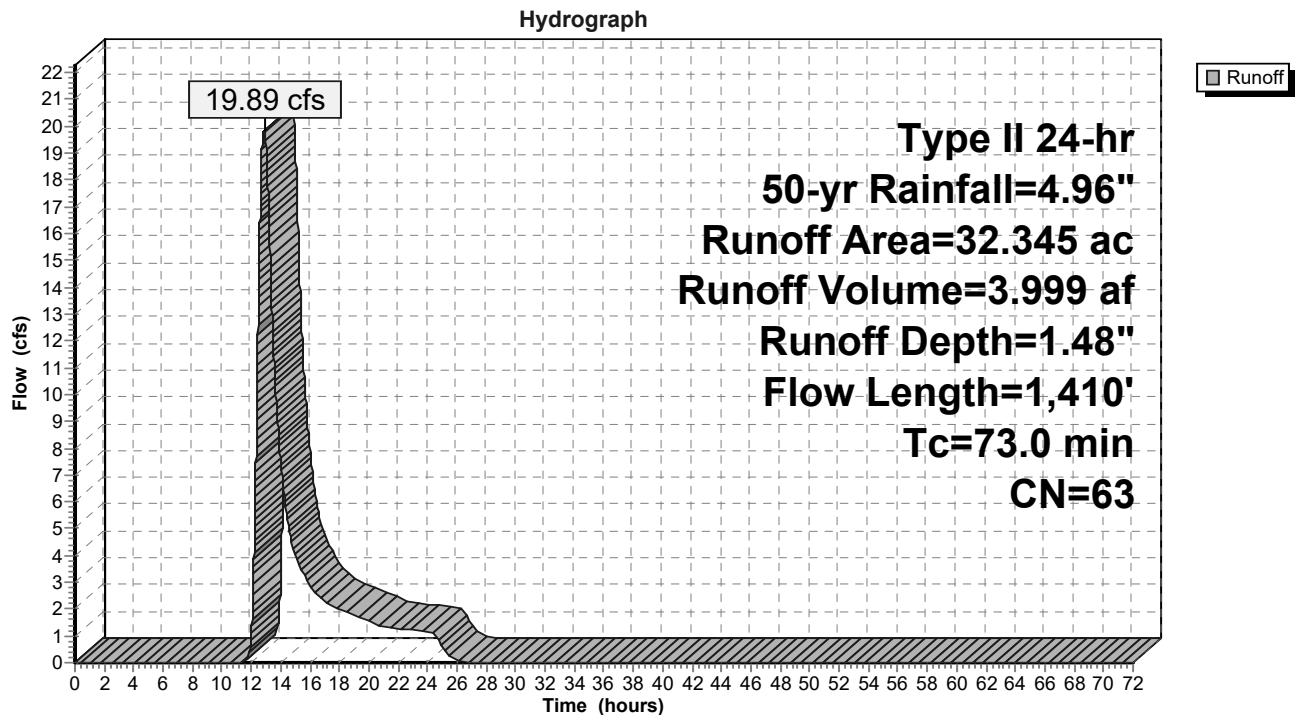
Subcatchment 31S: DA-1c



Subcatchment 33S: DA-1d

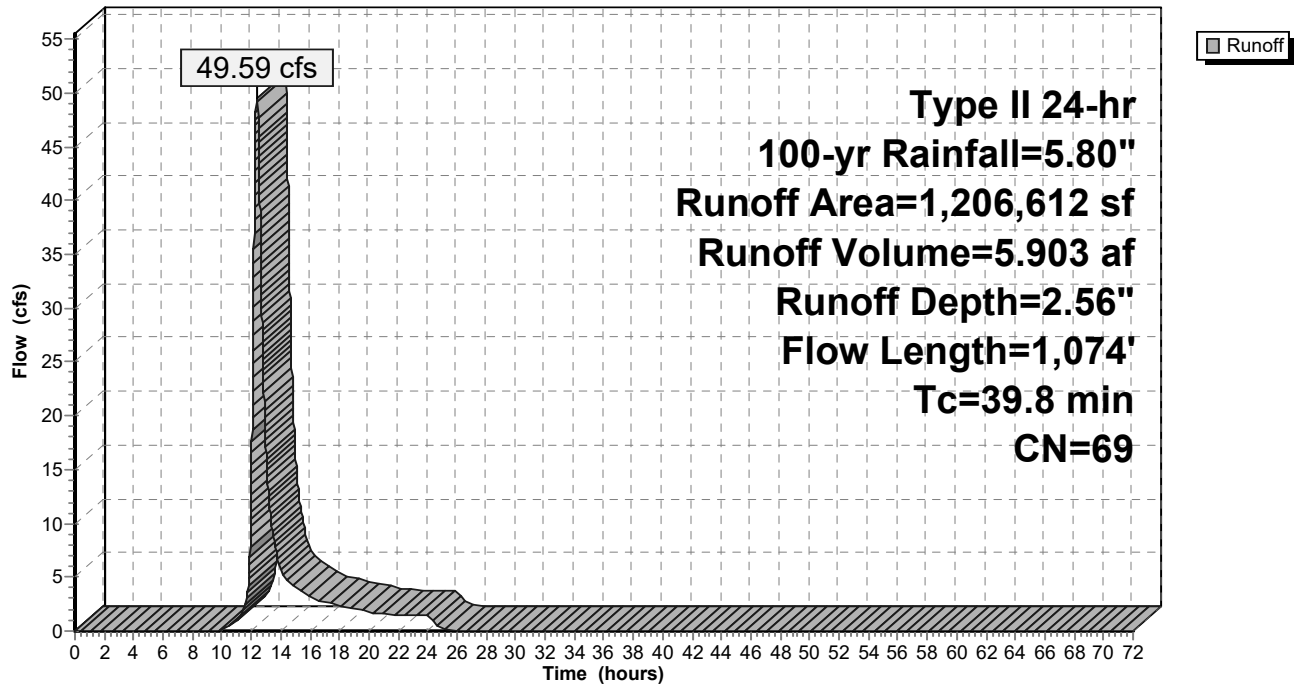


Subcatchment 34S: DA-1b



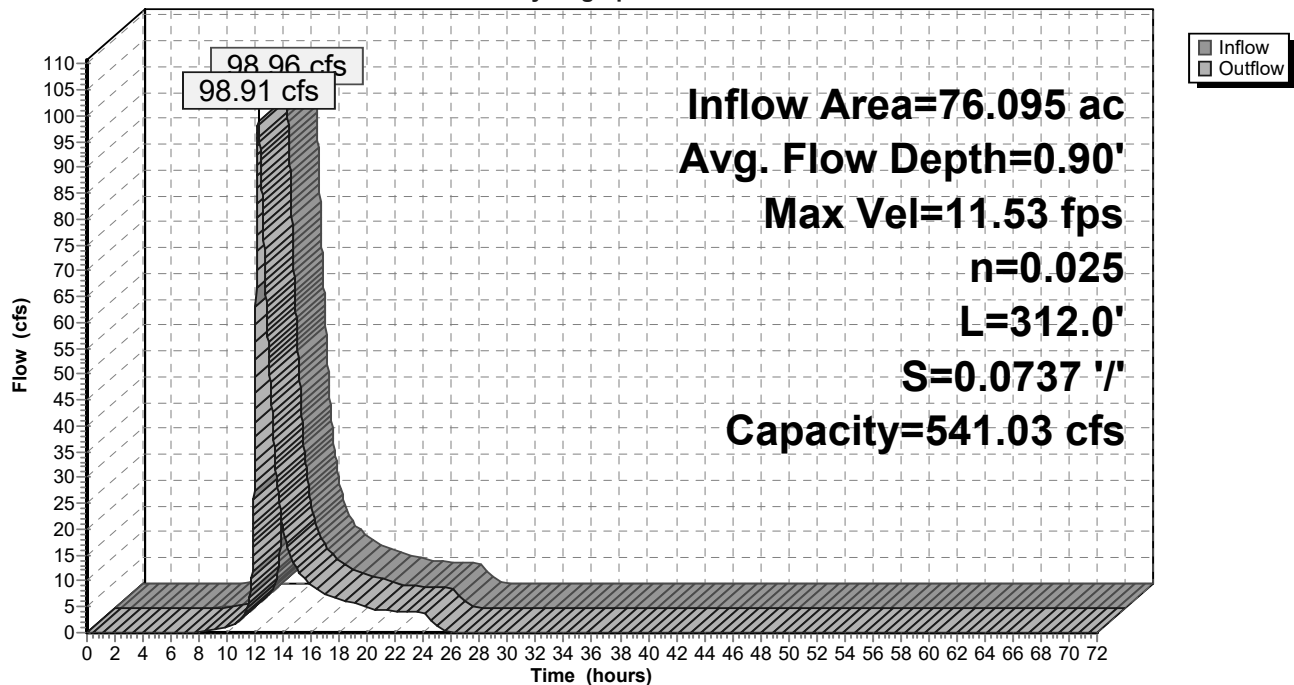
Subcatchment 9S: EXDA-1a

Hydrograph

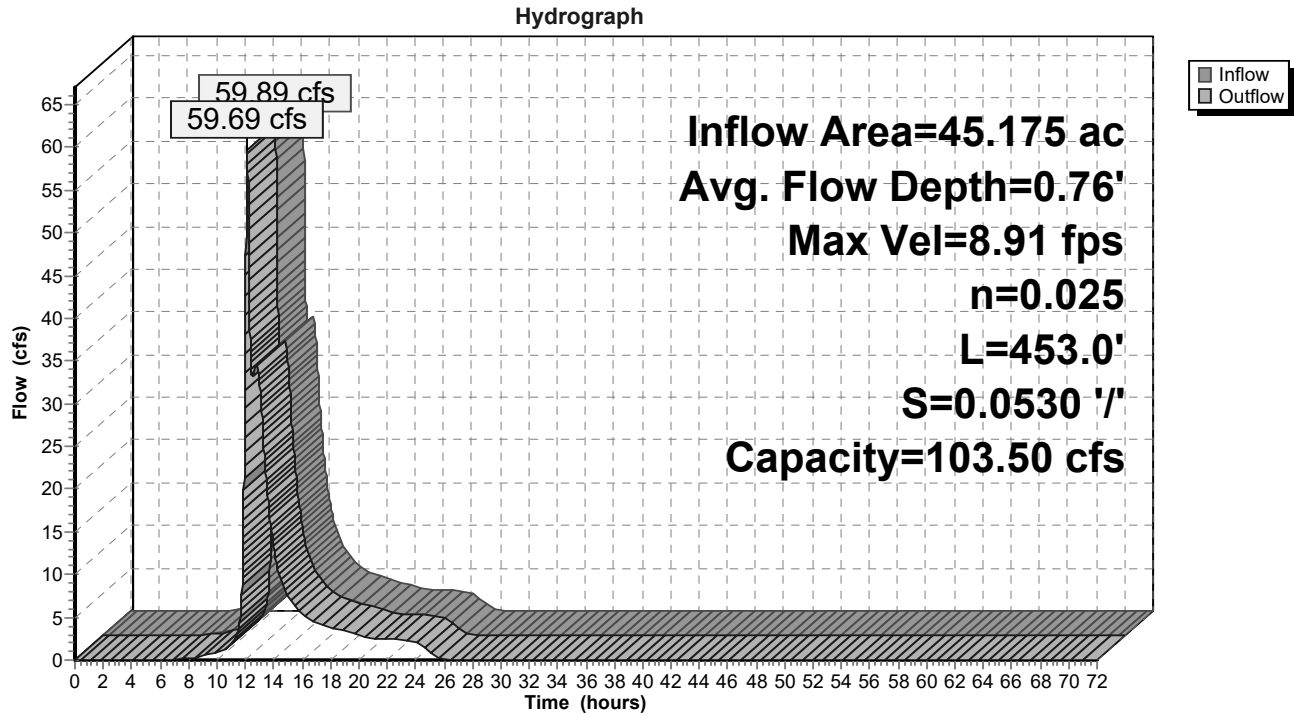


Reach 24R: Swale 3 (Ex. Cond)

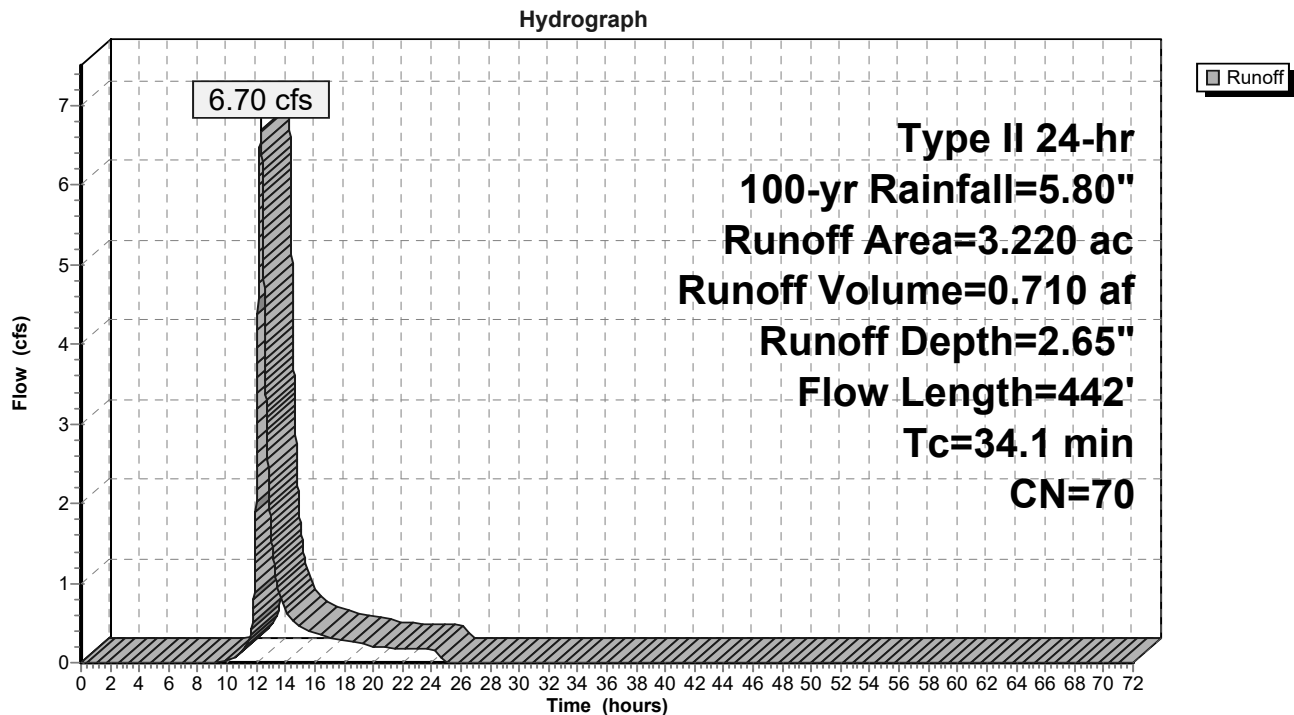
Hydrograph



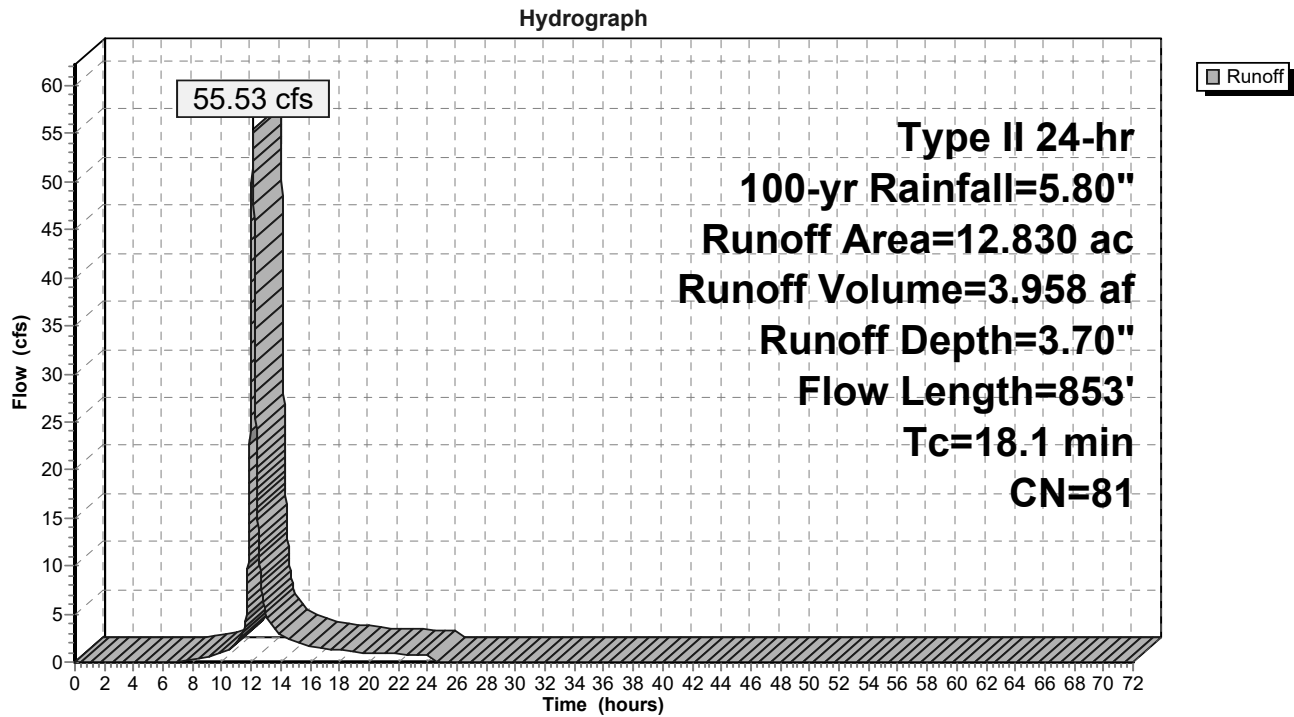
Reach 30R: Swale 1 (Ex. Cond)



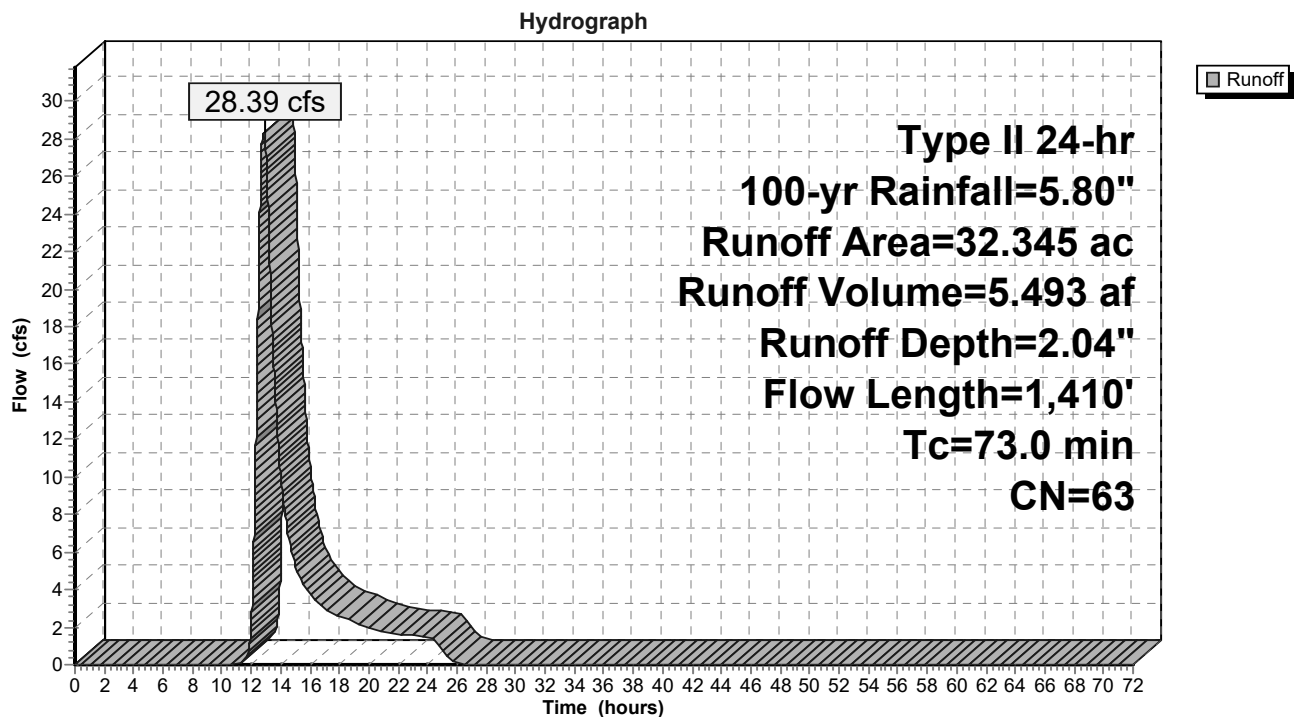
Subcatchment 31S: DA-1c



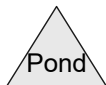
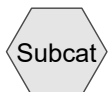
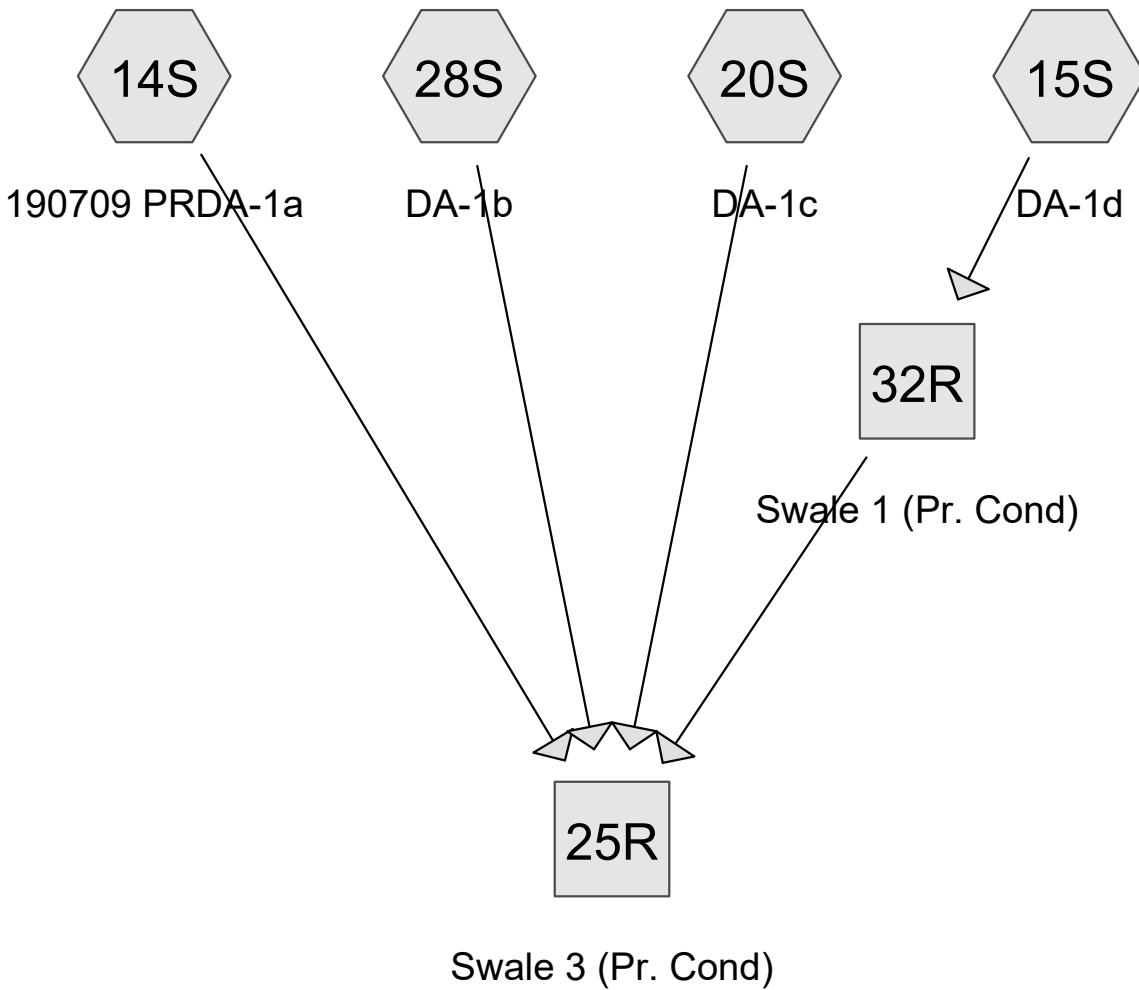
Subcatchment 33S: DA-1d



Subcatchment 34S: DA-1b



APPENDIX D



17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 2

Summary for Subcatchment 14S: 190709 PRDA-1a

Runoff = 57.70 cfs @ 12.42 hrs, Volume= 7.020 af, Depth= 3.11"

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
3.959	55	Woods, Good, HSG B
16.790	74	>75% Grass cover, Good, HSG C
* 3.873	98	Proposed Subject Site Impervious
* 0.300	98	Permanent Pool of Wet Pond
2.144	70	Woods, Good, HSG C
27.066	75	Weighted Average
22.893		84.58% Pervious Area
4.173		15.42% 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
6.7	567	0.0405	1.41		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
42.2	1,180	Total			

Summary for Subcatchment 15S: DA-1d

Runoff = 55.53 cfs @ 12.10 hrs, Volume= 3.958 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
11.560	79	1 acre lots, 20% imp, HSG C
1.270	98	Paved parking, HSG C
12.830	81	Weighted Average
9.248		72.08% Pervious Area
3.582		27.92% Impervious Area

17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 3

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 20S: DA-1c

Runoff = 6.70 cfs @ 12.31 hrs, Volume= 0.710 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
3.220	70	Woods, Good, HSG C
3.220		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 Reach 25R: Swale 3 (Pr. Cond)

Inflow Area = 75.461 ac, 12.71% Impervious, Inflow Depth = 2.73" for 100-yr event
Inflow = 102.79 cfs @ 12.21 hrs, Volume= 17.181 af
Outflow = 102.79 cfs @ 12.22 hrs, Volume= 17.181 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= 11.65 fps, Min. Travel Time= 0.4 min
Avg. Velocity= 4.30 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2,752 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.92'
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'

17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 4

**Summary for Subcatchment 28S: DA-1b**

Runoff = 26.26 cfs @ 12.94 hrs, Volume= 5.493 af, Depth= 2.04"

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
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
57.1	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.39"
19.8	1,133	0.0364	0.95		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.9	408	0.0616	1.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
80.8	1,641	Total			

Summary for Reach 32R: Swale 1 (Pr. Cond)

Inflow Area = 12.830 ac, 27.92% Impervious, Inflow Depth = 3.70" for 100-yr event
Inflow = 55.53 cfs @ 12.10 hrs, Volume= 3.958 af
Outflow = 55.36 cfs @ 12.13 hrs, Volume= 3.958 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= 2,877 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 1.00' Flow Area= 10.0 sf, Capacity= 103.50 cfs

17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 5

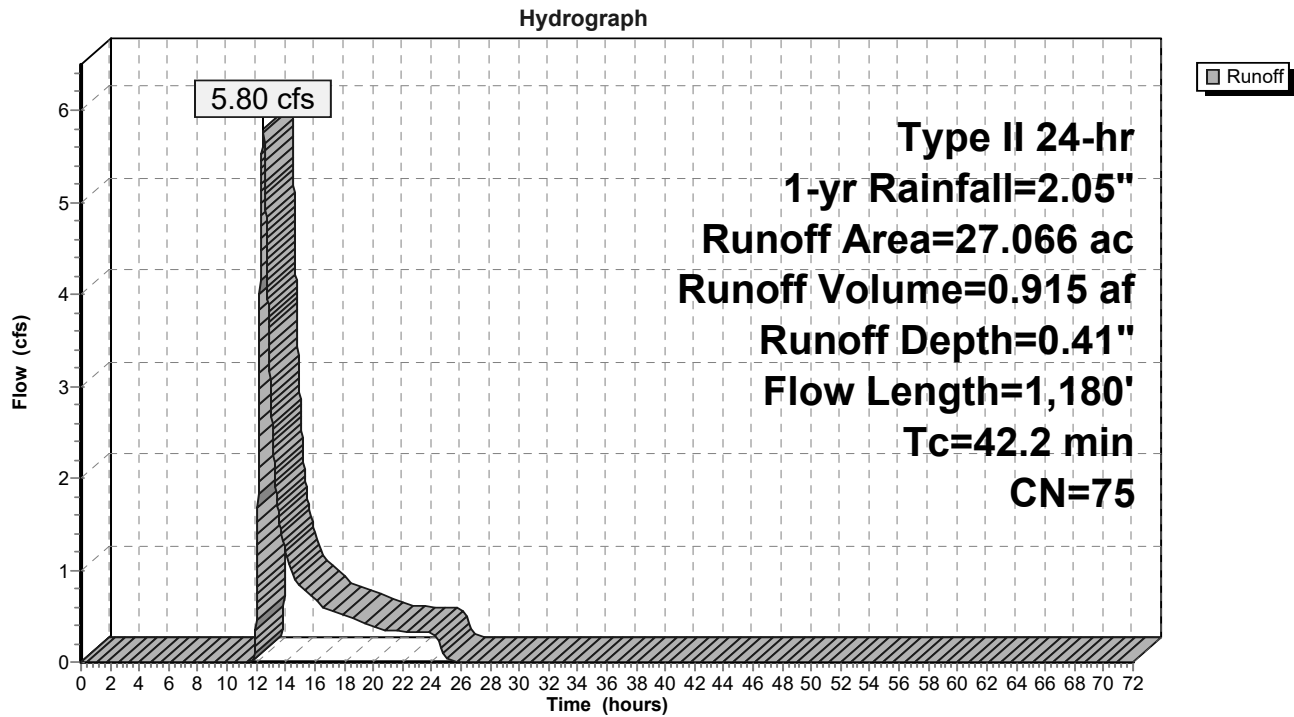
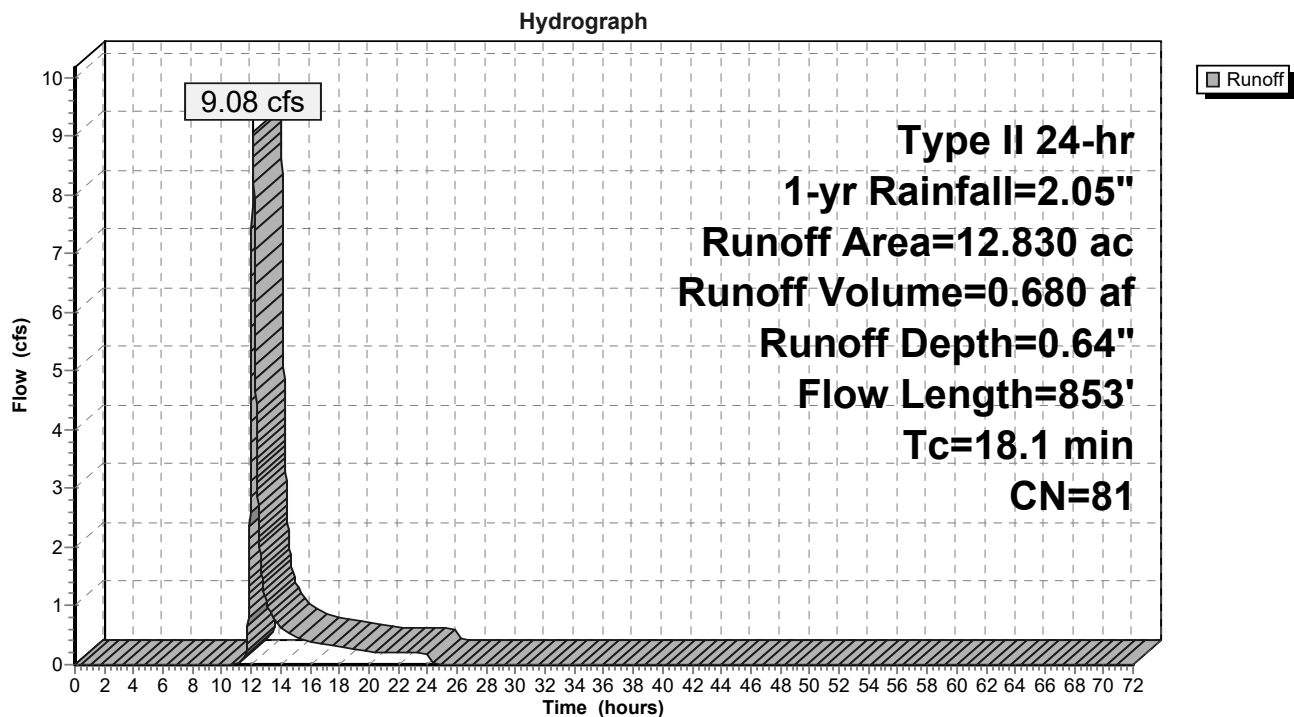
5.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 5.0 '/' Top Width= 15.00'

Length= 453.0' Slope= 0.0530 '/'

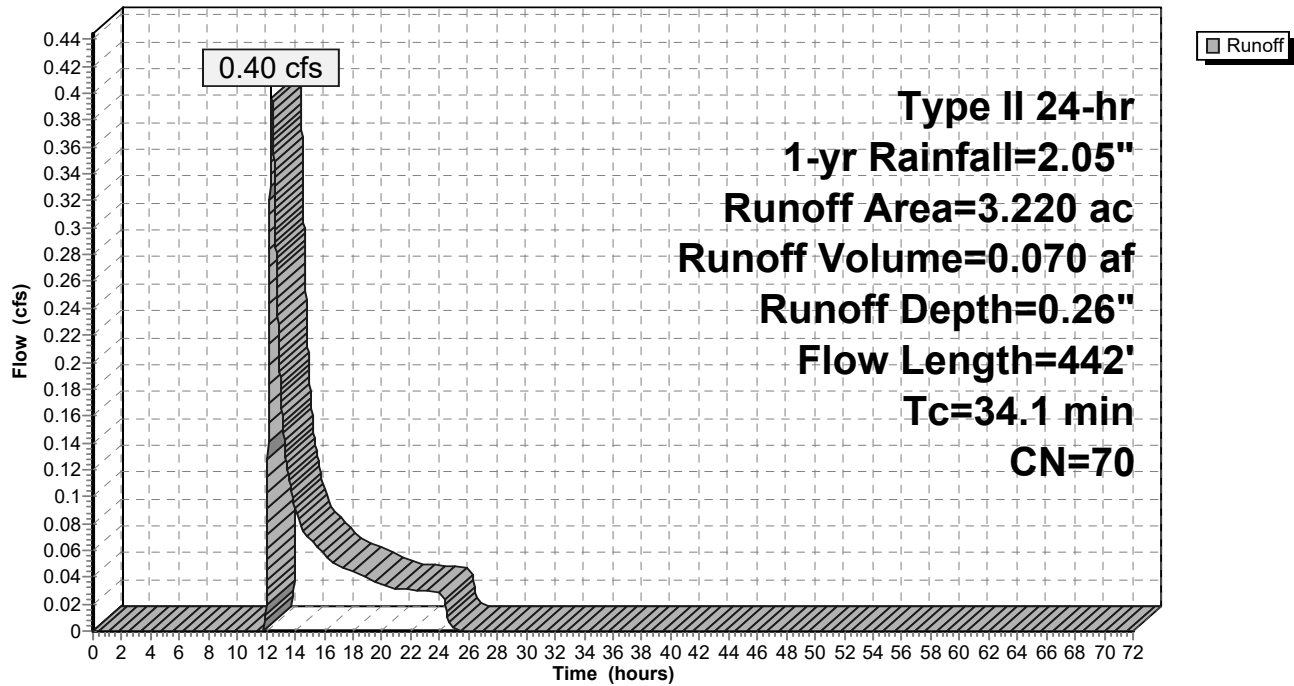
Inlet Invert= 680.00', Outlet Invert= 656.00'



Subcatchment 14S: 190709 PRDA-1a**Subcatchment 15S: DA-1d**

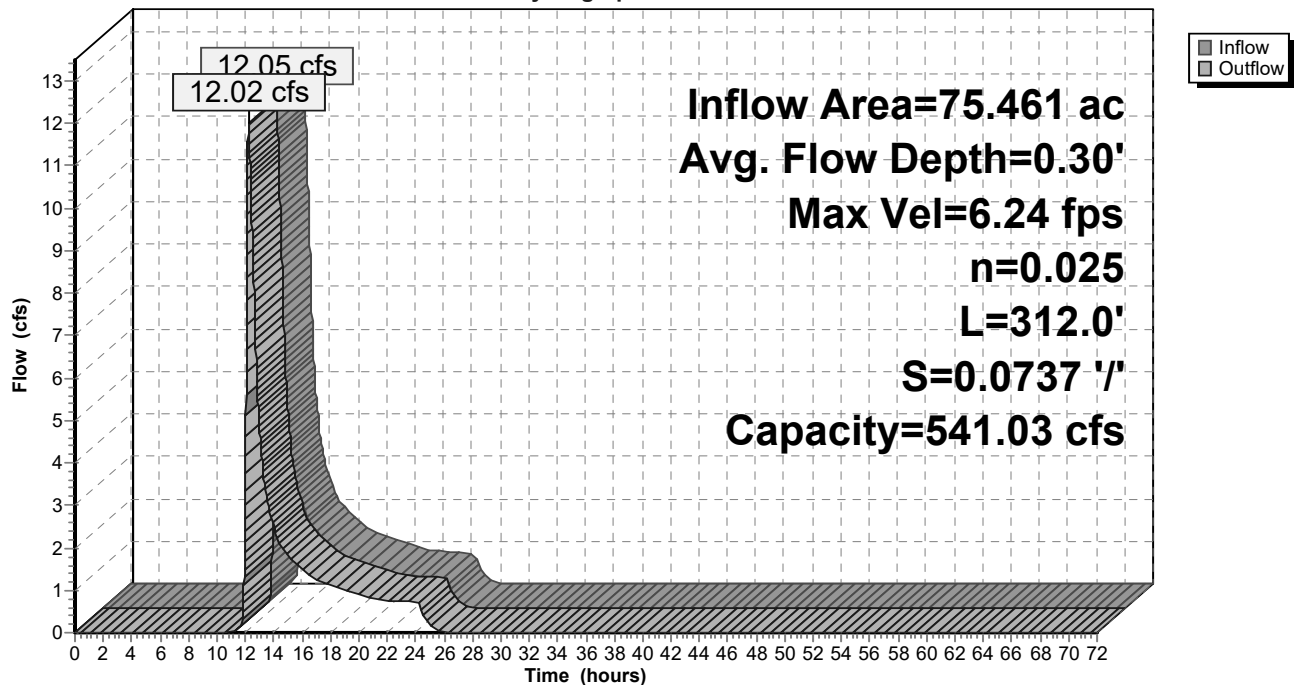
Subcatchment 20S: DA-1c

Hydrograph

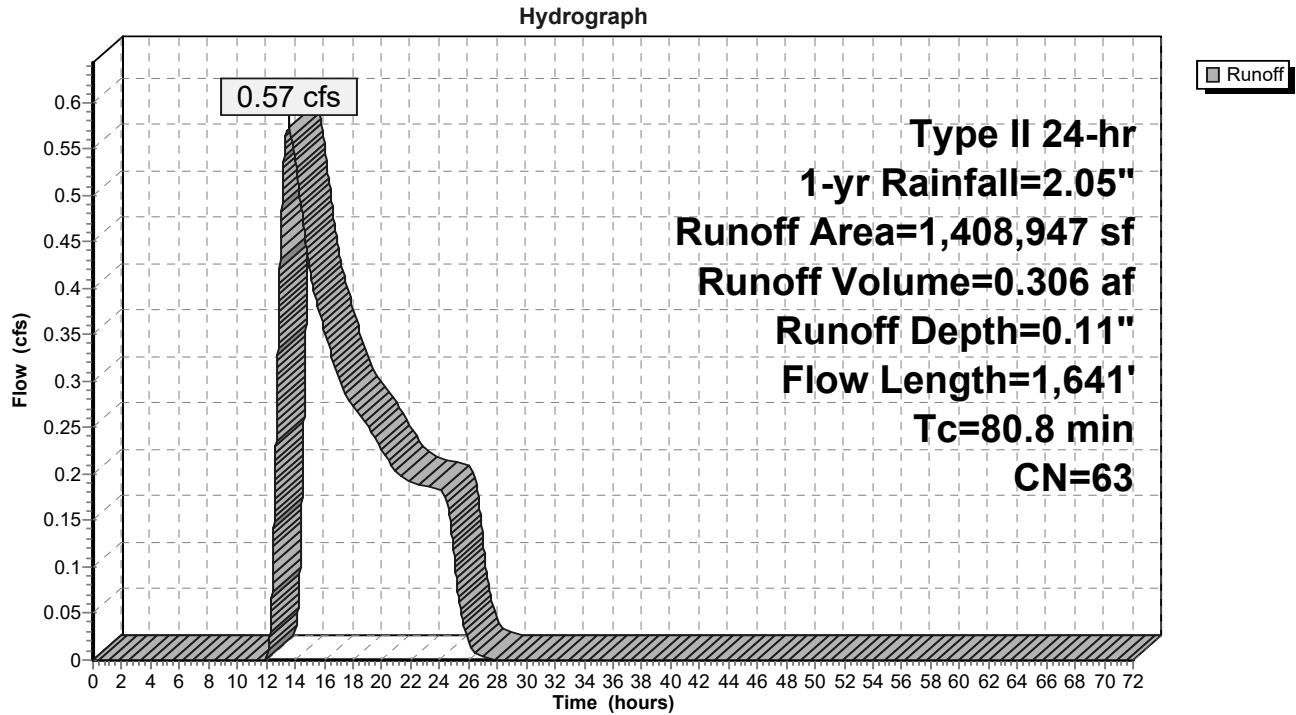


Reach 25R: Swale 3 (Pr. Cond)

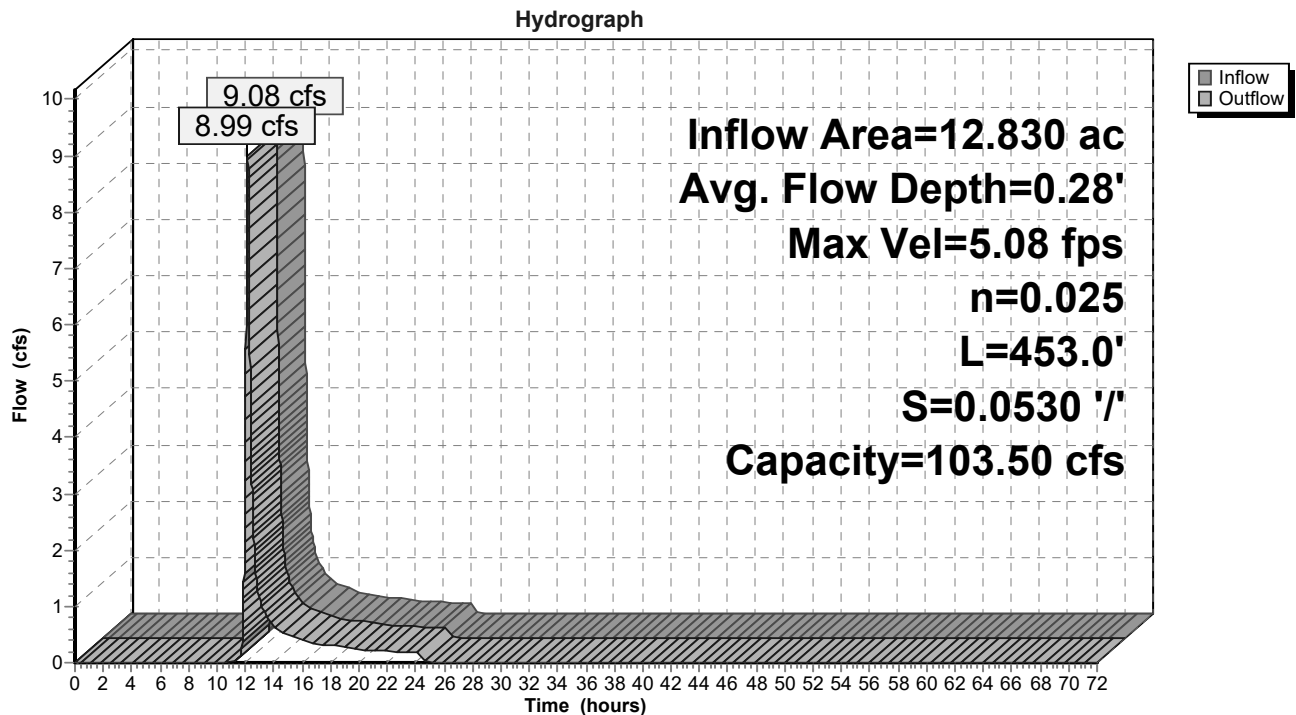
Hydrograph



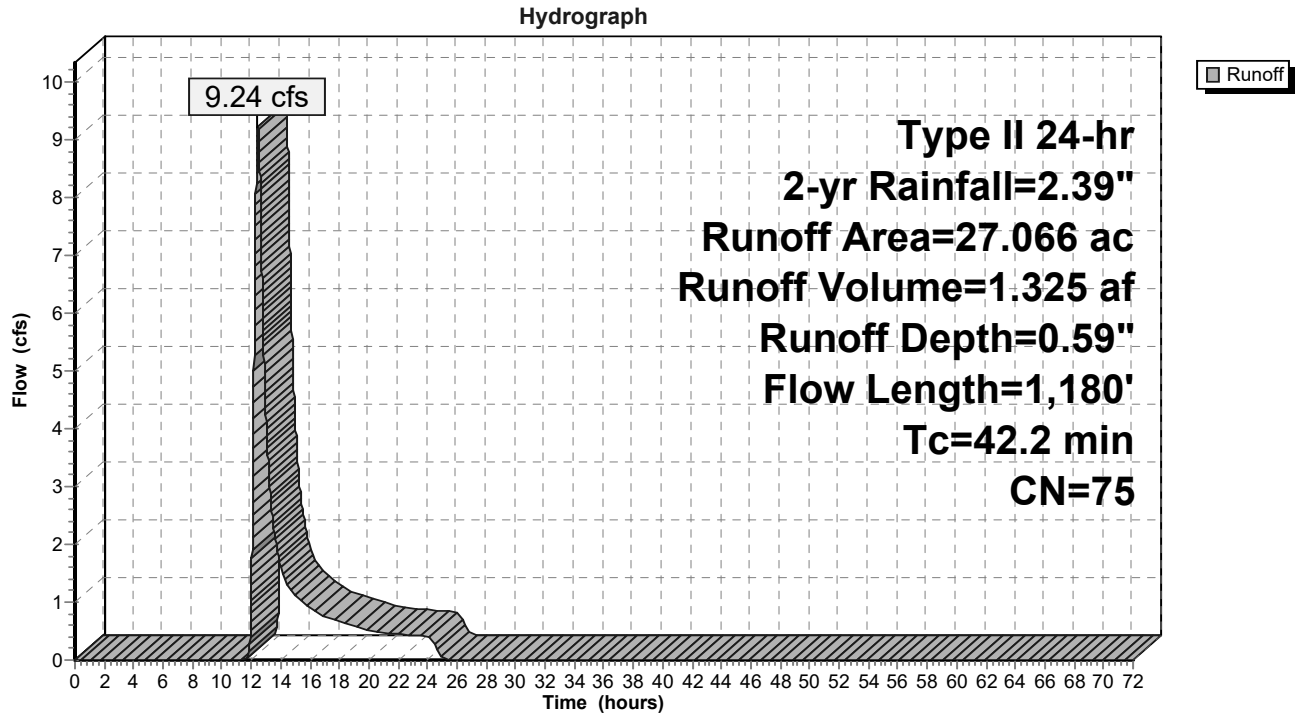
Subcatchment 28S: DA-1b



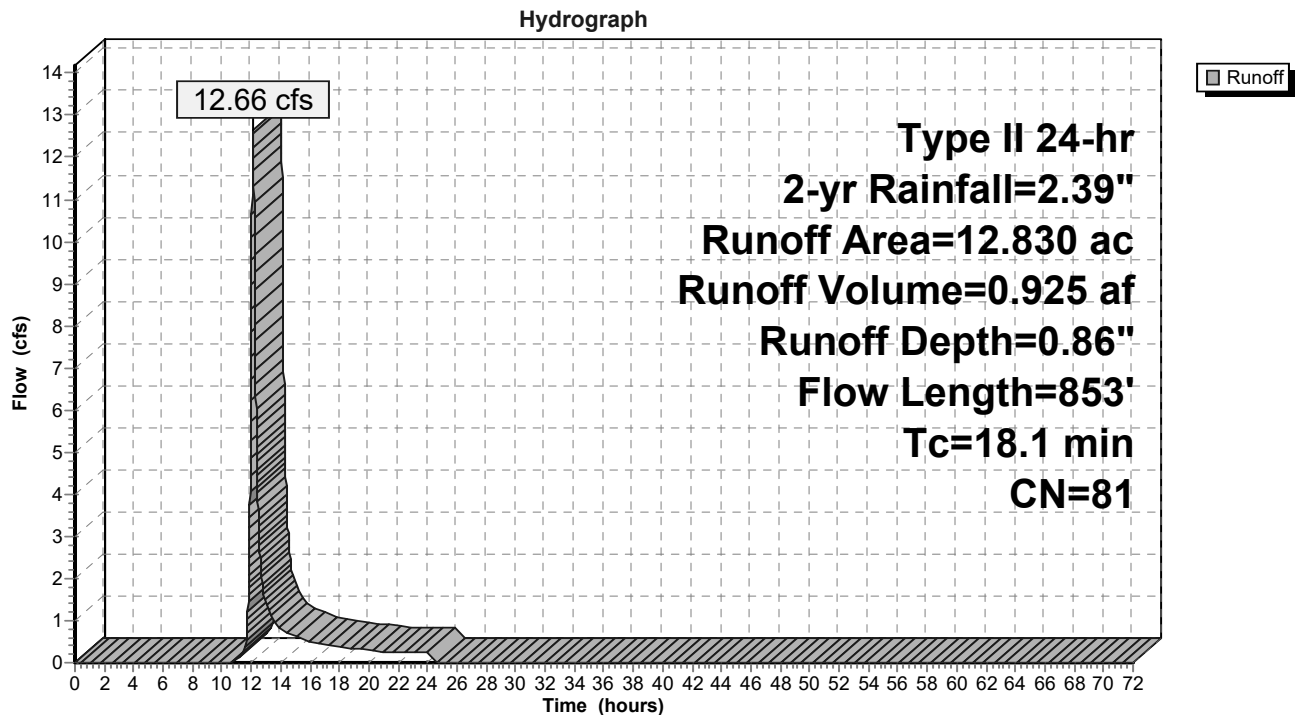
Reach 32R: Swale 1 (Pr. Cond)



Subcatchment 14S: 190709 PRDA-1a

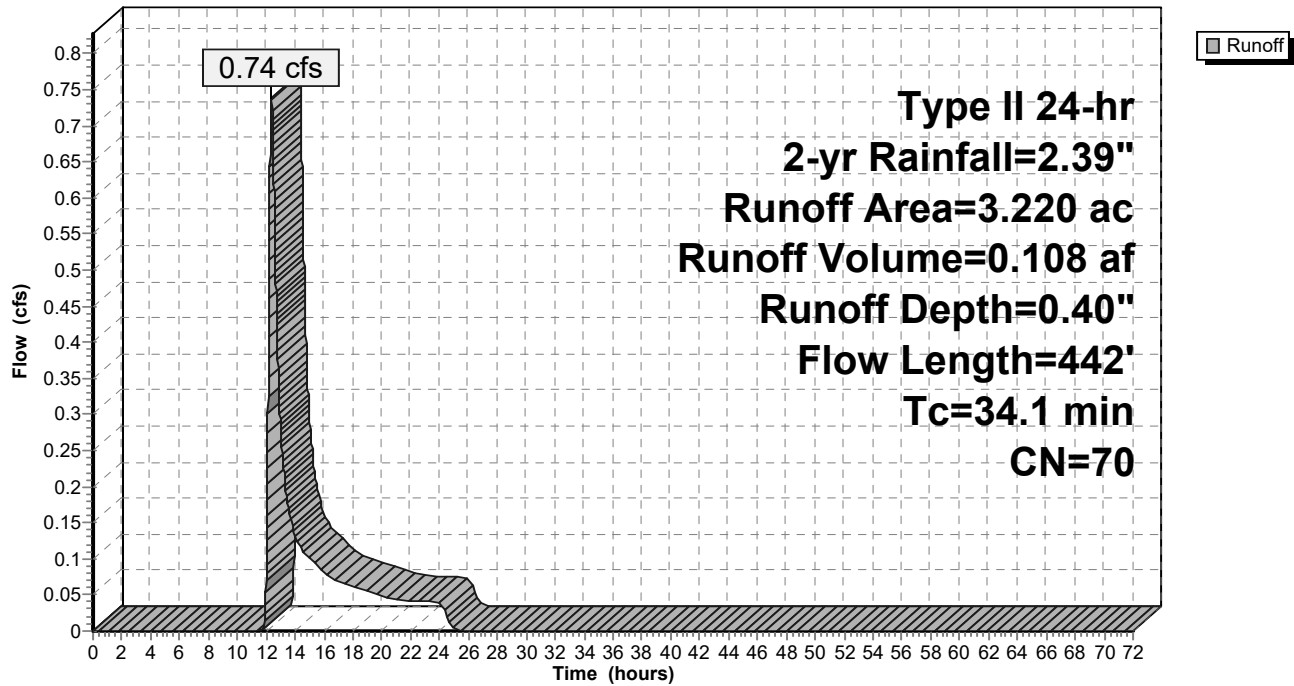


Subcatchment 15S: DA-1d



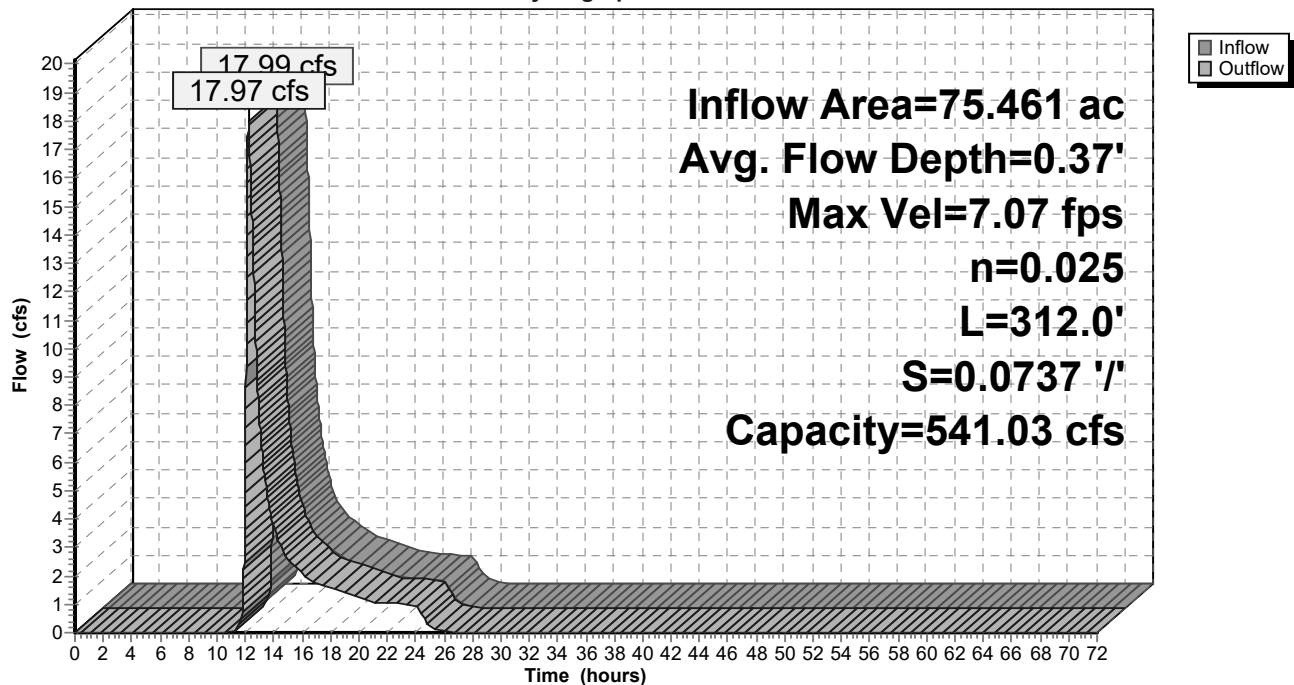
Subcatchment 20S: DA-1c

Hydrograph

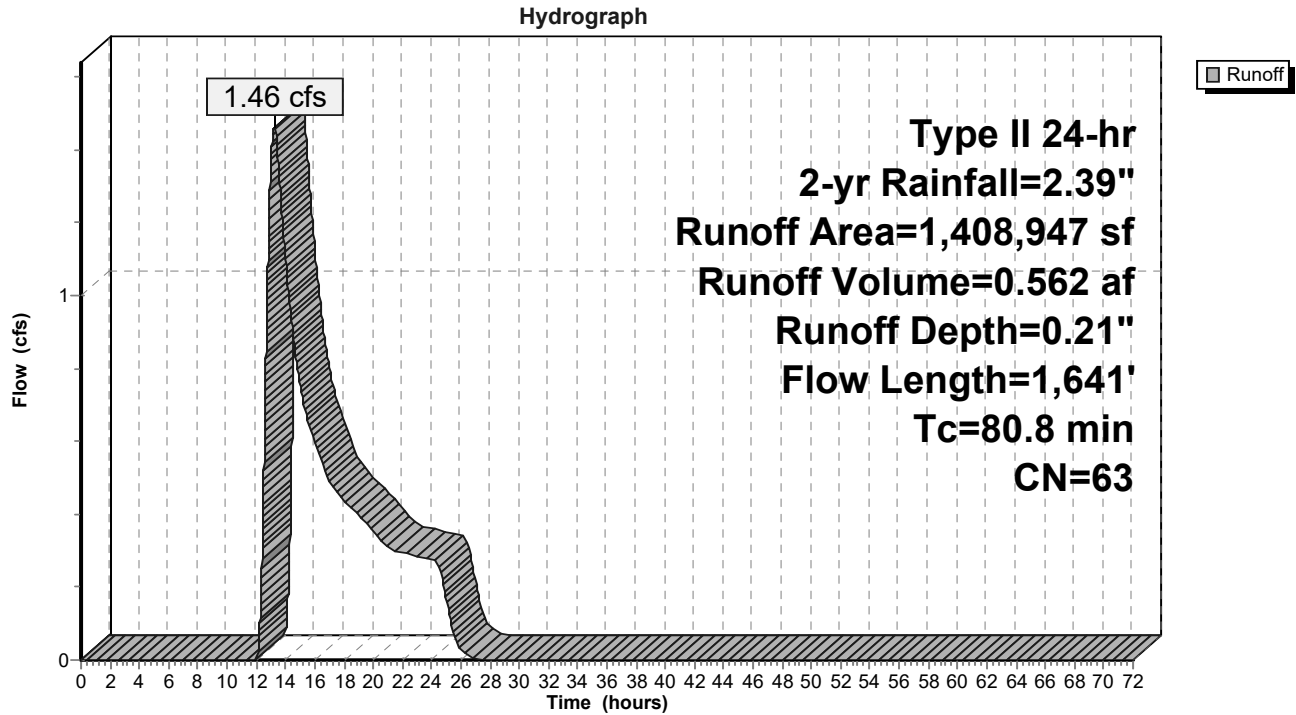


Reach 25R: Swale 3 (Pr. Cond)

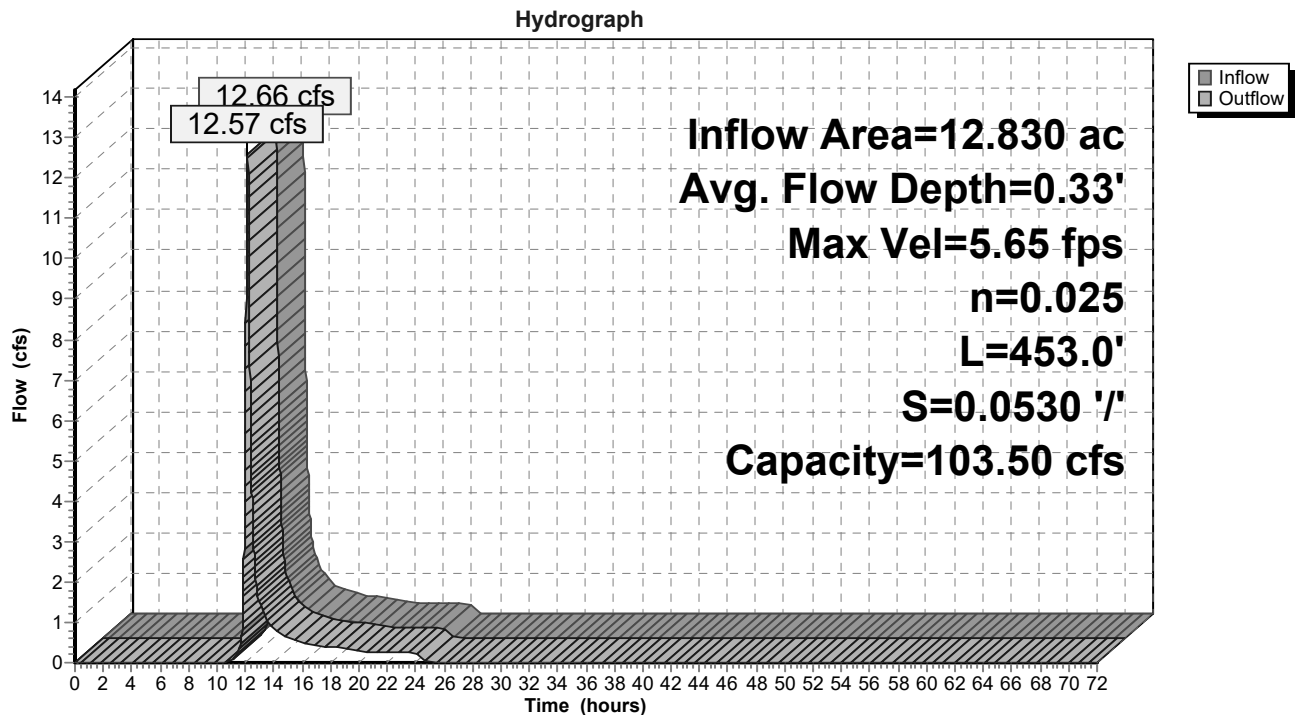
Hydrograph



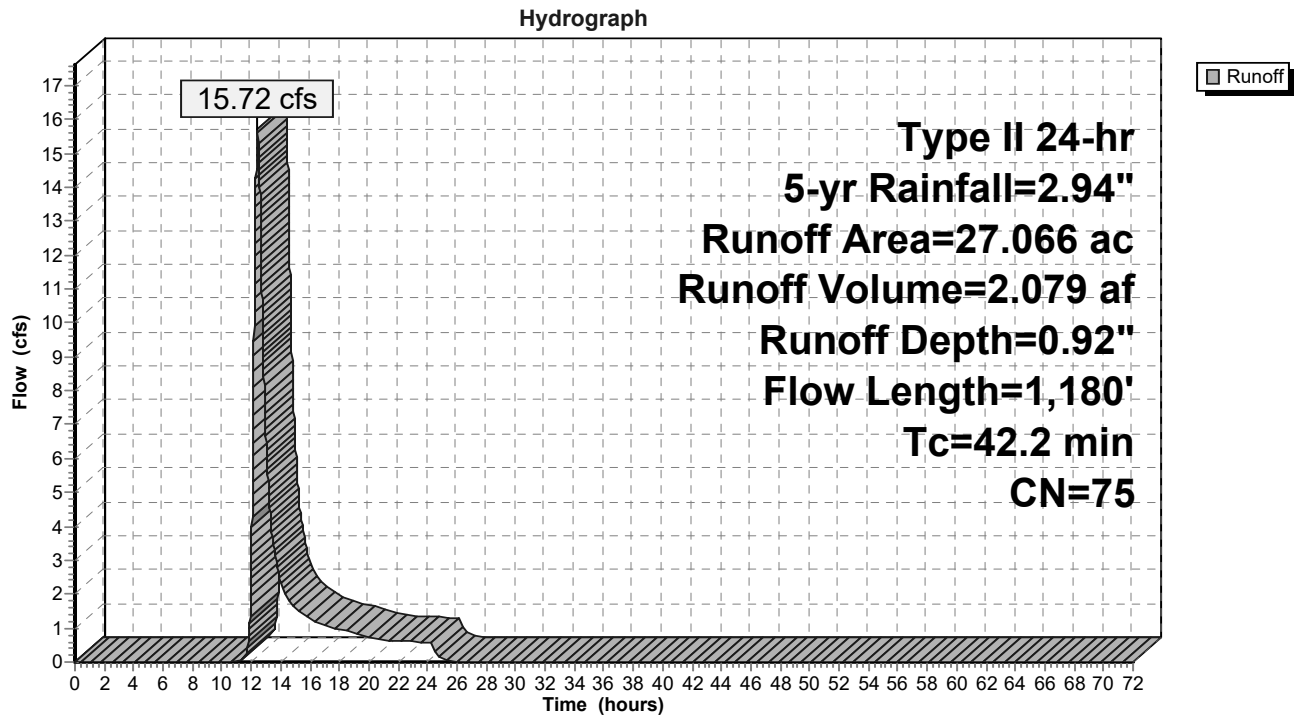
Subcatchment 28S: DA-1b



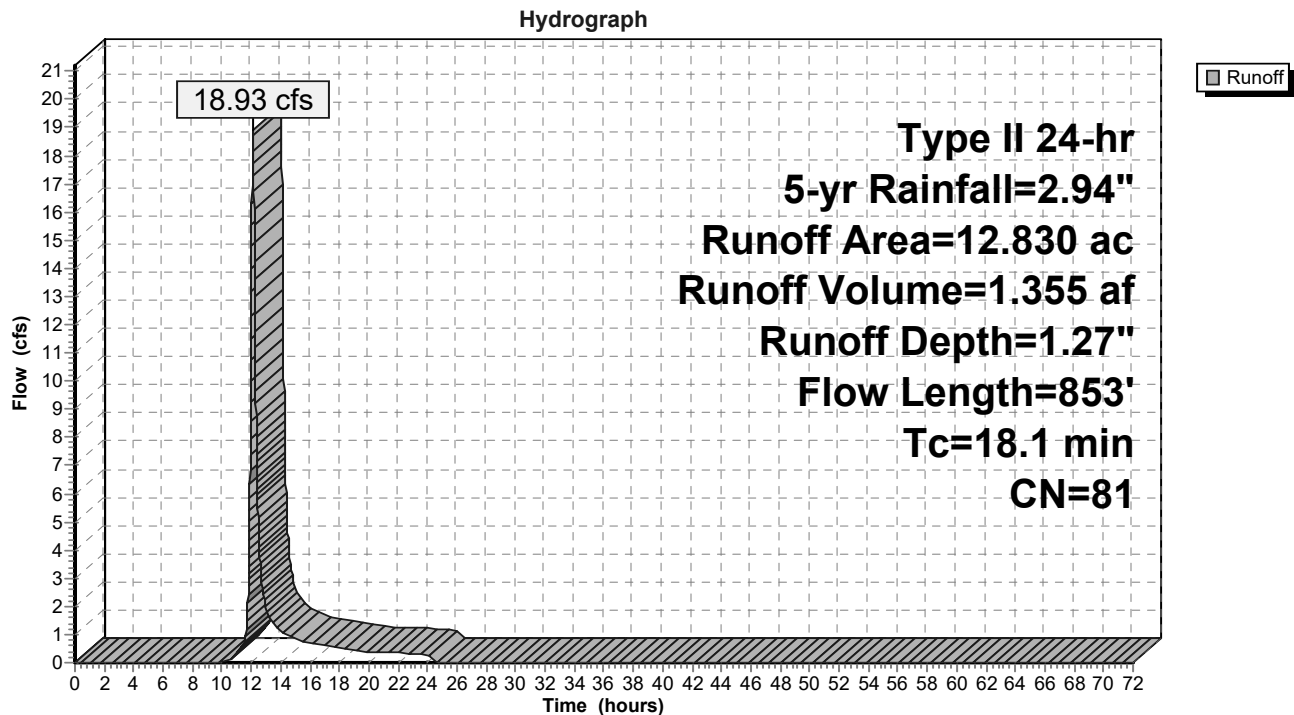
Reach 32R: Swale 1 (Pr. Cond)



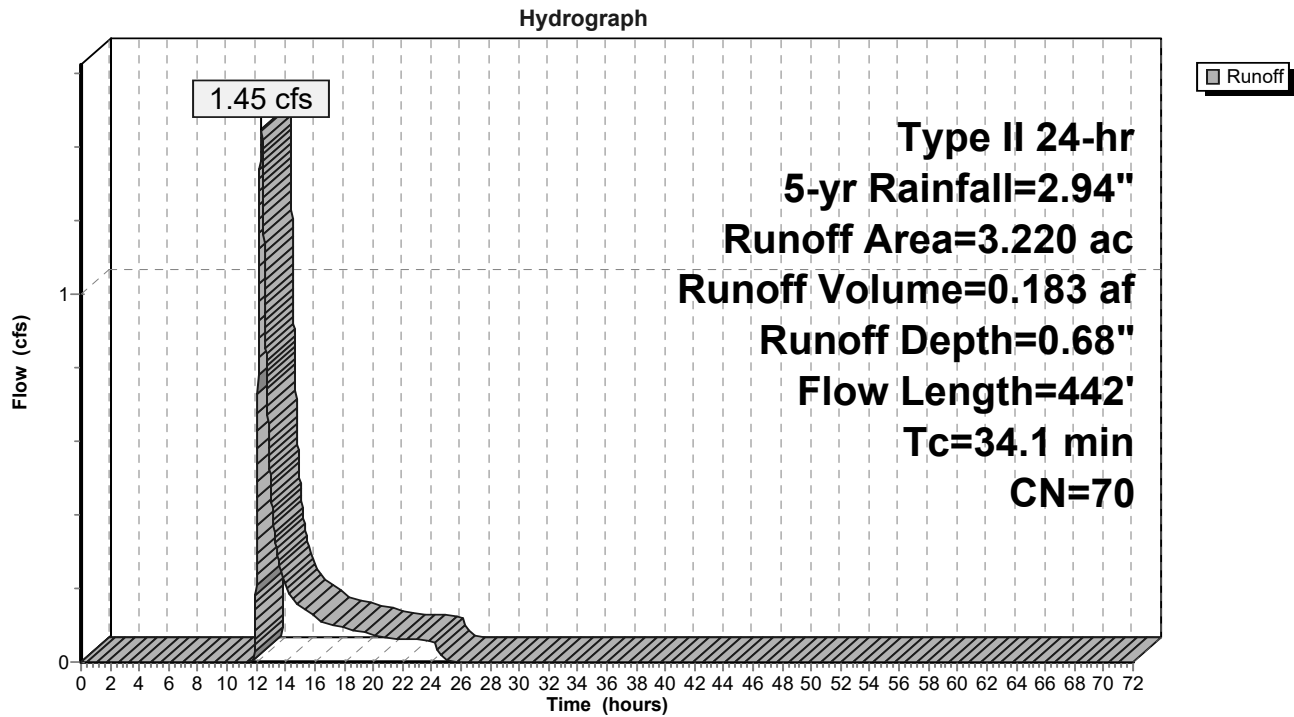
Subcatchment 14S: 190709 PRDA-1a



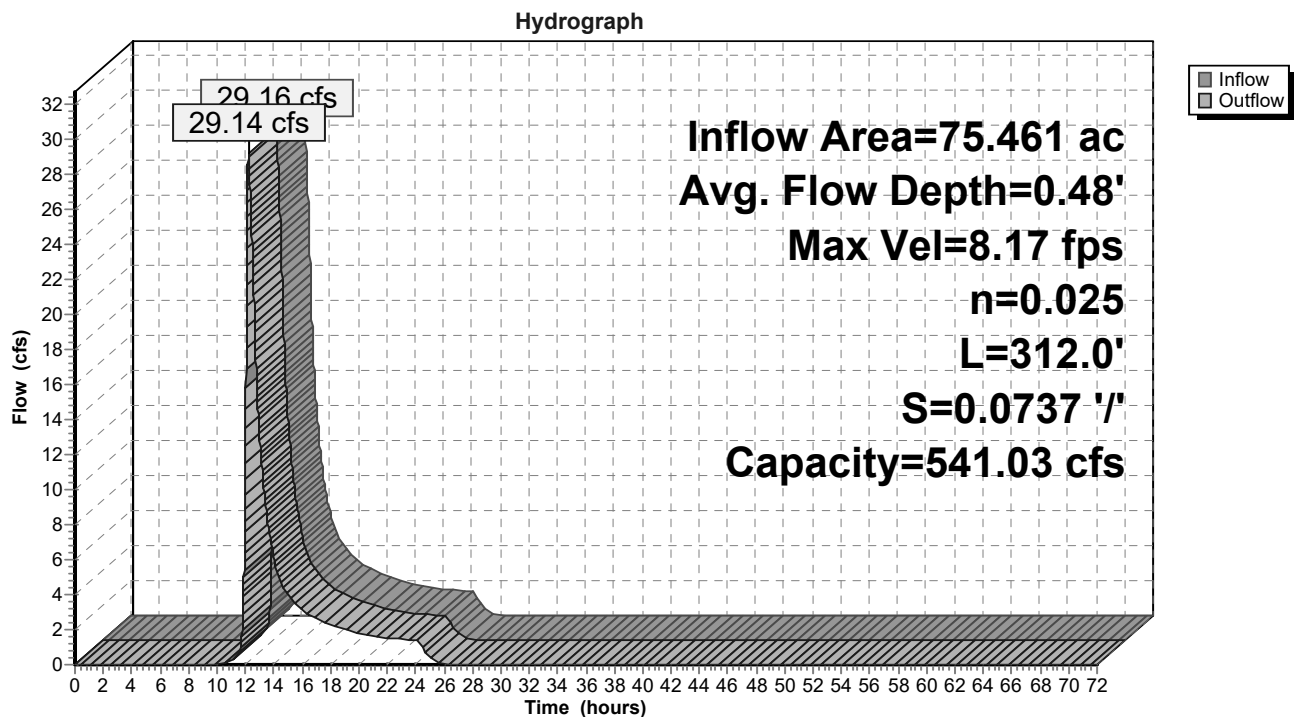
Subcatchment 15S: DA-1d



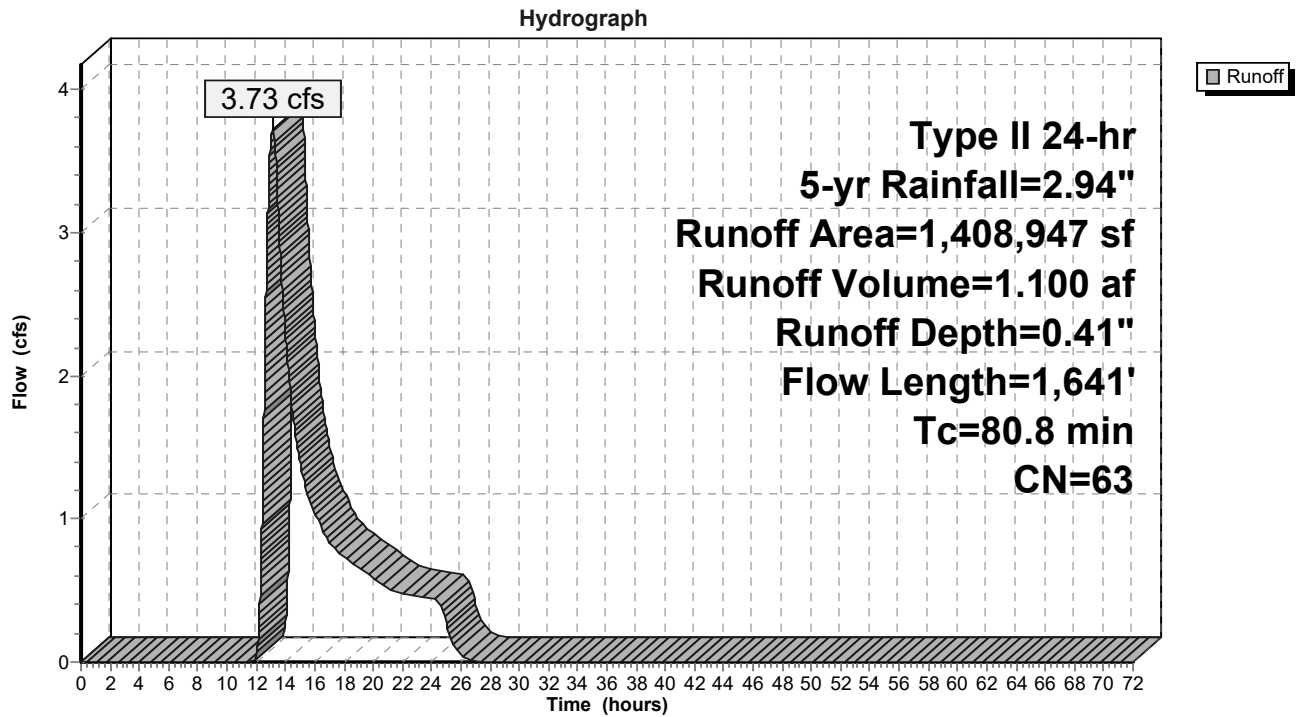
Subcatchment 20S: DA-1c



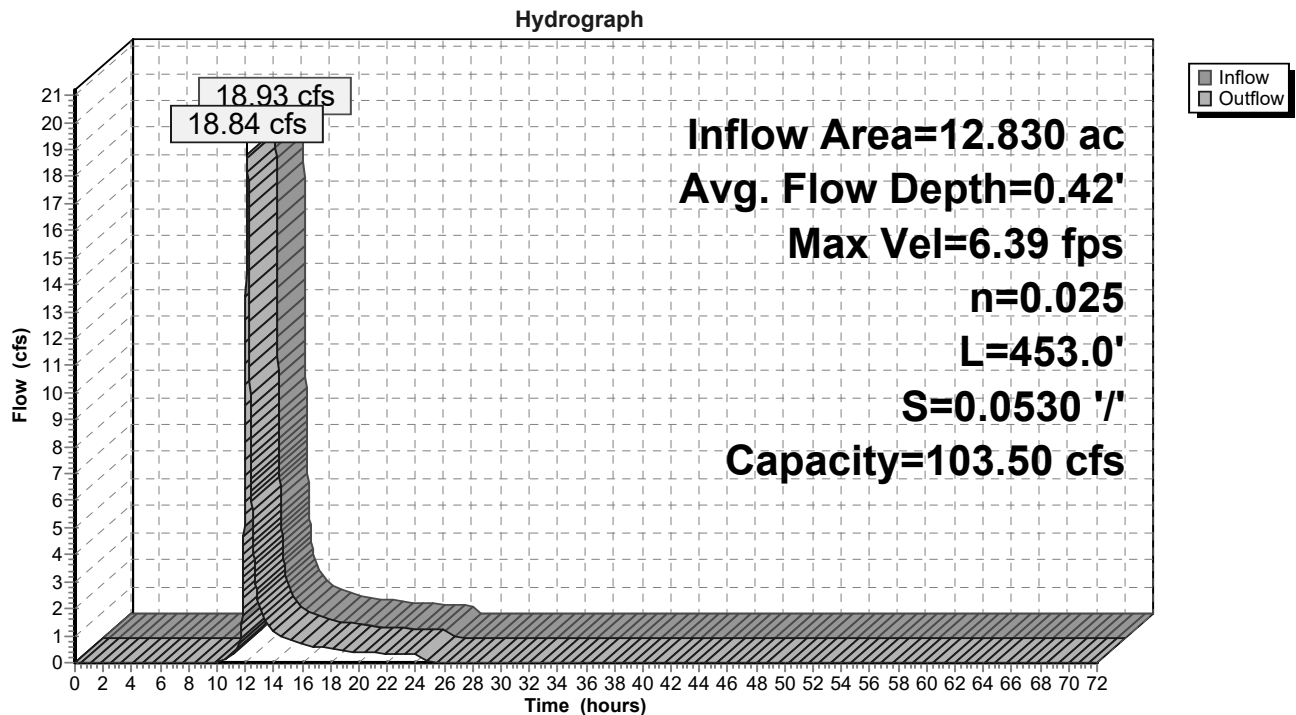
Reach 25R: Swale 3 (Pr. Cond)

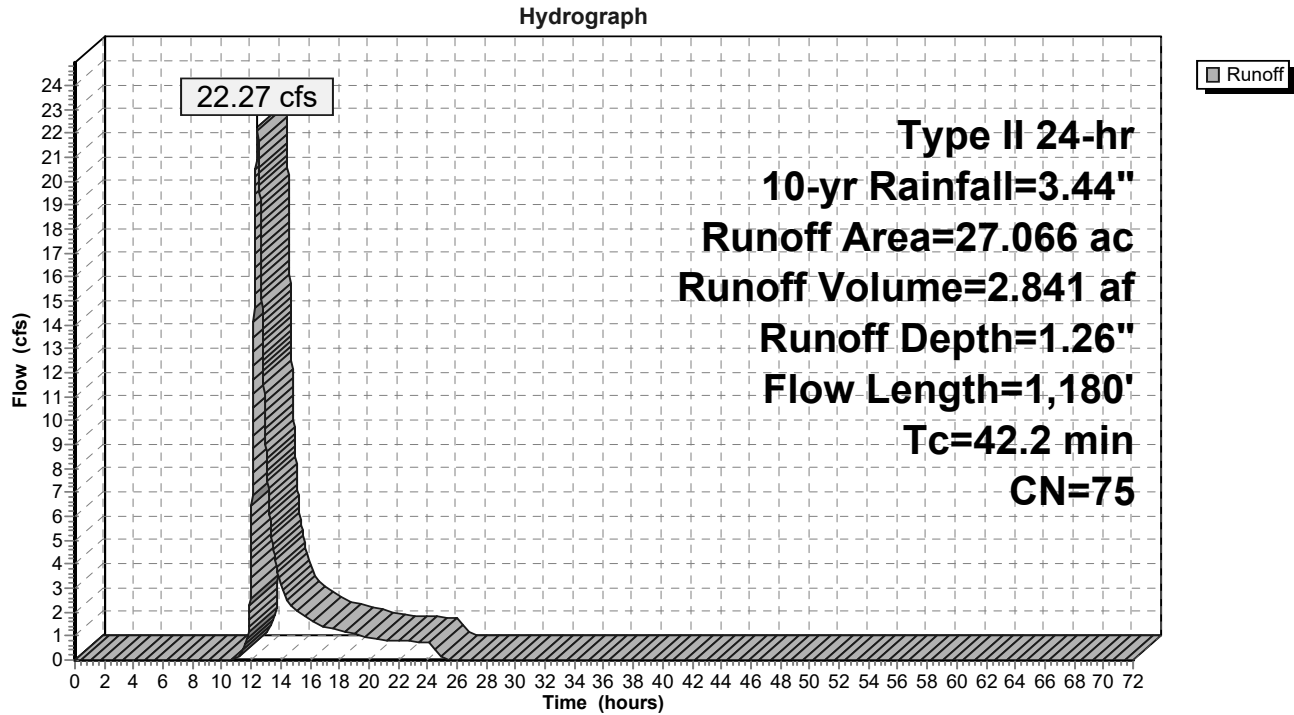
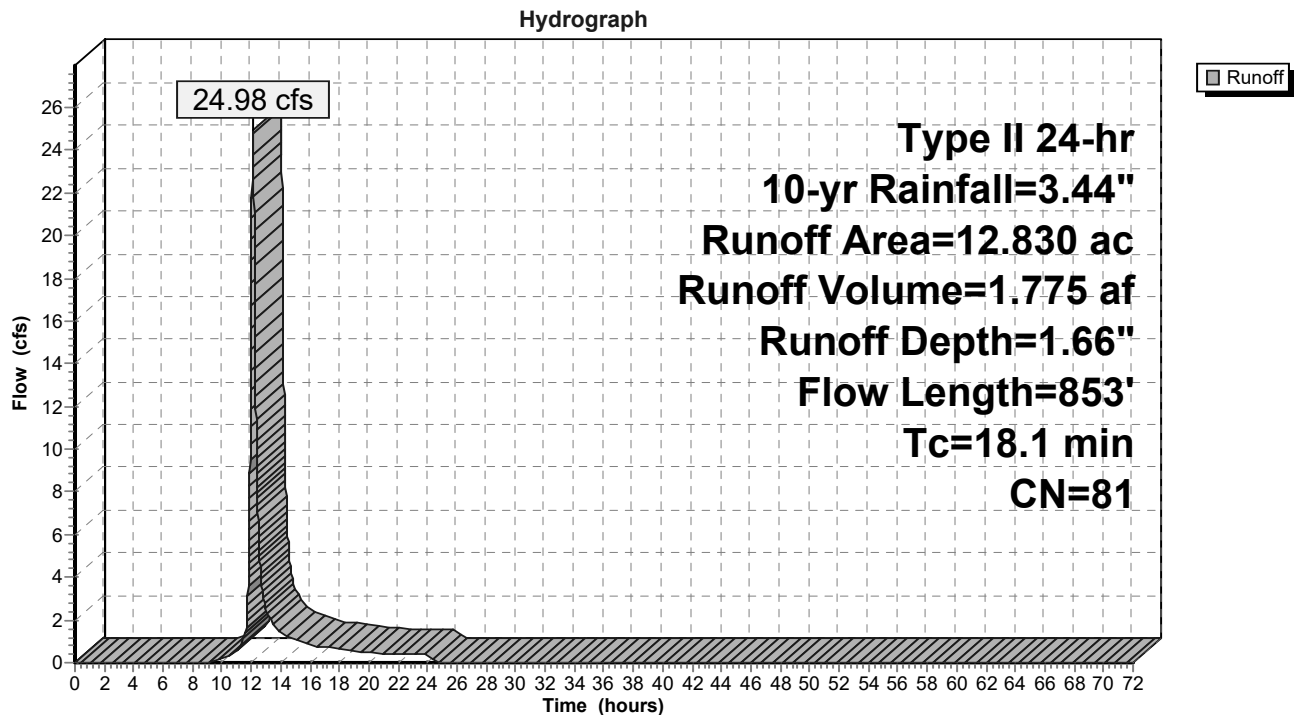


Subcatchment 28S: DA-1b

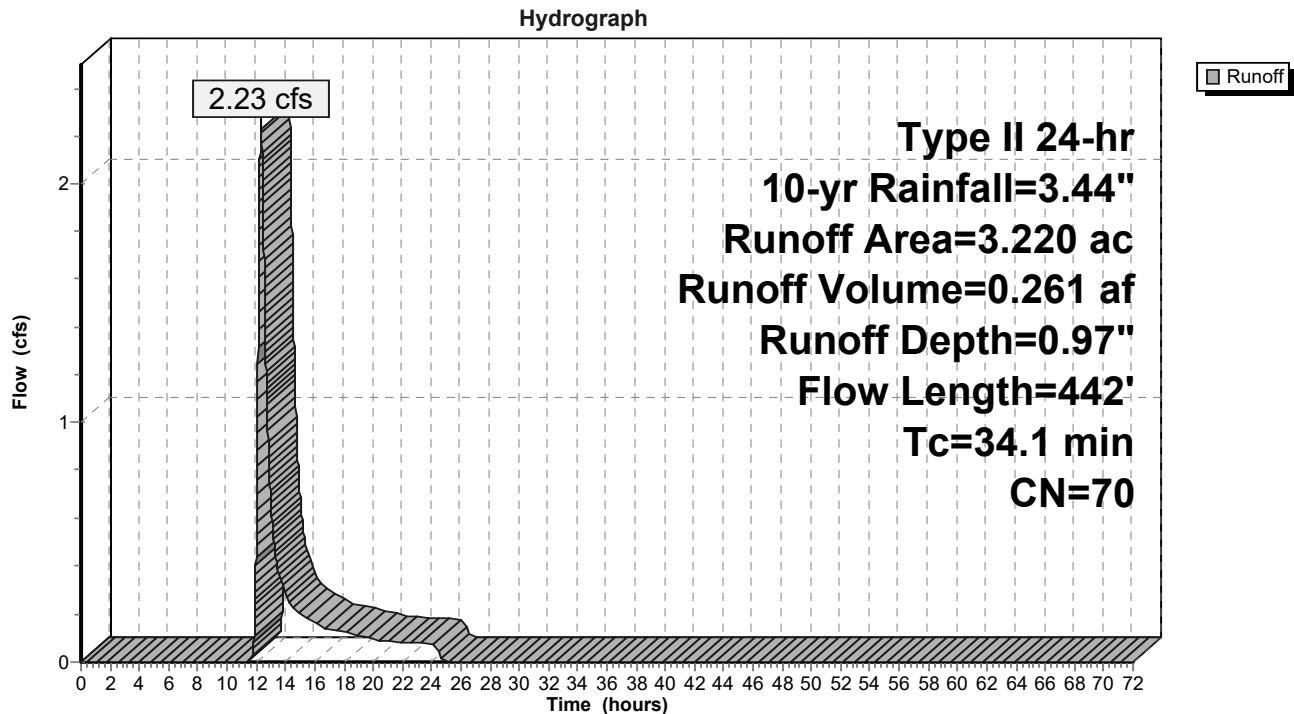


Reach 32R: Swale 1 (Pr. Cond)

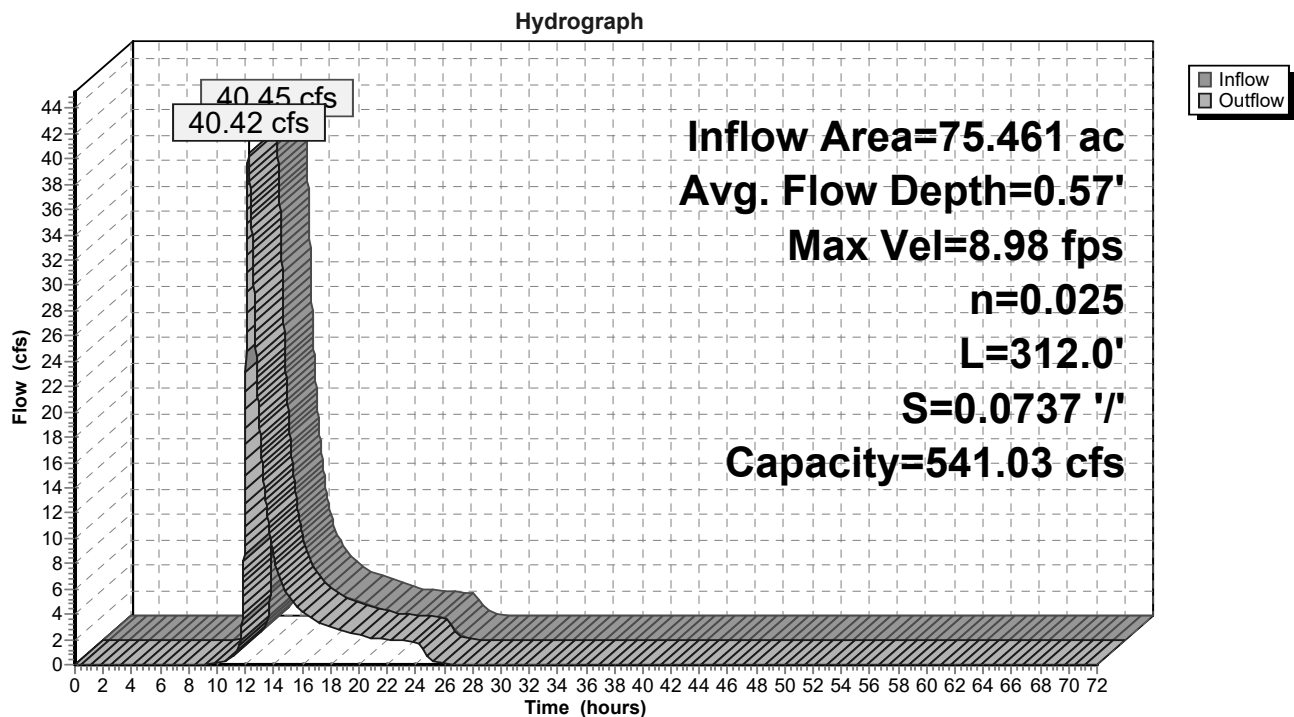


Subcatchment 14S: 190709 PRDA-1a**Subcatchment 15S: DA-1d**

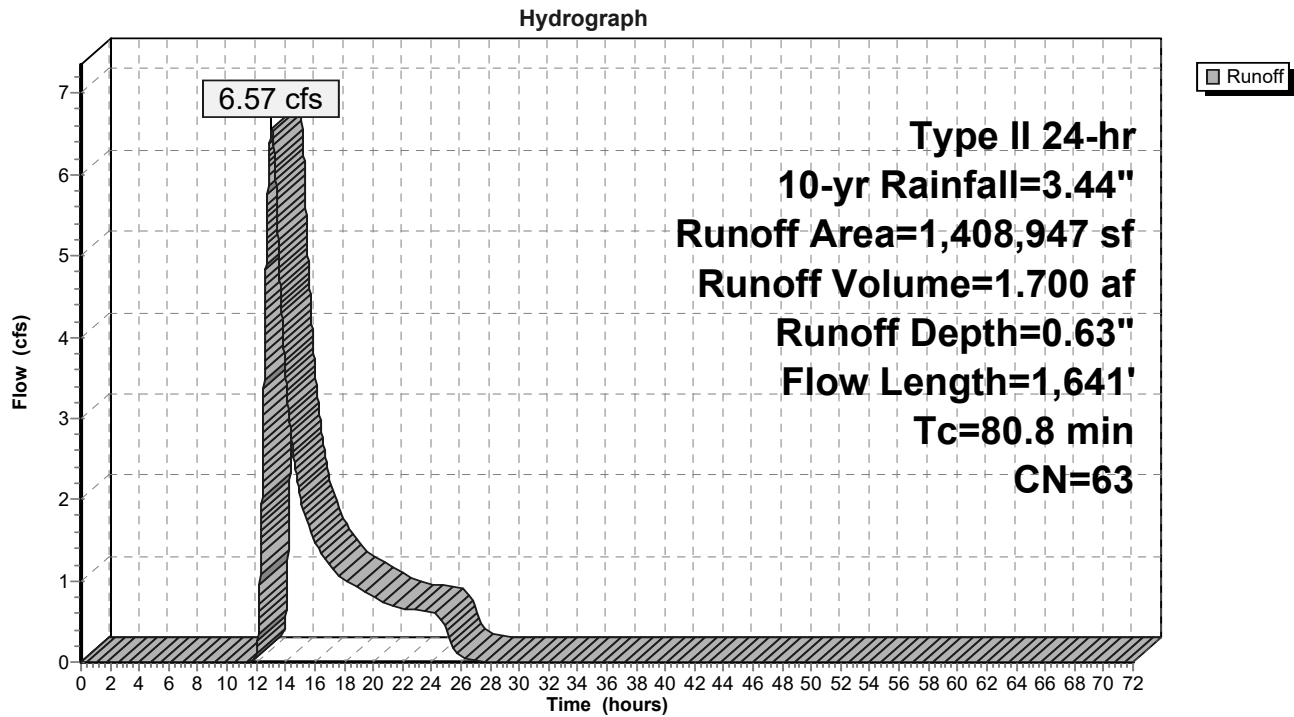
Subcatchment 20S: DA-1c



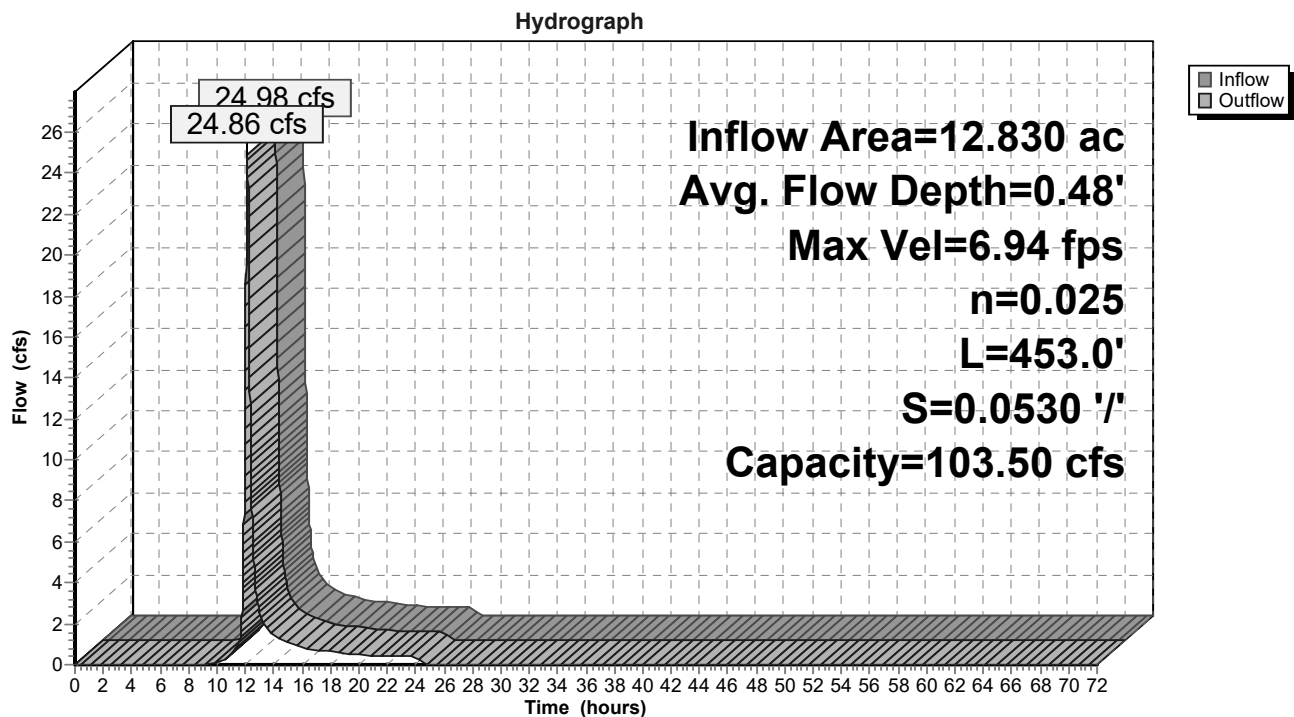
Reach 25R: Swale 3 (Pr. Cond)



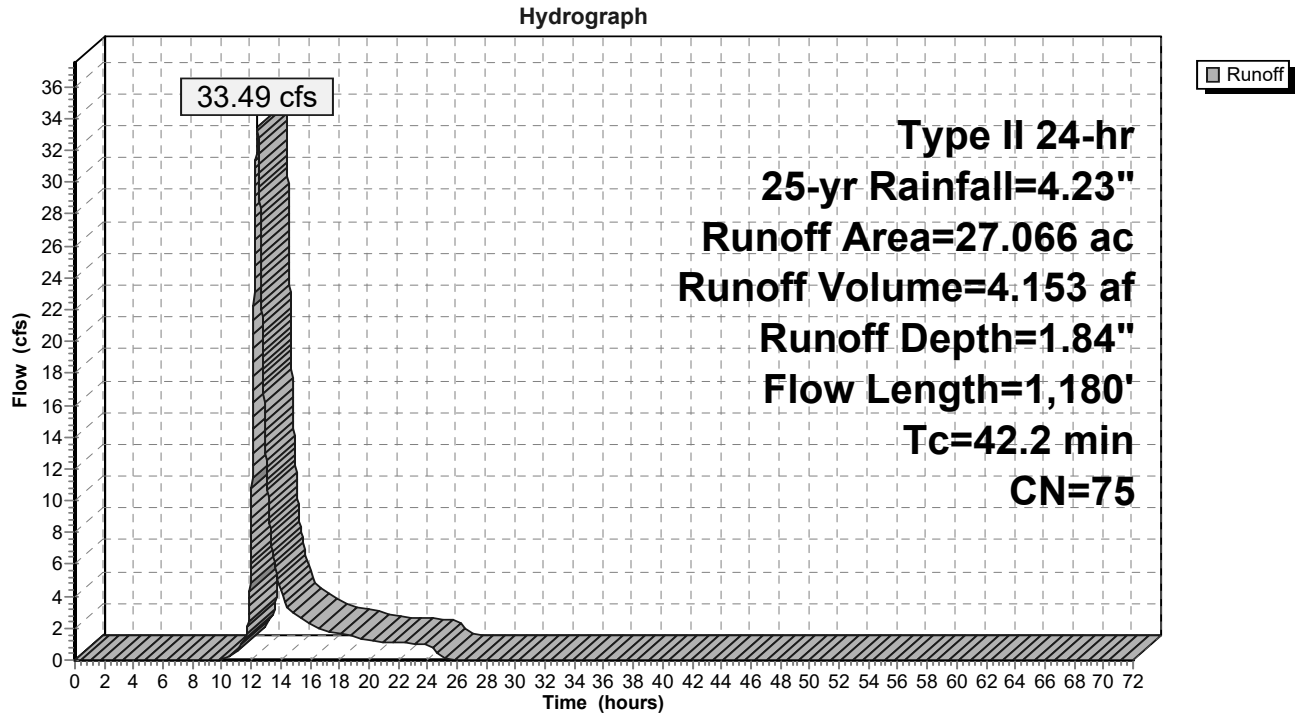
Subcatchment 28S: DA-1b



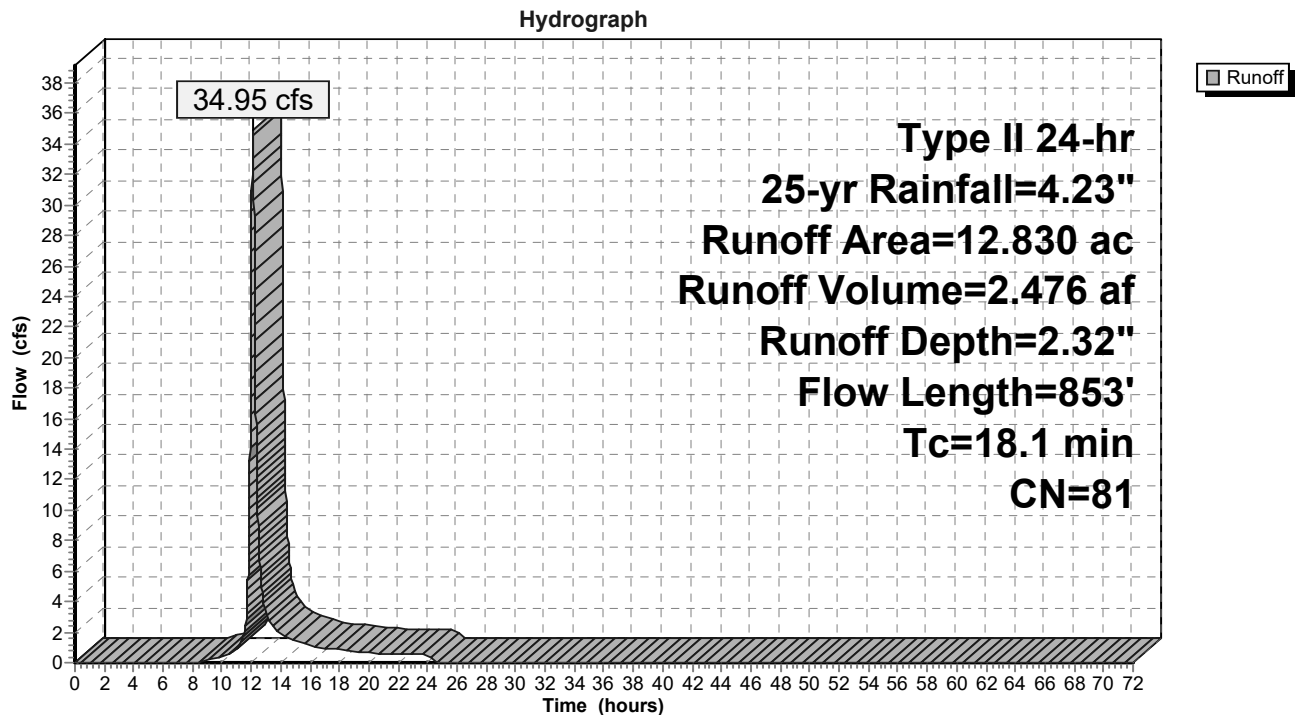
Reach 32R: Swale 1 (Pr. Cond)



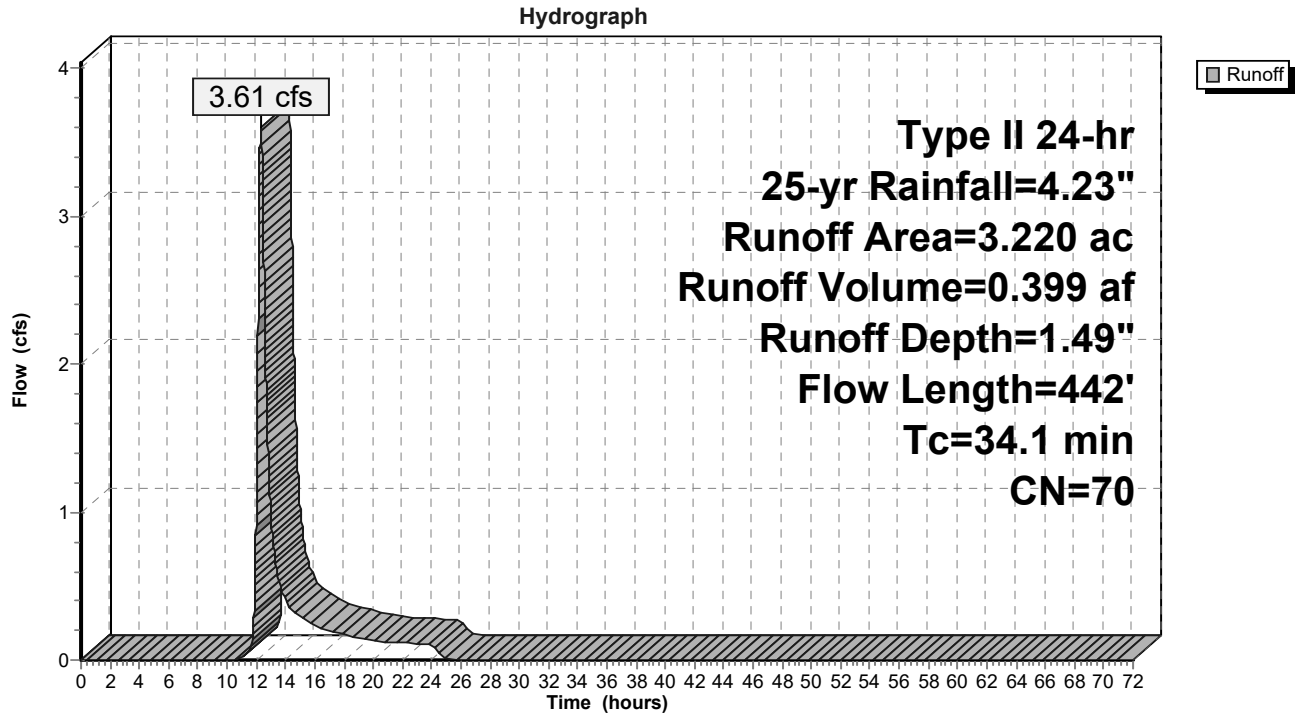
Subcatchment 14S: 190709 PRDA-1a



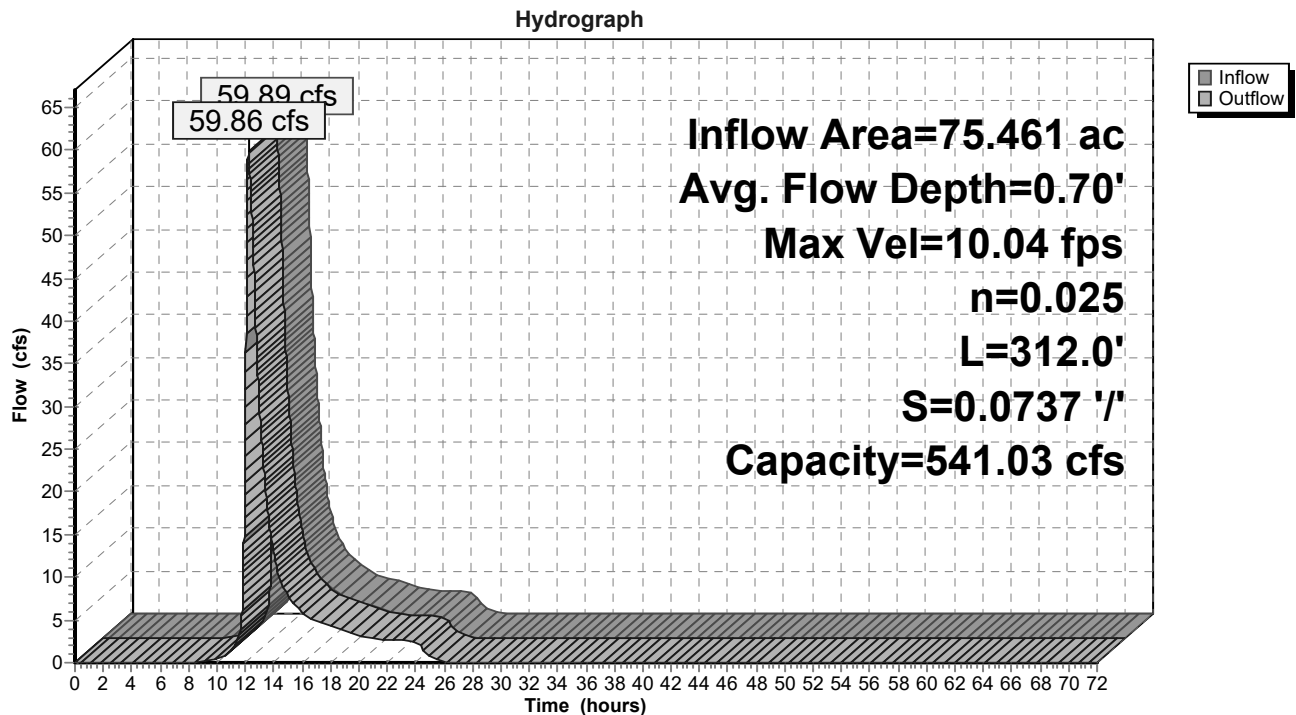
Subcatchment 15S: DA-1d



Subcatchment 20S: DA-1c

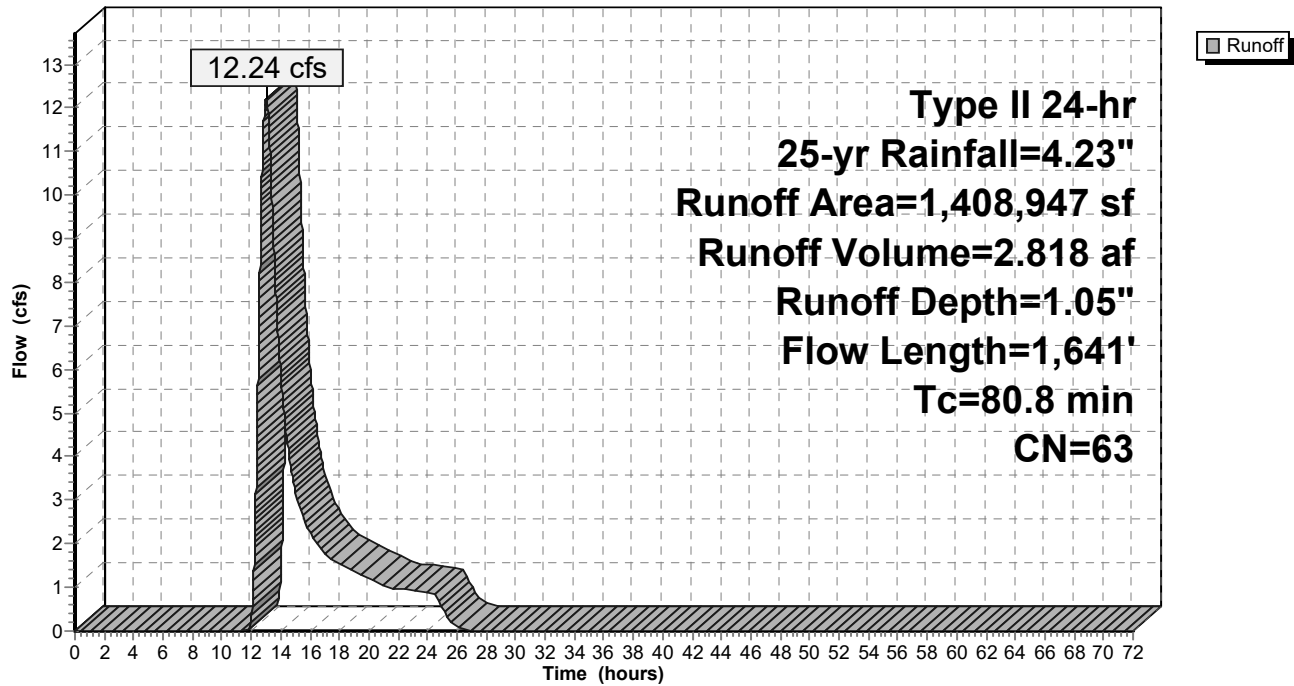


Reach 25R: Swale 3 (Pr. Cond)



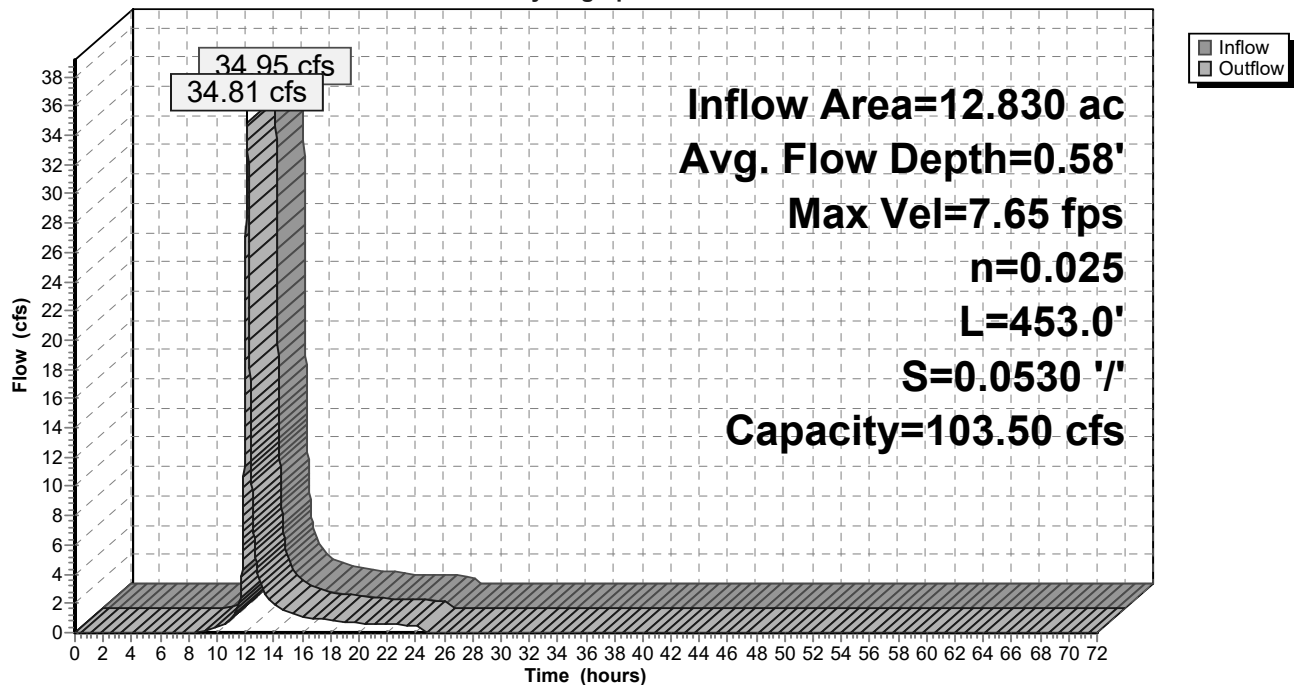
Subcatchment 28S: DA-1b

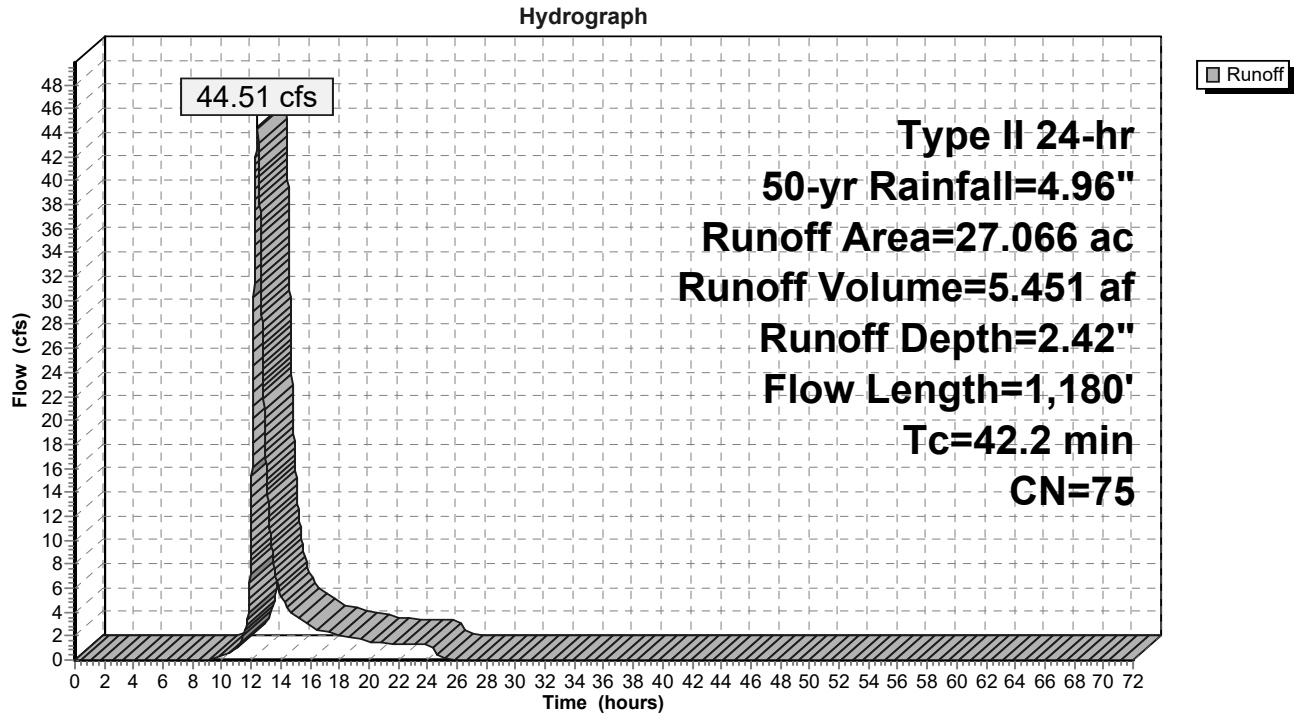
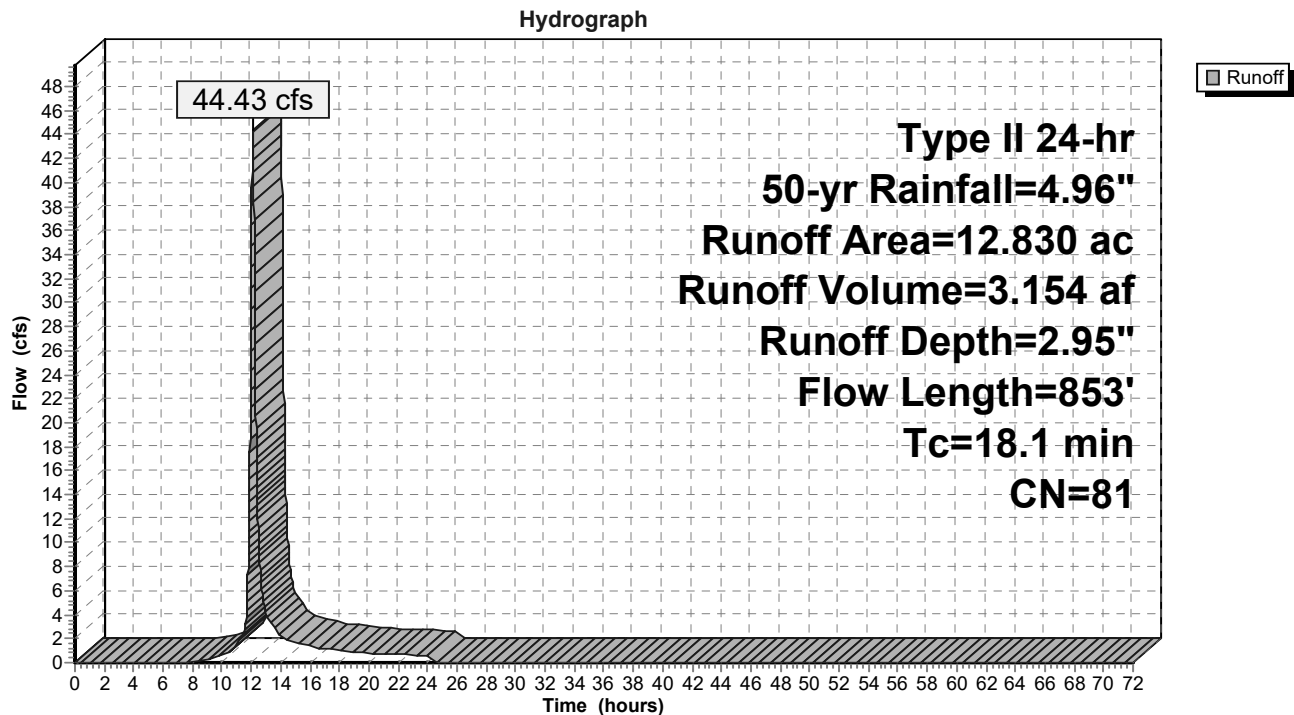
Hydrograph



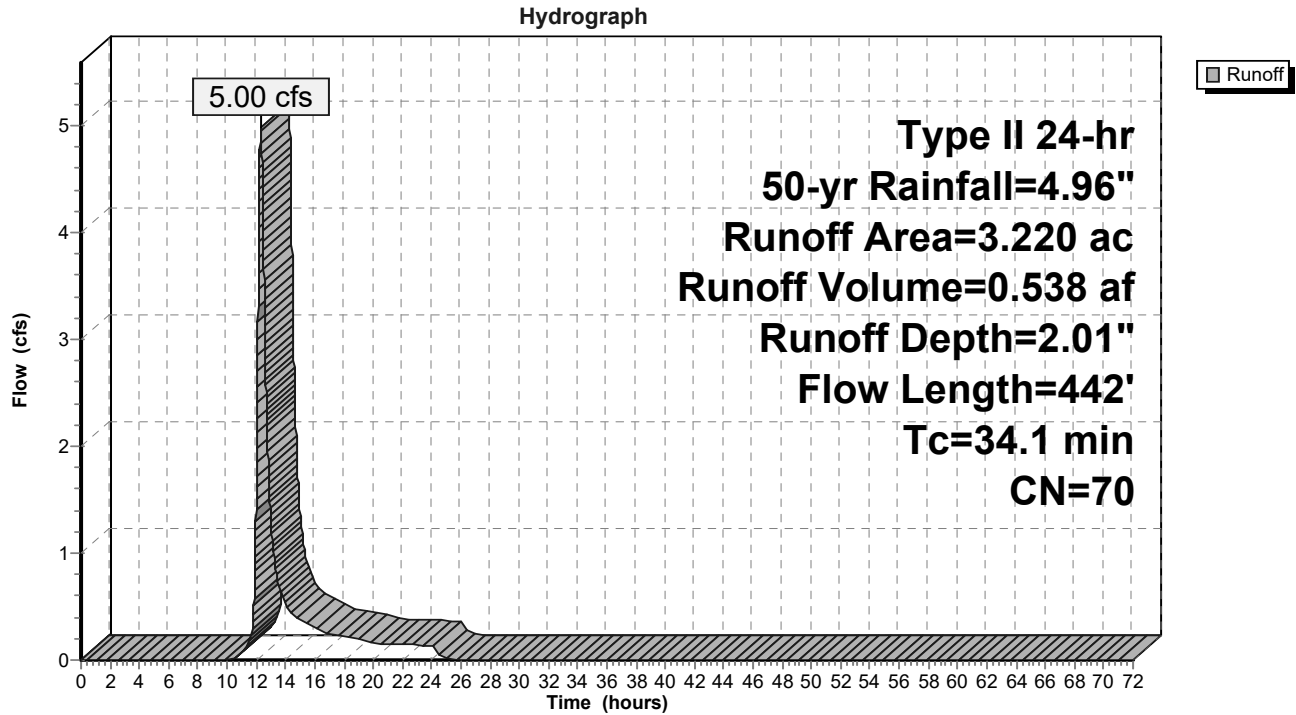
Reach 32R: Swale 1 (Pr. Cond)

Hydrograph

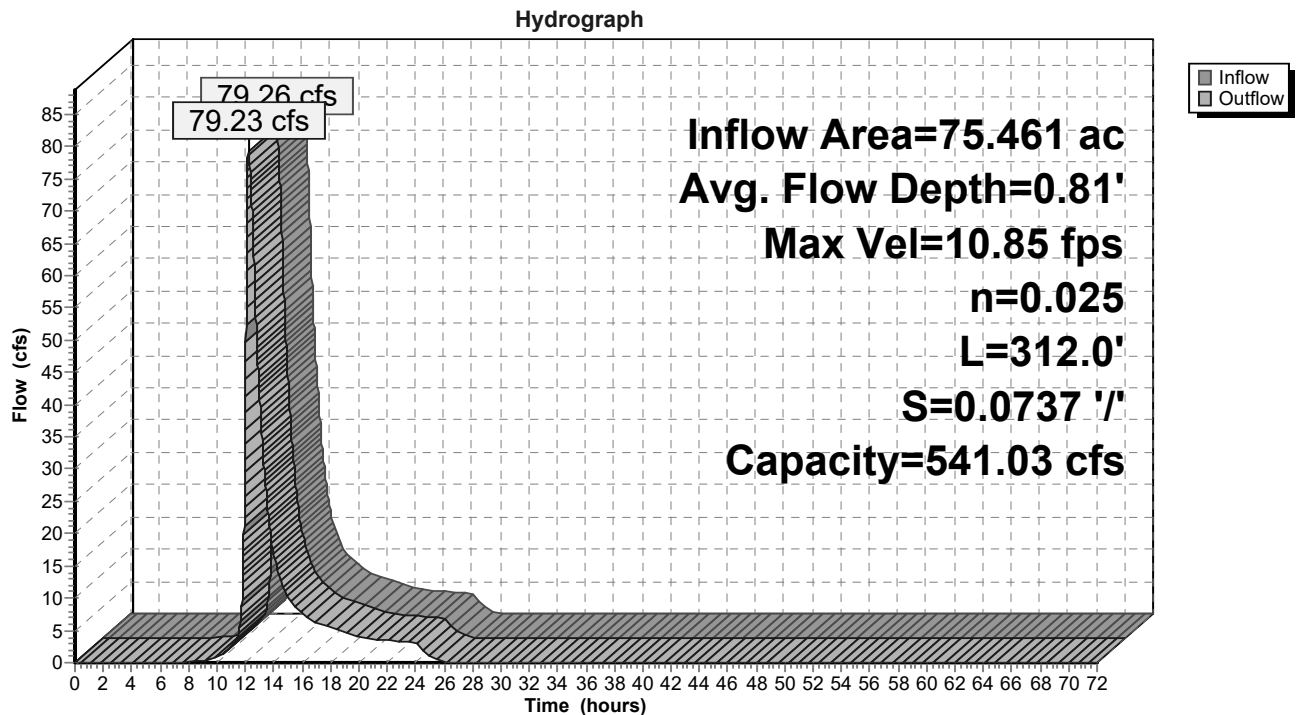


Subcatchment 14S: 190709 PRDA-1a**Subcatchment 15S: DA-1d**

Subcatchment 20S: DA-1c

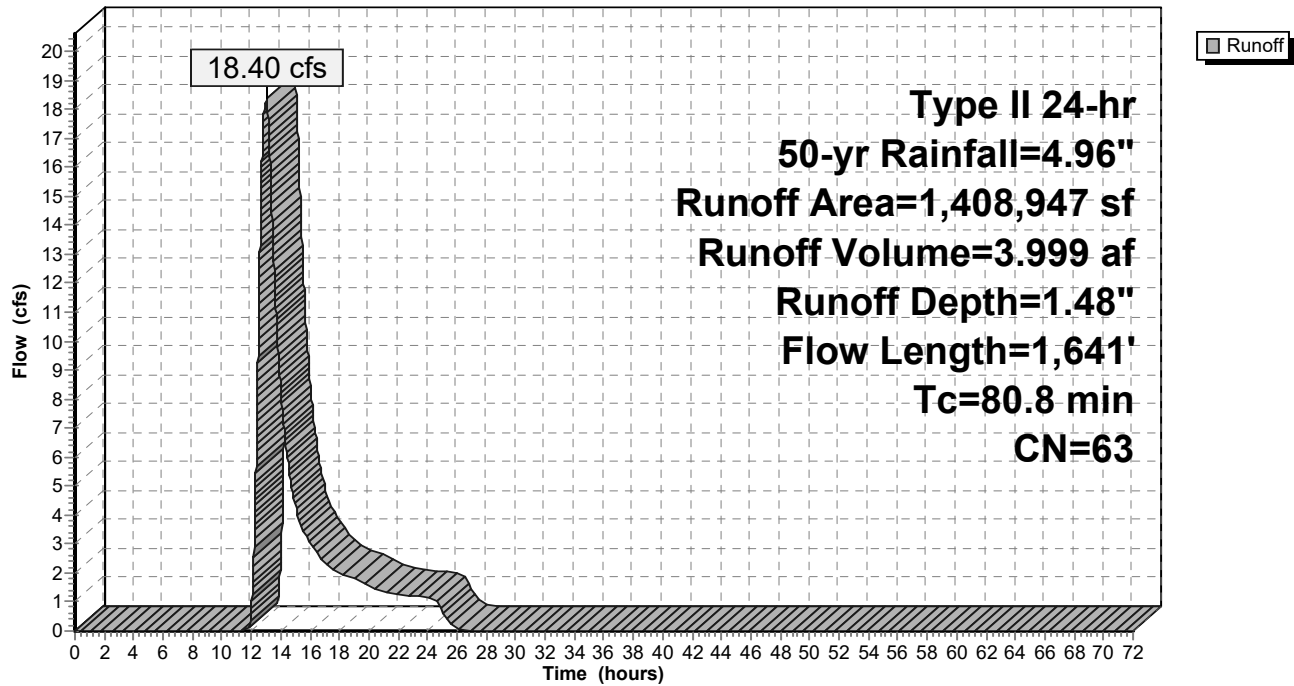


Reach 25R: Swale 3 (Pr. Cond)

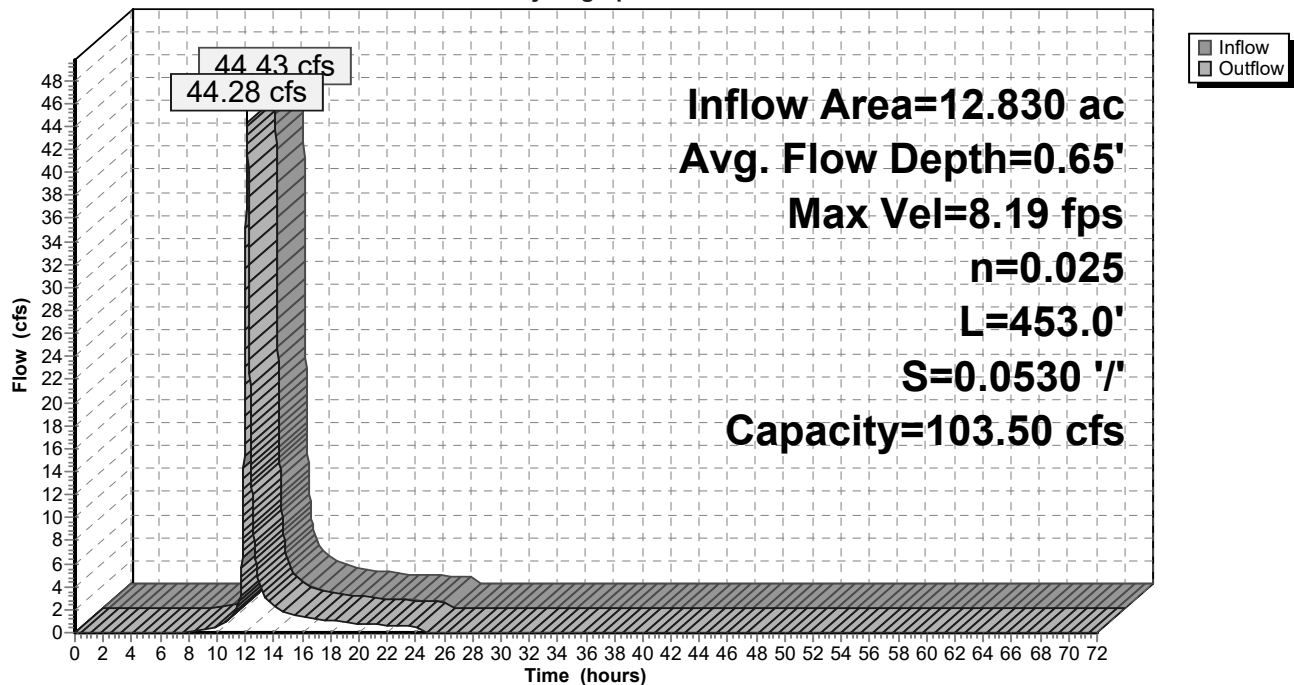


Subcatchment 28S: DA-1b

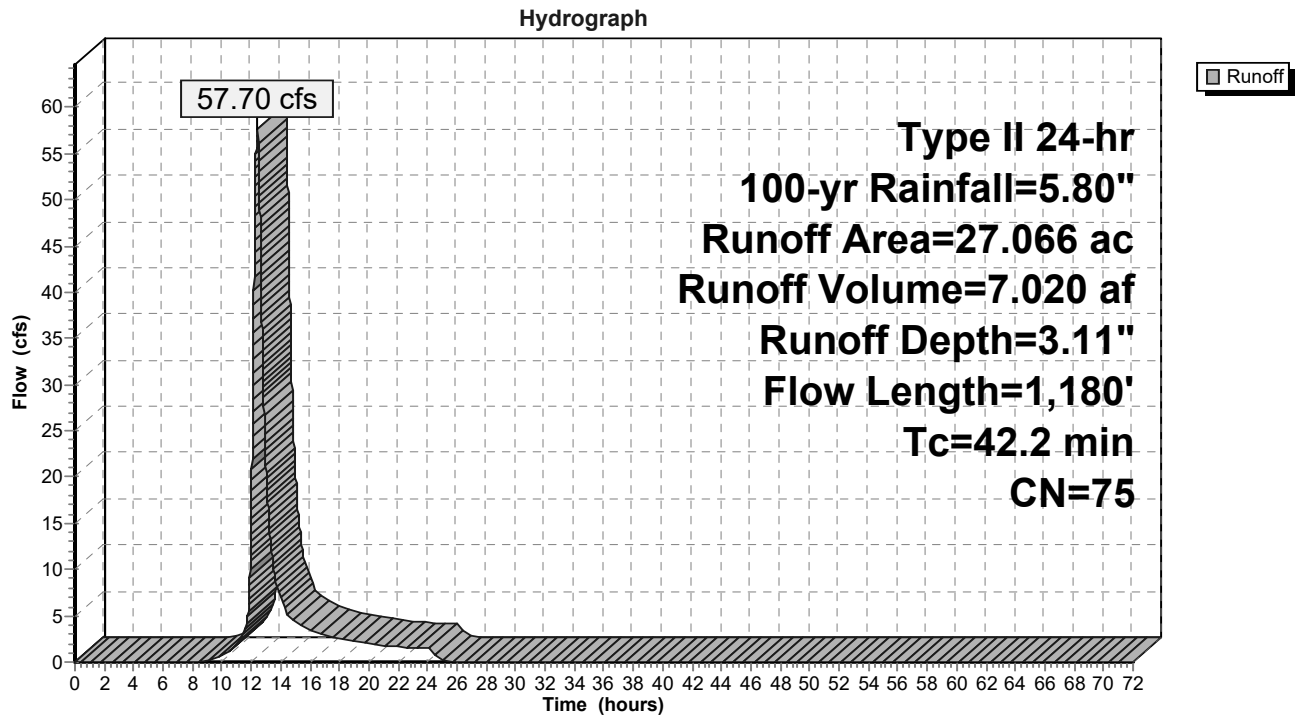
Hydrograph

**Reach 32R: Swale 1 (Pr. Cond)**

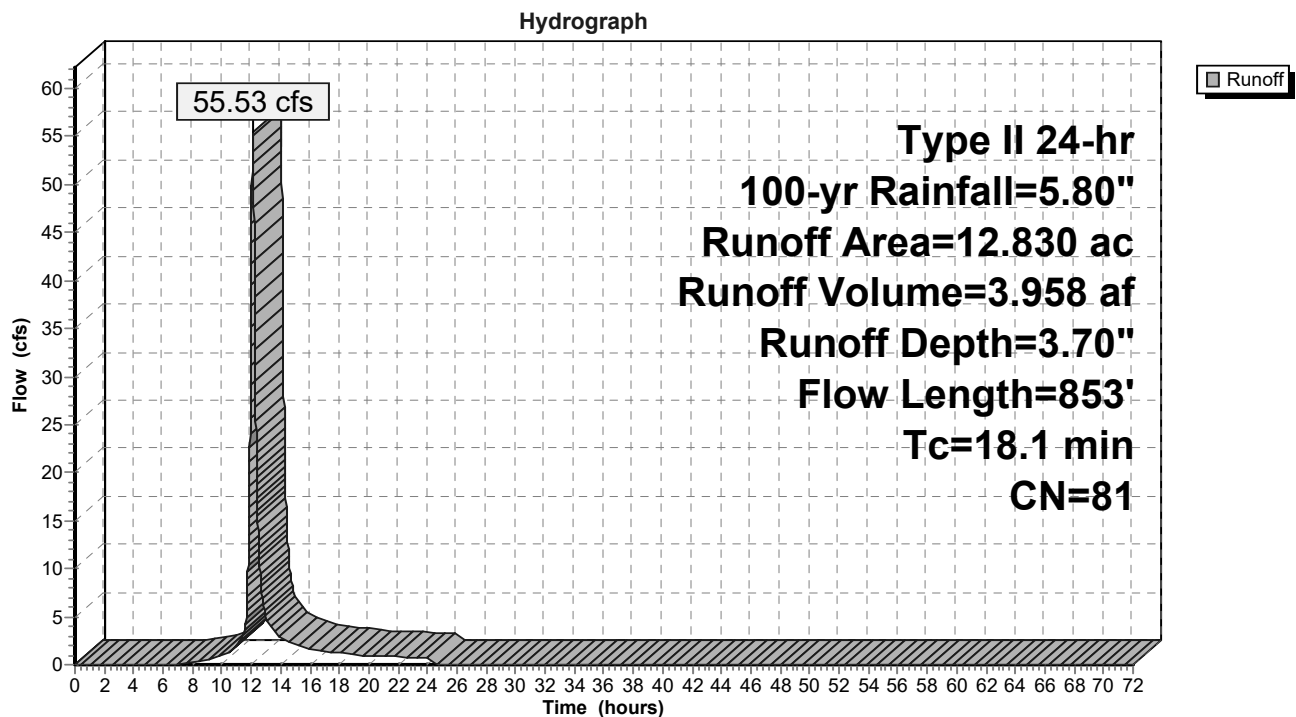
Hydrograph



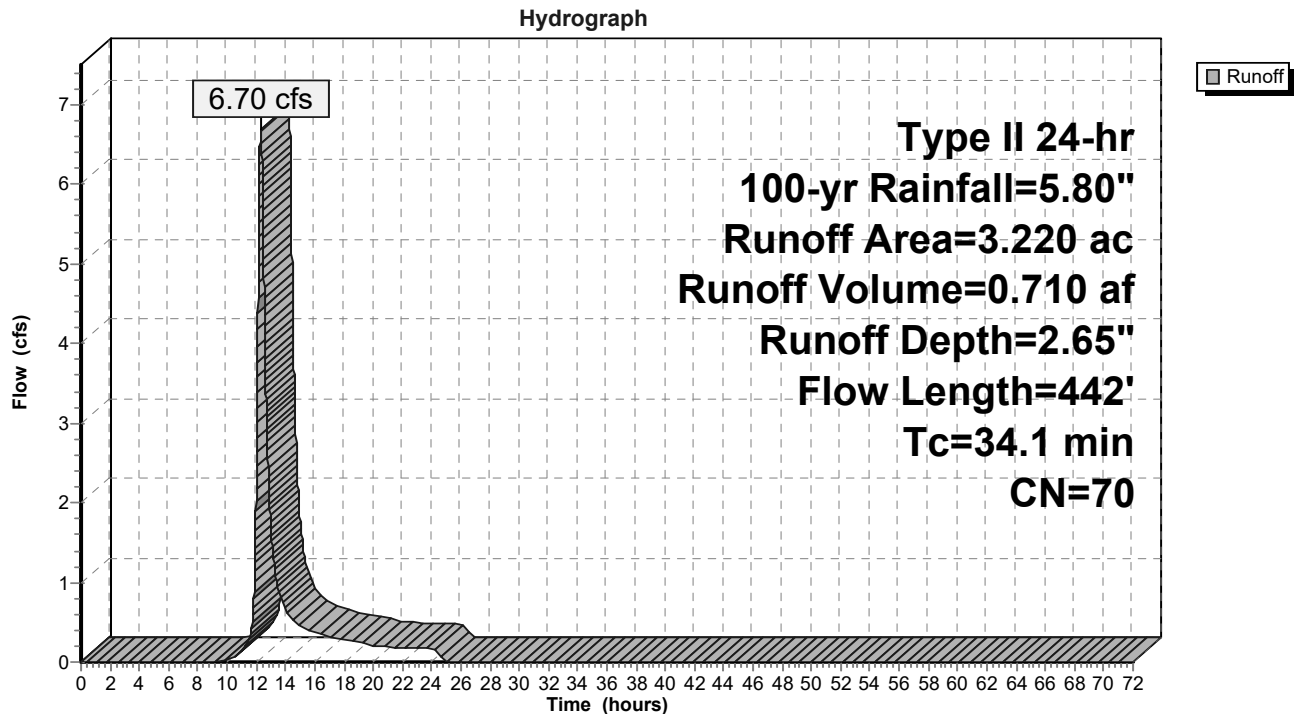
Subcatchment 14S: 190709 PRDA-1a



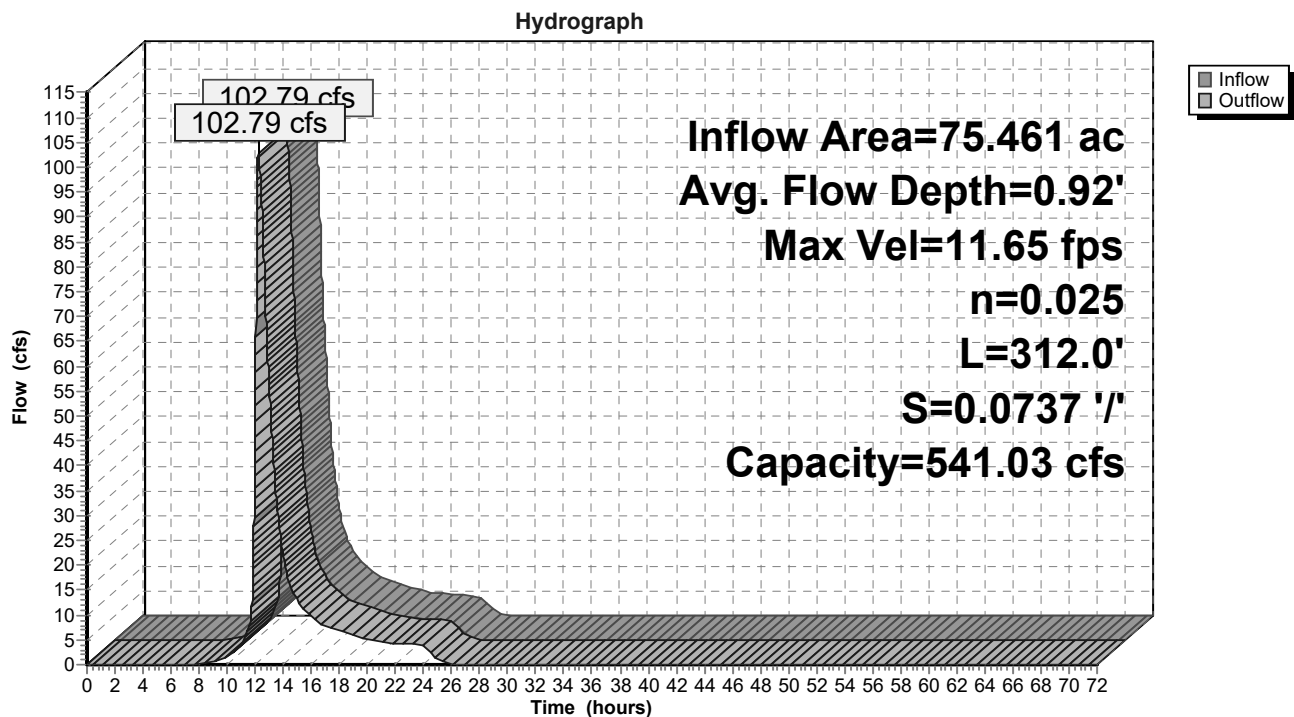
Subcatchment 15S: DA-1d



Subcatchment 20S: DA-1c

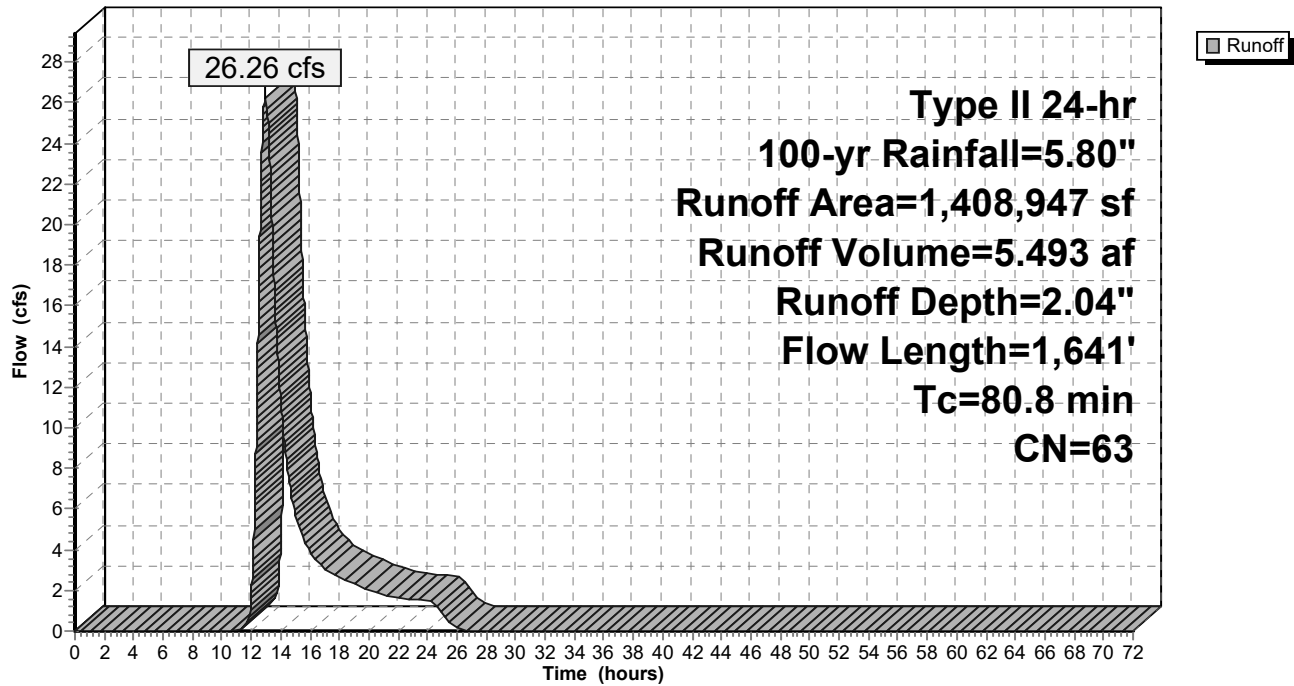


Reach 25R: Swale 3 (Pr. Cond)



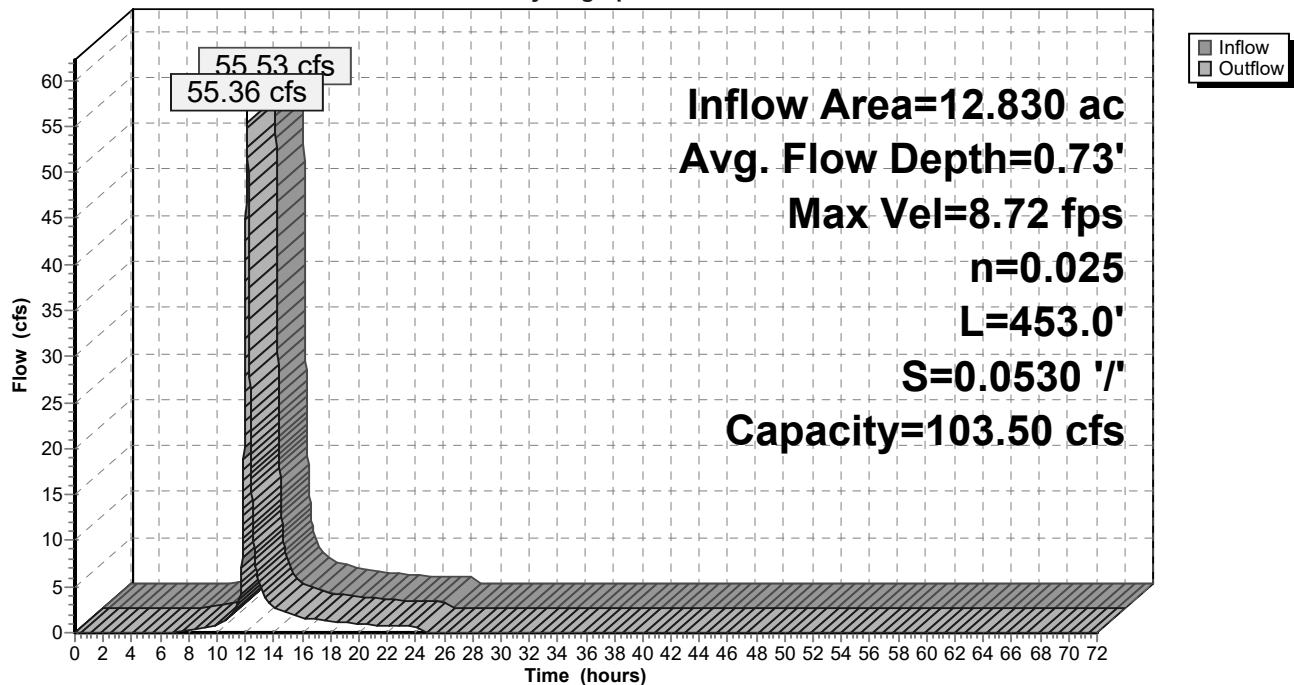
Subcatchment 28S: DA-1b

Hydrograph

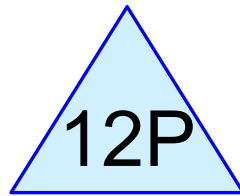
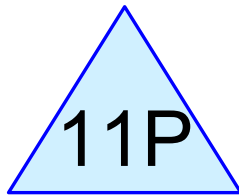


Reach 32R: Swale 1 (Pr. Cond)

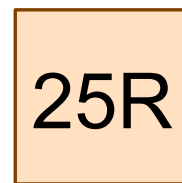
Hydrograph



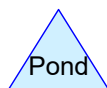
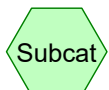
APPENDIX E



Forebays (WQv) 190709 Wet Pond



Swale 3 (Pr. Cond)



17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 2

Summary for Pond 11P: Forebays (WQv)

Volume	Invert	Avail.Storage	Storage Description
#1	672.00'	12,199 cf	Forebay #1 (Prismatic) Listed below (Recalc) x 2
#2	672.00'	15,017 cf	Forebay #2 (Prismatic) Listed below (Recalc) x 2
		27,216 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	345	0	0
673.00	798	572	572
674.00	1,377	1,088	1,659
675.00	2,212	1,795	3,454
676.00	3,080	2,646	6,100

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	597	0	0
673.00	1,127	862	862
674.00	1,766	1,447	2,309
675.00	2,586	2,176	4,485
676.00	3,462	3,024	7,509

Device	Routing	Invert	Outlet Devices
#1	Primary	676.00'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 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)	Elevation (feet)	Storage (cubic-feet)
672.00	0	674.60	12,302
672.05	97	674.65	12,720
672.10	198	674.70	13,146
672.15	305	674.75	13,580
672.20	416	674.80	14,023
672.25	532	674.85	14,474
672.30	654	674.90	14,933
672.35	780	674.95	15,400
672.40	911	675.00	15,876
672.45	1,047	675.05	16,360
672.50	1,188	675.10	16,853
672.55	1,334	675.15	17,355
672.60	1,484	675.20	17,865
672.65	1,640	675.25	18,384
672.70	1,800	675.30	18,912
672.75	1,966	675.35	19,448
672.80	2,136	675.40	19,993
672.85	2,312	675.45	20,547
672.90	2,492	675.50	21,110
672.95	2,677	675.55	21,681
673.00	2,867	675.60	22,261
673.05	3,063	675.65	22,850
673.10	3,264	675.70	23,448
673.15	3,472	675.75	24,054
673.20	3,686	675.80	24,669
673.25	3,906	675.85	25,293
673.30	4,132	675.90	25,925
673.35	4,364	675.95	26,566
673.40	4,602	676.00	27,216
673.45	4,846	676.05	27,216
673.50	5,097	676.10	27,216
673.55	5,353	676.15	27,216
673.60	5,615	676.20	27,216
673.65	5,884	676.25	27,216
673.70	6,159	676.30	27,216
673.75	6,440	676.35	27,216
673.80	6,727	676.40	27,216
673.85	7,020	676.45	27,216
673.90	7,319	676.50	27,216
673.95	7,624	676.55	27,216
674.00	7,935	676.60	27,216
674.05	8,253	676.65	27,216
674.10	8,580	676.70	27,216
674.15	8,915	676.75	27,216
674.20	9,258	676.80	27,216
674.25	9,610	676.85	27,216
674.30	9,970	676.90	27,216
674.35	10,338	676.95	27,216
674.40	10,714	677.00	27,216
674.45	11,099		
674.50	11,492		
674.55	11,893		

17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 4

Summary for Pond 12P: 190709 Wet Pond

Inflow Area = 59.411 ac, 10.12% Impervious, Inflow Depth = 2.53" for 100-yr event
 Inflow = 70.92 cfs @ 12.47 hrs, Volume= 12.513 af
 Outflow = 52.56 cfs @ 12.88 hrs, Volume= 12.307 af, Atten= 26%, Lag= 24.6 min
 Primary = 46.57 cfs @ 12.88 hrs, Volume= 12.144 af
 Secondary = 5.99 cfs @ 12.88 hrs, Volume= 0.163 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 4

Starting Elev= 670.00' Surf.Area= 11,054 sf Storage= 25,924 cf

Peak Elev= 675.98' @ 12.88 hrs Surf.Area= 24,708 sf Storage= 131,031 cf (105,107 cf above start)

Plug-Flow detention time= 205.6 min calculated for 11.711 af (94% of inflow)

Center-of-Mass det. time= 155.3 min (1,042.1 - 886.9)

Volume	Invert	Avail.Storage	Storage Description
#1	664.00'	145,109 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
664.00	760	0	0
665.00	1,657	1,209	1,209
666.00	2,682	2,170	3,378
667.00	3,840	3,261	6,639
668.00	5,175	4,508	11,147
669.00	6,663	5,919	17,066
670.00	11,054	8,859	25,924
671.00	13,062	12,058	37,982
672.00	15,196	14,129	52,111
673.00	17,436	16,316	68,427
674.00	19,778	18,607	87,034
675.00	22,218	20,998	108,032
676.00	24,758	23,488	131,520
676.50	29,598	13,589	145,109

Device	Routing	Invert	Outlet Devices
#1	Primary	665.50'	24.0" Round Outlet Culvert L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 665.50' / 664.00' S= 0.0300 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	675.75'	Spillway, Cv= 2.62 (C= 3.28) Head (feet) 0.00 0.75 Width (feet) 15.00 25.00
#3	Device 1	670.00'	2.5" Vert. 2.5" Orifice C= 0.600
#4	Device 1	675.25'	24.0" Horiz. Rim C= 0.600 Limited to weir flow at low heads
#5	Device 1	673.05'	Rectangular Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 1.00 Width (feet) 7.00 7.00 0.00

17061 Hoag Lane

Prepared by Microsoft

HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.80"

Printed 7/11/2019

Page 5

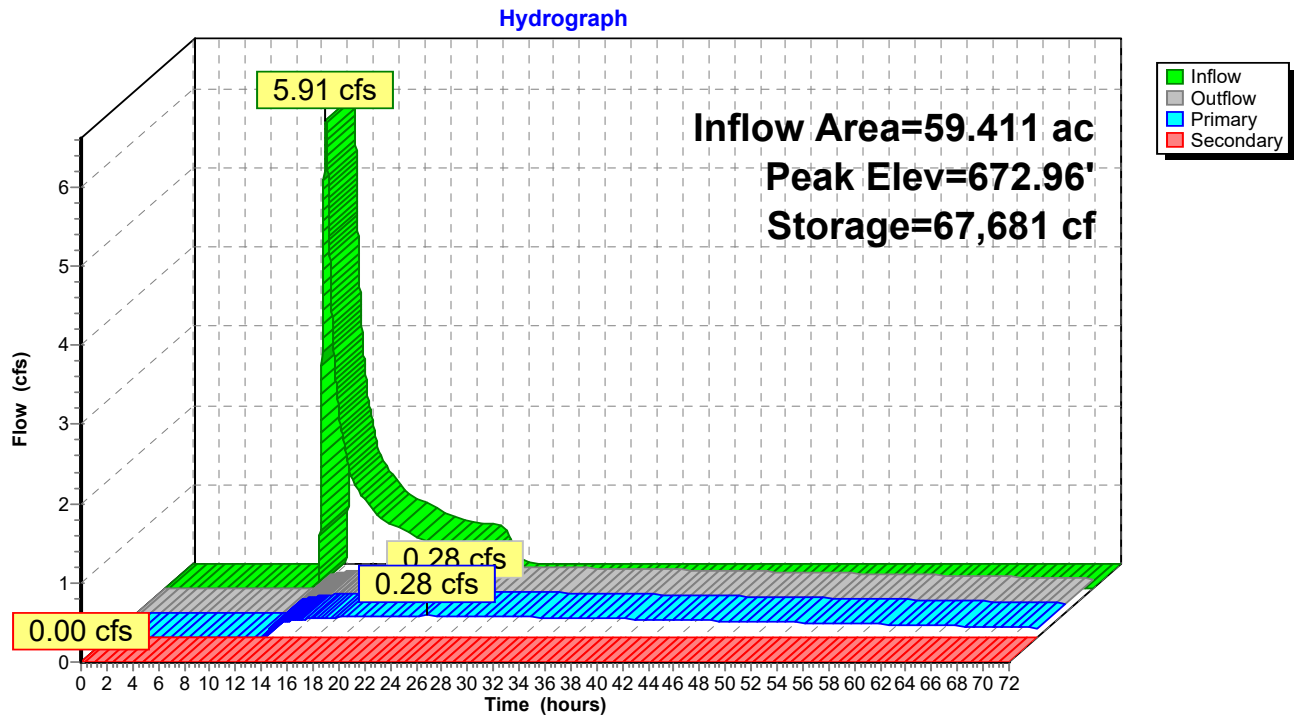
Primary OutFlow Max=46.57 cfs @ 12.88 hrs HW=675.98' (Free Discharge)

- ↑ 1=Outlet Culvert (Inlet Controls 46.57 cfs @ 14.83 fps)
- ↑ 3=2.5" Orifice (Passes < 0.40 cfs potential flow)
- ↑ 4=Rim (Passes < 12.82 cfs potential flow)
- ↑ 5=Rectangular Orifice (Passes < 53.51 cfs potential flow)

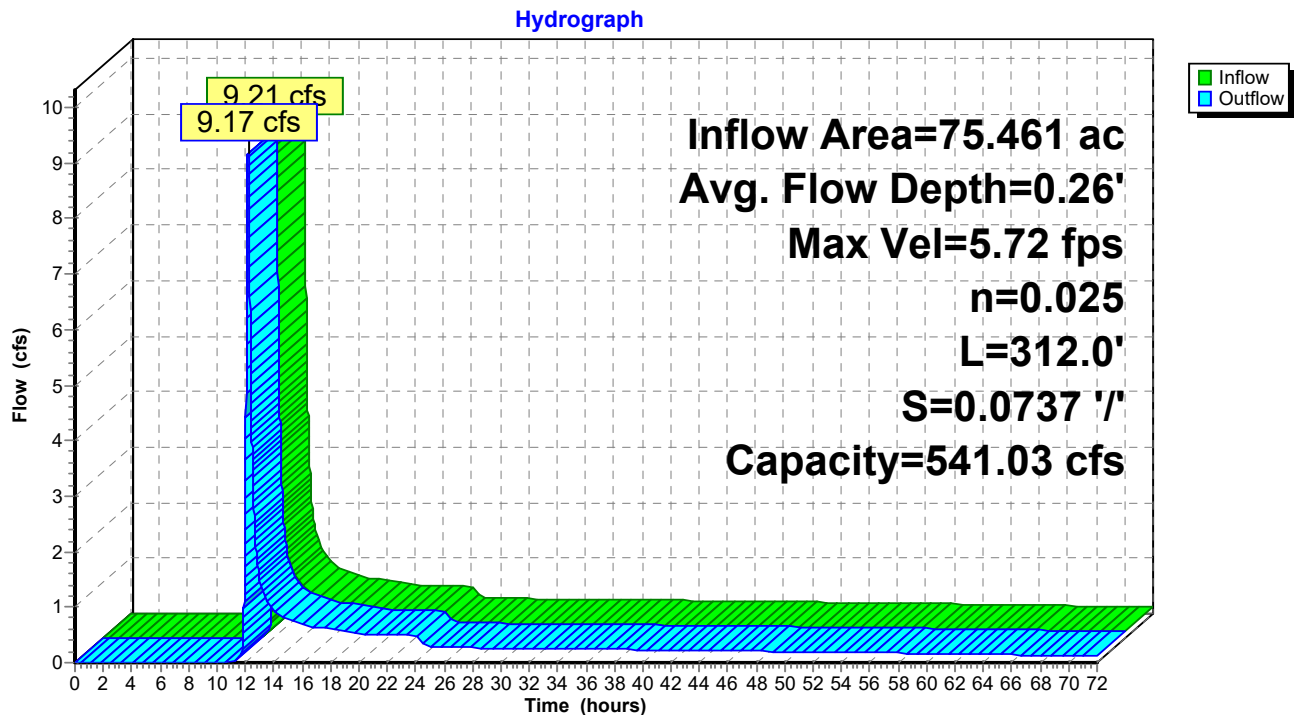
Secondary OutFlow Max=5.87 cfs @ 12.88 hrs HW=675.98' (Free Discharge)

- ↑ 2=Spillway (Weir Controls 5.87 cfs @ 1.54 fps)

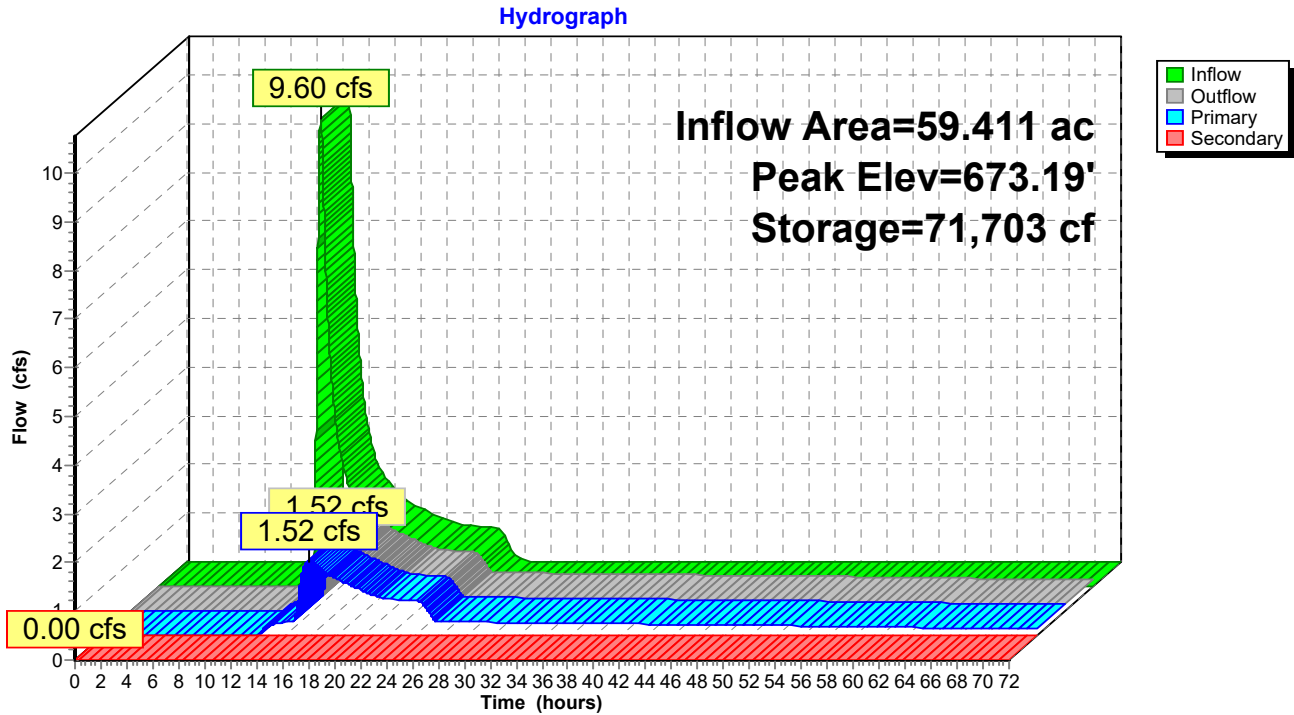
Pond 12P: 190709 Wet Pond



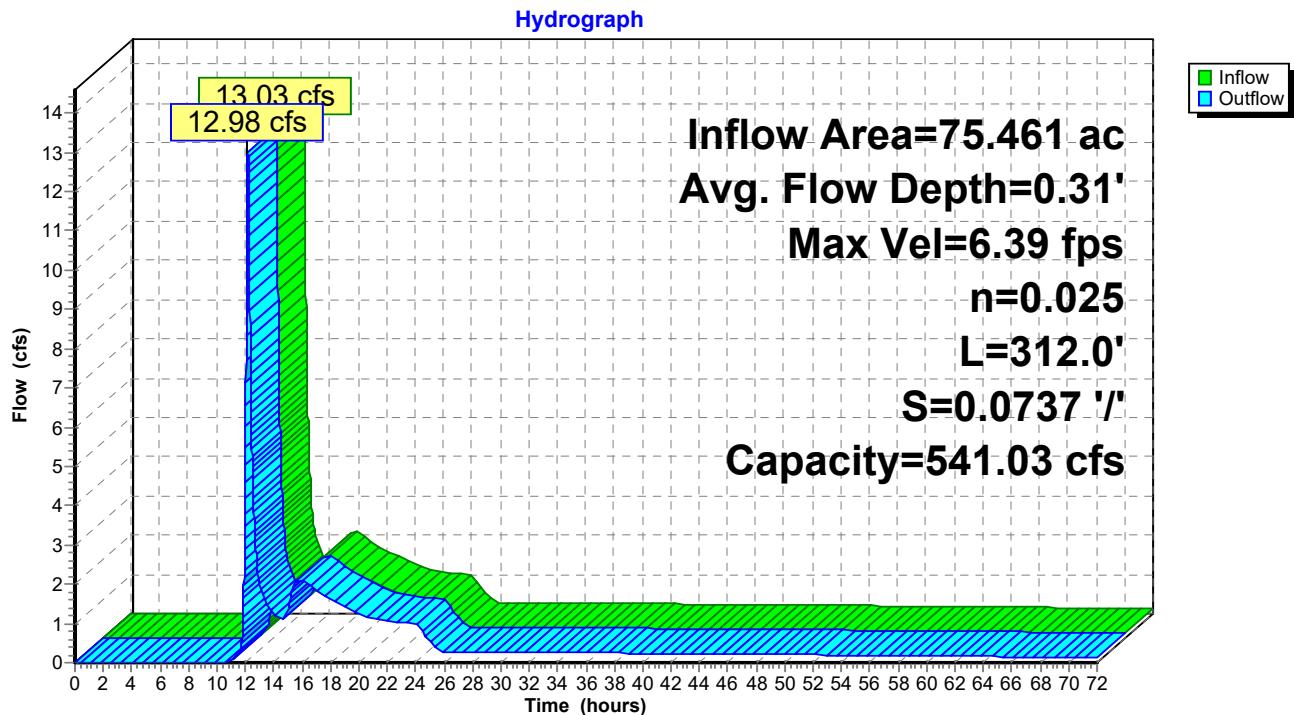
Reach 25R: Swale 3 (Pr. Cond)



Pond 12P: 190709 Wet Pond

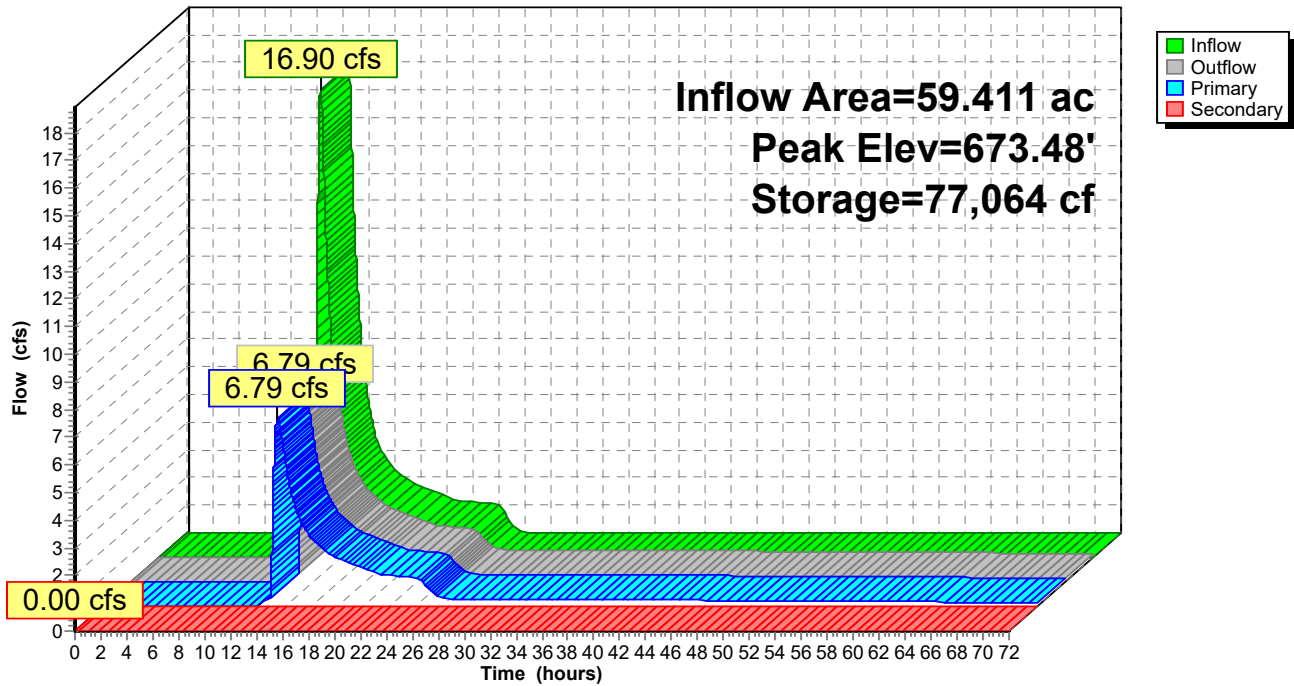


Reach 25R: Swale 3 (Pr. Cond)



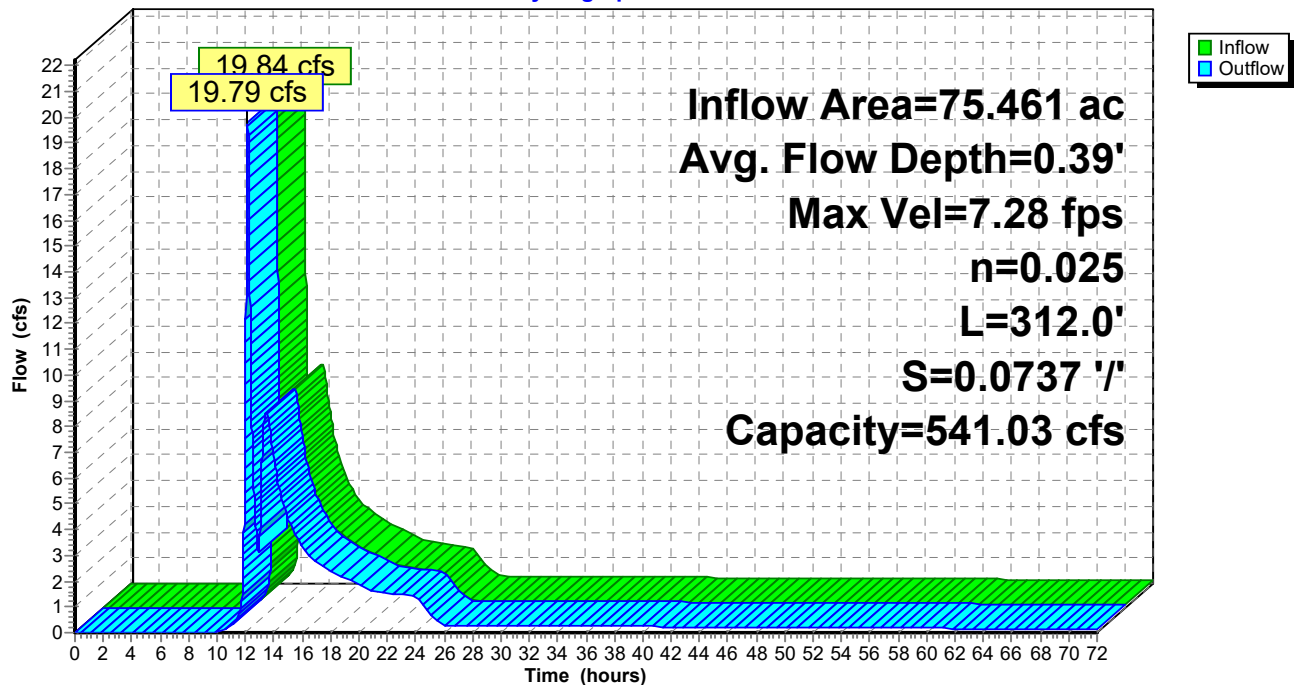
Pond 12P: 190709 Wet Pond

Hydrograph



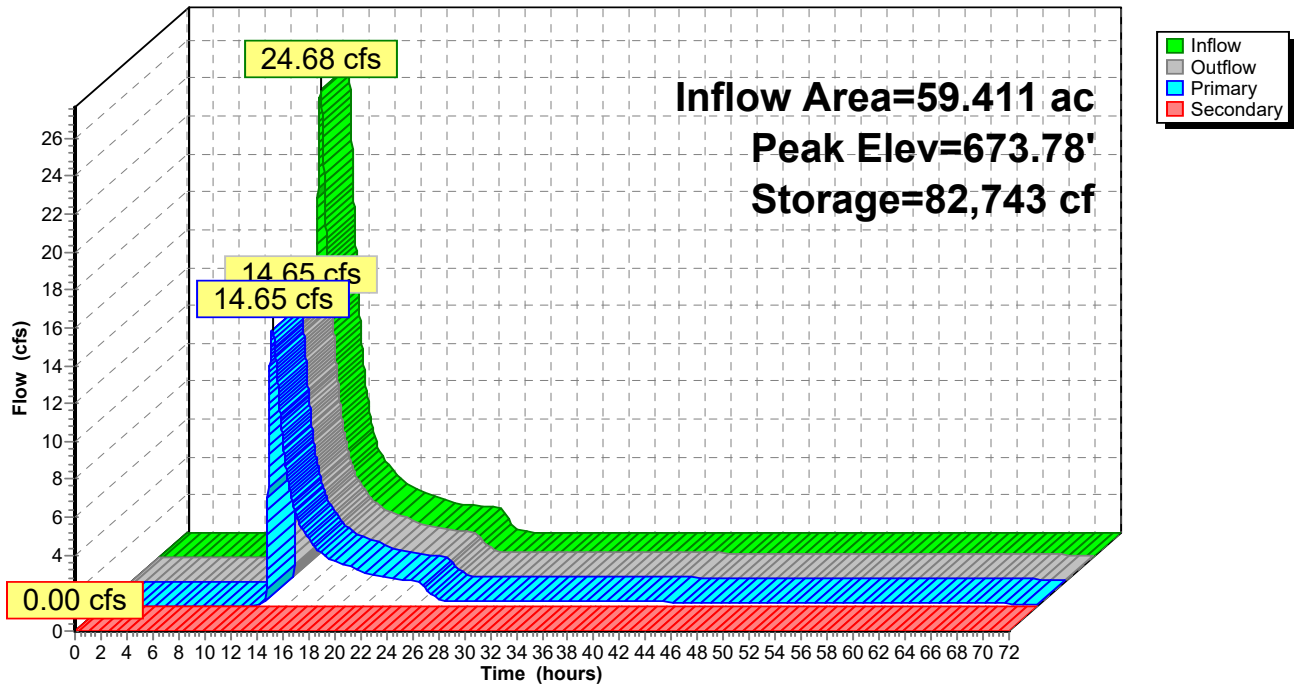
Reach 25R: Swale 3 (Pr. Cond)

Hydrograph



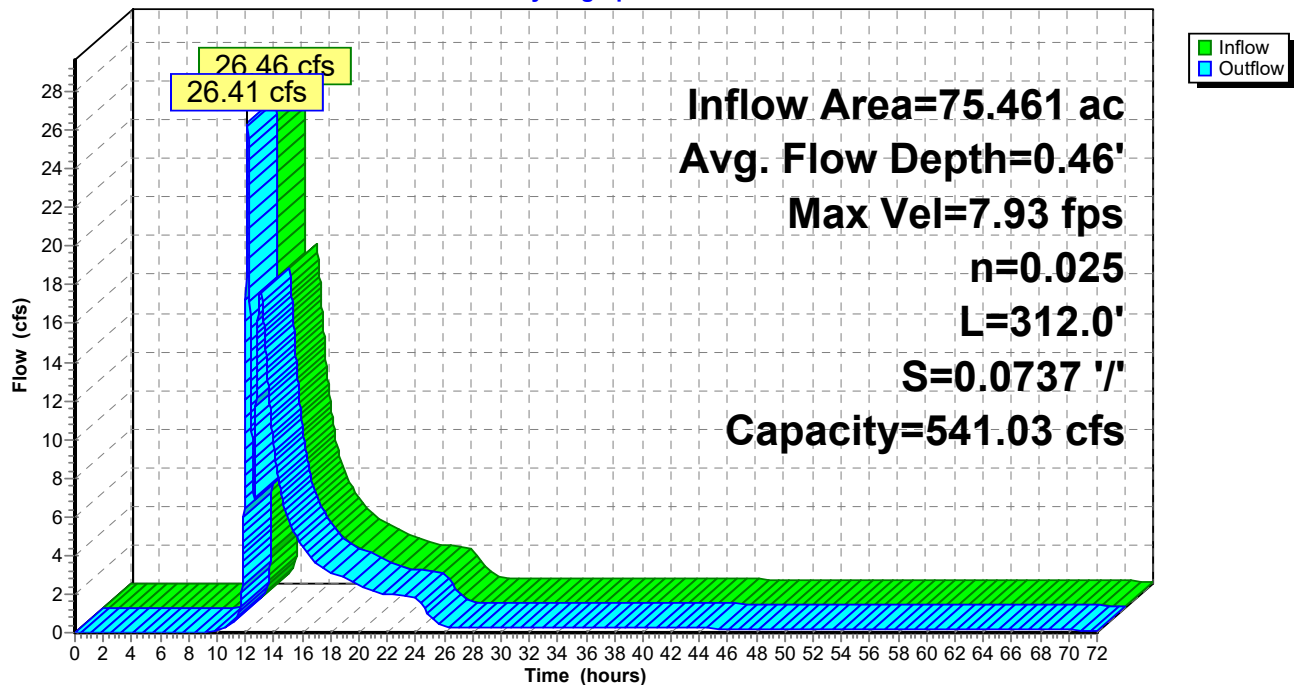
Pond 12P: 190709 Wet Pond

Hydrograph



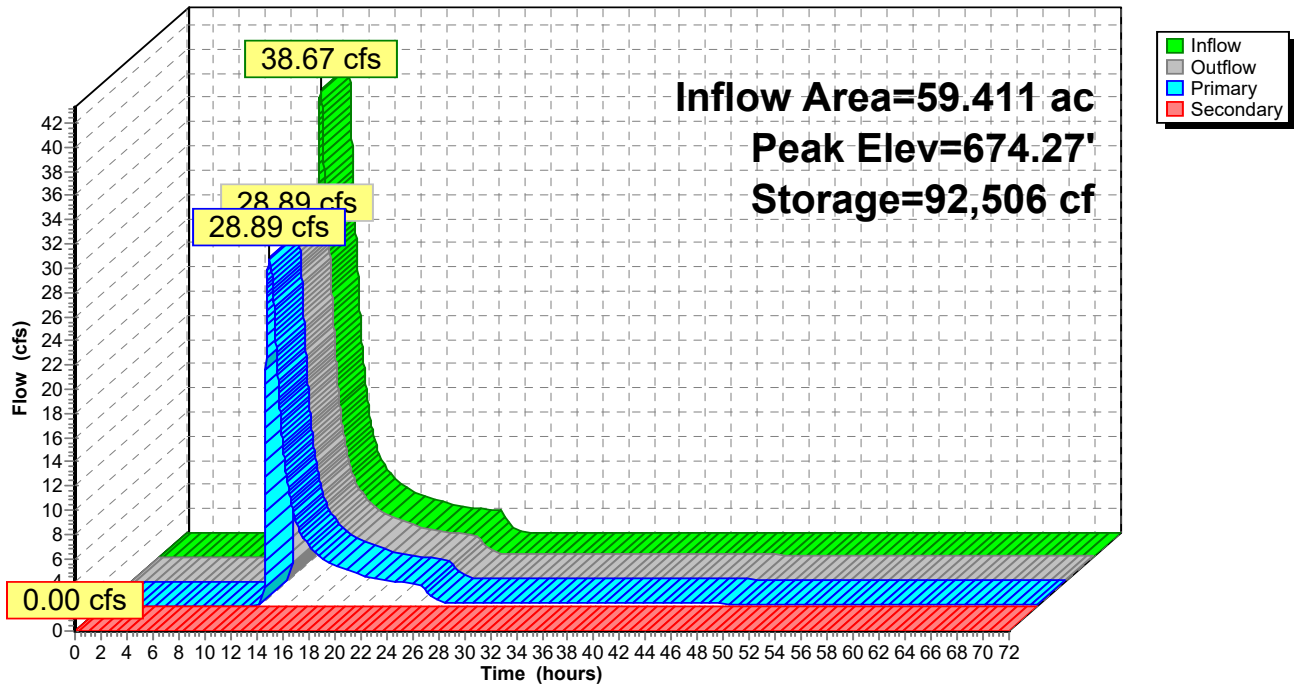
Reach 25R: Swale 3 (Pr. Cond)

Hydrograph



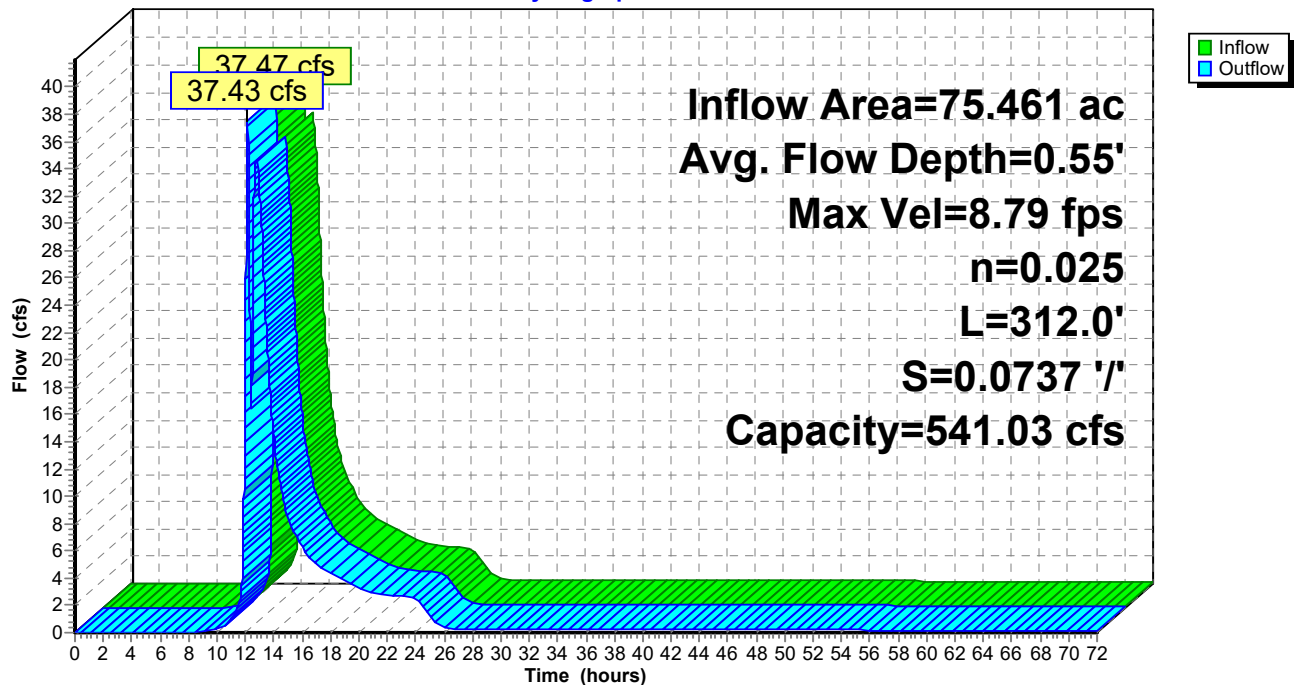
Pond 12P: 190709 Wet Pond

Hydrograph

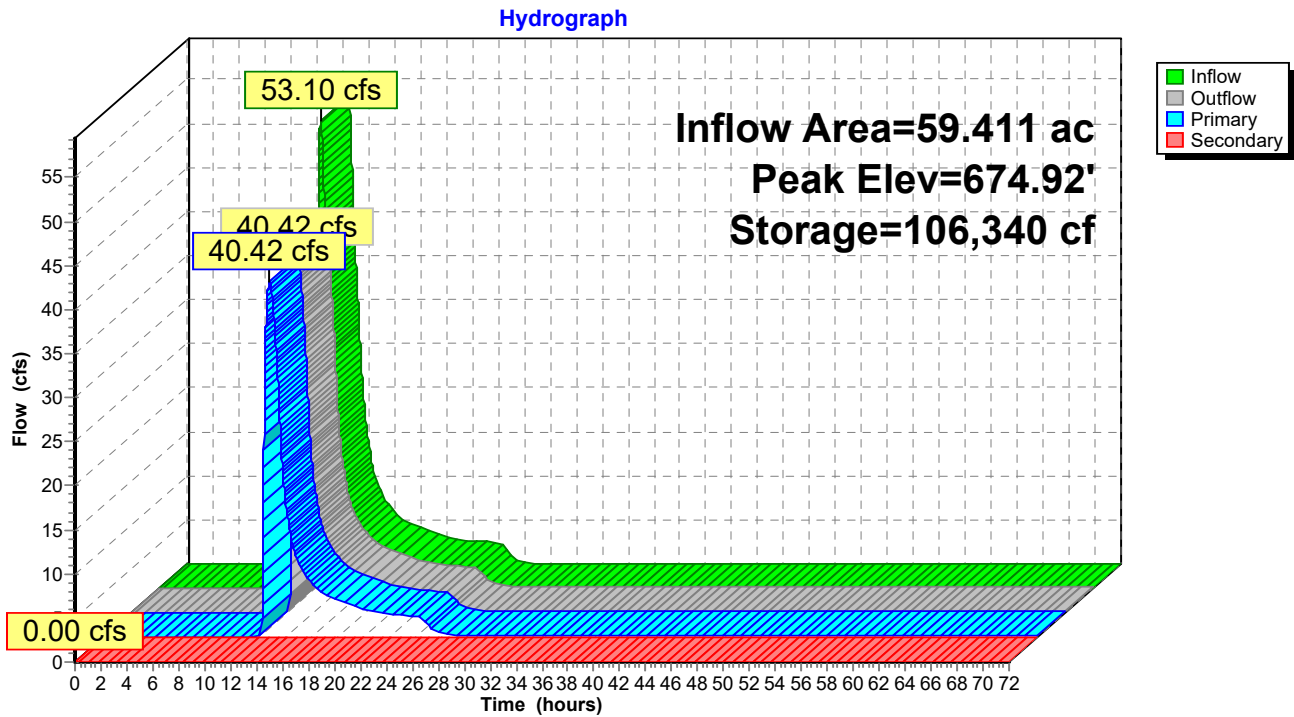


Reach 25R: Swale 3 (Pr. Cond)

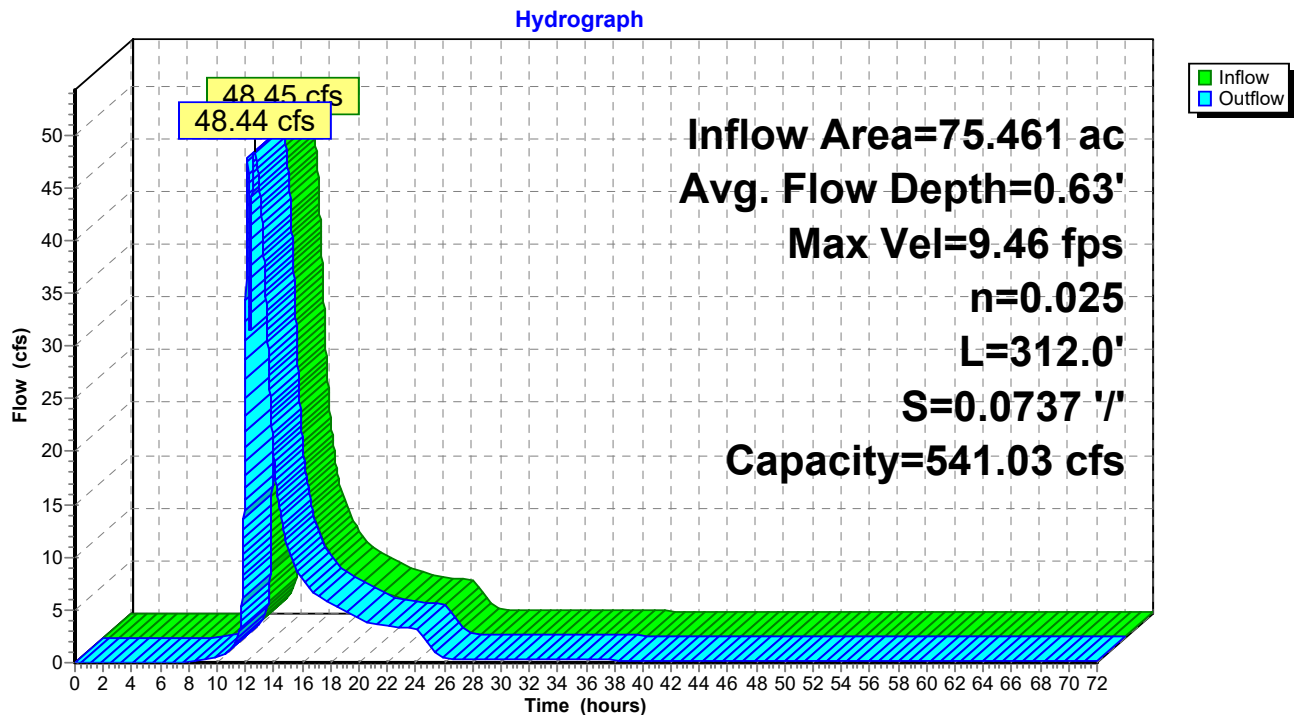
Hydrograph



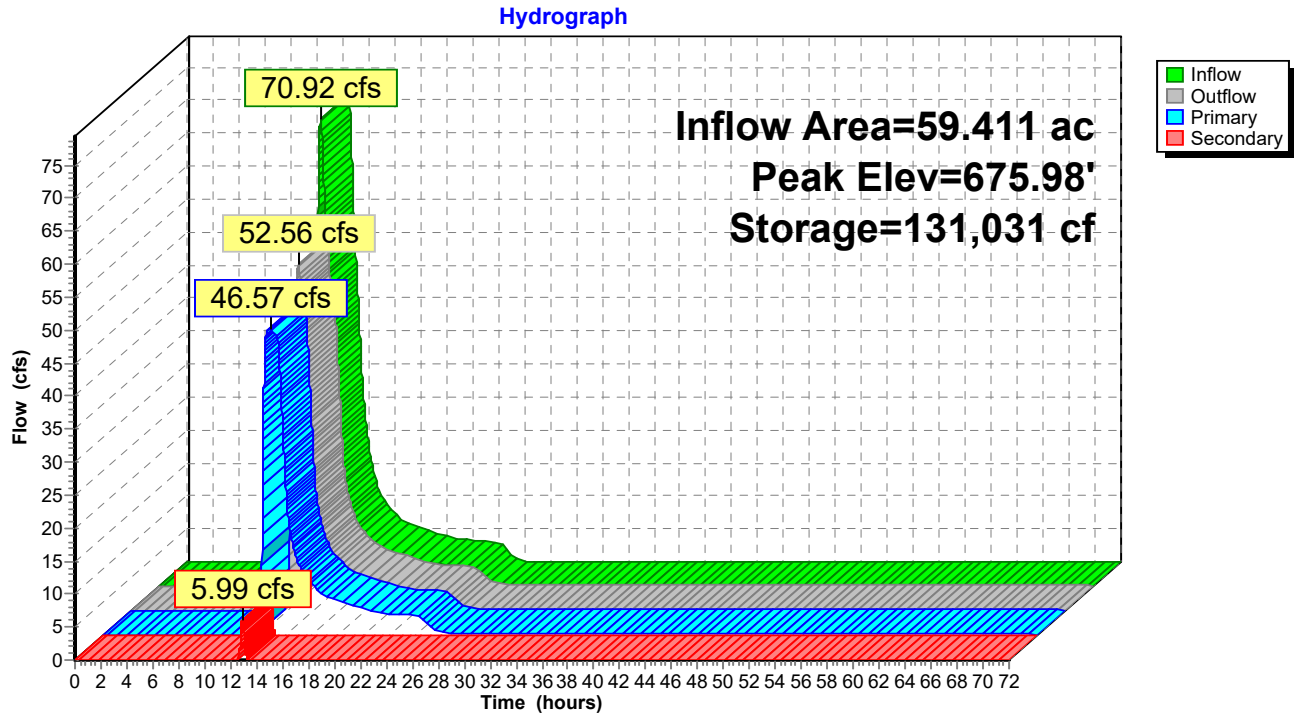
Pond 12P: 190709 Wet Pond



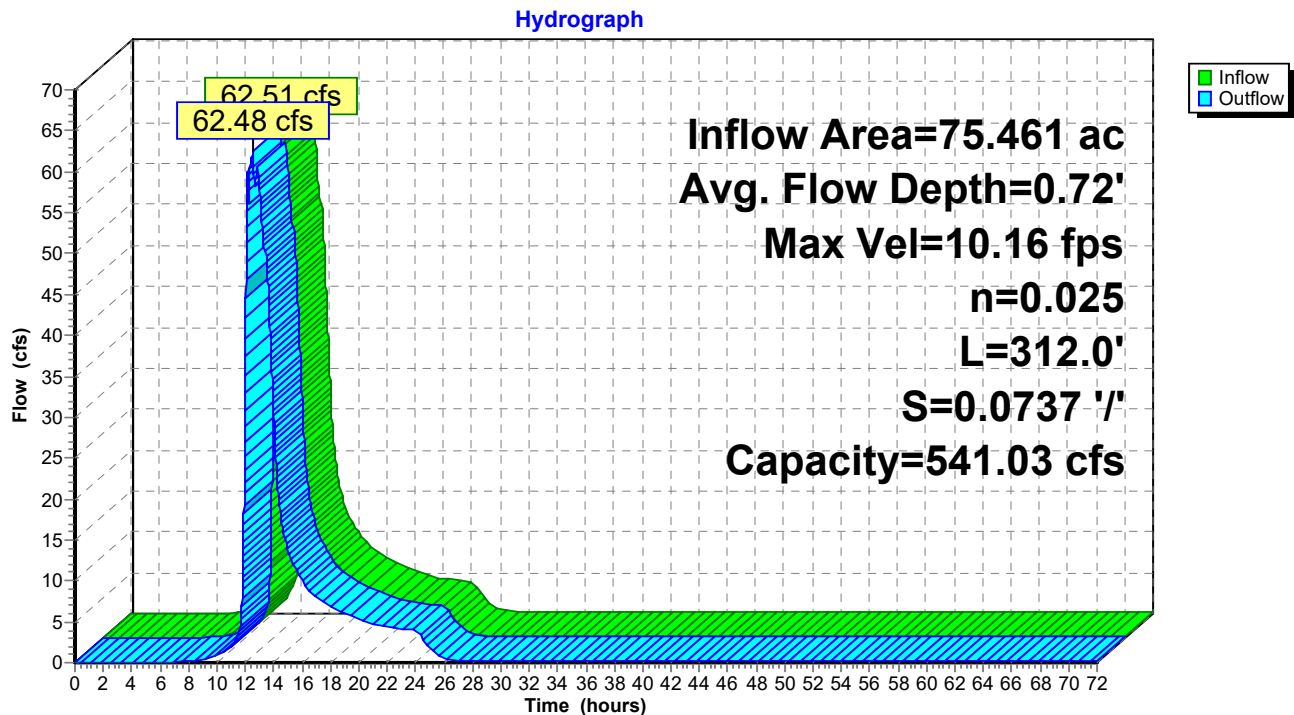
Reach 25R: Swale 3 (Pr. Cond)



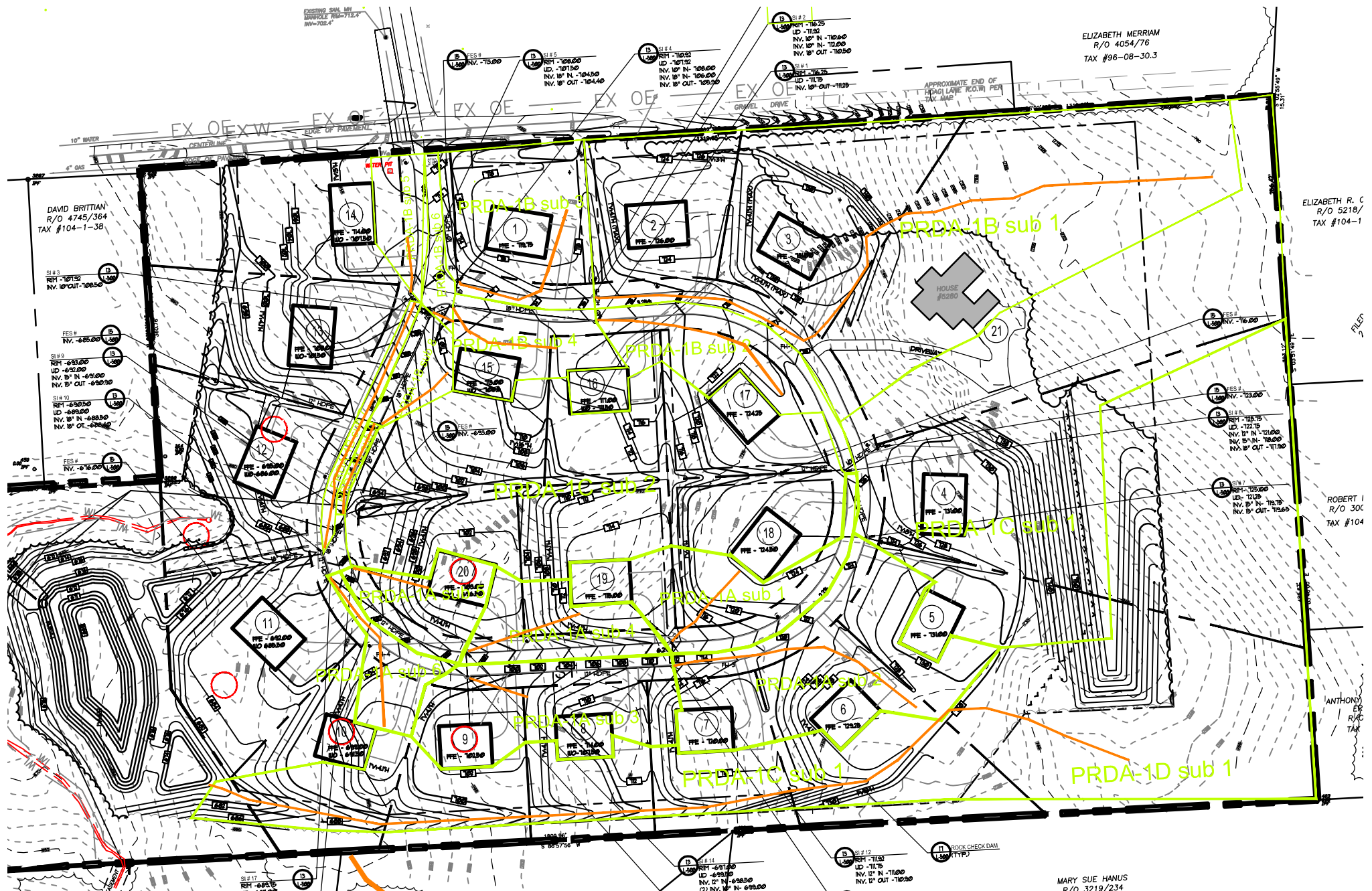
Pond 12P: 190709 Wet Pond



Reach 25R: Swale 3 (Pr. Cond)



APPENDIX F



Hoag Lane Subdivision
 Town of Manlius, Onondaga County, NY

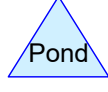
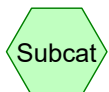
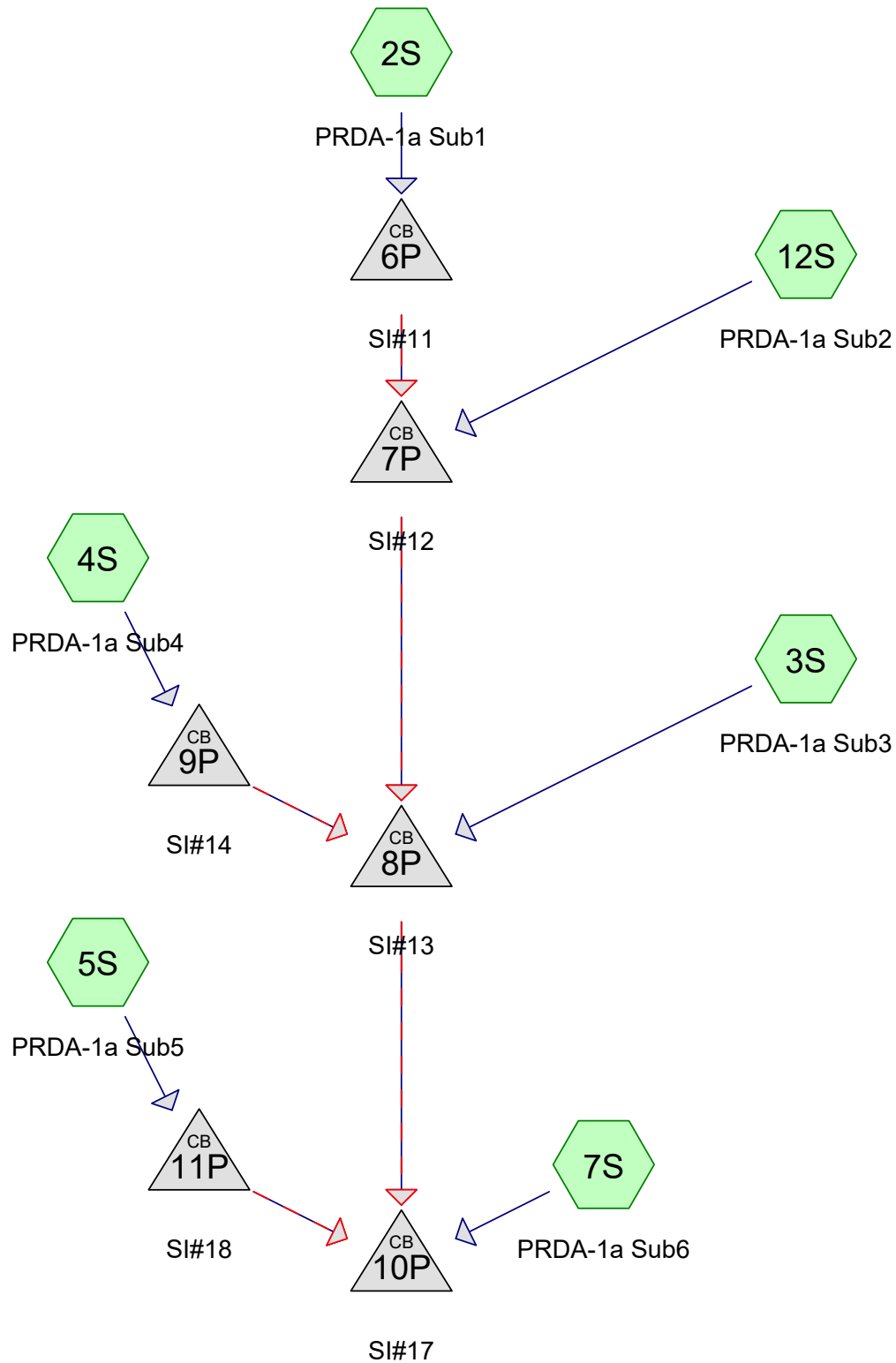
Figure F: Proposed Sub-Watersheds



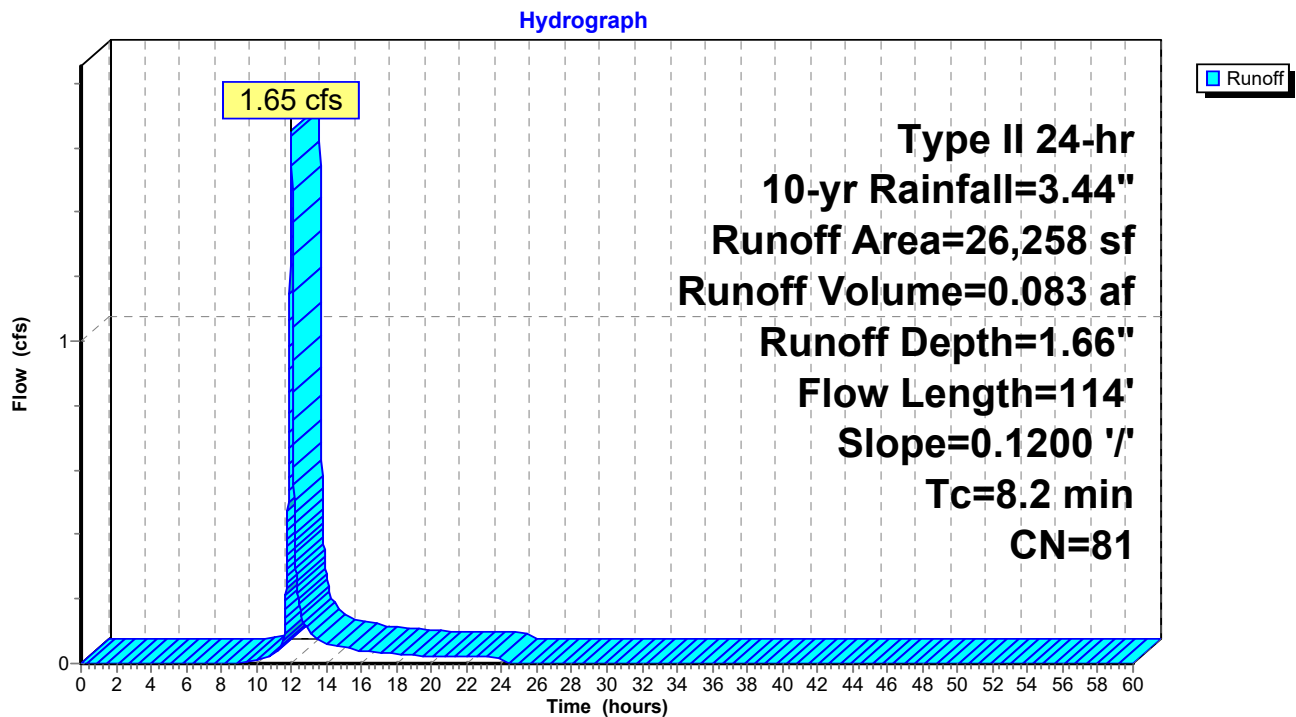
SCALE: 1:300
 Updated: 06/01/18

MARY SUE HANUS
 R/O 3219/234

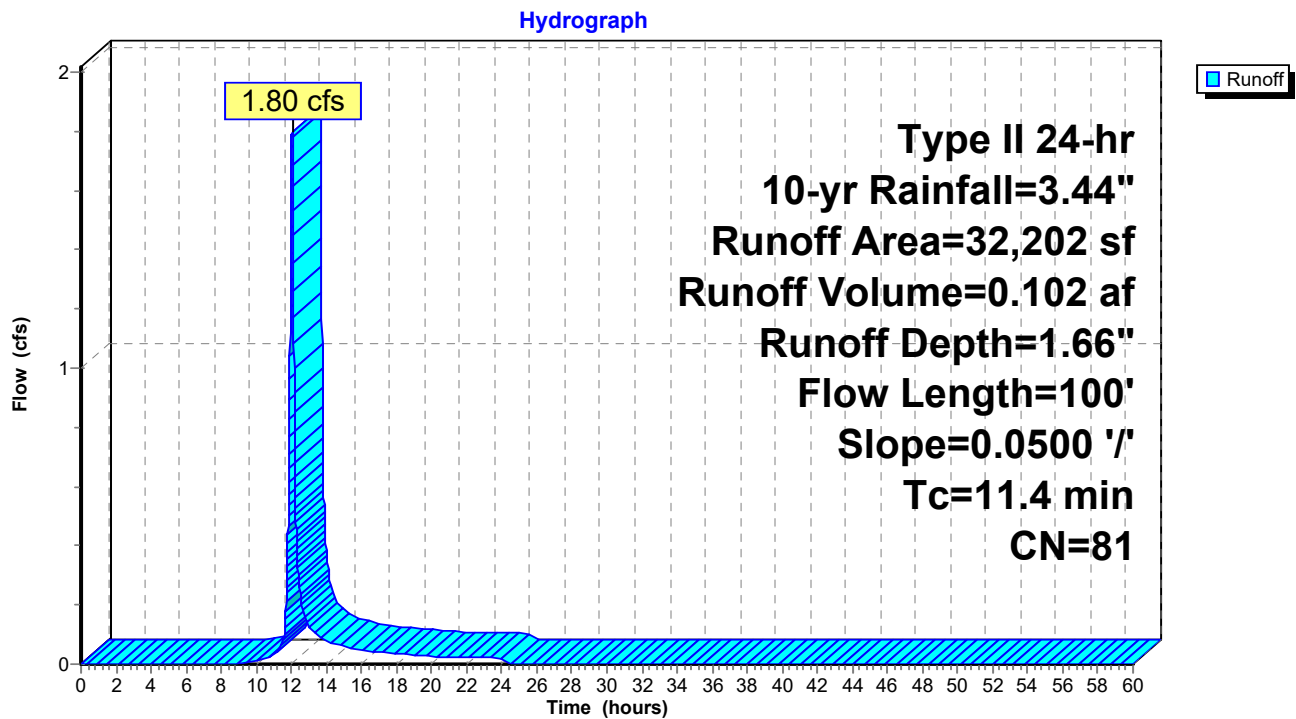
RZ Engineering, PLLC
 STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
 6320 FLY ROAD SUITE 109
 EAST SYRACUSE, NY 13057
 PH (315) 432-1089
 FAX (315) 445-7981



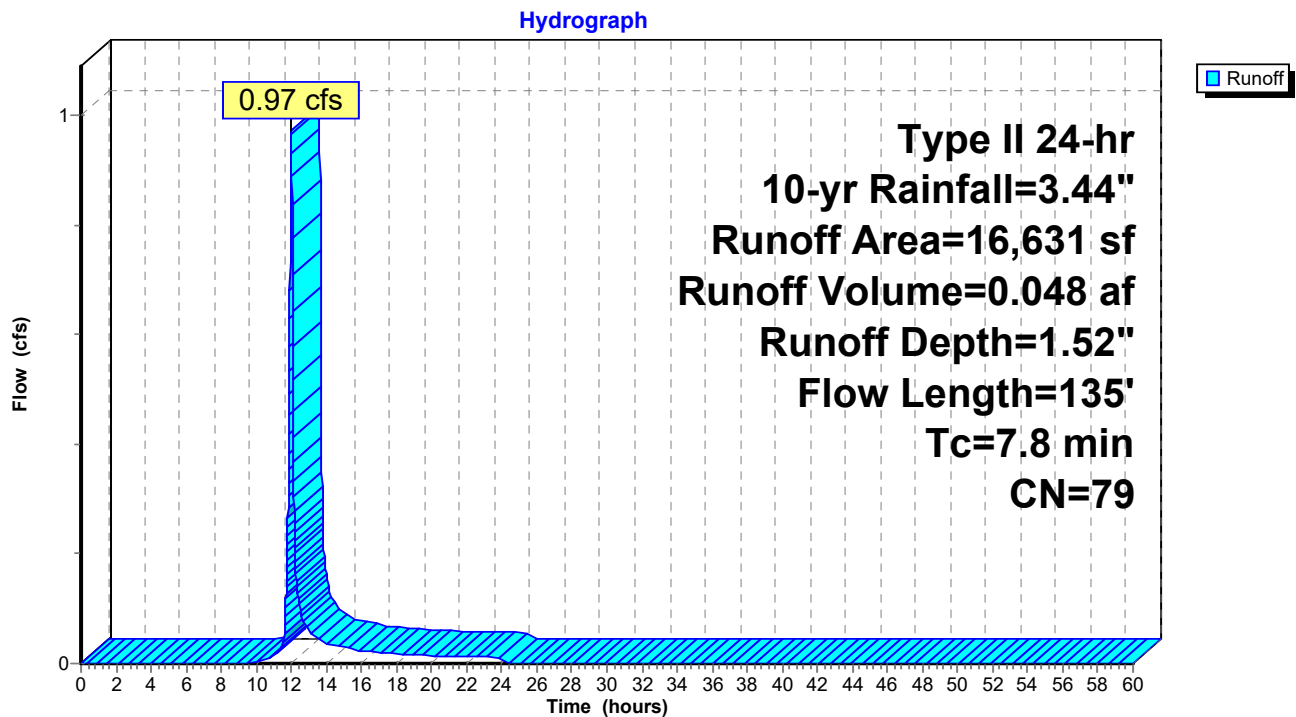
Subcatchment 2S: PRDA-1a Sub1



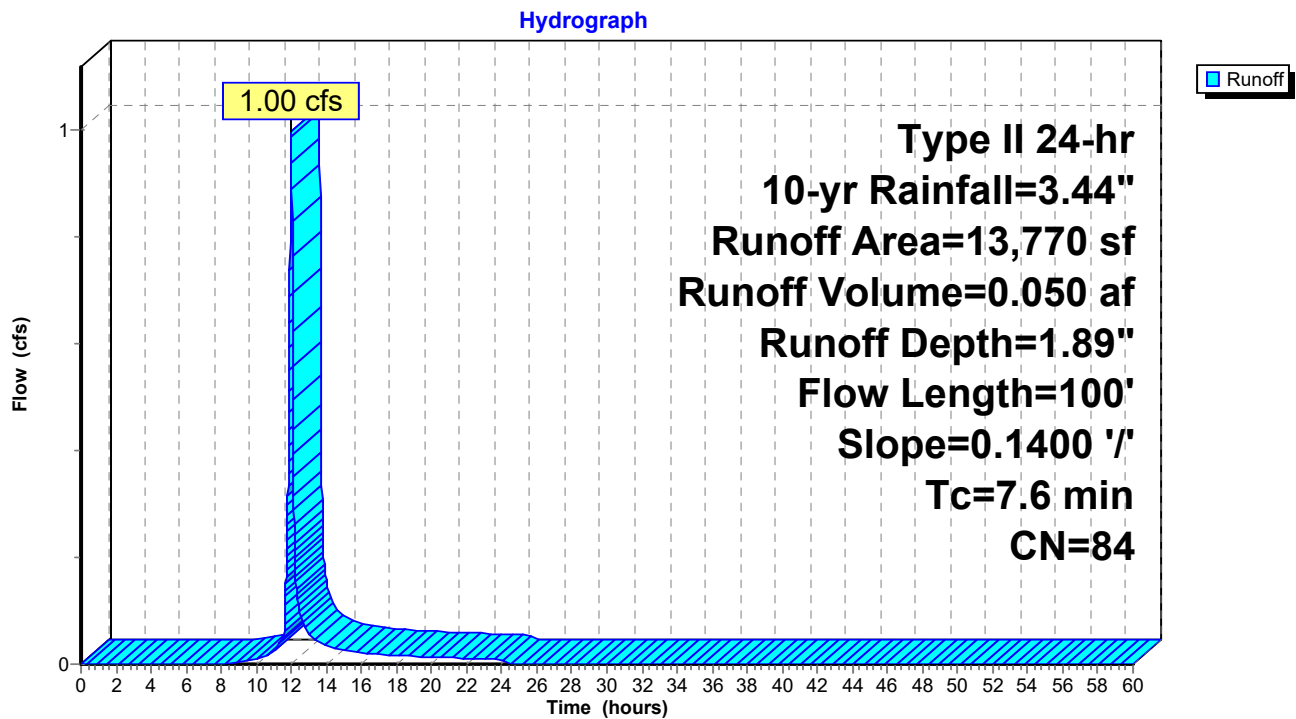
Subcatchment 3S: PRDA-1a Sub3



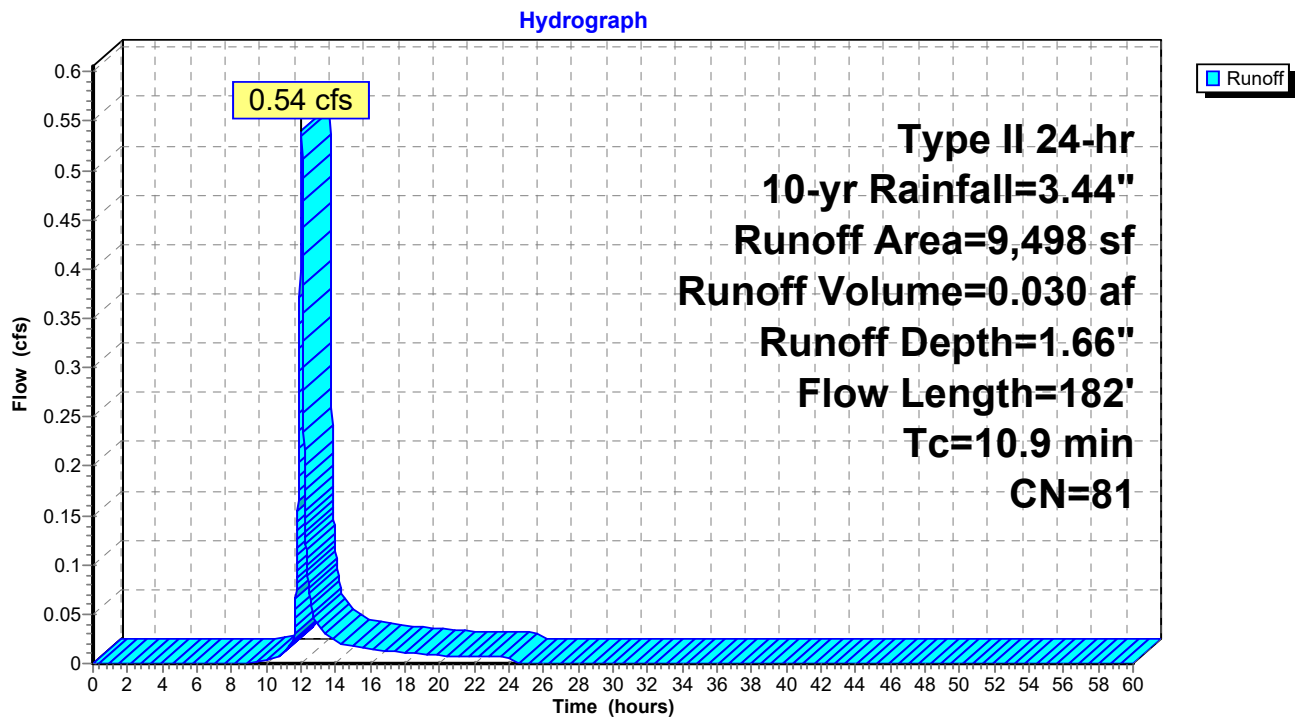
Subcatchment 4S: PRDA-1a Sub4



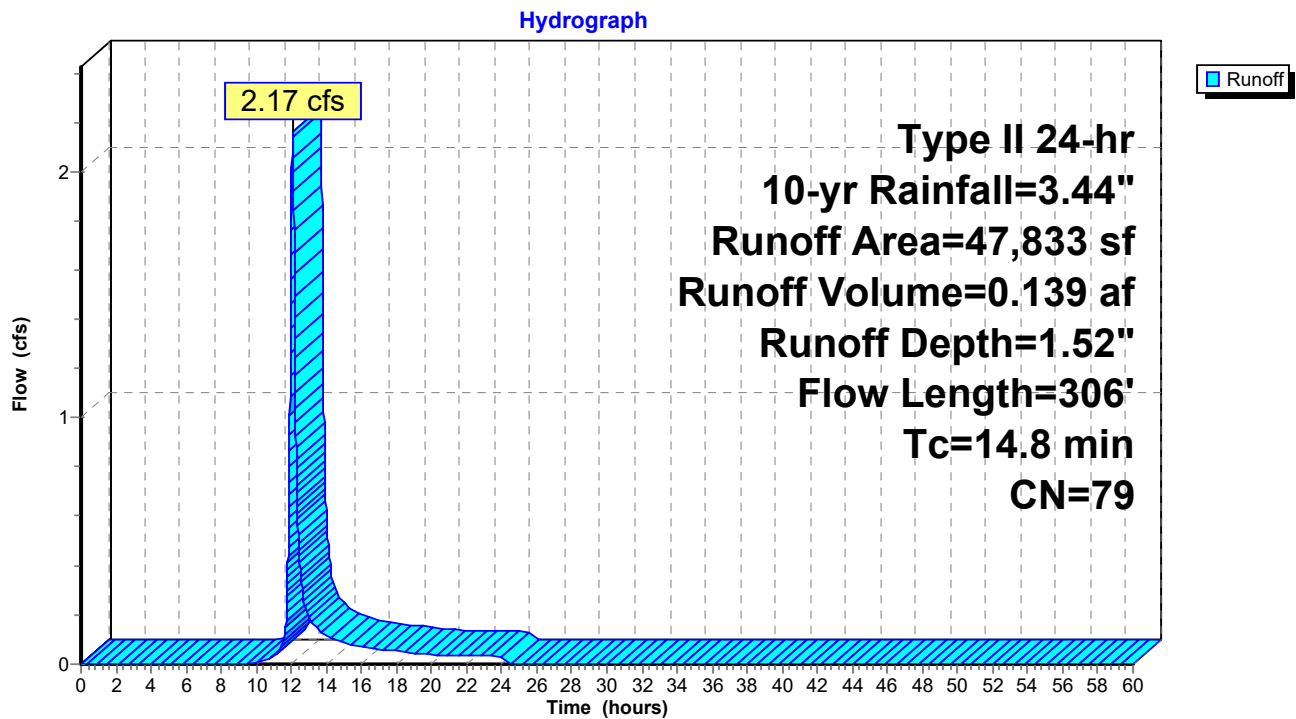
Subcatchment 5S: PRDA-1a Sub5



Subcatchment 7S: PRDA-1a Sub6

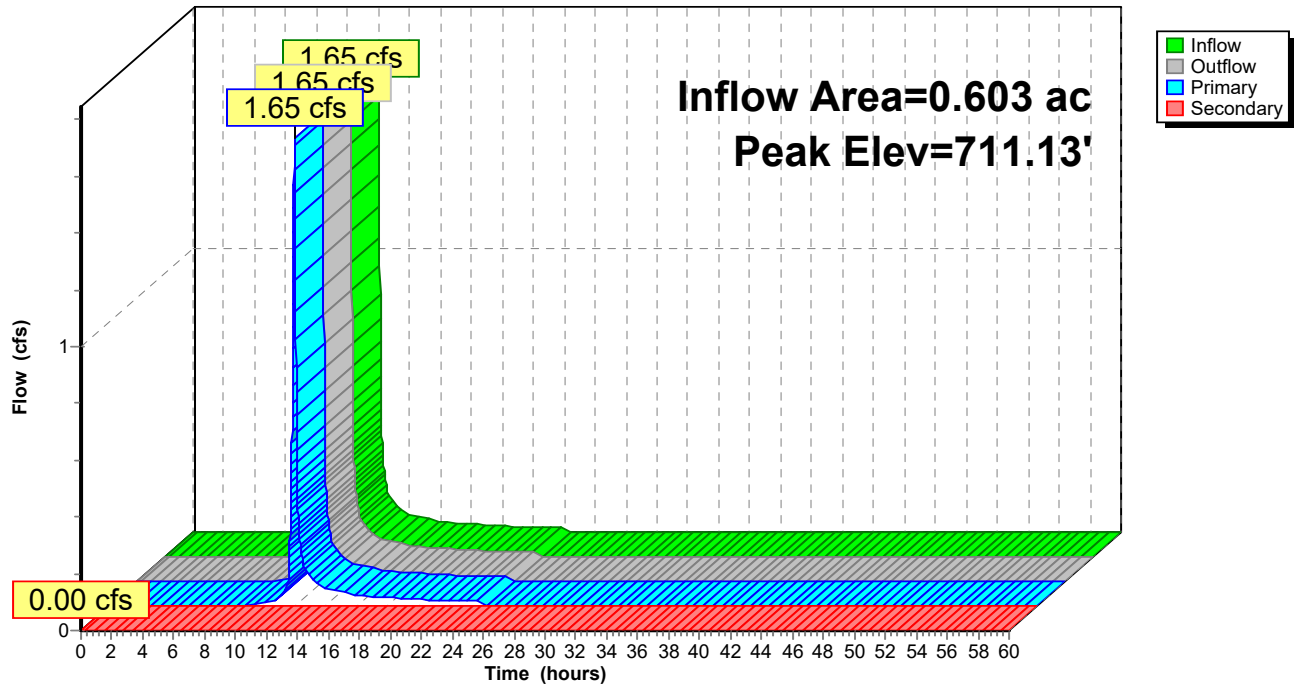


Subcatchment 12S: PRDA-1a Sub2



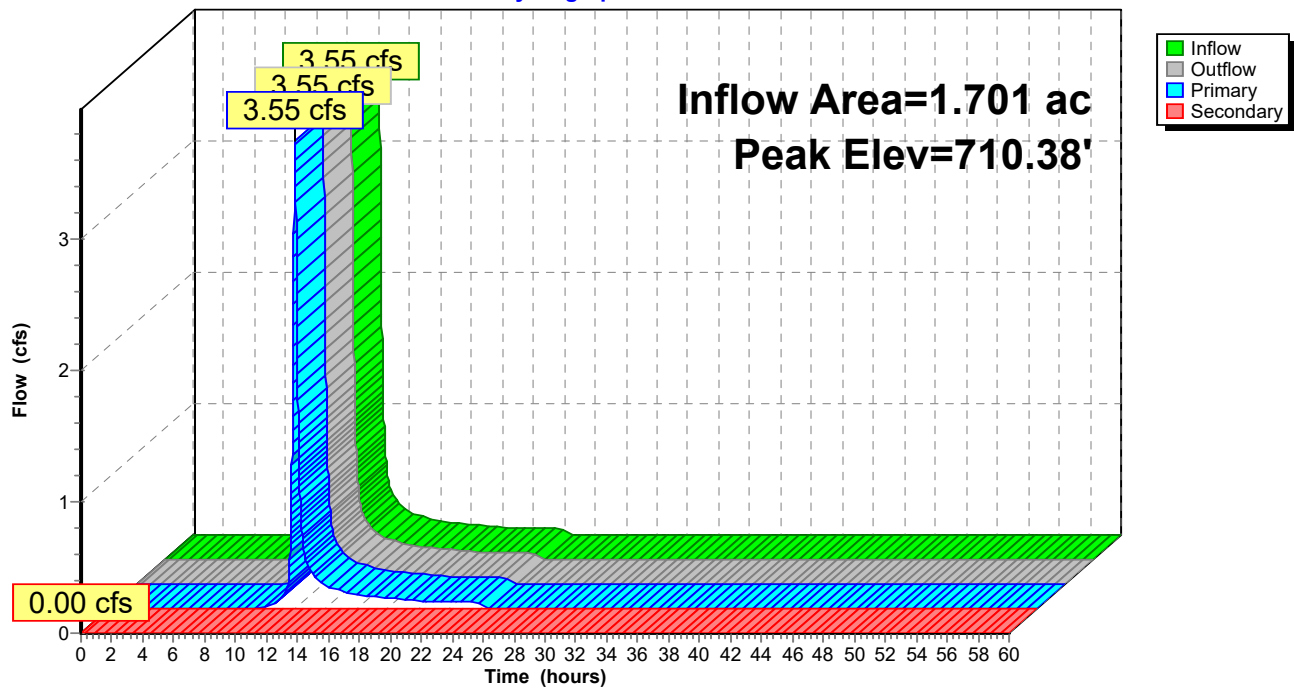
Pond 6P: SI#11

Hydrograph



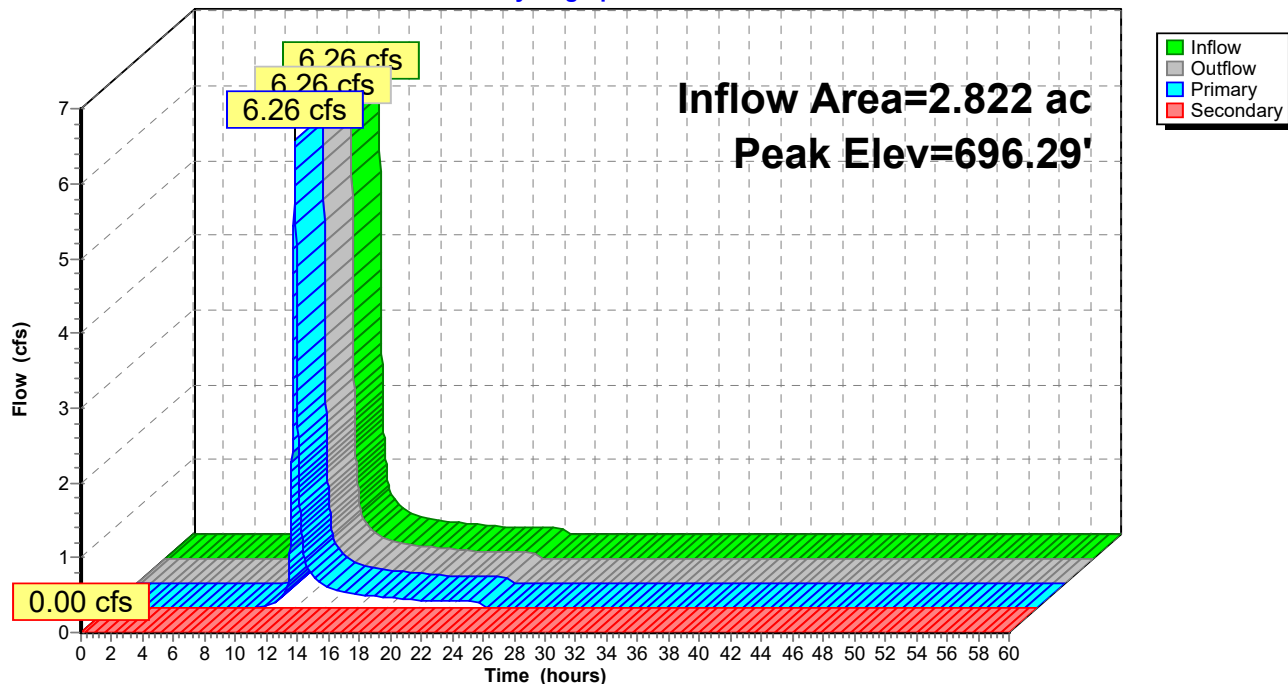
Pond 7P: SI#12

Hydrograph



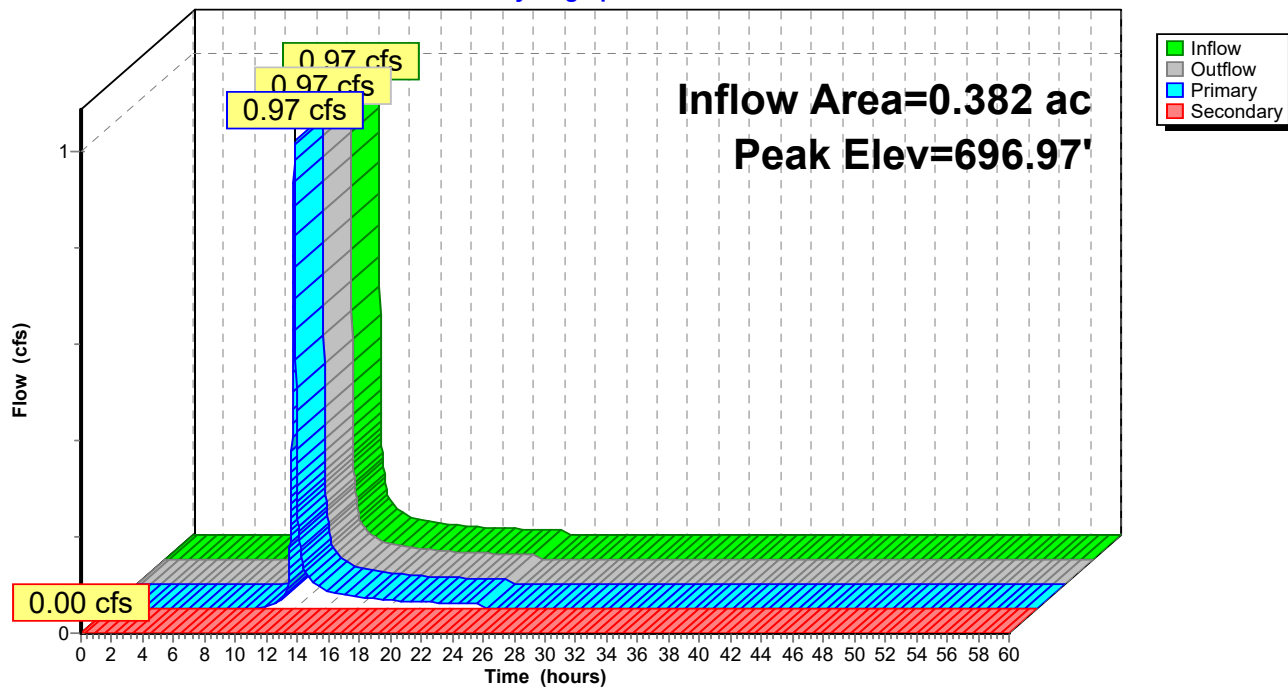
Pond 8P: SI#13

Hydrograph



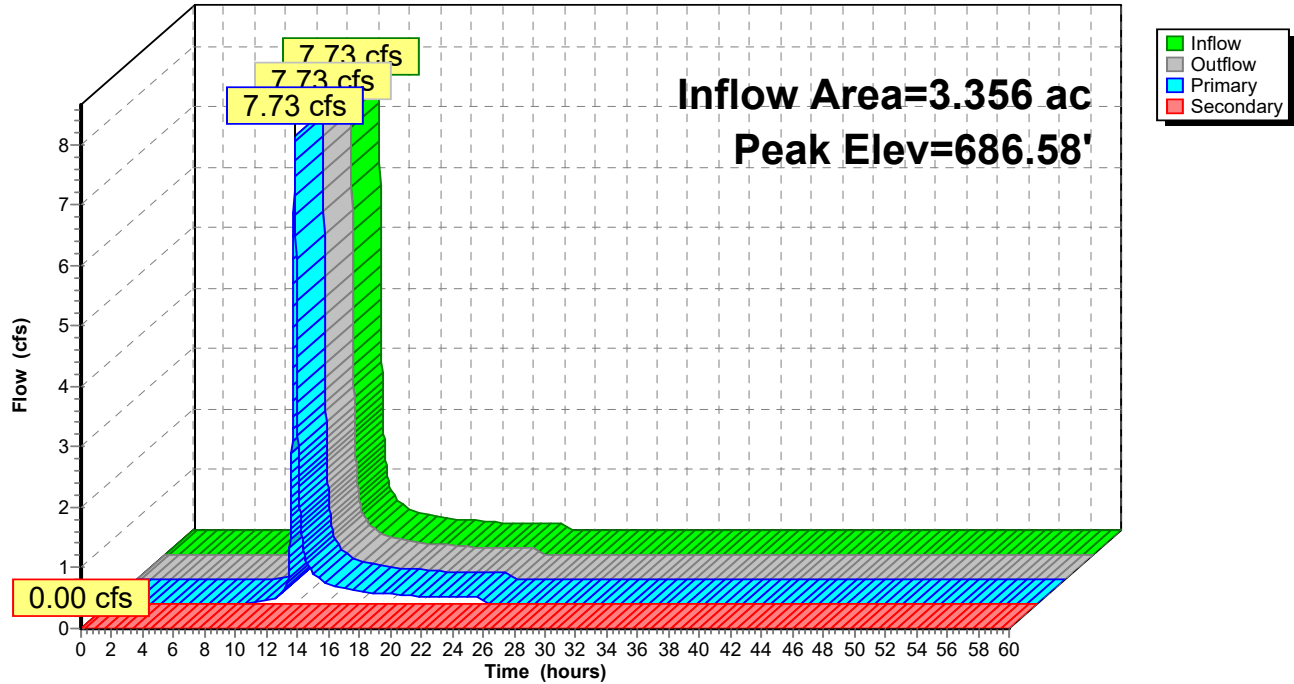
Pond 9P: SI#14

Hydrograph



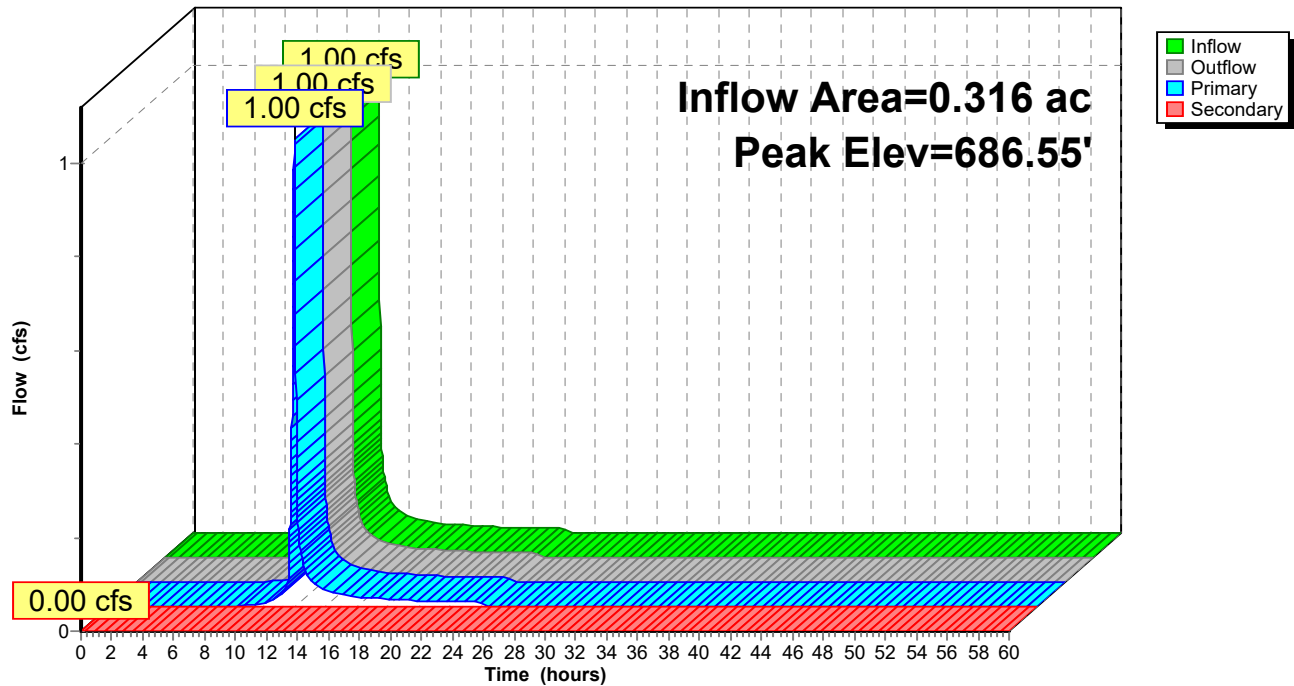
Pond 10P: SI#17

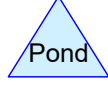
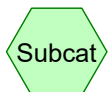
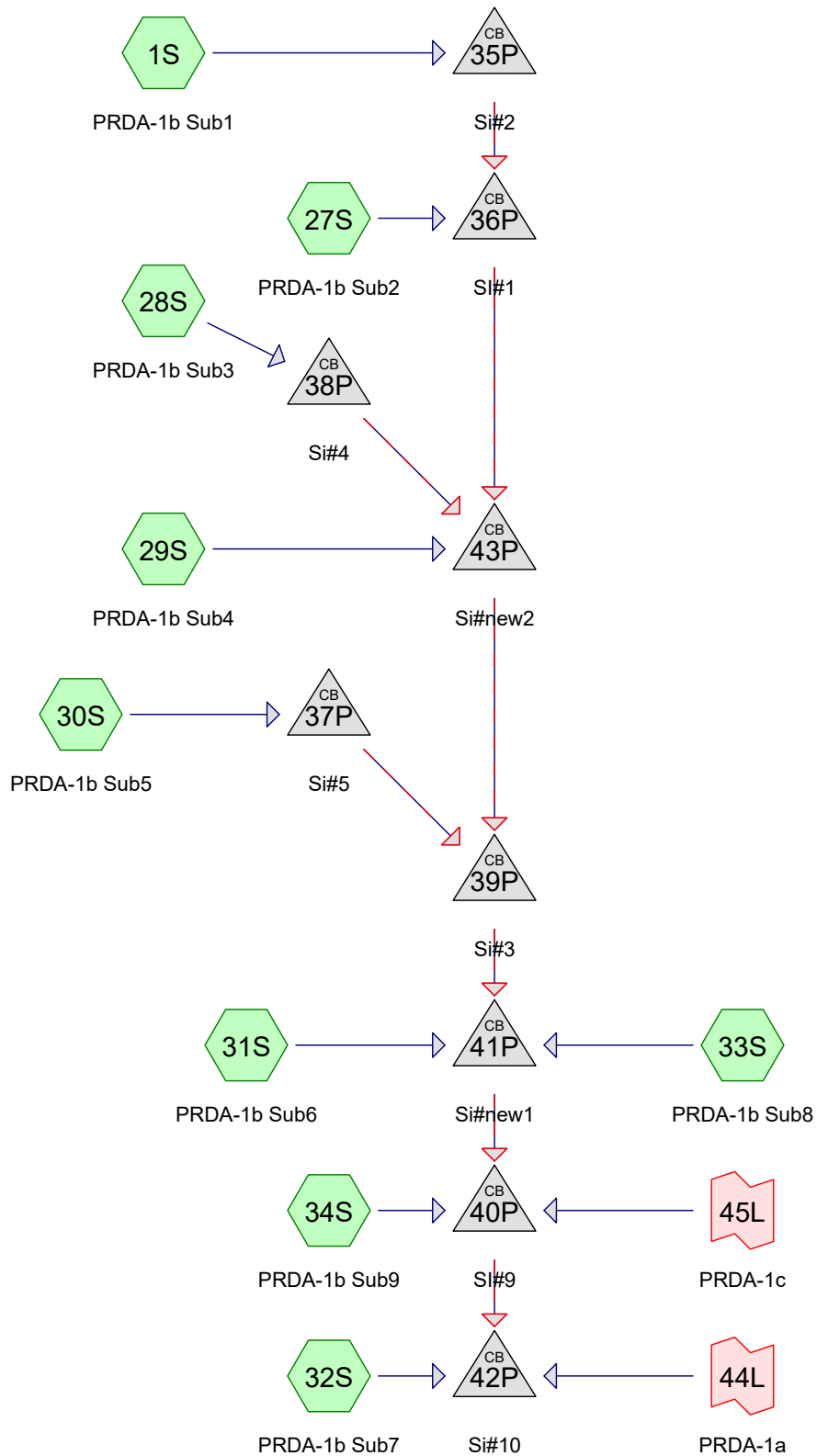
Hydrograph



Pond 11P: SI#18

Hydrograph





17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 2

Summary for Subcatchment 1S: PRDA-1b Sub1

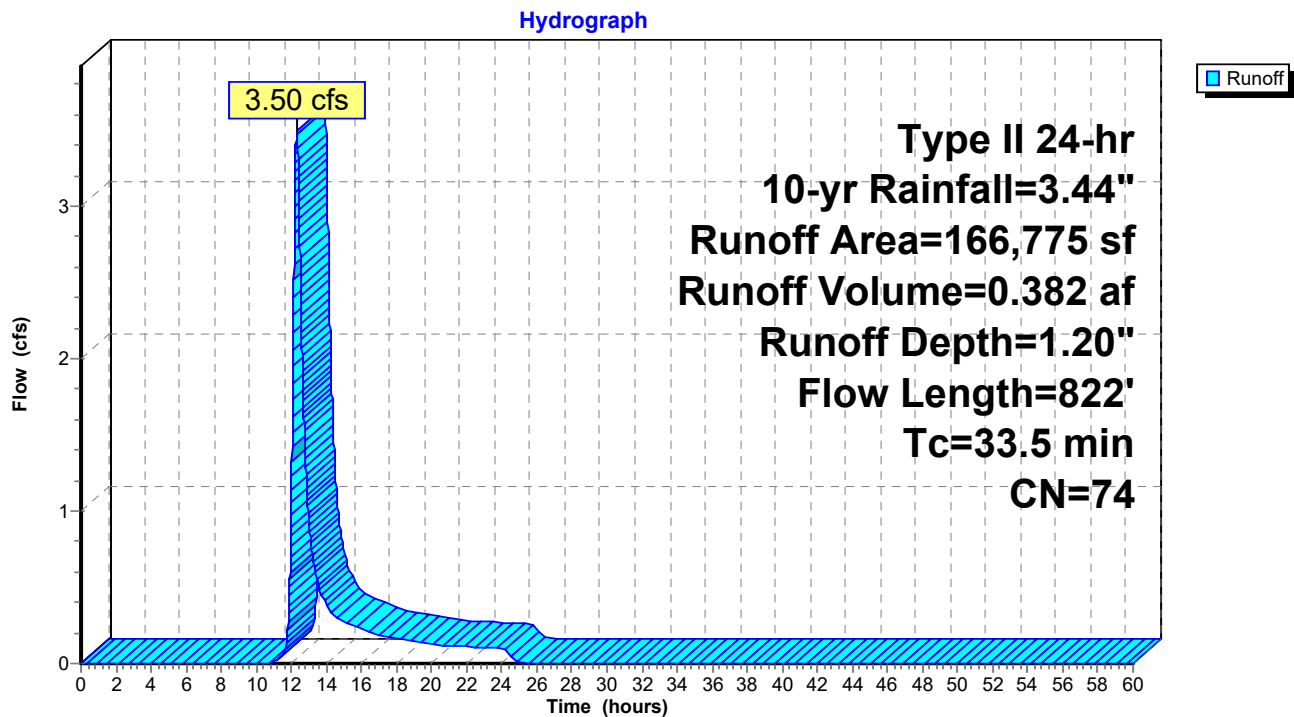
Runoff = 3.50 cfs @ 12.32 hrs, Volume= 0.382 af, Depth= 1.20"

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
73,844	74	>75% Grass cover, Good, HSG C
79,090	70	Woods, Good, HSG C
6,841	98	Paved parking, HSG C
7,000	98	Roofs, HSG C
166,775	74	Weighted Average
152,934		91.70% Pervious Area
13,841		8.30% 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
1.1	256	0.0370	3.90		Shallow Concentrated Flow, Paved Kv= 20.3 fps
33.5	822	Total			

Subcatchment 1S: PRDA-1b Sub1



17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 4

Summary for Subcatchment 27S: PRDA-1b Sub2

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.081 af, Depth= 1.73"

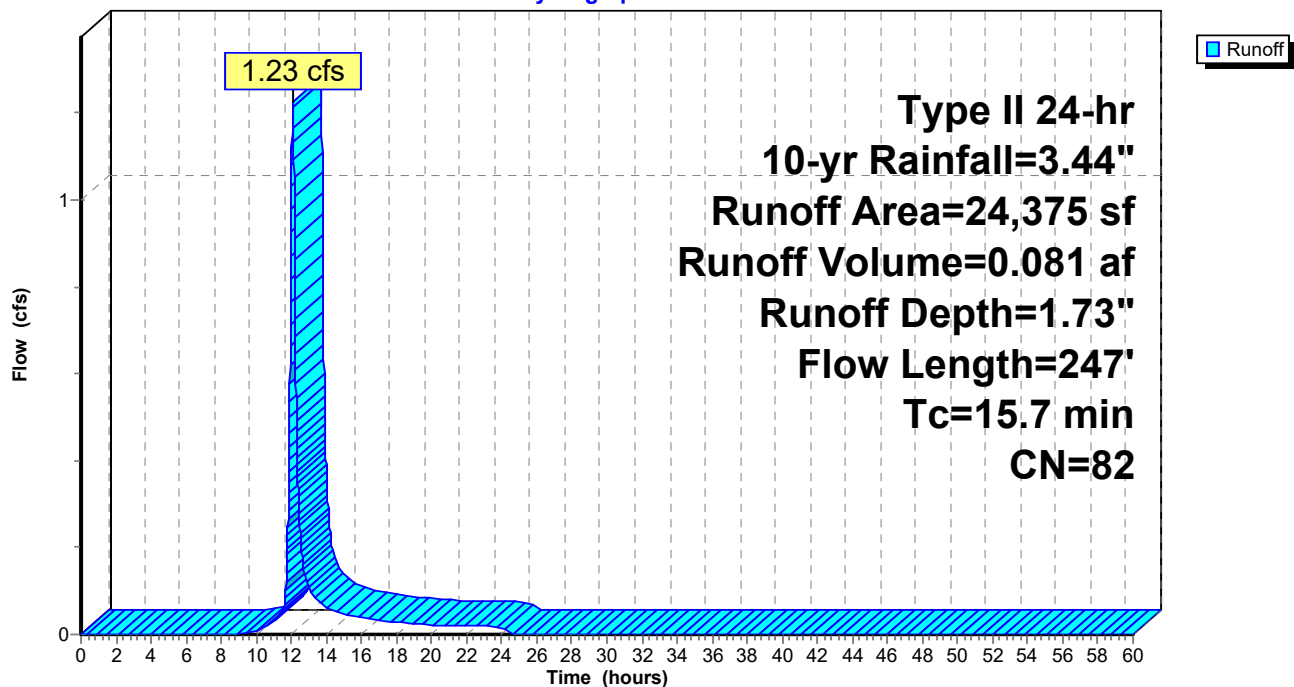
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

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-1b Sub2

Hydrograph



17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 5

Summary for Subcatchment 28S: PRDA-1b Sub3

Runoff = 1.44 cfs @ 12.06 hrs, Volume= 0.087 af, Depth= 1.45"

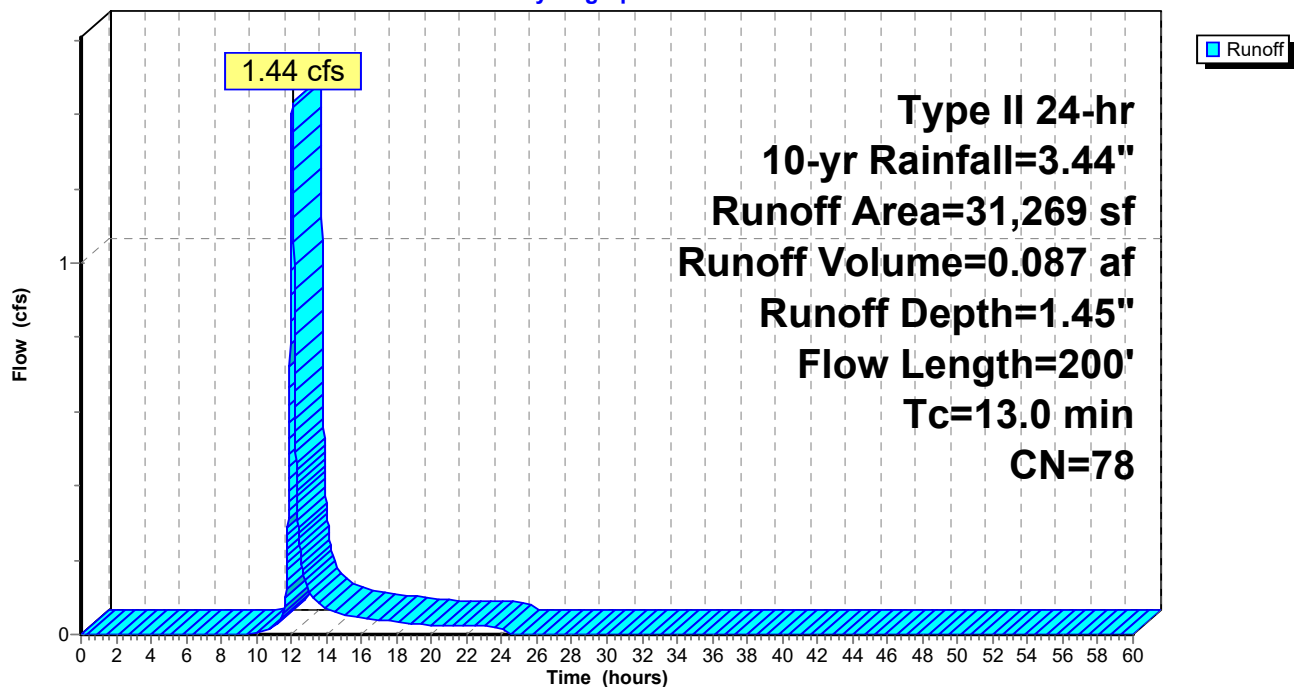
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
25,644	74	>75% Grass cover, Good, HSG C
2,125	98	Paved parking, HSG C
3,500	98	Roofs, HSG C
31,269	78	Weighted Average
25,644		82.01% Pervious Area
5,625		17.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sub1 Sheet Grass: Dense n= 0.240 P2= 2.39"
0.1	16	0.1000	2.21		Shallow Concentrated Flow, Sub1 Shallow Short Grass Pasture Kv= 7.0 fps
0.4	84	0.0330	3.69		Shallow Concentrated Flow, Paved Kv= 20.3 fps
13.0	200	Total			

Subcatchment 28S: PRDA-1b Sub3

Hydrograph



17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 6

Summary for Subcatchment 29S: PRDA-1b Sub4

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.058 af, Depth= 1.81"

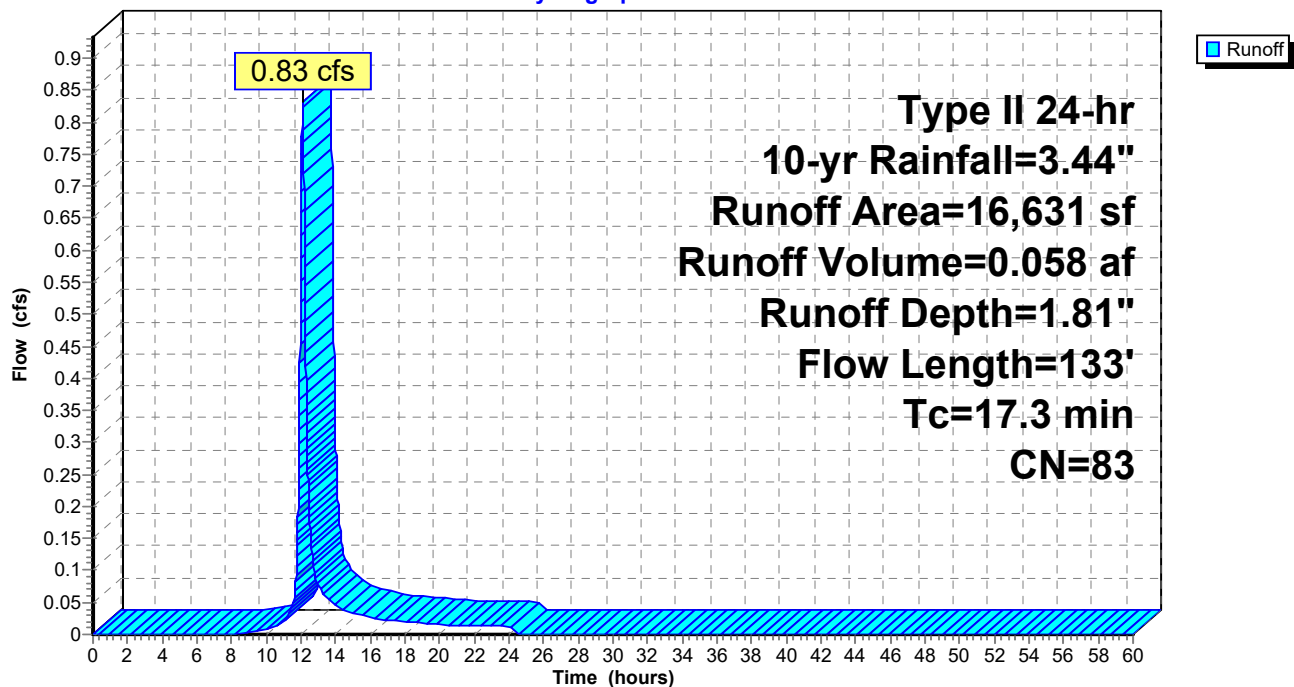
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

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
16.9	100	0.0190	0.10		Sheet Flow, Sub1 Sheet
					Grass: Dense n= 0.240 P2= 2.39"
0.4	33	0.0330	1.27		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
17.3	133	Total			

Subcatchment 29S: PRDA-1b Sub4

Hydrograph



17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 7

Summary for Subcatchment 30S: PRDA-1b Sub5

Runoff = 0.47 cfs @ 11.99 hrs, Volume= 0.023 af, Depth= 1.52"

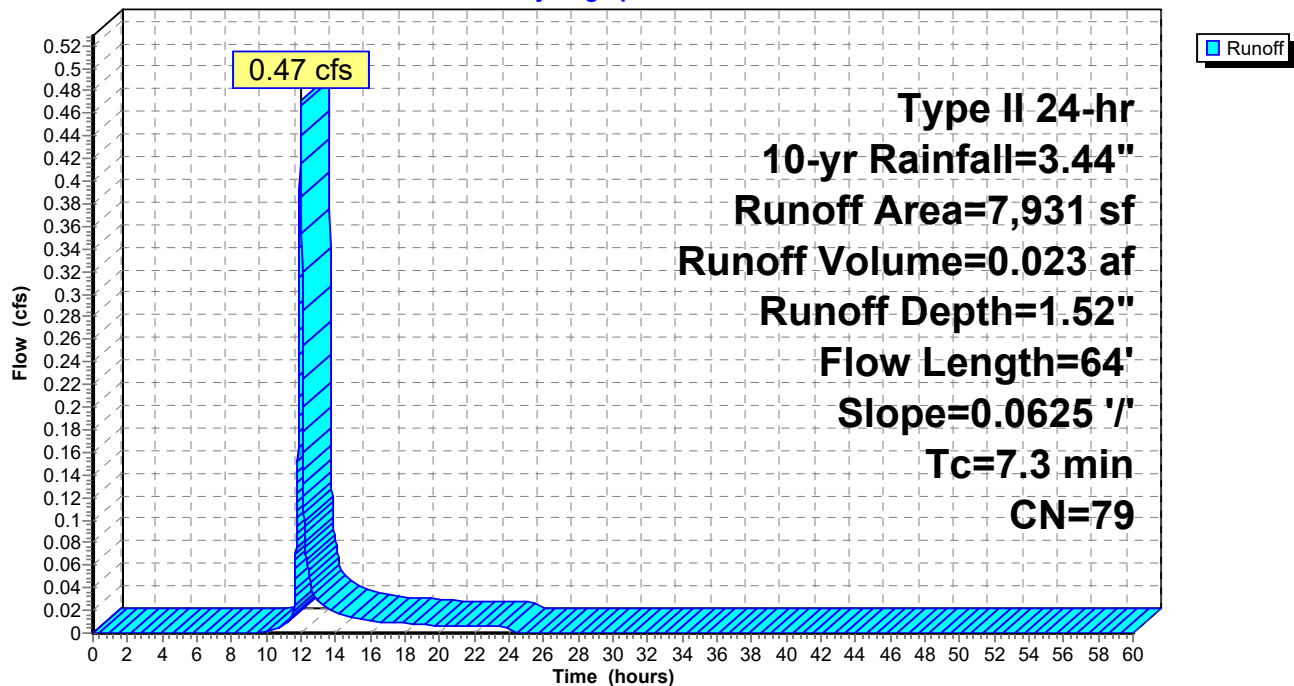
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
6,161	74	>75% Grass cover, Good, HSG C
1,770	98	Paved parking, HSG C
7,931	79	Weighted Average
6,161		77.68% Pervious Area
1,770		22.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	64	0.0625	0.15		Sheet Flow, Sub1 Sheet
					Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 30S: PRDA-1b Sub5

Hydrograph



17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 8

Summary for Subcatchment 31S: PRDA-1b Sub6

Runoff = 0.29 cfs @ 11.94 hrs, Volume= 0.012 af, Depth= 1.39"

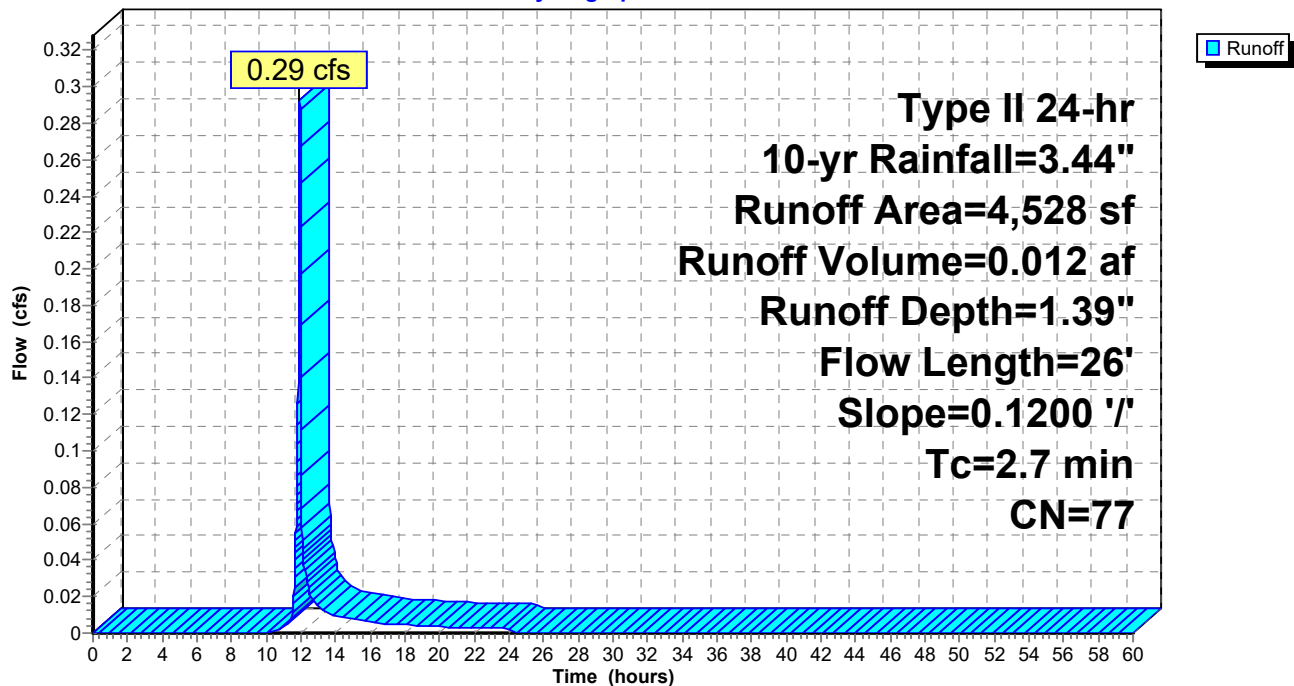
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
4,012	74	>75% Grass cover, Good, HSG C
516	98	Paved parking, HSG C
4,528	77	Weighted Average
4,012		88.60% Pervious Area
516		11.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	26	0.1200	0.16		Sheet Flow, Sub1 Sheet
Grass: Dense n= 0.240 P2= 2.39"					

Subcatchment 31S: PRDA-1b Sub6

Hydrograph



17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 9

Summary for Subcatchment 32S: PRDA-1b Sub7

Runoff = 0.58 cfs @ 11.92 hrs, Volume= 0.028 af, Depth= 3.21"

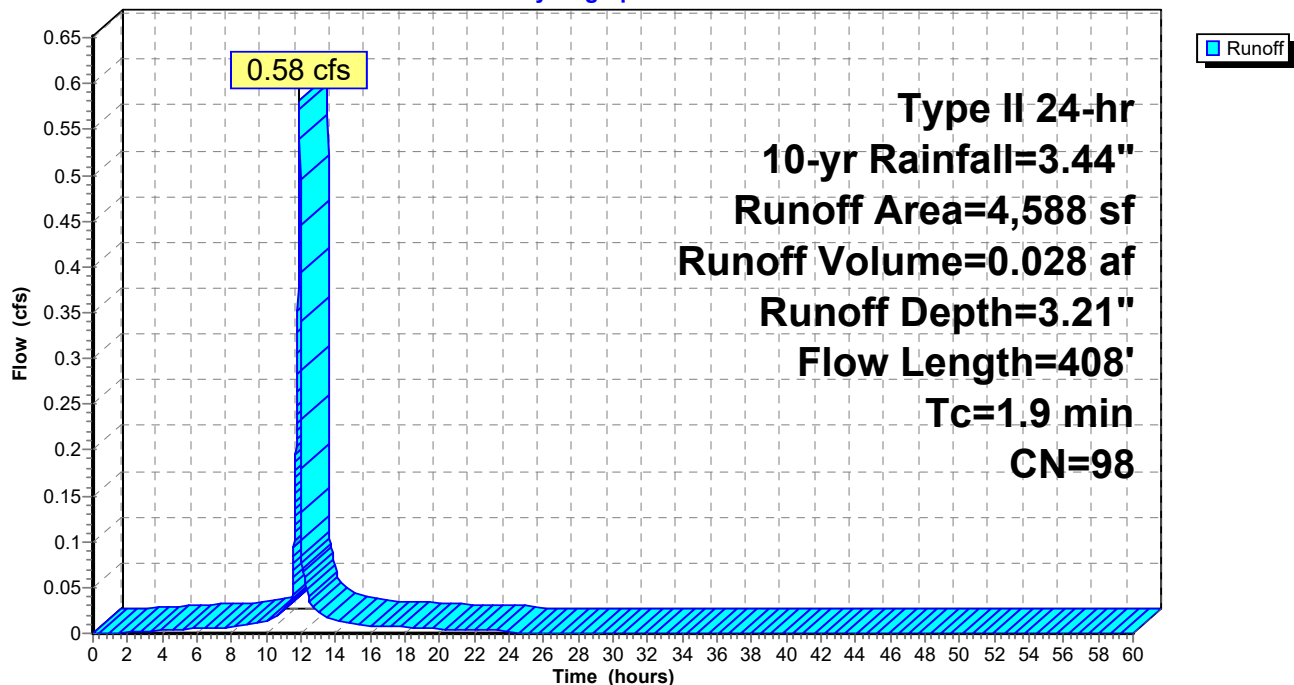
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
4,588	98	Paved parking, HSG C
4,588		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"
1.1	308	0.0500	4.54		Shallow Concentrated Flow, Sub1 Shallow Paved Kv= 20.3 fps
1.9	408	Total			

Subcatchment 32S: PRDA-1b Sub7

Hydrograph



17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 10

Summary for Subcatchment 33S: PRDA-1b Sub8

Runoff = 0.45 cfs @ 12.00 hrs, Volume= 0.023 af, Depth= 1.66"

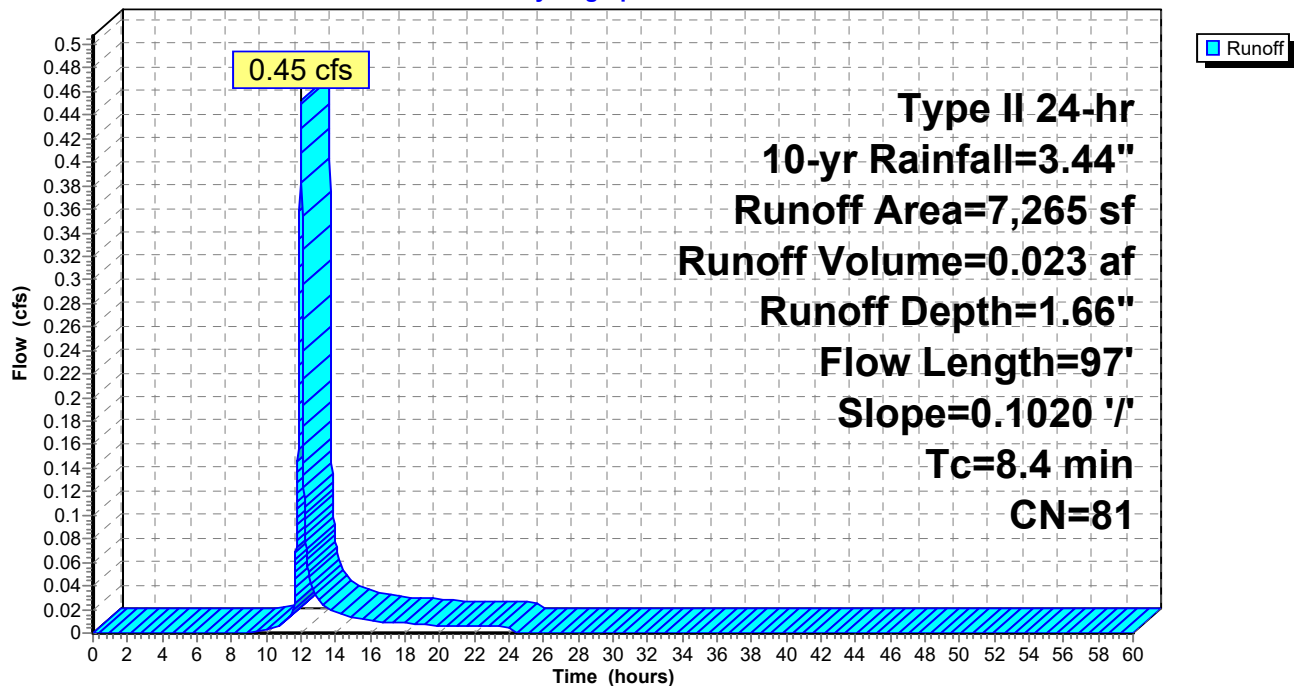
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
1,968	98	Paved parking, HSG C
5,297	74	>75% Grass cover, Good, HSG C
7,265	81	Weighted Average
5,297		72.91% Pervious Area
1,968		27.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	97	0.1020	0.19		Sheet Flow, Sub1 Sheet
					Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 33S: PRDA-1b Sub8

Hydrograph



Summary for Subcatchment 34S: PRDA-1b Sub9

Runoff = 0.20 cfs @ 11.91 hrs, Volume= 0.009 af, Depth= 3.21"

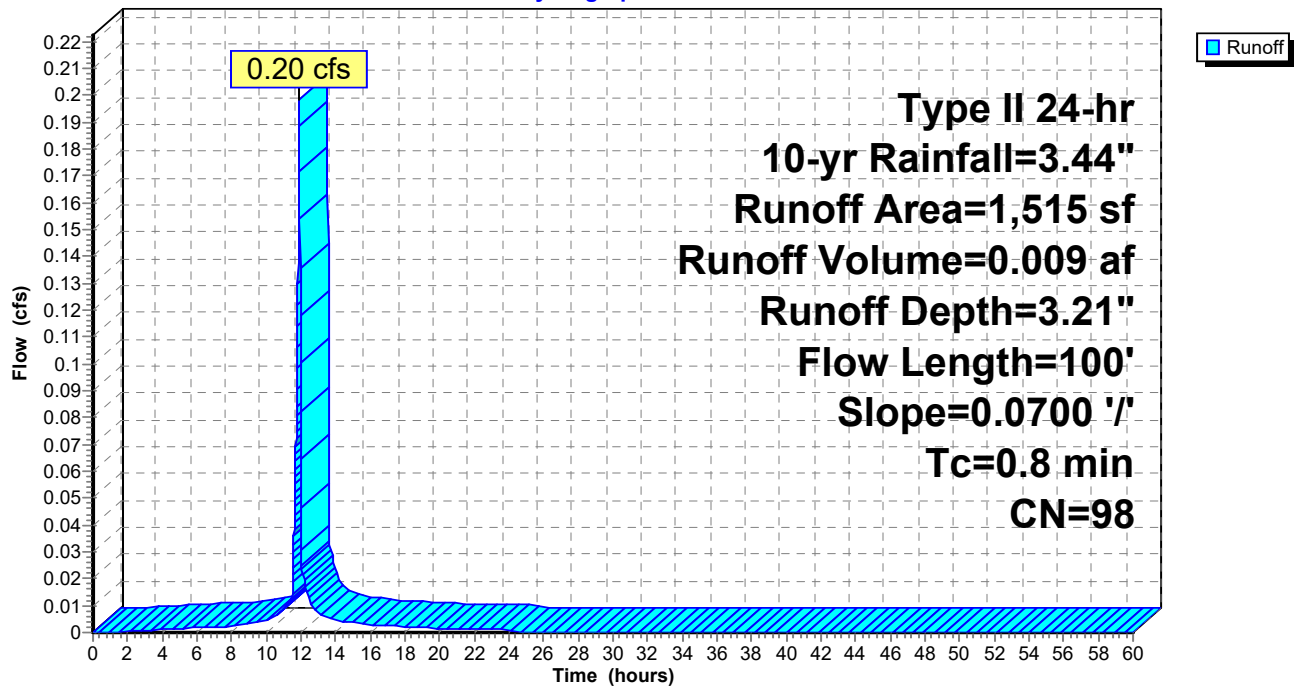
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
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-1b Sub9

Hydrograph



Summary for Pond 35P: Si#2

Inflow Area = 3.829 ac, 8.30% Impervious, Inflow Depth = 1.20" for 10-yr event
 Inflow = 3.50 cfs @ 12.32 hrs, Volume= 0.382 af
 Outflow = 3.50 cfs @ 12.32 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.50 cfs @ 12.32 hrs, Volume= 0.382 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= 714.51' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	711.25'	10.0" Round Culvert L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 711.25' / 710.60' S= 0.0250 ' S= 0.0250 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	716.25'	24.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=3.49 cfs @ 12.32 hrs HW=714.51' (Free Discharge)

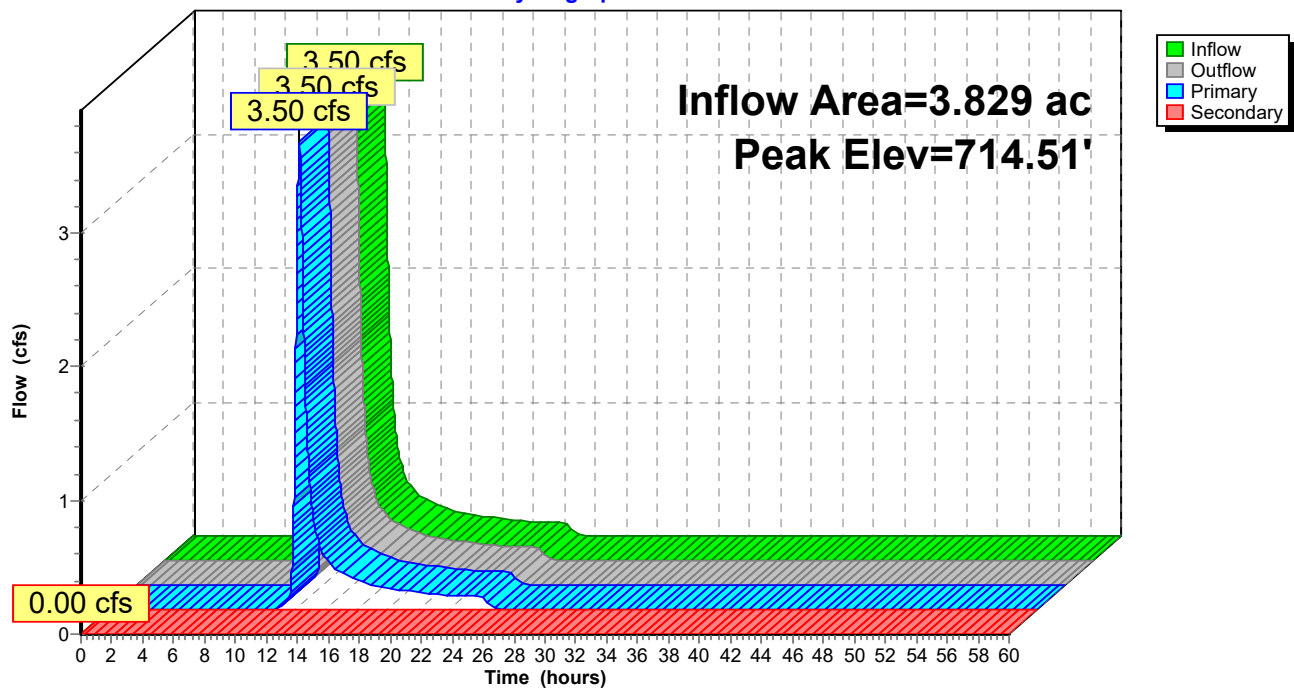
↑**1=Culvert** (Inlet Controls 3.49 cfs @ 6.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=711.25' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 35P: Si#2

Hydrograph



Summary for Pond 36P: SI#1

Inflow Area = 4.388 ac, 11.68% Impervious, Inflow Depth = 1.27" for 10-yr event
 Inflow = 4.00 cfs @ 12.25 hrs, Volume= 0.463 af
 Outflow = 4.00 cfs @ 12.25 hrs, Volume= 0.463 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.00 cfs @ 12.25 hrs, Volume= 0.463 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= 711.62' @ 12.25 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	710.50'	18.0" Round Culvert L= 165.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 710.50' / 704.00' S= 0.0394 ' S= 0.0394 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	716.25'	24.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=4.00 cfs @ 12.25 hrs HW=711.62' (Free Discharge)

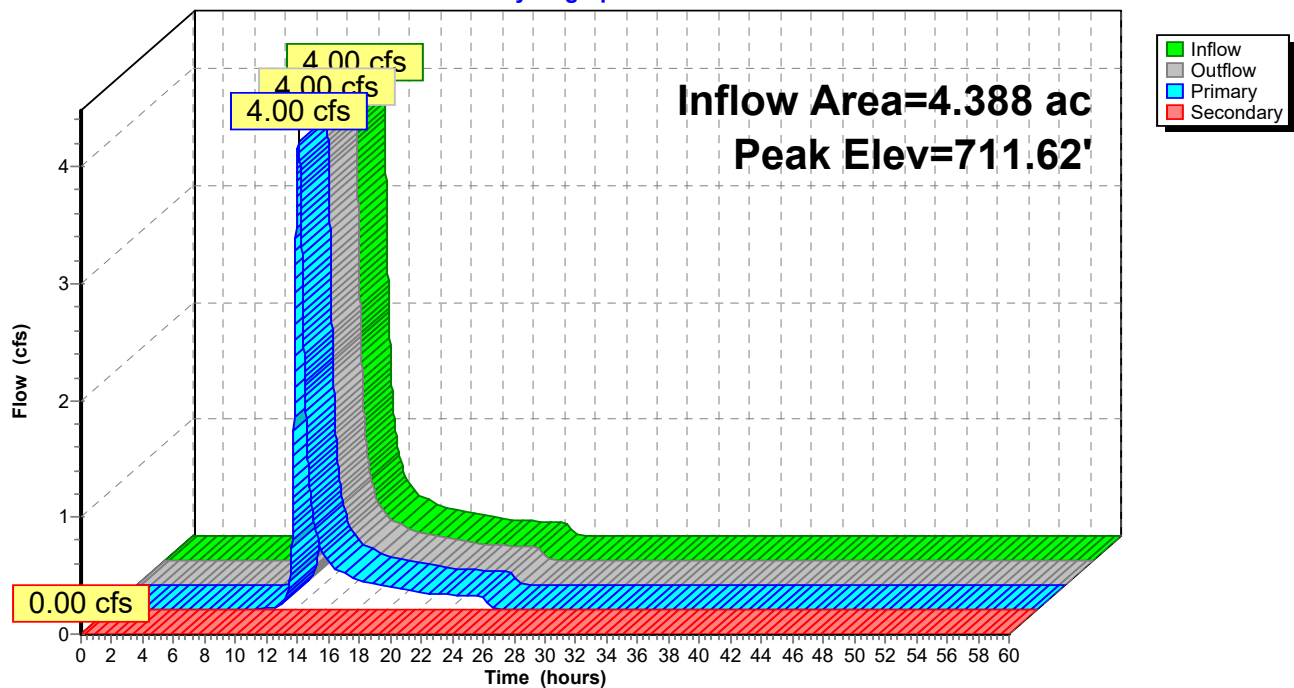
↑**1=Culvert** (Inlet Controls 4.00 cfs @ 2.84 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=710.50' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 36P: SI#1

Hydrograph



Summary for Pond 37P: Si#5

Inflow Area = 0.182 ac, 22.32% Impervious, Inflow Depth = 1.52" for 10-yr event
 Inflow = 0.47 cfs @ 11.99 hrs, Volume= 0.023 af
 Outflow = 0.47 cfs @ 11.99 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.47 cfs @ 11.99 hrs, Volume= 0.023 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= 704.92' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	704.50'	10.0" Round Culvert L= 32.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 704.50' / 704.00' S= 0.0156 ' S= 0.0156 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	708.00'	24.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.47 cfs @ 11.99 hrs HW=704.92' (Free Discharge)

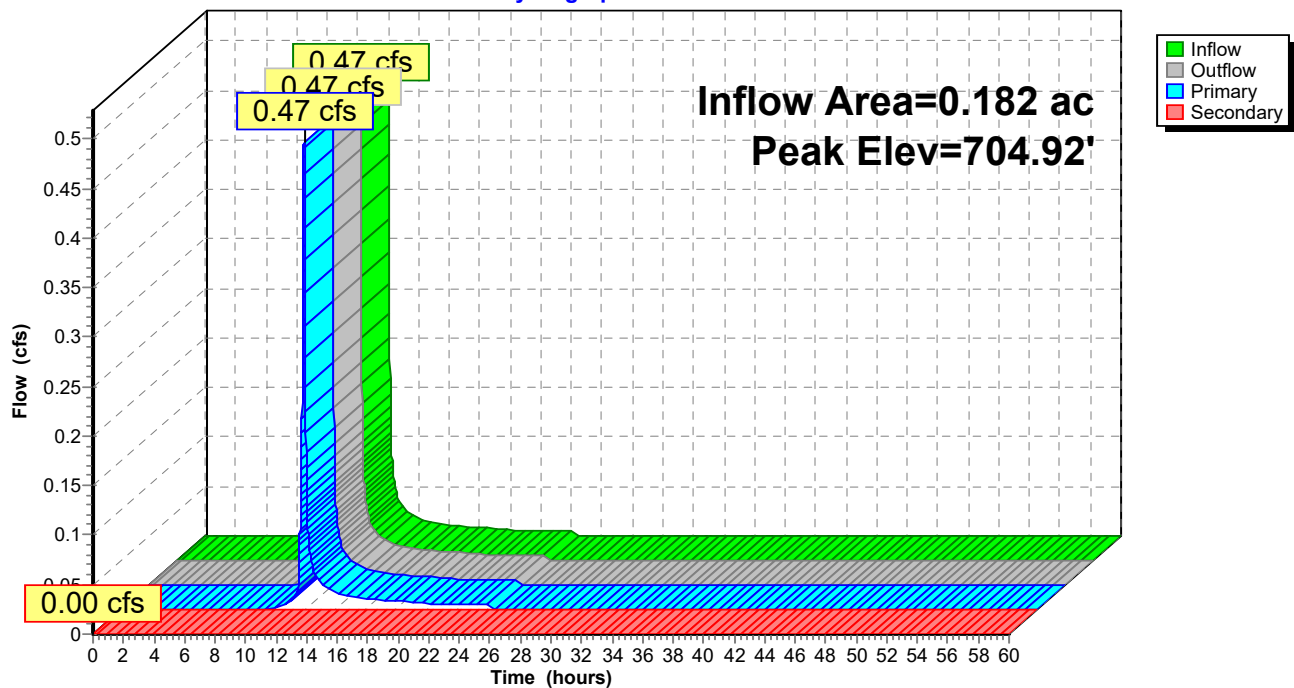
↑**1=Culvert** (Inlet Controls 0.47 cfs @ 1.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=704.50' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 37P: Si#5

Hydrograph



Summary for Pond 38P: Si#4

Inflow Area = 0.718 ac, 17.99% Impervious, Inflow Depth = 1.45" for 10-yr event
 Inflow = 1.44 cfs @ 12.06 hrs, Volume= 0.087 af
 Outflow = 1.44 cfs @ 12.06 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.44 cfs @ 12.06 hrs, Volume= 0.087 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= 706.56' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	705.90'	15.0" Round Culvert L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 705.90' / 704.50' S= 0.0538 ' S= 0.0538 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf
#2	Secondary	710.92'	24.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.43 cfs @ 12.06 hrs HW=706.56' (Free Discharge)

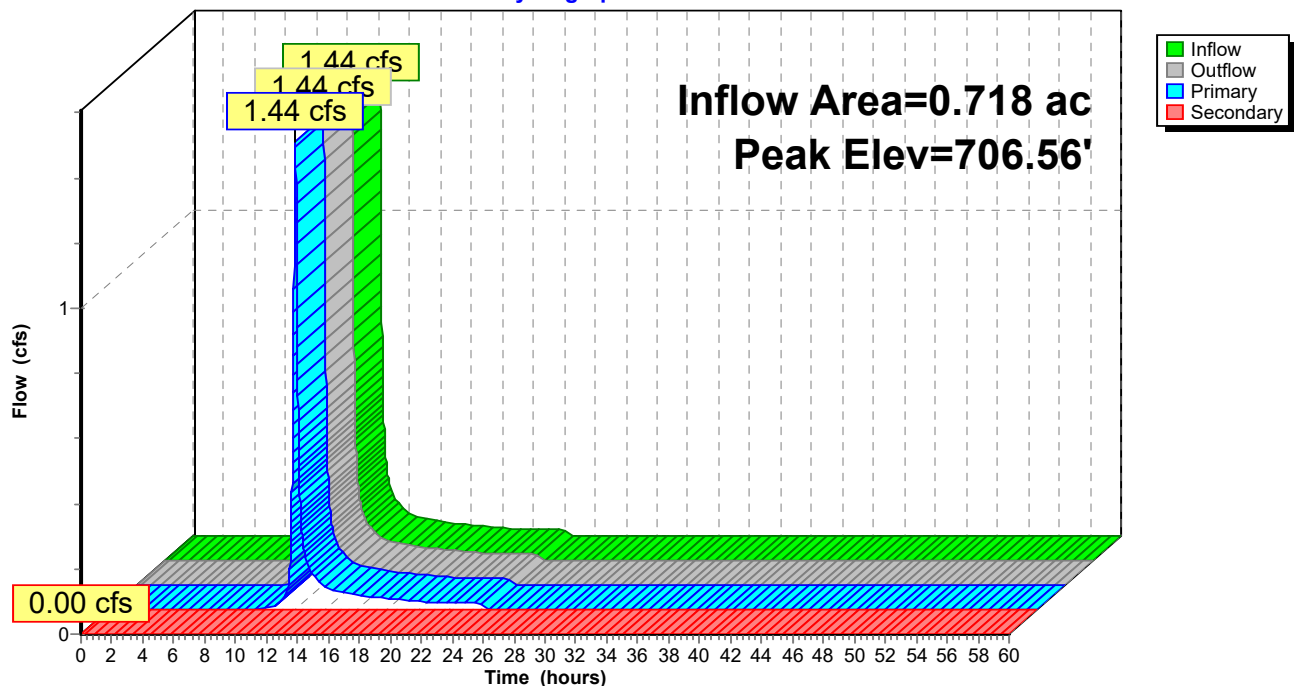
↑**1=Culvert** (Inlet Controls 1.43 cfs @ 2.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=705.90' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 38P: Si#4

Hydrograph



Summary for Pond 39P: Si#3

Inflow Area = 5.670 ac, 14.45% Impervious, Inflow Depth = 1.33" for 10-yr event
 Inflow = 5.63 cfs @ 12.12 hrs, Volume= 0.631 af
 Outflow = 5.63 cfs @ 12.12 hrs, Volume= 0.631 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.63 cfs @ 12.12 hrs, Volume= 0.631 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= 704.44' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	703.00'	18.0" Round Culvert L= 139.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 703.00' / 695.00' S= 0.0576 ' / ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	707.92'	24.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=5.63 cfs @ 12.12 hrs HW=704.44' (Free Discharge)

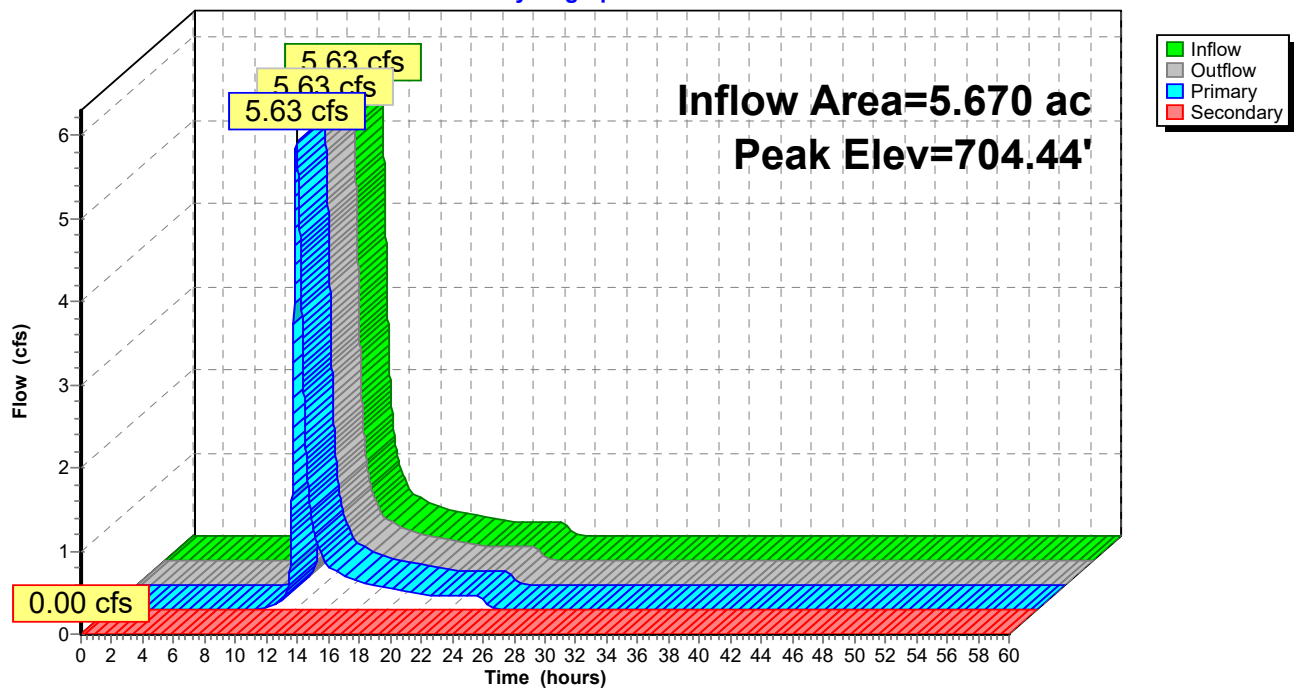
↑**1=Culvert** (Inlet Controls 5.63 cfs @ 3.23 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=703.00' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 39P: Si#3

Hydrograph



Summary for Pond 40P: SI#9

Inflow Area = 11.691 ac, 11.54% Impervious, Inflow Depth = 1.31" for 10-yr event
 Inflow = 11.49 cfs @ 12.21 hrs, Volume= 1.272 af
 Outflow = 11.49 cfs @ 12.21 hrs, Volume= 1.272 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.49 cfs @ 12.21 hrs, Volume= 1.272 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= 692.67' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	689.00'	18.0" Round Culvert L= 49.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 689.00' / 687.50' S= 0.0303 ' S= 0.0303 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	693.00'	24.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=11.48 cfs @ 12.21 hrs HW=692.67' (Free Discharge)

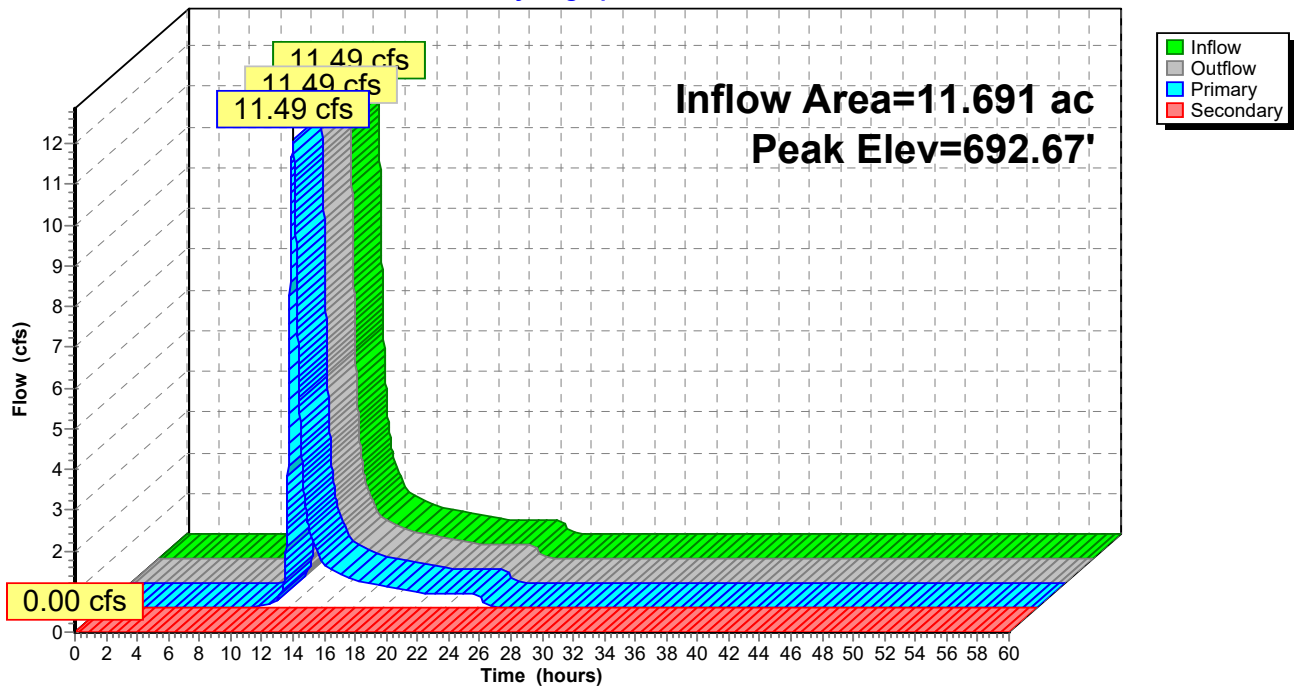
↑1=Culvert (Inlet Controls 11.48 cfs @ 6.50 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=689.00' (Free Discharge)

↑2=Orifice/Grate (Controls 0.00 cfs)

Pond 40P: SI#9

Hydrograph



Summary for Pond 41P: Si#new1

Inflow Area = 5.941 ac, 14.75% Impervious, Inflow Depth = 1.34" for 10-yr event
 Inflow = 5.90 cfs @ 12.09 hrs, Volume= 0.666 af
 Outflow = 5.90 cfs @ 12.09 hrs, Volume= 0.666 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.90 cfs @ 12.09 hrs, Volume= 0.666 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= 695.52' @ 12.09 hrs

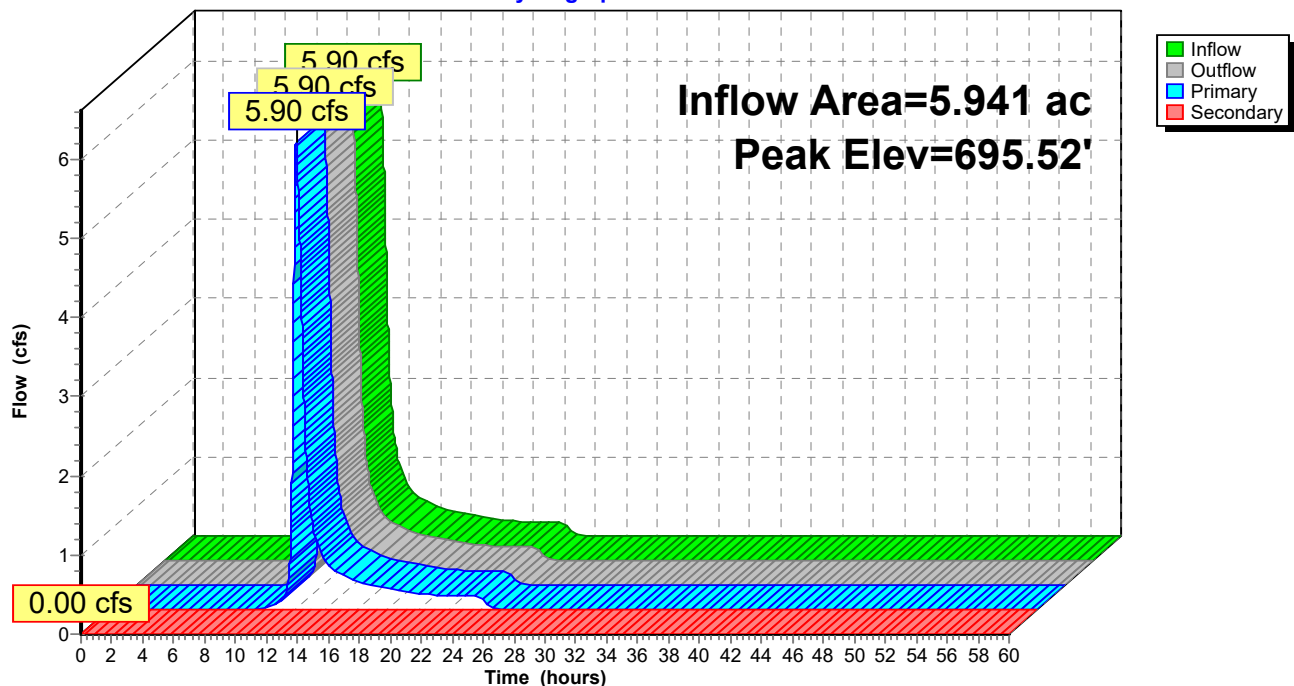
Device	Routing	Invert	Outlet Devices
#1	Primary	694.00'	18.0" Round Culvert L= 110.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 694.00' / 691.00' S= 0.0273 ' S= 0.0273 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	698.10'	24.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=5.90 cfs @ 12.09 hrs HW=695.52' (Free Discharge)

↑**1=Culvert** (Inlet Controls 5.90 cfs @ 3.34 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=694.00' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 41P: Si#new1**Hydrograph**

Summary for Pond 42P: Si#10

Inflow Area = 15.152 ac, 15.51% Impervious, Inflow Depth = 1.39" for 10-yr event
 Inflow = 16.52 cfs @ 12.06 hrs, Volume= 1.753 af
 Outflow = 16.52 cfs @ 12.06 hrs, Volume= 1.753 af, Atten= 0%, Lag= 0.0 min
 Primary = 16.52 cfs @ 12.06 hrs, Volume= 1.753 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= 689.31' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	686.40'	24.0" Round Culvert L= 126.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 686.40' / 676.00' S= 0.0825 ' S= 0.0825 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	690.50'	24.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=16.51 cfs @ 12.06 hrs HW=689.31' (Free Discharge)

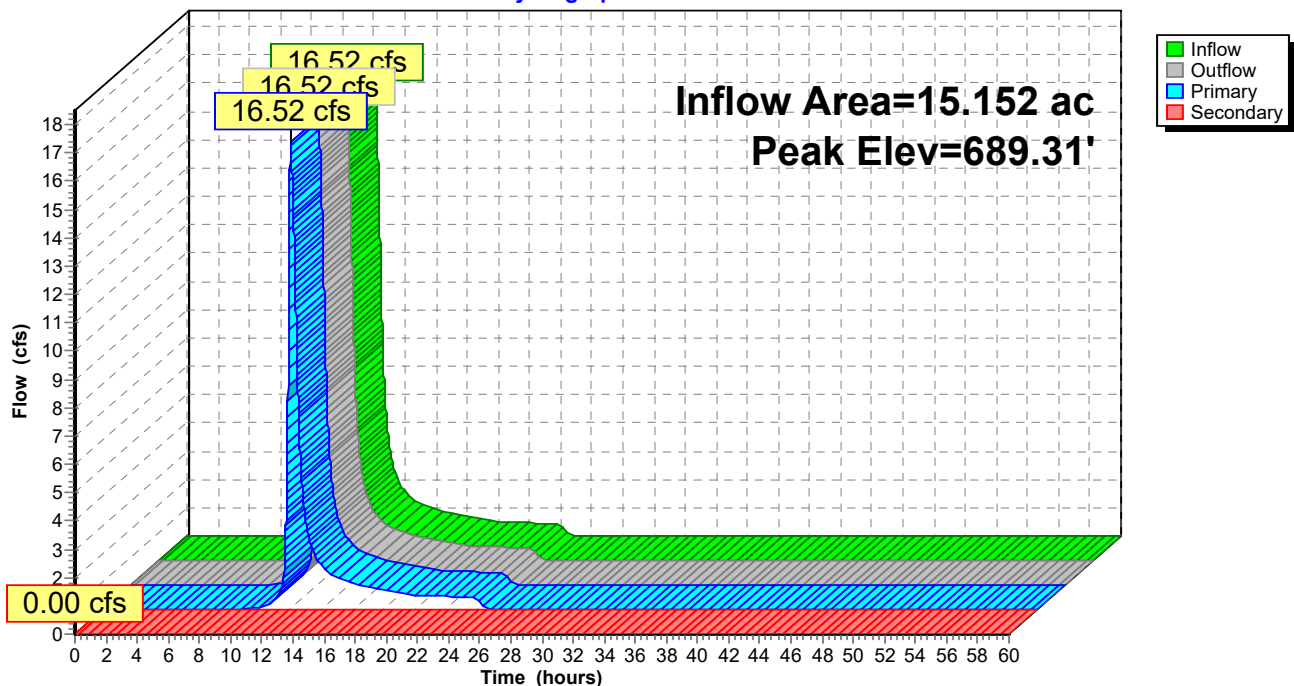
↑**1=Culvert** (Inlet Controls 16.51 cfs @ 5.26 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=686.40' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 42P: Si#10

Hydrograph



Summary for Pond 43P: Si#new2

Inflow Area = 5.488 ac, 14.18% Impervious, Inflow Depth = 1.33" for 10-yr event
 Inflow = 5.47 cfs @ 12.13 hrs, Volume= 0.608 af
 Outflow = 5.47 cfs @ 12.13 hrs, Volume= 0.608 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.47 cfs @ 12.13 hrs, Volume= 0.608 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= 707.40' @ 12.13 hrs

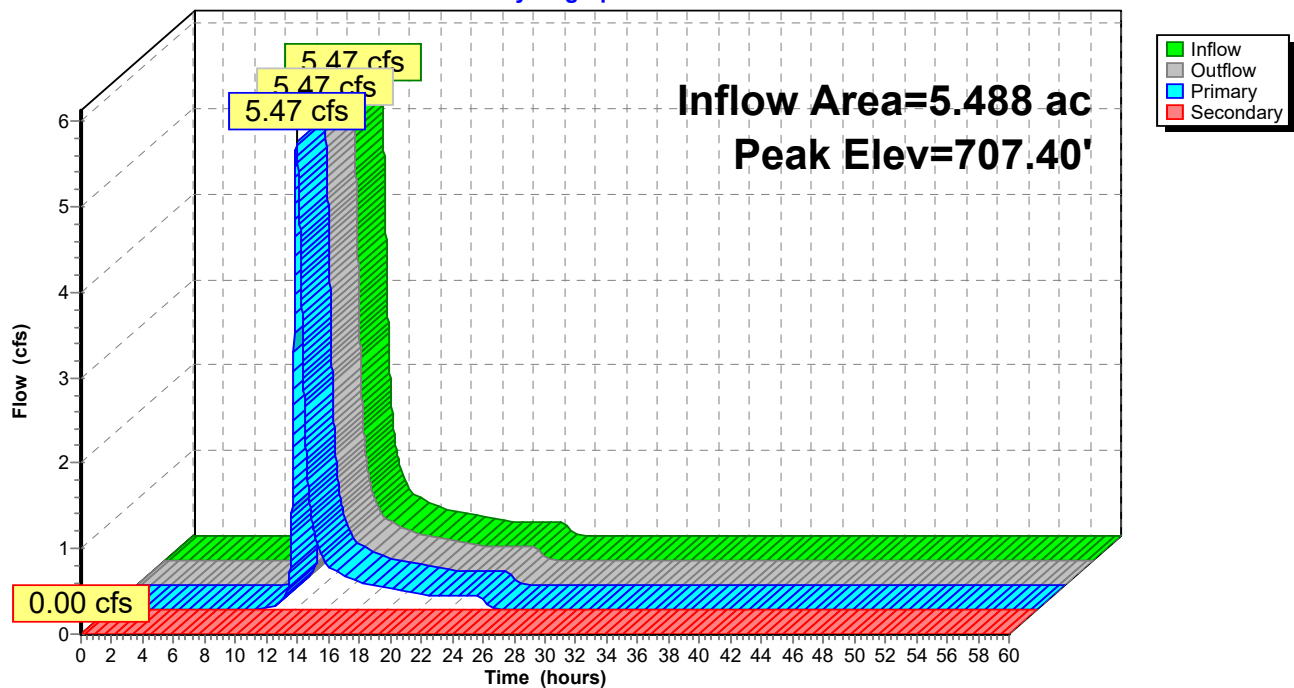
Device	Routing	Invert	Outlet Devices
#1	Primary	706.00'	18.0" Round Culvert L= 110.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 706.00' / 704.00' S= 0.0182 ' S= 0.0182 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	710.92'	24.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=5.47 cfs @ 12.13 hrs HW=707.40' (Free Discharge)

↑**1=Culvert** (Inlet Controls 5.47 cfs @ 3.18 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#new2**Hydrograph**

17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 21

Summary for Link 44L: PRDA-1a

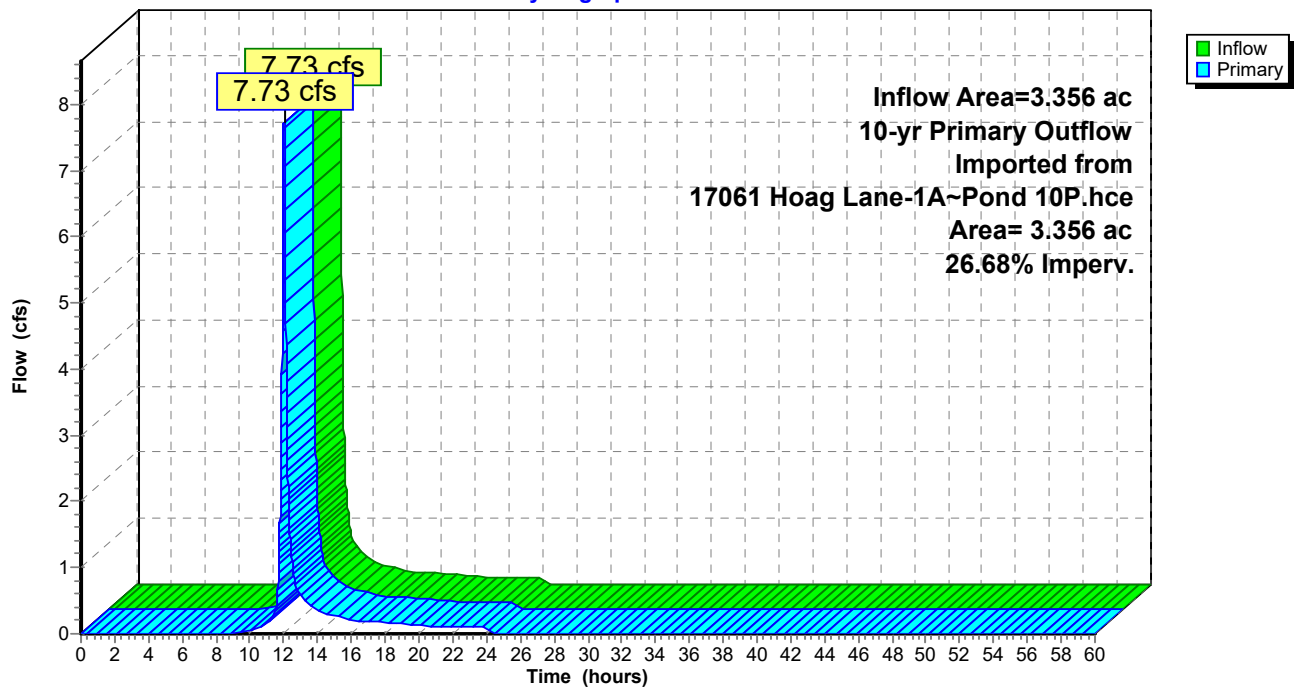
Inflow Area = 3.356 ac, 26.68% Impervious, Inflow Depth = 1.62" for 10-yr event
Inflow = 7.73 cfs @ 12.02 hrs, Volume= 0.453 af
Primary = 7.73 cfs @ 12.02 hrs, Volume= 0.453 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

10-yr Primary Outflow Imported from 17061 Hoag Lane-1A~Pond 10P.hce

Link 44L: PRDA-1a

Hydrograph



17061 Hoag Lane-1B

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 22

Summary for Link 45L: PRDA-1c

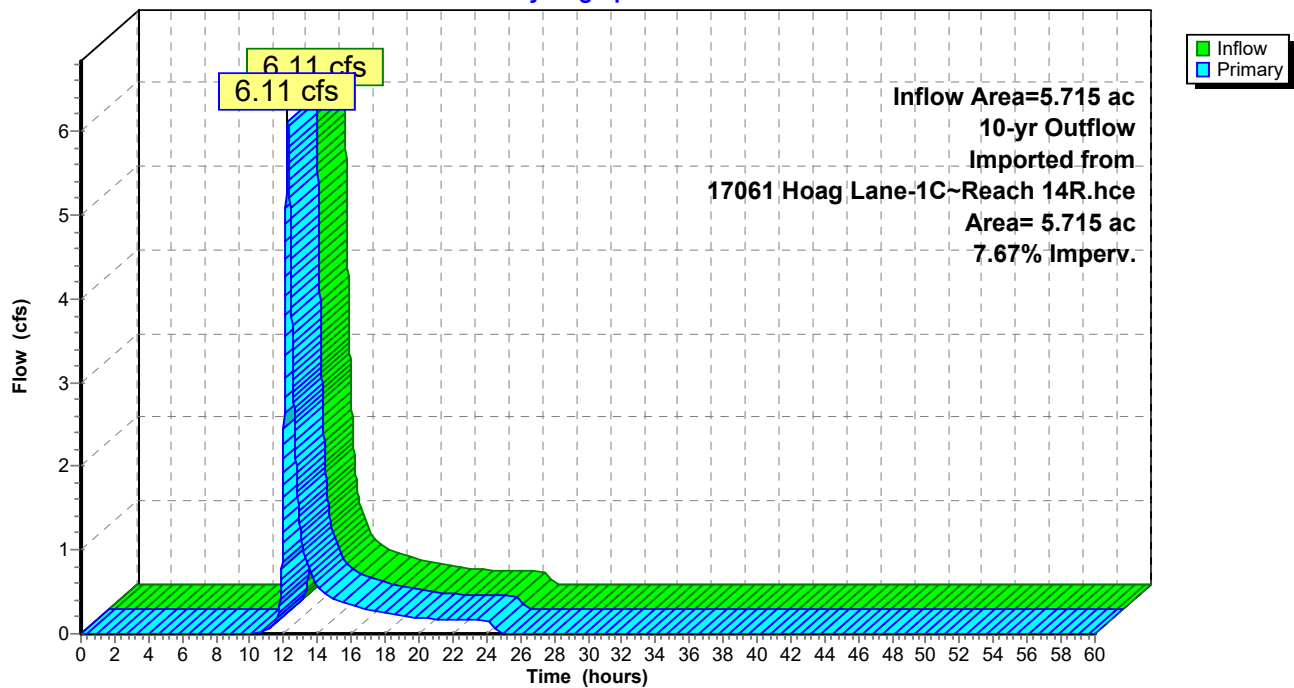
Inflow Area = 5.715 ac, 7.67% Impervious, Inflow Depth = 1.25" for 10-yr event
Inflow = 6.11 cfs @ 12.24 hrs, Volume= 0.597 af
Primary = 6.11 cfs @ 12.24 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

10-yr Outflow Imported from 17061 Hoag Lane-1C~Reach 14R.hce

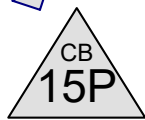
Link 45L: PRDA-1c

Hydrograph

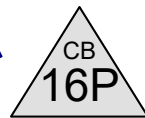




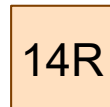
PRDA-1c Sub1



SI#7



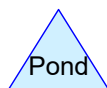
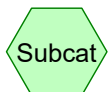
SI#8



Backyard Swale



PRDA-1c Sub2



Routing Diagram for 17061 Hoag Lane-1C

Prepared by Microsoft, Printed 5/28/2019

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

17061 Hoag Lane-1C

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 2

Summary for Subcatchment 39S: PRDA-1c Sub1

Runoff = 3.09 cfs @ 12.27 hrs, Volume= 0.321 af, Depth= 1.20"

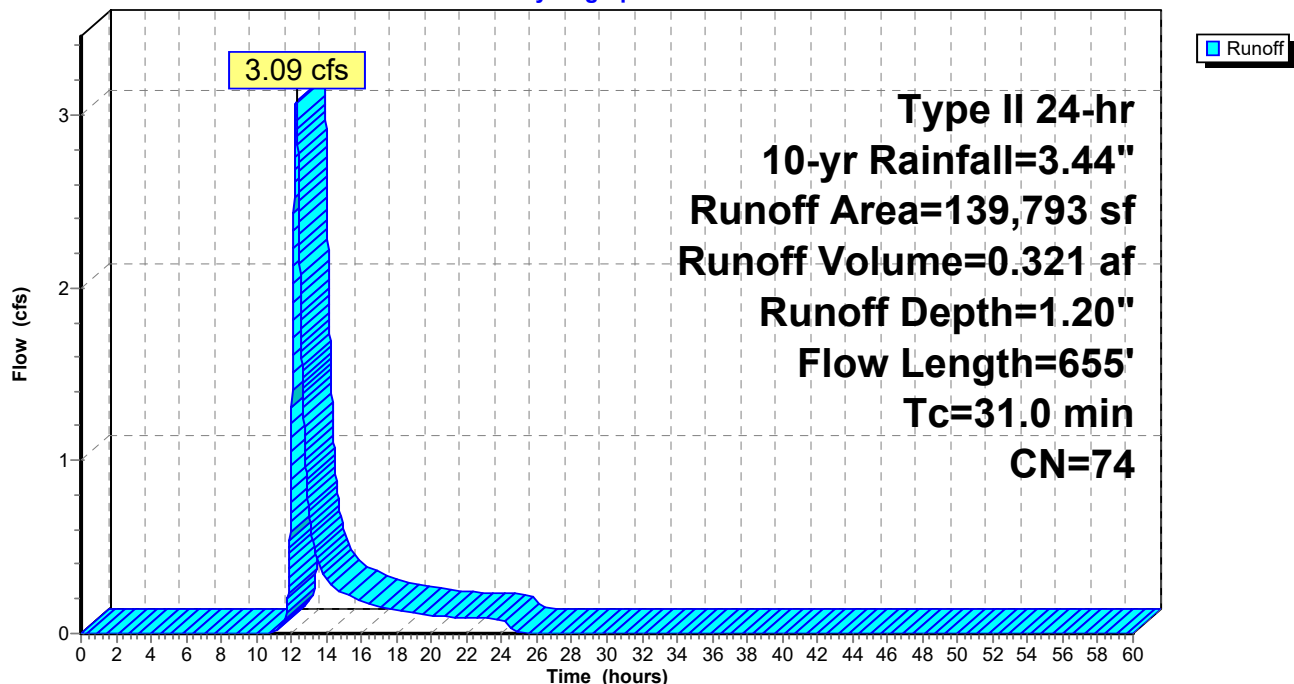
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
76,285	74	>75% Grass cover, Good, HSG C
46,073	70	Woods, Good, HSG C
5,329	55	Woods, Good, HSG B
* 7,000	98	House Roof
5,106	98	Paved parking, HSG C
139,793	74	Weighted Average
127,687		91.34% Pervious Area
12,106		8.66% Impervious 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-1c Sub1

Hydrograph



17061 Hoag Lane-1C

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 5/28/2019

Page 3

Summary for Subcatchment 40S: PRDA-1c Sub2

Runoff = 3.24 cfs @ 12.19 hrs, Volume= 0.276 af, Depth= 1.32"

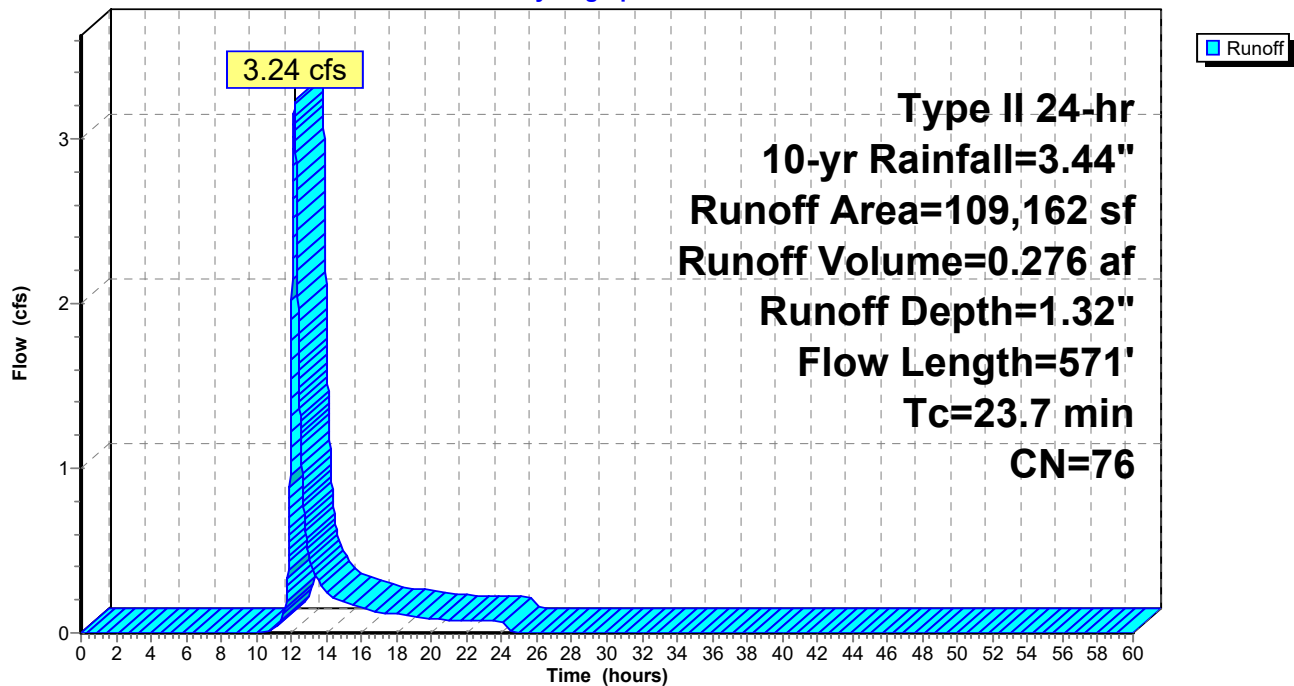
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

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
19.6	100	0.0130	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 2.39"
4.1	471	0.0760	1.93		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.7	571	Total			

Subcatchment 40S: PRDA-1c Sub2

Hydrograph



Summary for Reach 14R: Backyard Swale

Inflow Area = 5.715 ac, 7.67% Impervious, Inflow Depth = 1.25" for 10-yr event
 Inflow = 6.13 cfs @ 12.22 hrs, Volume= 0.597 af
 Outflow = 6.11 cfs @ 12.24 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
 Max. Velocity= 3.89 fps, Min. Travel Time= 1.5 min
 Avg. Velocity= 1.98 fps, Avg. Travel Time= 3.0 min

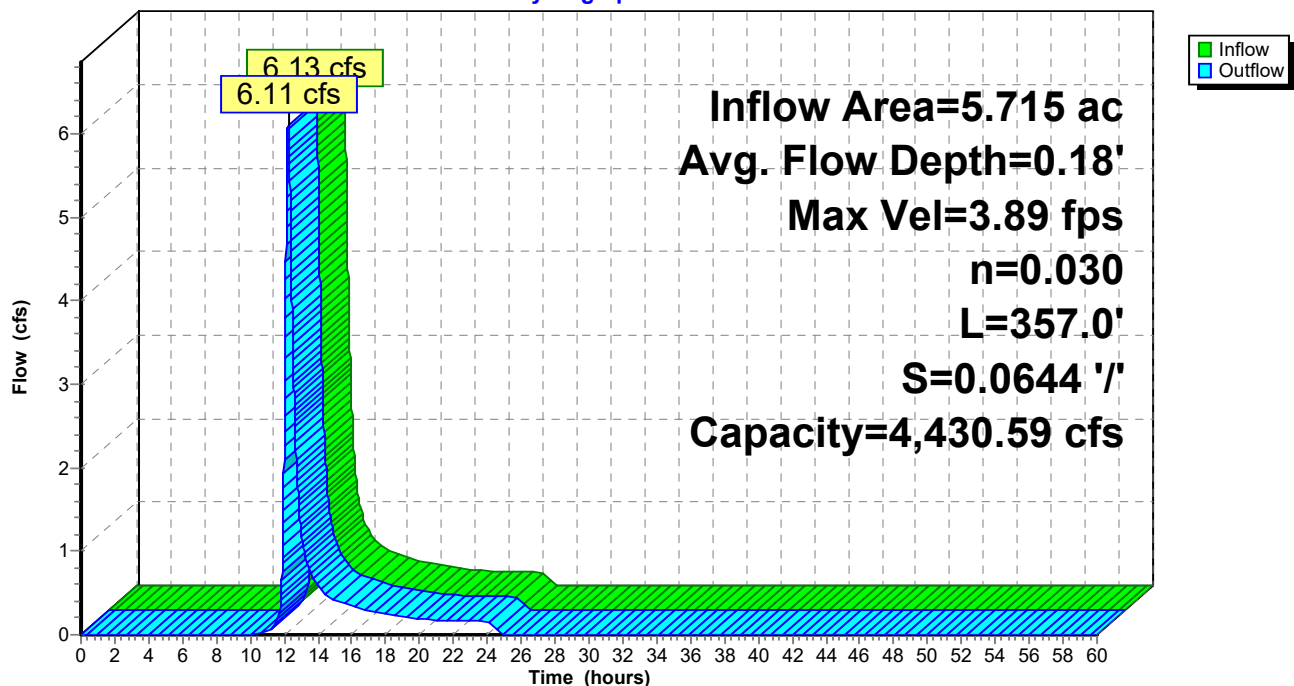
Peak Storage= 561 cf @ 12.24 hrs
 Average Depth at Peak Storage= 0.18'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 4,430.59 cfs

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

Hydrograph



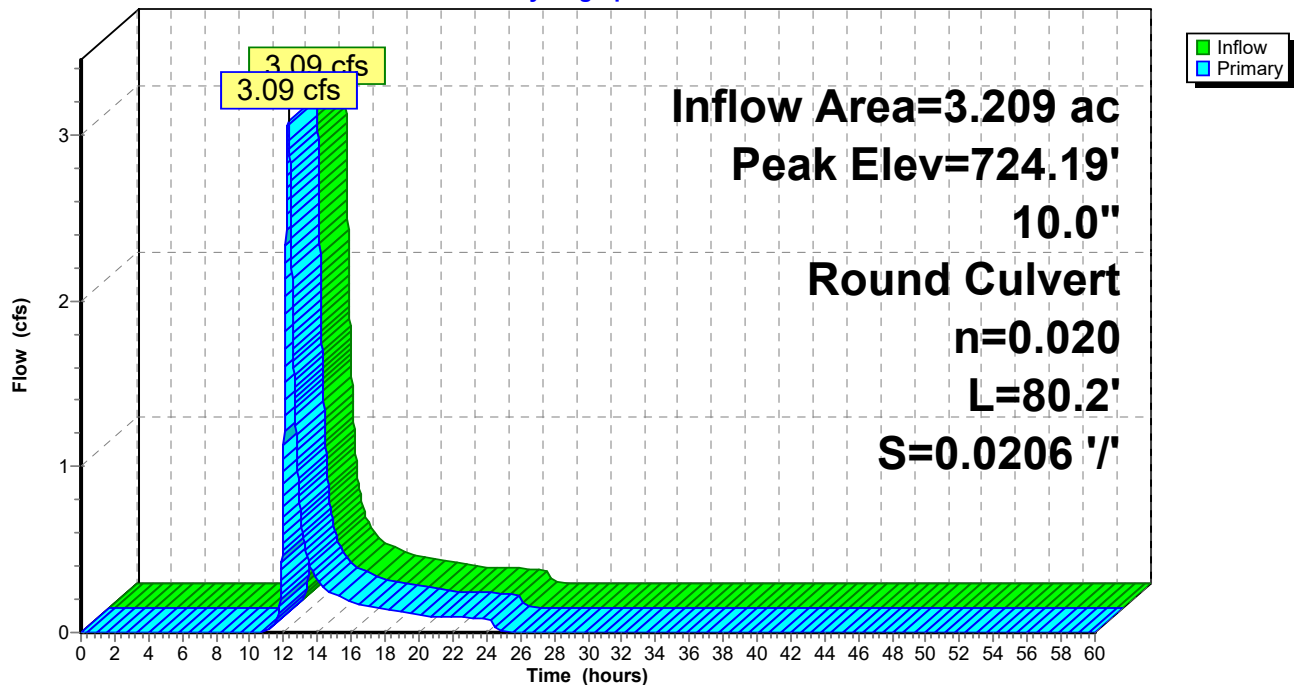
Summary for Pond 15P: SI#7

Inflow Area = 3.209 ac, 8.66% Impervious, Inflow Depth = 1.20" for 10-yr event
 Inflow = 3.09 cfs @ 12.27 hrs, Volume= 0.321 af
 Outflow = 3.09 cfs @ 12.27 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.09 cfs @ 12.27 hrs, Volume= 0.321 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 724.19' @ 12.27 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	719.65'	10.0" Round Culvert L= 80.2' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 719.65' / 718.00' S= 0.0206 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf

Primary OutFlow Max=3.08 cfs @ 12.27 hrs HW=724.19' TW=719.47' (Dynamic Tailwater)
 ↑ **1=Culvert** (Outlet Controls 3.08 cfs @ 5.66 fps)

Pond 15P: SI#7**Hydrograph**

Summary for Pond 16P: SI#8

Inflow Area = 3.209 ac, 8.66% Impervious, Inflow Depth = 1.20" for 10-yr event
 Inflow = 3.09 cfs @ 12.27 hrs, Volume= 0.321 af
 Outflow = 3.09 cfs @ 12.27 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.09 cfs @ 12.27 hrs, Volume= 0.321 af

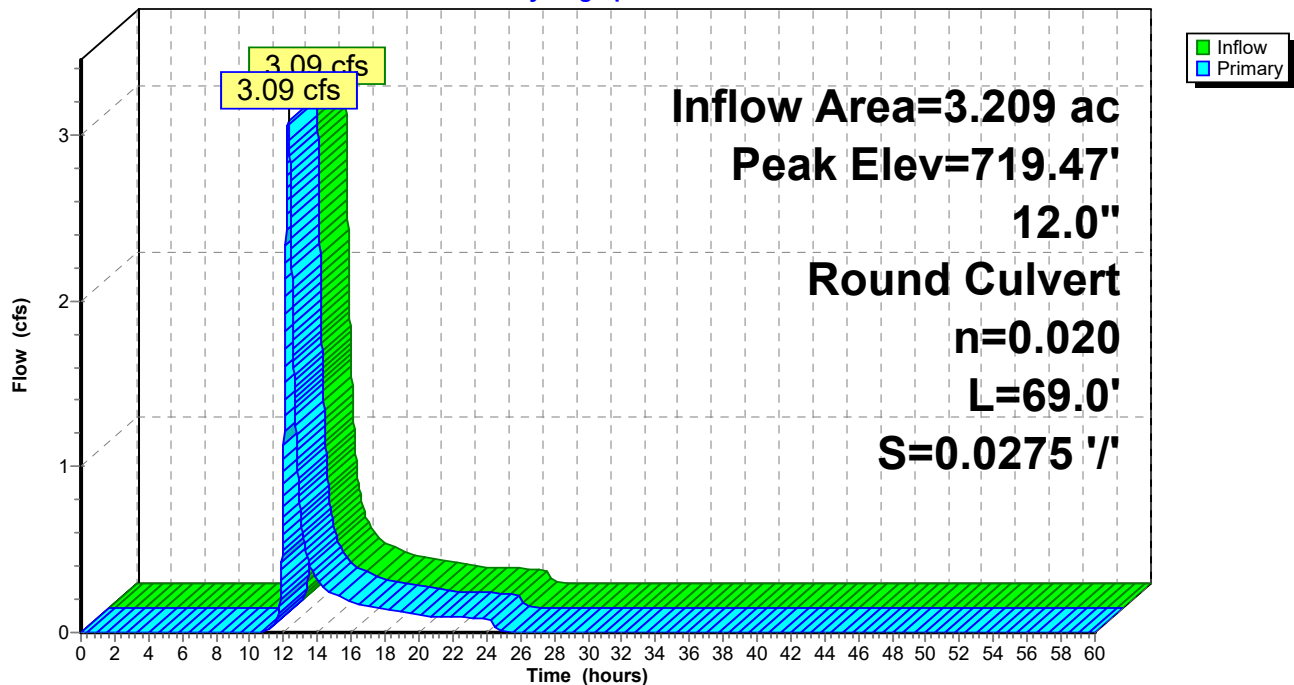
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 719.47' @ 12.27 hrs

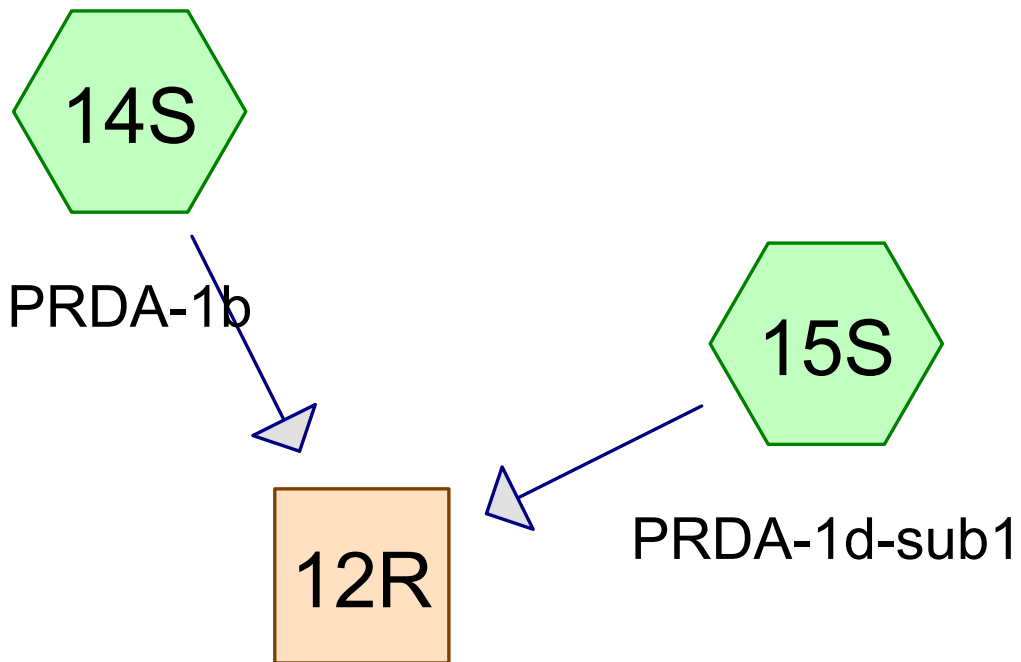
Device	Routing	Invert	Outlet Devices
#1	Primary	717.90'	12.0" Round Culvert L= 69.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 717.90' / 716.00' S= 0.0275 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.08 cfs @ 12.27 hrs HW=719.47' TW=716.18' (Dynamic Tailwater)
 ↳ **1=Culvert** (Inlet Controls 3.08 cfs @ 3.93 fps)

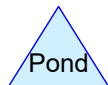
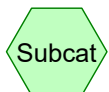
Pond 16P: SI#8

Hydrograph





Swale by southern
property line



17061 Hoag Lane-southern swale

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 6/12/2019

Page 2

Summary for Subcatchment 14S: PRDA-1b

Runoff = 6.57 cfs @ 13.02 hrs, Volume= 1.700 af, Depth= 0.63"

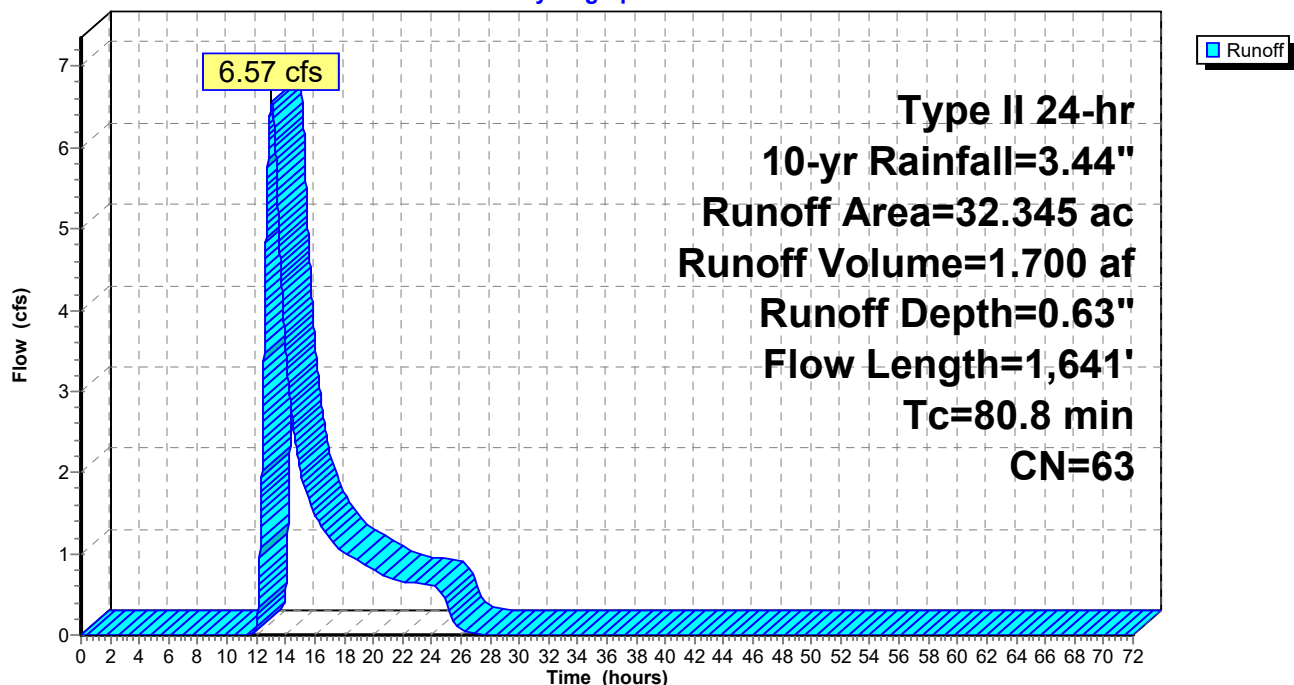
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (ac)	CN	Description
2.802	79	1 acre lots, 20% imp, HSG C
10.640	65	2 acre lots, 12% imp, HSG B
12.324	55	Woods, Good, HSG B
6.579	70	Woods, Good, HSG C
32.345	63	Weighted Average
30.508		94.32% Pervious Area
1.837		5.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
57.1	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.39"
19.8	1,133	0.0364	0.95		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.9	408	0.0616	1.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
80.8	1,641	Total			

Subcatchment 14S: PRDA-1b

Hydrograph



17061 Hoag Lane-southern swale

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 6/12/2019

Page 3

Summary for Subcatchment 15S: PRDA-1d-sub1

Runoff = 4.30 cfs @ 12.37 hrs, Volume= 0.532 af, Depth= 1.08"

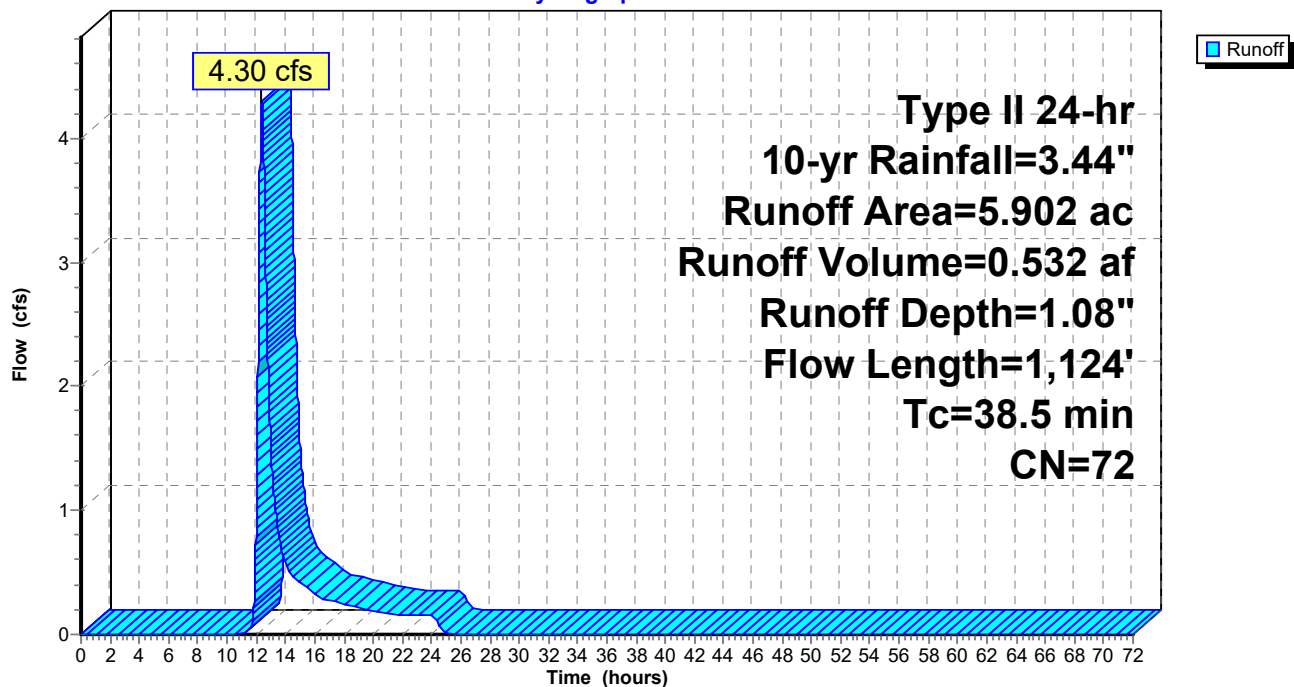
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (ac)	CN	Description
2.802	74	>75% Grass cover, Good, HSG C
3.100	70	Woods, Good, HSG C
5.902	72	Weighted Average
5.902		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.39"
0.4	33	0.0600	1.22		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.2	991	0.0530	1.61		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
38.5	1,124	Total			

Subcatchment 15S: PRDA-1d-sub1

Hydrograph



17061 Hoag Lane-southern swale

Prepared by Microsoft

HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 10-yr Rainfall=3.44"

Printed 6/12/2019

Page 4

Summary for Reach 12R: Swale by southern property line

Inflow Area = 38.247 ac, 4.80% Impervious, Inflow Depth = 0.70" for 10-yr event
Inflow = 8.09 cfs @ 12.93 hrs, Volume= 2.232 af
Outflow = 8.09 cfs @ 12.98 hrs, Volume= 2.232 af, Atten= 0%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.40 fps, Min. Travel Time= 2.6 min
Avg. Velocity= 2.61 fps, Avg. Travel Time= 5.4 min

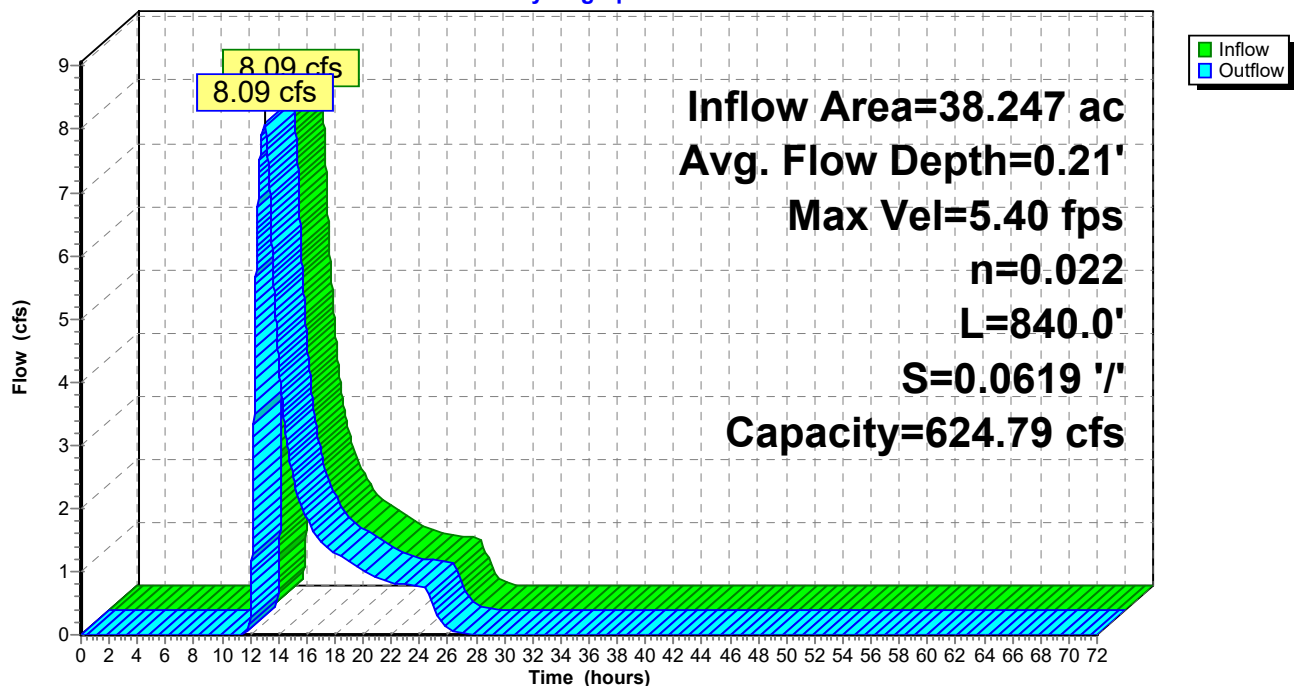
Peak Storage= 1,258 cf @ 12.94 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.00' Flow Area= 32.8 sf, Capacity= 624.79 cfs

6.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 5.2 '/' Top Width= 26.80'
Length= 840.0' Slope= 0.0619 '/'
Inlet Invert= 728.00', Outlet Invert= 676.00'



Reach 12R: Swale by southern property line

Hydrograph



(6)

QUANTITY OF STORMWATER

51

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 = 0.95

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,

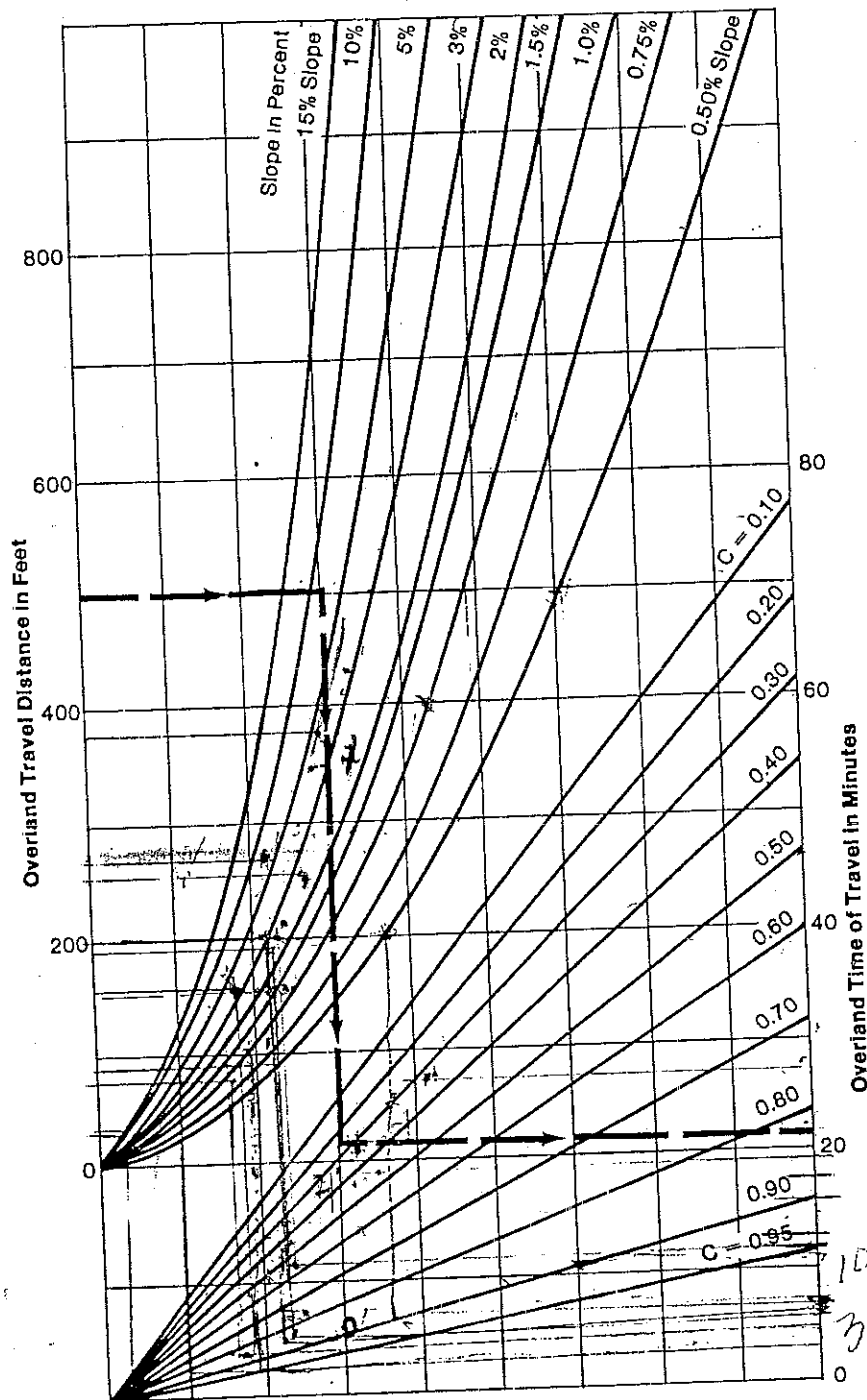
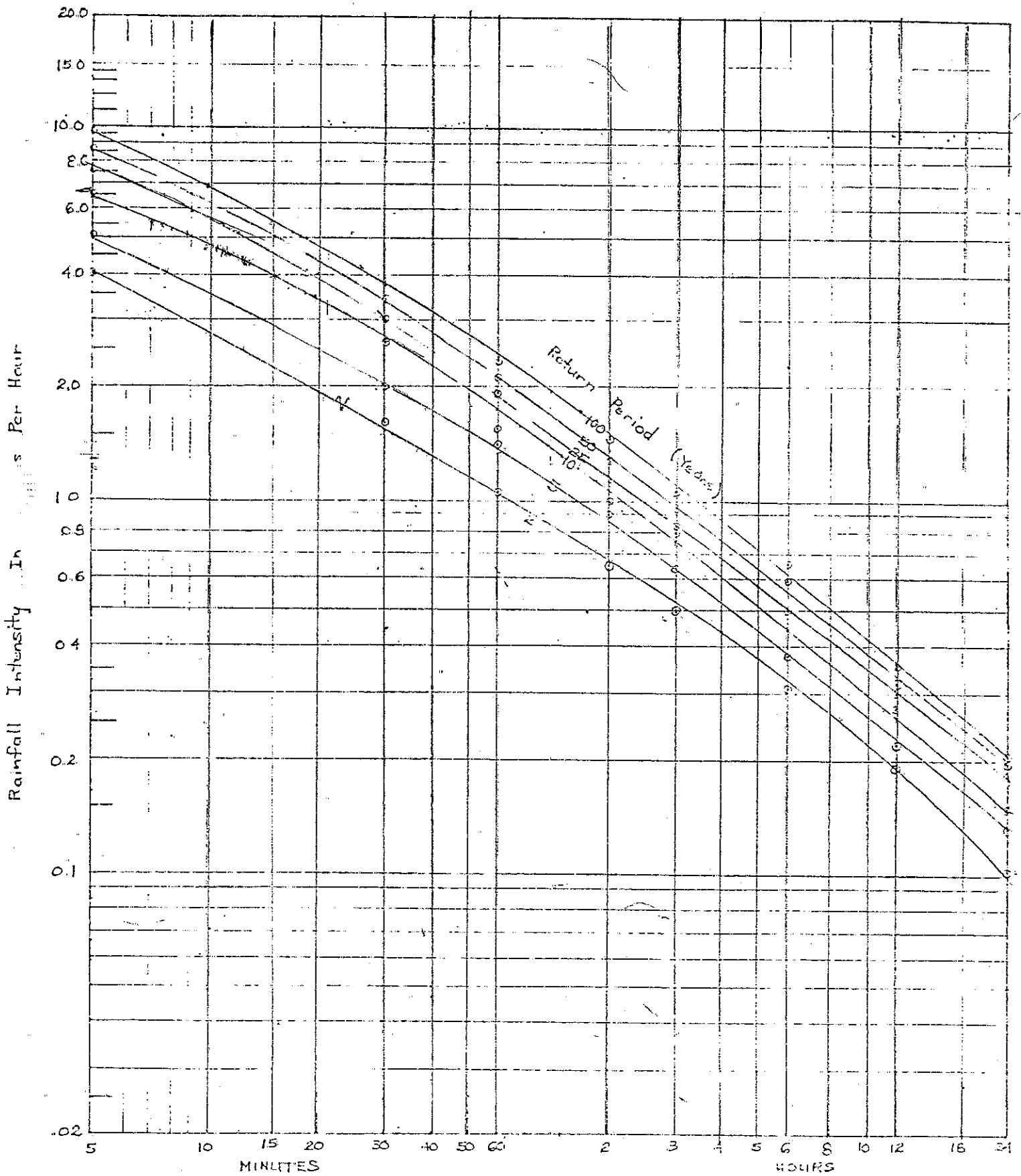


Figure 3-10 Overland time of flow graph

300

7 31

Syracuse, New York 1903-1970



APPENDIX G

Project: Hoag Lane Subdivision
100% New Impervious
Water Quality Calculations

Date: 7/11/2019

Owner: _____

Project No.: 17061

Location: Hoag Lane

Drawings: Grading and Site Plans

Estimated By: HJM

PRDA-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 =

3.873 Acres

Total Site Area =

27.066 Acres

% Impervious=

0.143

---->%Impervious= 100% New Impervious Area / Total Site Area

Therefore Rv =0.05 + 0.009(

14.31 %)

Rv =

0.179

A= Total Site Area =

27.066 Acres

Therefore Water Quality Volume WQv =

$$WQv = [(P)(Rv)(A)]/12$$

$$= \boxed{0.403 \text{ acre feet}}$$

or

$$= \boxed{17565.57 \text{ cubic feet}}$$

Project:

Hoag Lane Subdivision

Channel Protection Volume

Date: 4/1/2019

Owner:

Project No.: 17061

Location:

Hoag Lane, Manlius, NY

Drawings:

Grading and Site Plans

Estimated By: MJB

PRDA-1a&b

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	1.37
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

$$V_s/V_r = 0.682 - 1.43*(q_o/q_i) + 1.64*(q_o/q_i)^2 - 0.804*(q_o/q_i)^3$$

V_r = runoff volume 1 year post development(acre-feet) 1.157 acre-feet

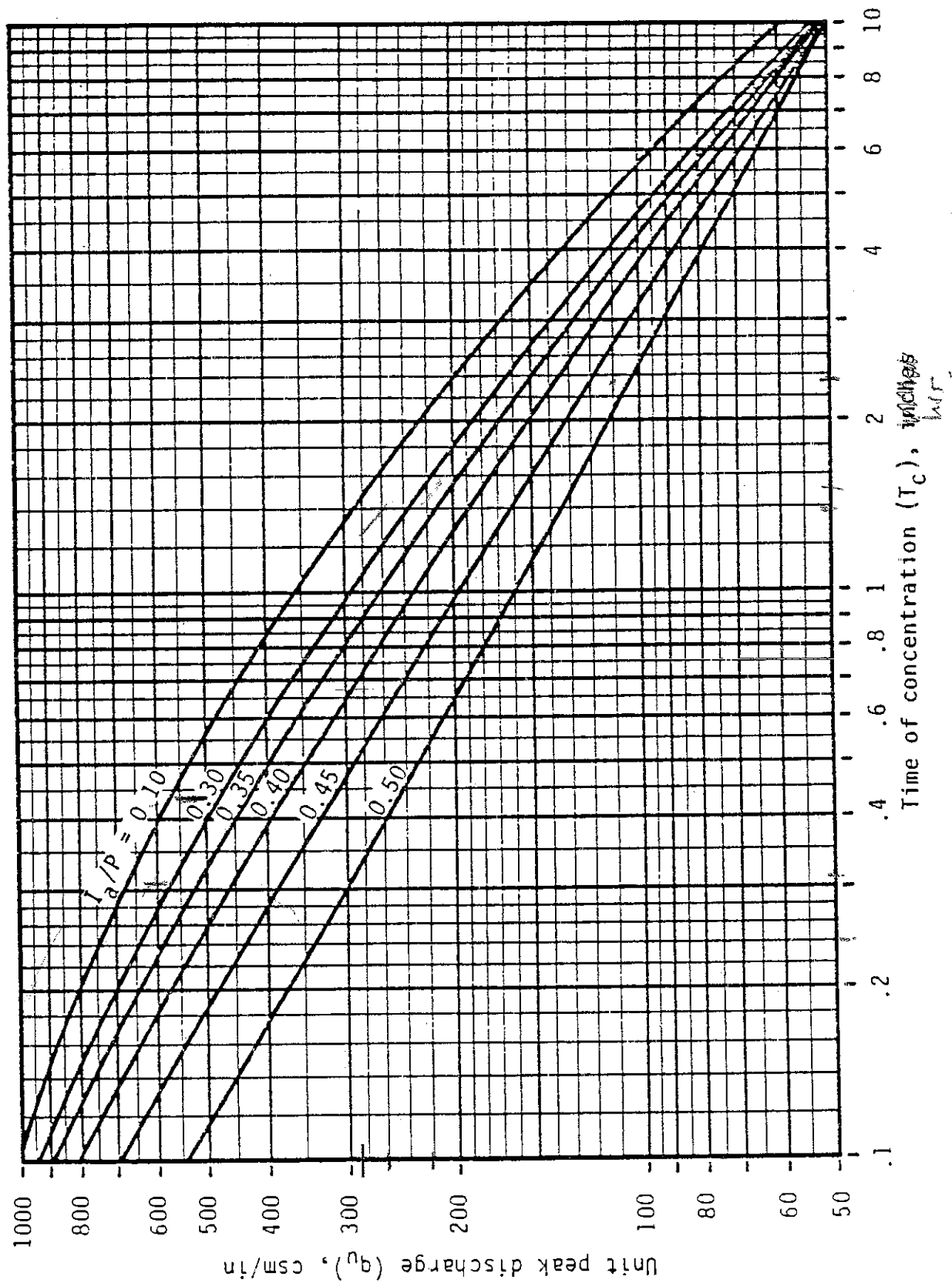
V_s/V_r= 0.565998 (no units)
Therefore V_s = 0.654860 acre-feet

C_{pv} = 0.655 acre feet
or
= 28525.68 cubic feet

Calculate Runoff Rate for 24 hr. detention time

Channel Protection Volume = 0.655 acre feet
Time to release V_s = 24 hours
Projected release rate = 0.33 cfs

Exhibit 4-II: Unit peak discharge (q_u) for SCS type II rainfall distribution



Compute Stream Channel Protection Volume, (C_p) (see Section 4.3 and Appendix B)

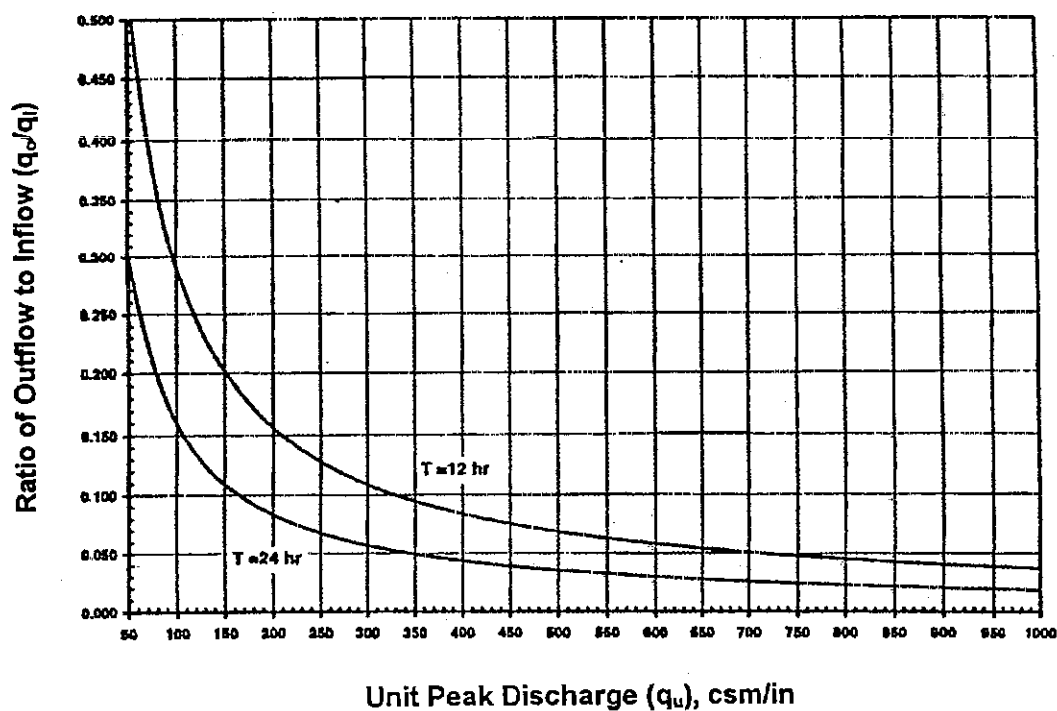
For stream channel protection, provide 24 hours of extended detention (T) for the one-year event.

Compute Channel Protection Storage Volume

First, determine the value of the unit peak discharge (q_u) using IR-55 and Type II Rainfall Distribution

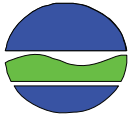
- Initial abstraction (I_a) for CN of 78 is 0.564: [$I_a = (200/CN - 2)$]
- $I_a/P = (0.564)/2.3 \text{ inches} = 0.245$
- $T_c = 0.35 \text{ hours}$
- Using the above data and Exhibit 4-II from IR-55 (NRCS, 1986), $q_u = 570 \text{ csm/in}$ (cubic feet per second per square mile per year)

Figure 8.5 Detention Time vs. Discharge Ratios (Source: MDE, 2000)



APPENDIX H

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-0-15-002

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)

H o a g R o a d P r o p e r t i e s L L C

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

A l l e n

Owner/Operator Contact Person First Name

T h o m a s

Owner/Operator Mailing Address

2 0 1 S o l a r S t r e e t

City

S y r a c u s e

State

N Y

Zip

1 3 2 0 4 -

Phone (Owner/Operator)

- -

Fax (Owner/Operator)

- -

Email (Owner/Operator)

t h o m a s a l l e n h o m e s @ y a h o o . c o m

FED TAX ID

- (not required for individuals)

Project Site Information

Project/Site Name

H o a g L a n e S u b d i v i s i o n

Street Address (NOT P.O. BOX)

5 2 9 0 - 5 3 2 0 H o a g L a n e

Side of Street

☐ North ☒ South ☐ East ☐ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)

M a n l i u s

State

N Y

Zip

1 3 0 6 6 -

County

O n e i d a

DEC Region

7

Name of Nearest Cross Street

C h u r c h i l l L a n e

Distance to Nearest Cross Street (Feet)

1 4 0 0

Project In Relation to Cross Street

☐ North ☐ South ☒ East ☐ WestTax Map Numbers
Section-Block-Parcel

1 0 4 . - 0 1 - 3 9 . 2

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

4 1 9 8 7 8

Y Coordinates (Northing)

4 7 6 3 2 1 2

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
☐ 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

Number of Lots

	2	4
--	---	---

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

***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**

		3	0	.	4
--	--	---	---	---	---

**Total Area To
Be Disturbed**

		2	3	.	2
--	--	---	---	---	---

**Existing Impervious
Area To Be Disturbed**

			1	.	2
--	--	--	---	---	---

**Future Impervious
Area Within
Disturbed Area**

			4	.	1
--	--	--	---	---	---

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

1	0	0
---	---	---

 %

D

--	--	--

 %

7. Is this a phased project? ☐ Yes ☒ No

8. Enter the planned start and end dates of the disturbance activities.

Start Date

0	4	/	1	5	/	2	0	1	7
---	---	---	---	---	---	---	---	---	---

End Date

1	0	/	0	1	/	2	0	1	8
---	---	---	---	---	---	---	---	---	---

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?

[illegible]

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

[illegible]

SWPPP Preparer

[illegible]

Contact Name (Last, Space, First)

[illegible]

Mailing Address

[illegible]

City

[illegible]

State Zip

N	Y	1	3	0	5	7	-				
---	---	---	---	---	---	---	---	--	--	--	--

Phone

3	1	5	-	4	3	2	-	1	0	8	9
---	---	---	---	---	---	---	---	---	---	---	---

Fax

3	1	5	-	4	4	5	-	7	9	8	1
---	---	---	---	---	---	---	---	---	---	---	---

Email

r	z	o	n	a	@	r	z	e	n	g	i	n	e	e	r	i	n	g	.	c	o	m
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

[illegible]

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-0-15-002. 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

[illegible]

MI

L

Last Name

[illegible]

Signature

Date _____

$$\boxed{1\ 2} / \boxed{2\ 6} / \boxed{2\ 0\ 1\ 7}$$

25. Has a construction sequence schedule for the planned management practices been prepared? ☒ Yes ☐ No

☒ 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**

Other

[illegible]

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

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

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)

RR Techniques (Area Reduction)	Total Contributing Area (acres)	Total Contributing Impervious Area (acres)
○ Conservation of Natural Areas (RR-1) ...	5 . 6 3	and/or .
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	.	and/or .
● Tree Planting/Tree Pit (RR-3)	0 . 0 6 4	and/or 0 . 0 6 4
● Disconnection of Rooftop Runoff (RR-4) ..	.	and/or 1 . 3 7
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)	2 . 4 4	
○ 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.

[illegible][illegible]

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	.	1	3	1	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
--	--	---

.

0	9	2
---	---	---

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

1 . 2 3 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 . 3 2

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 . 6 5 5 acre-feet

CPv Provided

1 . 2 3 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

3 6 . 0 6 CFS

Post-development

2 6 . 4 1 CFS

Total Extreme Flood Control Criteria (Qf)

Pre-Development

9 8 . 9 1 CFS

Post-development

6 2 . 4 8 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

- 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

☒ Yes ☐ No

If Yes, Identify the entity responsible for the long term
Operation and Maintenance

[illegible]

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 from the entire watershed. However, only runoff from the subject site was utilized to determine WQv design.

Groundwater tables at the depths of the proposed wet pond elevations prohibited the use of onsite infiltration techniques.

The wet pond was designed to accommodate runoff from the entire watershed. However, only runoff from the subject site was utilized to determine WQv design.

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?
(If No, skip question 43)

☒ Yes ☐ No

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	D							
---	---	---	--	--	--	--	--	--	--

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**

01/10/2018



Department of
Environmental
Conservation

SWPPP Preparer Certification Form

*SPDES General Permit for Stormwater Discharges
From Construction Activity (GP-0-15-002)*

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-0-15-002. 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

First name

L

MI

Zona

Last Name

A handwritten signature in blue ink, appearing to read "Rudy L Zona".

Signature

1/8/2018

Date



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

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

CONSTRUCTION DURATION INSPECTIONS
Runoff Control Practices (continued)

Page 3 of _____

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 1 acre 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
Municipality: County:	Permit # (if any): NYR	
	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

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?

Law, rule or permit citation

SWPPP Content

Yes No N/A

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?

Law, rule or permit citation

Recordkeeping

Yes No N/A

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?

Law, rule or permit citation

Visual Observations

Yes No N/A

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)

Law, rule or permit citation

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: _____

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook page or a sheet of stationery.

☐ 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 TOPSOILING



Definition

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas.

Purpose

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.
3. Refer to USDA Soil Conservation Service (presently 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 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 to a minimum depth of 12 inches with a deep ripper or chisel plow prior to topsoiling.
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.

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 following amounts:

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, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

STANDARD AND SPECIFICATIONS FOR MULCHING



Definition

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface.

Purpose

The primary purpose is 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 is also used alone for temporary stabilization in non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedlings 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. 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 3.7
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	8" x 100" 2-sided plastic, 48" x 180" 1-sided plastic	—	—	Use without additional mulch. Excellent for seeding establishment. Tie down as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Compost	Up to 3" pieces, moderately to highly stable	3-9 cu. yds.	134-402 cu. yds.	1-3"	Coarser textured mulches may be more effective in reducing weed growth and wind erosion.
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 3.8
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 STABILIZATION WITH SOD



Definition

Stabilizing silt producing areas by establishing long term stands of grass with sod.

Purpose

To stabilize the soil; reduce damage from sediment and runoff to downstream areas; 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 5-10-10 (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

Figure 5A.8
Silt Fence

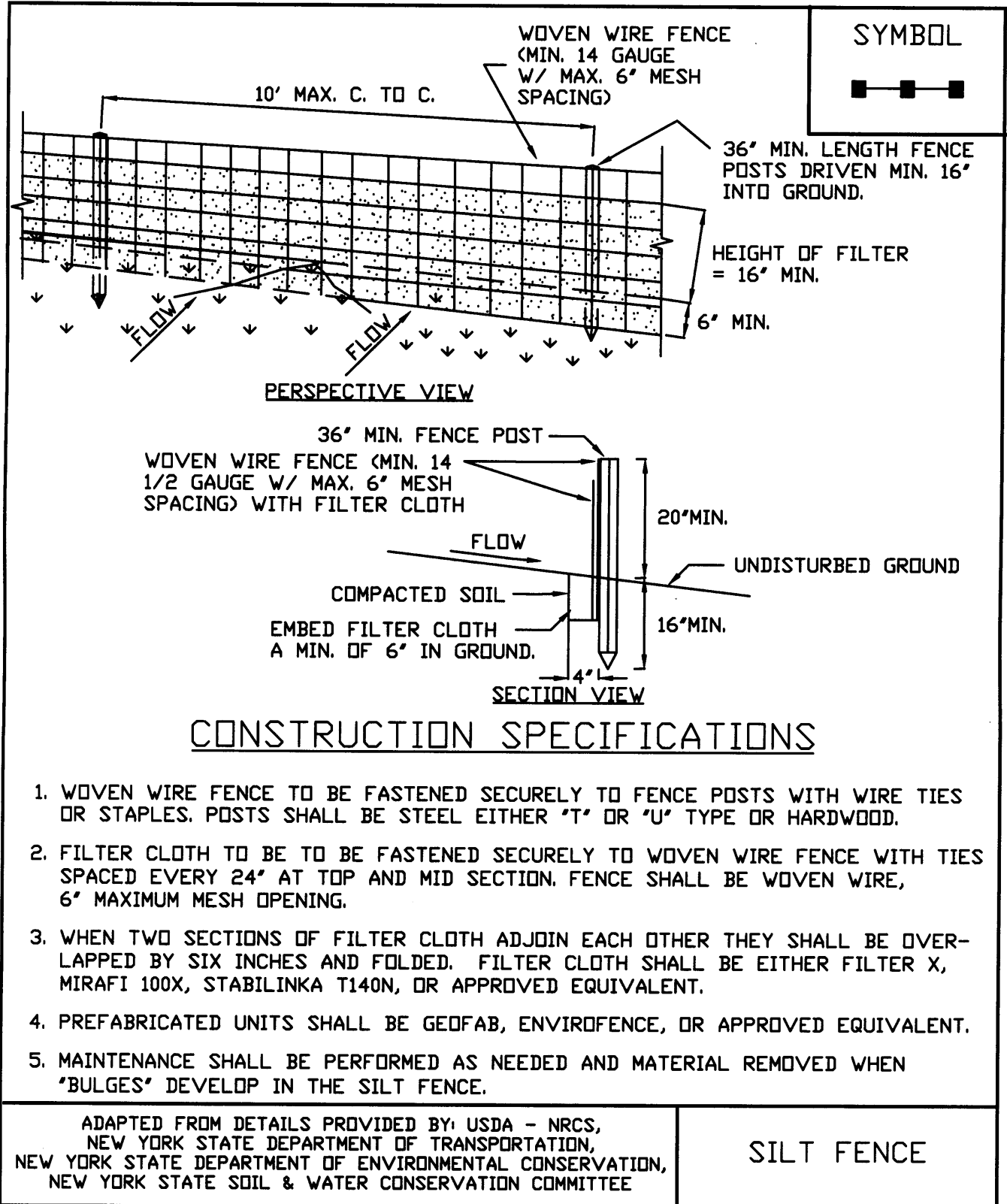


Figure 5A.9
Check Dam

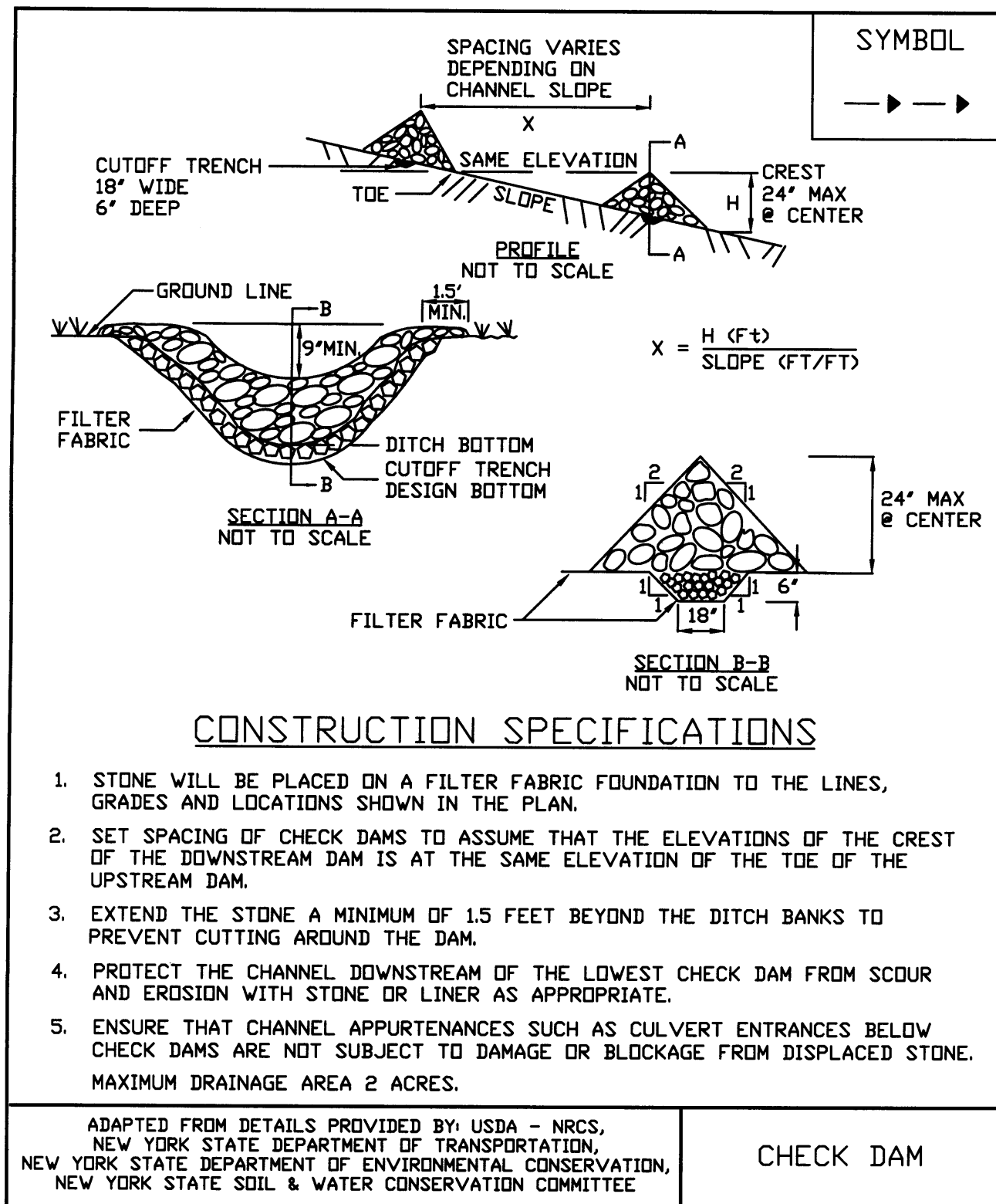


Figure 5A.11
Excavated Drop Inlet Protection

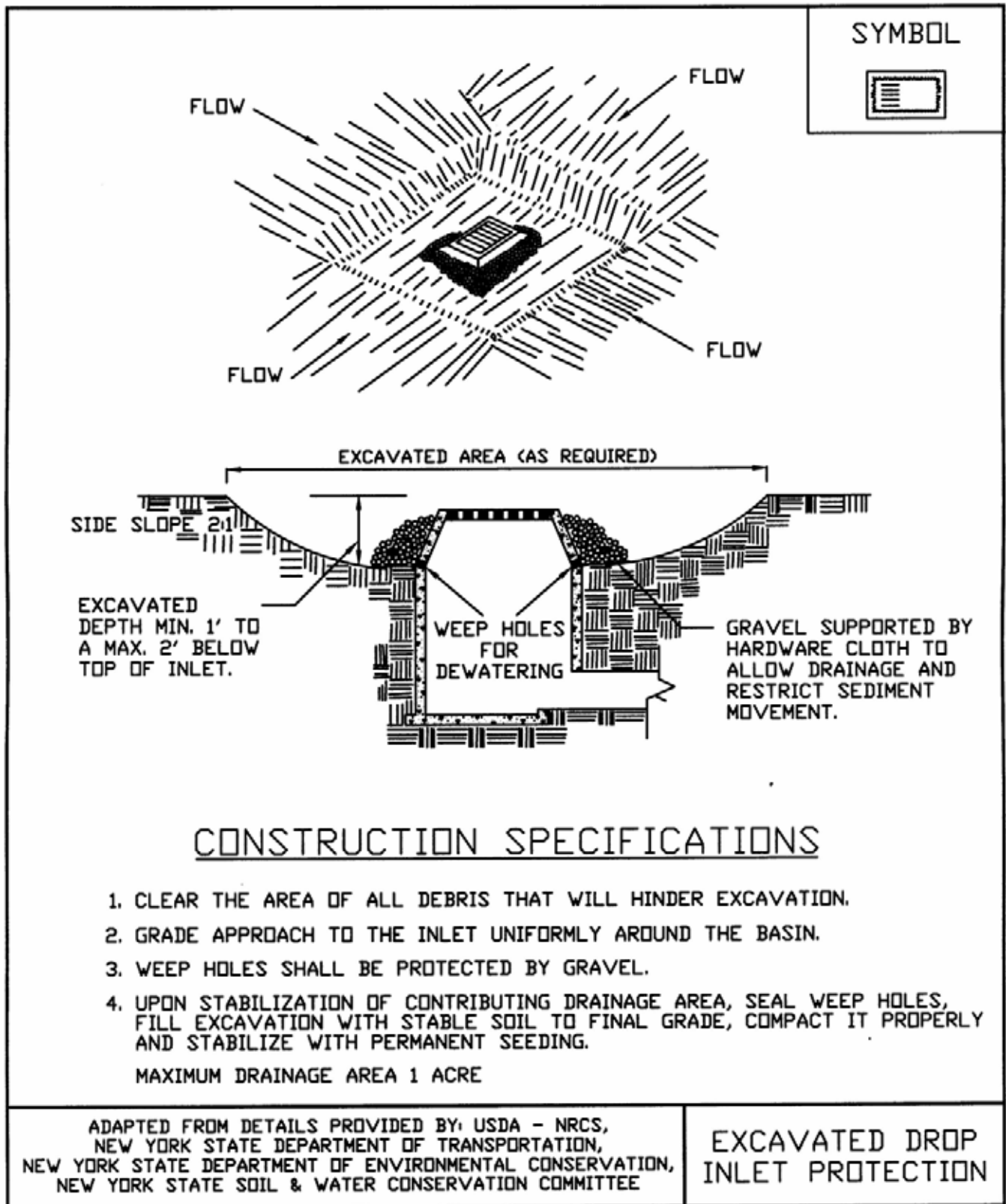


Figure 5A.12
Filter Fabric Drop Inlet Protection

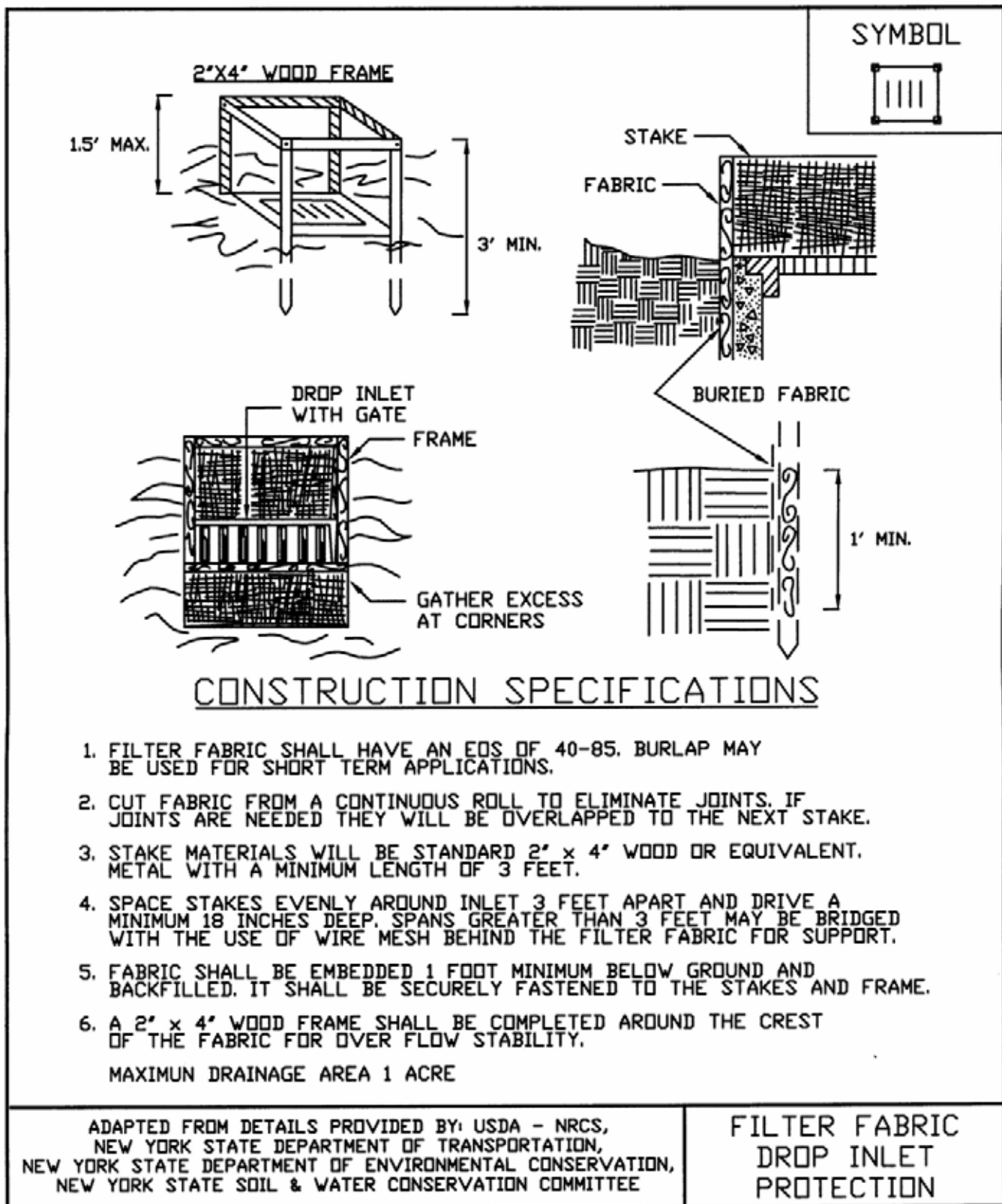


Figure 5A.13
Stone & Block Drop Inlet Protection

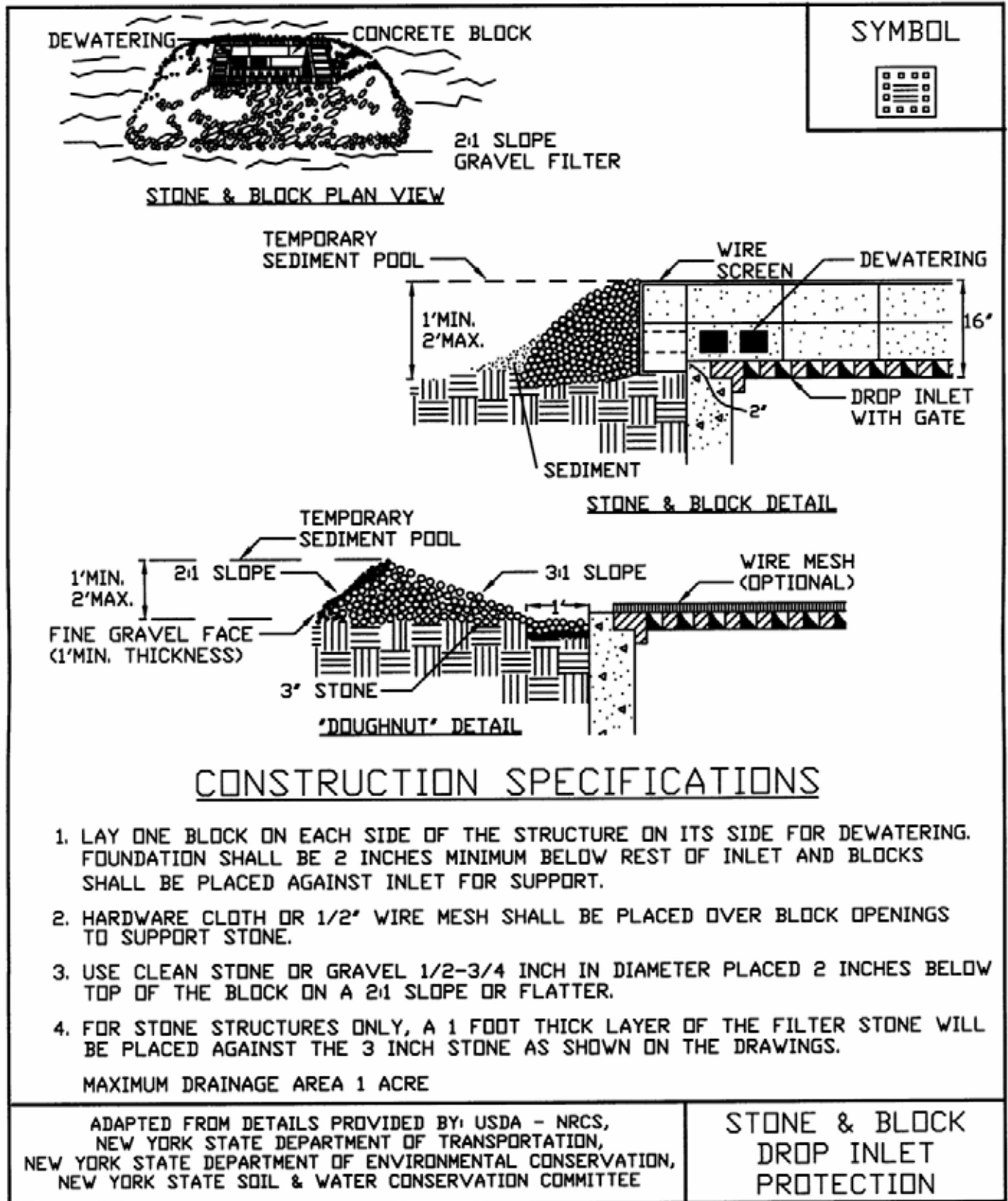
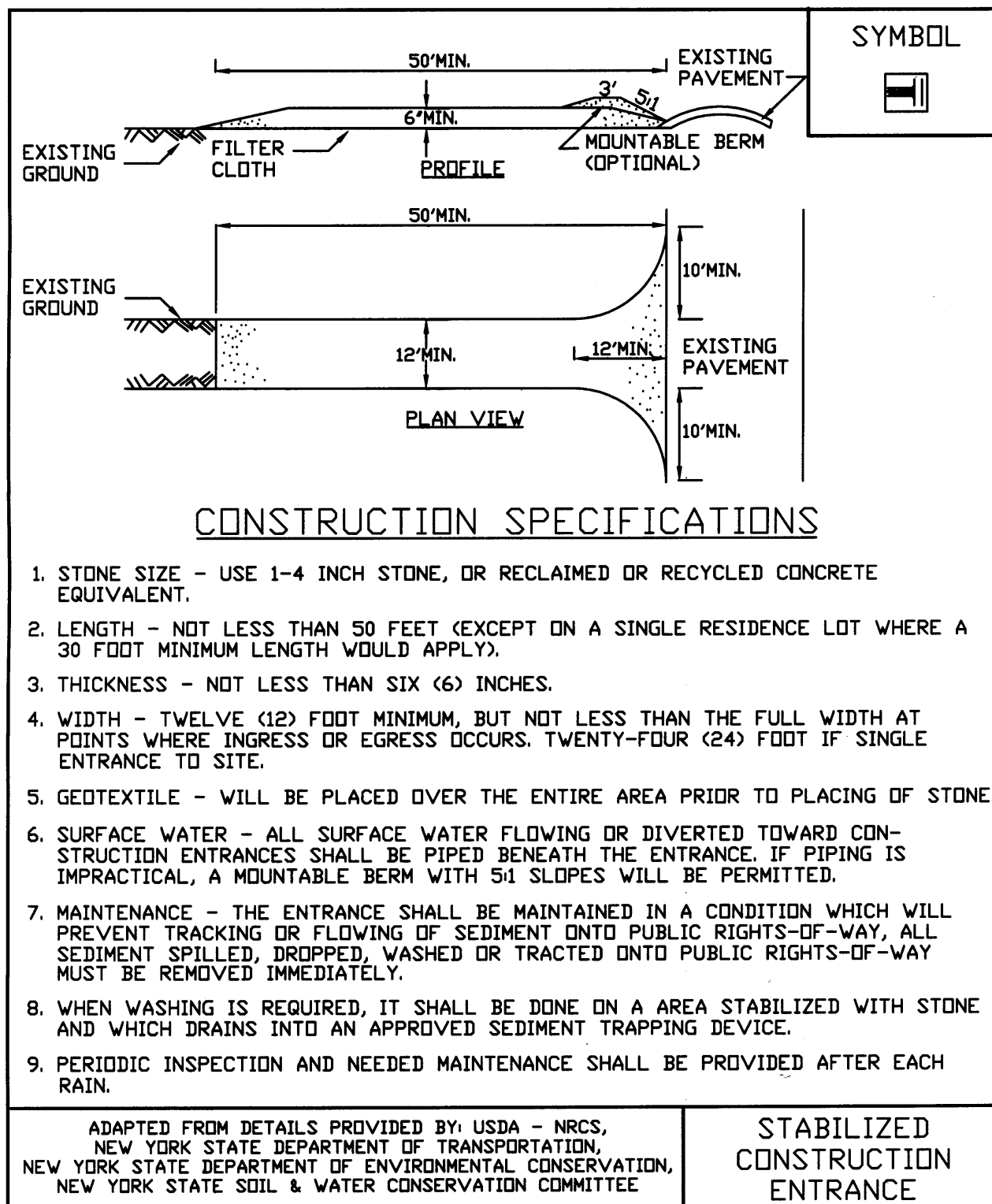


Figure 5A.35
Stabilized Construction Entrance



STANDARD AND SPECIFICATIONS FOR DUST CONTROL



Definition

The control of dust resulting from land-disturbing activities.

Purpose

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 local permitting authority.

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 routes.

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 geotextiles 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.

All Stormwater Pollution Prevention Plans must contain the NYS DEC issued “Conditions for Use” and “Application Instructions” for any polymers used on the site. This information can be obtained from the NYS DEC website.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

Figure 5B.14
Riprap Outlet Protection Detail (1)

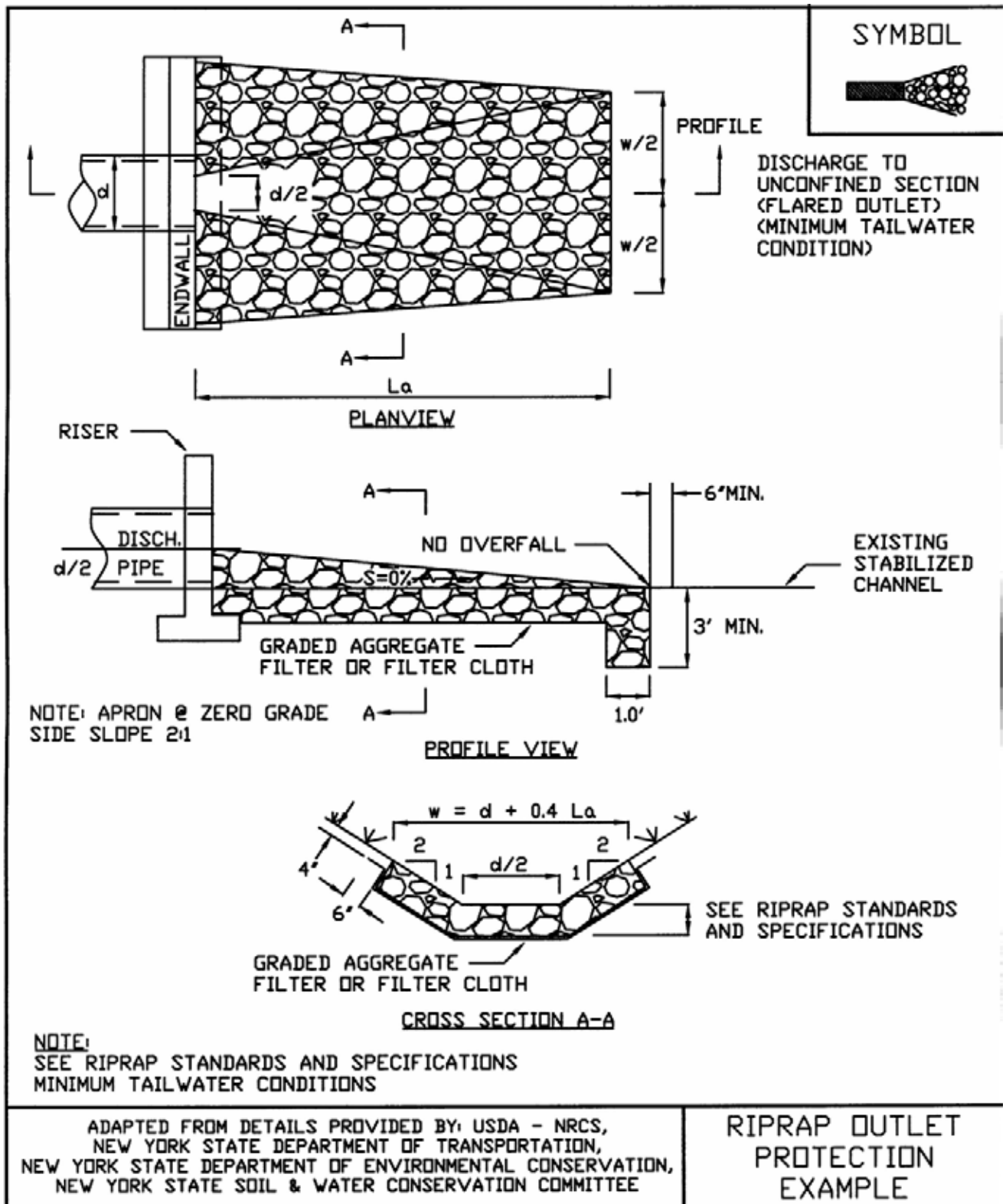
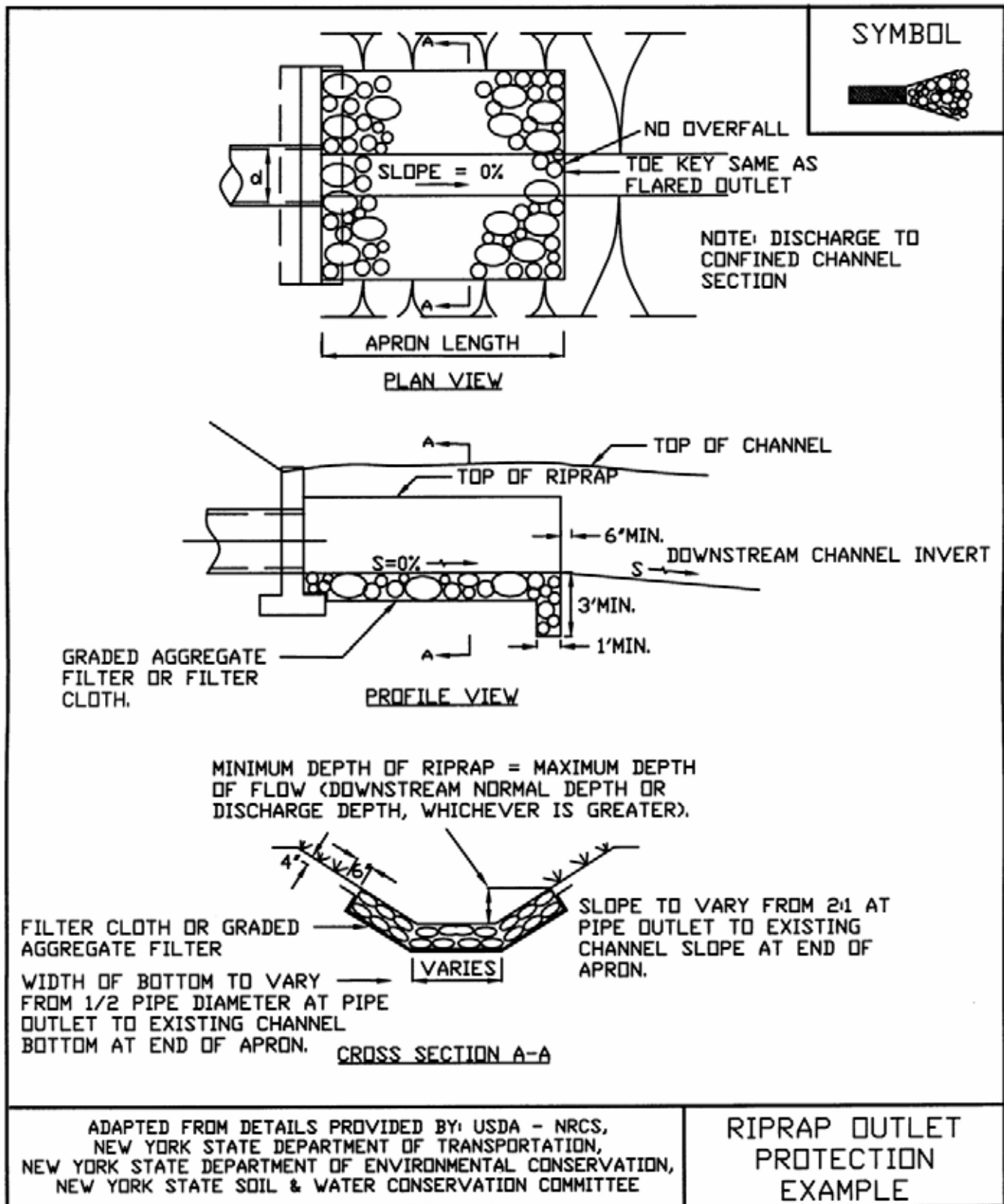


Figure 5B.15
Riprap Outlet Protection Detail (2)



STANDARD AND SPECIFICATIONS FOR LANDGRADING



Definition

Reshaping of the existing land surface in accordance with a plan as determined by engineering survey and layout.

Purpose

The purpose of a landgrading specification is to provide for erosion control and vegetative establishment on those areas where the existing land surface is to be reshaped by grading according to plan.

Design Criteria

The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surrounding to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and water removal, and vegetative treatment, etc.

Many counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed.

The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope benches (include grade and cross section), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing

of these practices. The following shall be incorporated into the plan:

1. Provisions shall be made to safely conduct surface runoff to storm drains, protected outlets, or to stable water courses to ensure that surface runoff will not damage slopes or other graded areas; see standards and specifications for Grassed Waterway, Diversion, Grade Stabilization Structure.
2. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. When slopes exceed 2:1, special design and stabilization consideration are required and shall be adequately shown on the plans. (Note: Where the slope is to be mowed, the slope should be no steeper than 3:1, although 4:1 is preferred because of safety factors related to mowing steep slopes.)
3. Reverse slope benches or diversion shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.
 - A. Benches shall be a minimum of six feet wide to provide for ease of maintenance.
 - B. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and computations.
 - C. The flow length within a bench shall not exceed 800 feet unless accompanied by appropriate design and computations; see Standard and Specifications for Diversion on page 5B.1
4. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of diversions, ditches and swales or conveyed downslope by the use of a designed structure, except where:
 - A. The face of the slope is or shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.

- B. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainage ways, graded swales, downspouts, etc.
 - C. The face of the slope will be protected by special erosion control materials, sod, gravel, riprap, or other stabilization method.
5. Cut slopes occurring in ripable rock shall be serrated as shown in Figure 5B.23 on page 5B.51. The serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have steps cut at nominal two-foot intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope line is 1 ½: 1. These steps will weather and act to hold moisture, lime, fertilizer, and seed thus producing a much quicker and longer-lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carried to a suitable outlet.
 6. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.
 7. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence, or other related damages.
 8. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two (2) inches in diameter where compacted by hand or mechanical tampers or over eight (8) inches in diameter where compacted by rollers or other equipment. Frozen material shall not be placed in the fill nor shall the fill material be placed on a frozen foundation.
 9. Stockpiles, borrow areas, and spoil shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.
 10. All disturbed areas shall be stabilized structurally or vegetatively in compliance with the Standard and Specifications for Critical Area Treatment in Section 3.
 1. All graded or disturbed areas, including slopes, shall be protected during clearing and construction in accordance with the erosion and sediment control plan until they are adequately stabilized.
 2. All erosion and sediment control practices and measures shall be constructed, applied and maintained in accordance with the sediment control plan and the "New York Standards and Specifications for Erosion and Sediment Control."
 3. Topsoil required for the establishment of vegetation shall be stockpiled in amount necessary to complete finished grading of all exposed areas.
 4. Areas to be filled shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material.
 5. Areas that are to be topsoiled shall be scarified to a minimum depth of four inches prior to placement of topsoil.
 6. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence, or other related problems. Fill intended to support buildings, structures, and conduits, etc., shall be compacted in accordance with local requirements or codes.
 7. All fill shall be placed and compacted in layers not to exceed 9 inches in thickness.
 8. Except for approved landfills or nonstructural fills, fill material shall be free of frozen particles, brush, roots, sod, or other foreign objectionable materials that would interfere with, or prevent, construction of satisfactory fills.
 9. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills.
 10. Fill shall not be placed on saturated or frozen surfaces.
 11. All benches shall be kept free of sediment during all phases of development.
 12. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain on page 5B.44 or other approved methods.
 13. All graded areas shall be permanently stabilized immediately following finished grading.
 14. Stockpiles, borrow areas, and spoil areas shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

Construction Specifications

See Figures 5B.23 and 5B.24 for details.

Figure 5B.23
Typical Section of Serrated Cut Slope

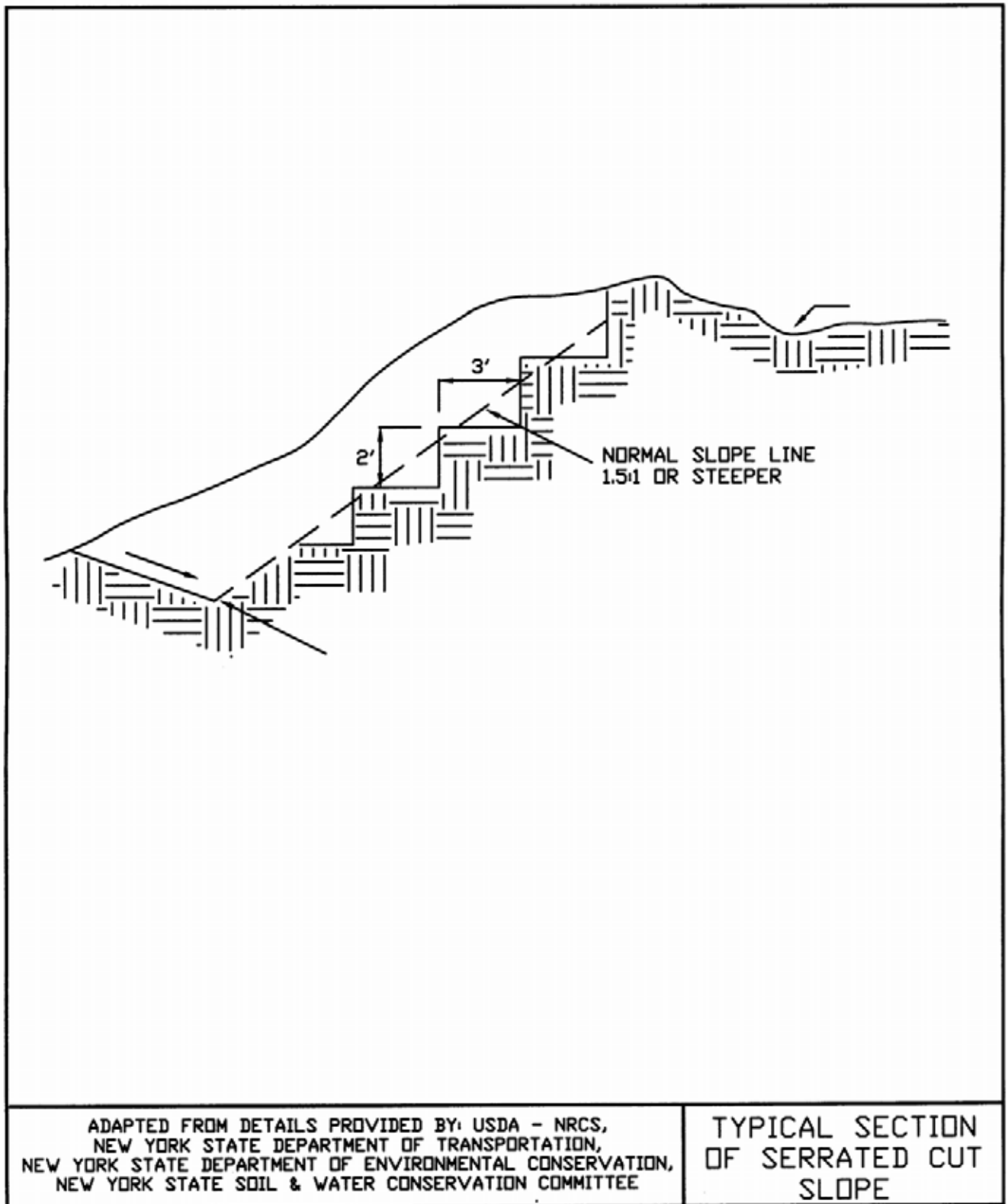


Figure 5B.24 (1)
Landgrading

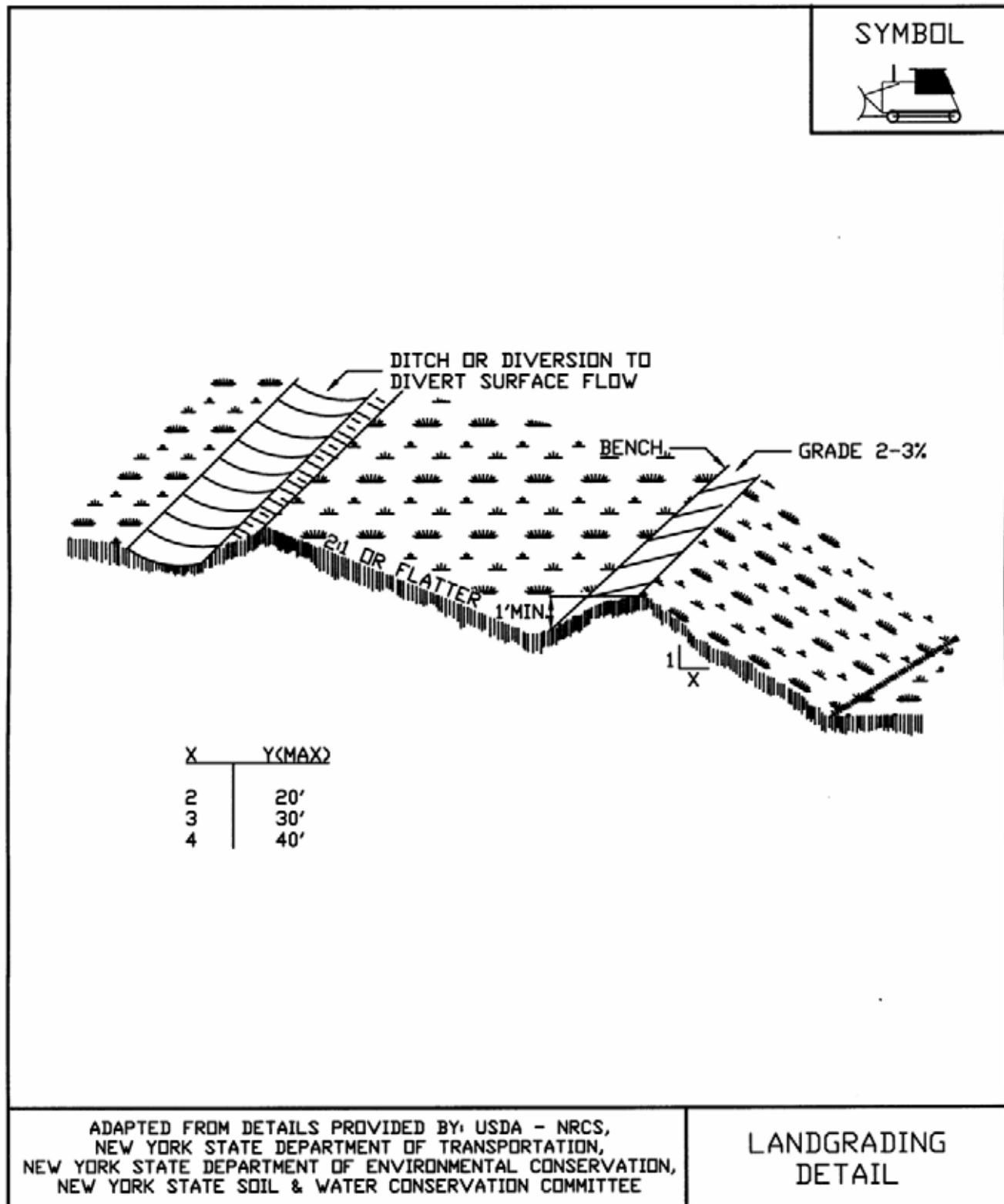


Figure 5B.24 (2)

Landgrading —Construction Specifications

<u>CONSTRUCTION SPECIFICATIONS</u>	
1. ALL GRADED OR DISTURBED AREAS INCLUDING SLOPES SHALL BE PROTECTED DURING CLEARING AND CONSTRUCTION IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLAN UNTIL THEY ARE PERMANENTLY STABILIZED. 2. ALL SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLAN AND THE 'STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL IN DEVELOPING AREAS'. 3. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN AMOUNT NECESSARY TO COMPLETE FINISHED GRADING OF ALL EXPOSED AREAS. 4. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL. 5. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF FOUR INCHES PRIOR TO PLACEMENT OF TOPSOIL. 6. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. 7. ALL FILL TO BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS. 8. EXCEPT FOR APPROVED LANDFILLS, FILL MATERIAL SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. 9. FROZEN MATERIALS OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED IN FILLS. 10. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES. 11. ALL BENCHES SHALL BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT. 12. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD. 13. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING. 14. STOCKPILES, BORROW AREAS AND SPOIL AREAS SHALL BE SHOWN ON THE PLANS AND SHALL BE SUBJECT TO THE PROVISIONS OF THIS STANDARD AND SPECIFICATION.	
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	LANDGRADING SPECIFICATIONS

APPENDIX J



Department of
Environmental
Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP-0-15-002

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2015

Expiration Date: January 28, 2020

John J. Ferguson
Chief Permit Administrator

A handwritten signature in black ink, appearing to read "John J. Ferguson", written over a horizontal line. The signature is stylized and somewhat cursive.

Authorized Signature

1 / 12 / 15

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's *State Pollutant Discharge Elimination System ("SPDES")* is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law ("ECL")*.

This general permit ("permit") is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL. An *owner or operator* may obtain coverage under this permit by submitting a Notice of Intent ("NOI") to the Department. Copies of this permit and the NOI for New York are available by calling (518) 402-8109 or at any New York State Department of Environmental Conservation ("the Department") regional office (see Appendix G). They are also available on the Department's website at:

<http://www.dec.ny.gov/>

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 Article 17-0505 of the ECL, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. They 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**

Part I. PERMIT COVERAGE AND LIMITATIONS	1
A. Permit Application	1
B. Effluent Limitations Applicable to Discharges from Construction Activities	1
C. Post-construction Stormwater Management Practice Requirements	4
D. Maintaining Water Quality	8
E. Eligibility Under This General Permit.....	9
F. Activities Which Are Ineligible for Coverage Under This General Permit	9
Part II. OBTAINING PERMIT COVERAGE	12
A. Notice of Intent (NOI) Submittal	12
B. Permit Authorization.....	13
C. General Requirements For Owners or Operators With Permit Coverage	15
D. Permit Coverage for Discharges Authorized Under GP-0-10-001.....	17
E. Change of <i>Owner or Operator</i>	17
Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP).....	18
A. General SWPPP Requirements	18
B. Required SWPPP Contents	20
C. Required SWPPP Components by Project Type.....	23
Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS	24
A. General Construction Site Inspection and Maintenance Requirements	24
B. Contractor Maintenance Inspection Requirements	24
C. Qualified Inspector Inspection Requirements.....	24
Part V. TERMINATION OF PERMIT COVERAGE	28
A. Termination of Permit Coverage	28
Part VI. REPORTING AND RETENTION OF RECORDS	30
A. Record Retention	30
B. Addresses	30
Part VII. STANDARD PERMIT CONDITIONS.....	31
A. Duty to Comply.....	31
B. Continuation of the Expired General Permit.....	31
C. Enforcement.....	31
D. Need to Halt or Reduce Activity Not a Defense.....	31
E. Duty to Mitigate	32
F. Duty to Provide Information.....	32
G. Other Information	32
H. Signatory Requirements.....	32
I. Property Rights.....	34
J. Severability	34
K. Requirement to Obtain Coverage Under an Alternative Permit.....	34
L. Proper Operation and Maintenance	35
M. Inspection and Entry	35
N. Permit Actions	36
O. Definitions	36
P. Re-Opener Clause	36

Q. Penalties for Falsification of Forms and Reports	36
R. Other Permits	36
APPENDIX A	37
APPENDIX B	44
APPENDIX C	46
APPENDIX D	52
APPENDIX E	53
APPENDIX F	55

(Part I)

I.

Part I. 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

Discharges 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 August 2005, 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

(Part I.B.1)

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 discharges*;
- (ii) Control stormwater *discharges* 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 *discharges* from the site;
- (vi) Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, 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; and
- (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover.

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.** *Discharges* from dewatering activities, including *discharges*

(Part I.B.1.c)

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 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 *discharges* 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

(Part I.B.1.f)

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

(Part I.C.2.a.ii)

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

(Part I.C.2.b.ii)

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 *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.

c. Sizing Criteria for Redevelopment Activity

(Part I.C.2.c.i)

- (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.

(Part I.C.2.c.iv)

- (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 *discharges* 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 *discharges* 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 *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or

(Part I.D)

if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* 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 *discharges* from *construction activities*.
3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater *discharges* may be authorized by this permit: *discharges* from firefighting activities; fire hydrant flushings; waters to which cleansers or other components have not been added that are used to wash vehicles or control dust in accordance with the SWPPP, routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated *groundwater* or spring water; uncontaminated *discharges* from construction site de-watering operations; and foundation or footing drains where flows are not contaminated with process materials such as solvents. For those entities required to obtain coverage under this permit, and who *discharge* as noted in this paragraph, and with the exception of flows from firefighting activities, these *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:

(Part I.F)

1. *Discharges after construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* 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.C.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 *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which disturb one or more acres of land with no existing *impervious cover*; and
 - c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture ("USDA") Soil Survey for the County where the disturbance will occur.
7. *Construction activities* for linear transportation projects and linear utility projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which disturb two or more acres of land with no existing *impervious cover*; and
 - c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the USDA Soil Survey for the County where the disturbance will occur.

(Part I.F.8)

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.C.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

(Part I.F.8.c.iii)

(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. *Discharges 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.

II.

Part II. OBTAINING PERMIT COVERAGE

A. Notice of Intent (NOI) Submittal

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 NOI form to the Department in order to be authorized to *discharge* under this permit. 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. 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 its 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. An *owner or operator* shall use either the electronic (eNOI) or paper version of the NOI.

The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the address in Part II.A.1.

(Part II.A.2)

The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *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.E. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4*.

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.

B. 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) 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.B.2 above

(Part II.B.3)

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. The Department may suspend or deny an *owner’s or operator’s* coverage

(Part II.B.4)

under this permit if the Department determines that the SWPPP does not meet the permit requirements. In accordance with statute, regulation, and the terms and conditions of this permit, the Department may deny coverage under this permit and require submittal of an application for an individual SPDES permit based on a review of the NOI or other information pursuant to Part II.

5. 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.B. of this permit.

C. 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-0-15-002), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, 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

(Part II.C.3.a)

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 August 2005.
 - 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. 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*.
5. 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

(Part II.D)

D. Permit Coverage for Discharges Authorized Under GP-0-10-001

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-10-001), an *owner or operator* of a *construction activity* with coverage under GP-0-10-001, as of the effective date of GP-0-15-002, shall be authorized to *discharge* in accordance with GP-0-15-002, 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-0-15-002.

E. Change of Owner or Operator

2. 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. 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.A.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.

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)

III.

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:
 - 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*; and
 - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority.
5. The Department may notify the *owner or operator* at any time that the

(Part III.A.5)

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.C.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 *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"

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

(Part III.A.6)

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 August 2005. 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

(Part III.B.1.d)

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 August 2005, 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 August 2005;
- 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 August 2005. Include the reason for the deviation or alternative design

(Part III.B.1.I)

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

(Part III.B.2.c.iv)

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)

IV. 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

(Part IV.C)

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),
- 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

(Part IV.C.2.b)

the *owner or operator* has received authorization in accordance with Part II.C.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.A.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

(Part IV.C.2.e)

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;

(Part IV.C.4.i)

- 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.C.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

V. 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.A.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.

(Part V.A.2)

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.E. 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.

(Part V.A.5)

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.

VI. Part VI. REPORTING AND RETENTION OF 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.A.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)

VII. 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.

(Part VII.E)

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

(Part VII.H.1.a.i)

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

(Part VII.H.2.b)

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

(Part VII.K.1)

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.

(Part VII.N)

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.

VIII. APPENDIX A

Definitions

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.

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.

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).

New Development – means any land disturbance that does meet the definition of Redevelopment Activity included in this appendix.

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*.

Owner or Operator - means the person, persons or legal entity which 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.

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.

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, 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 required to gain coverage under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s).

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,
- Stream bank restoration projects (does not include the placement of spoil material),
- 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 makes 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 with a Soil Slope Phase that is identified as an E or F, or

the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture ("USDA") Soil Survey for the County where the disturbance will occur.

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 sources. 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 sources, 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, 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 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
- Bike paths and trails
- Sidewalk construction projects that are not part of a road/ highway construction or reconstruction project
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics
- Spoil areas that will be covered with vegetation
- Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), 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 less than five acres and construction activities that include the construction or reconstruction of impervious area

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.

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 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 townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- 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, includes hospitals, prisons, schools and colleges
- Industrial facilities, includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's and water treatment plants
- Office complexes
- Sports complexes
- Racetracks, includes racetracks with earthen (dirt) surface
- Road construction or reconstruction
- Parking lot construction or reconstruction
- 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
- 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 Where Enhanced Phosphorus Removal Standards Are Required**

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

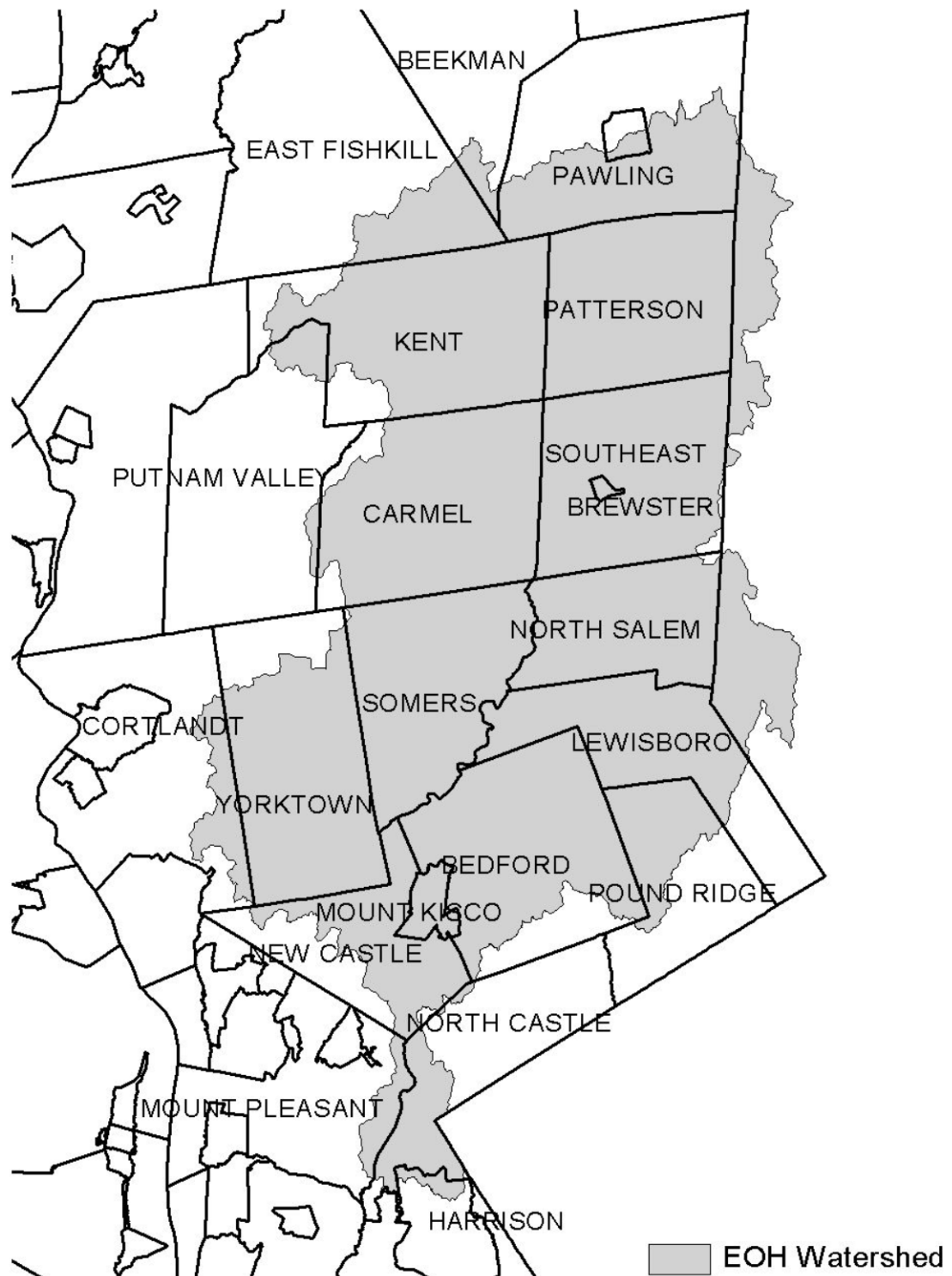


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

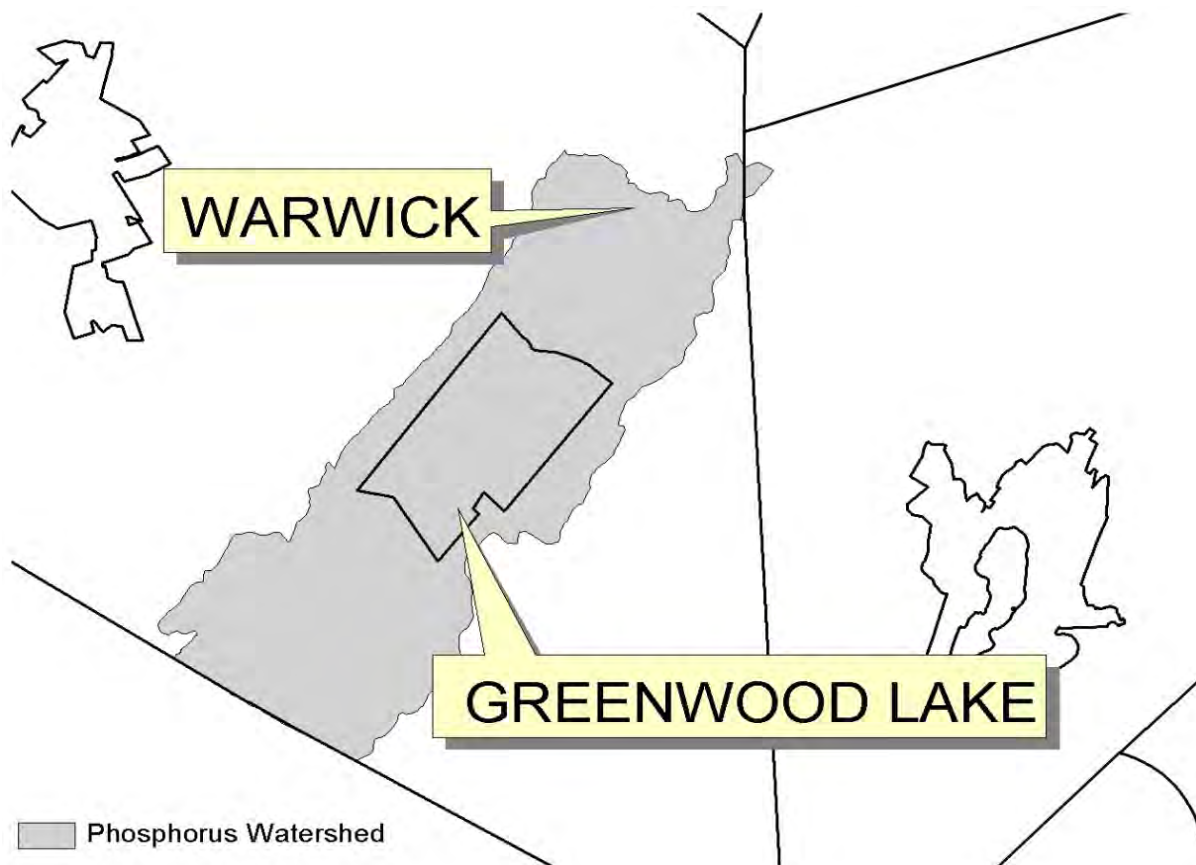


Figure 4 - Oscawana Lake Watershed

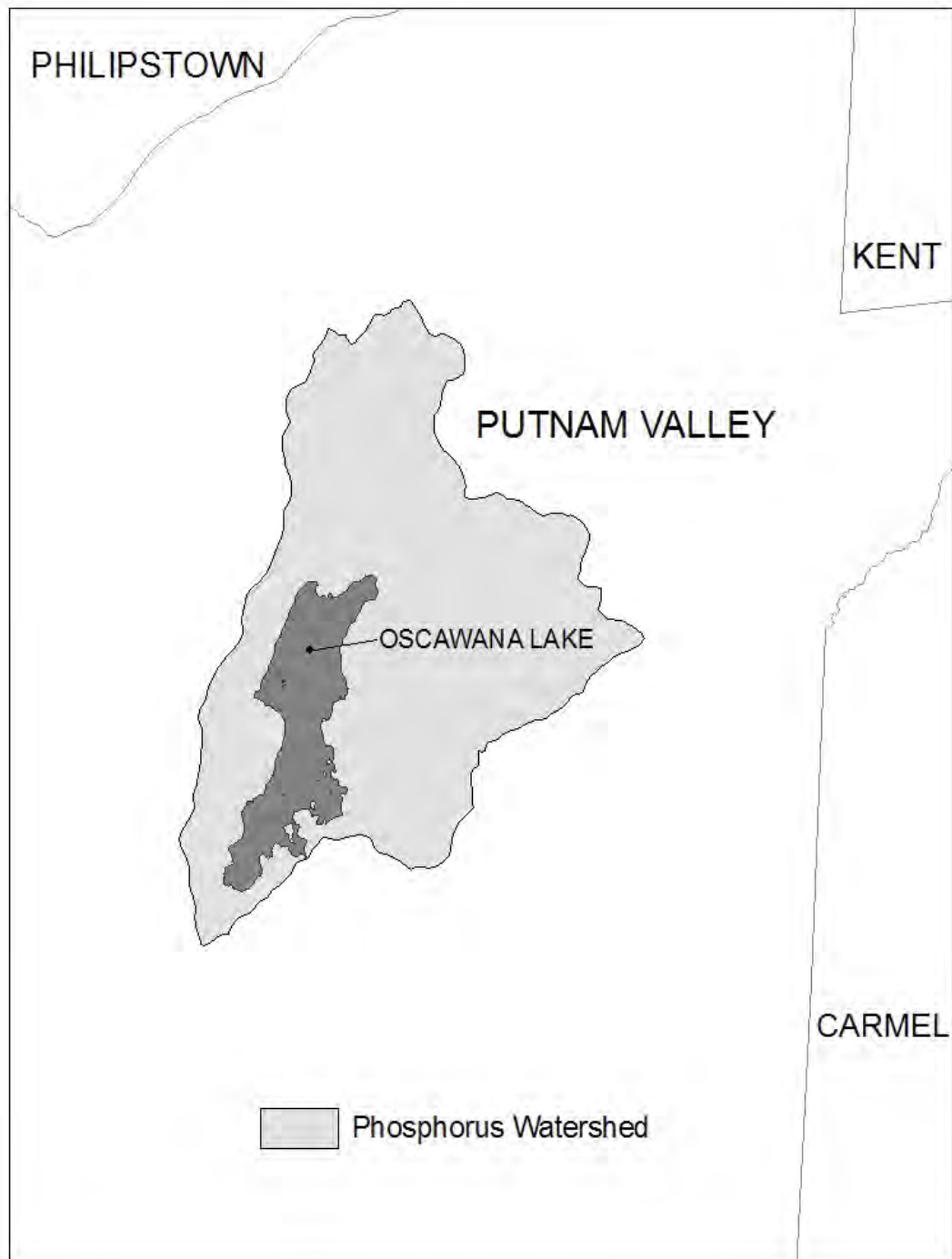
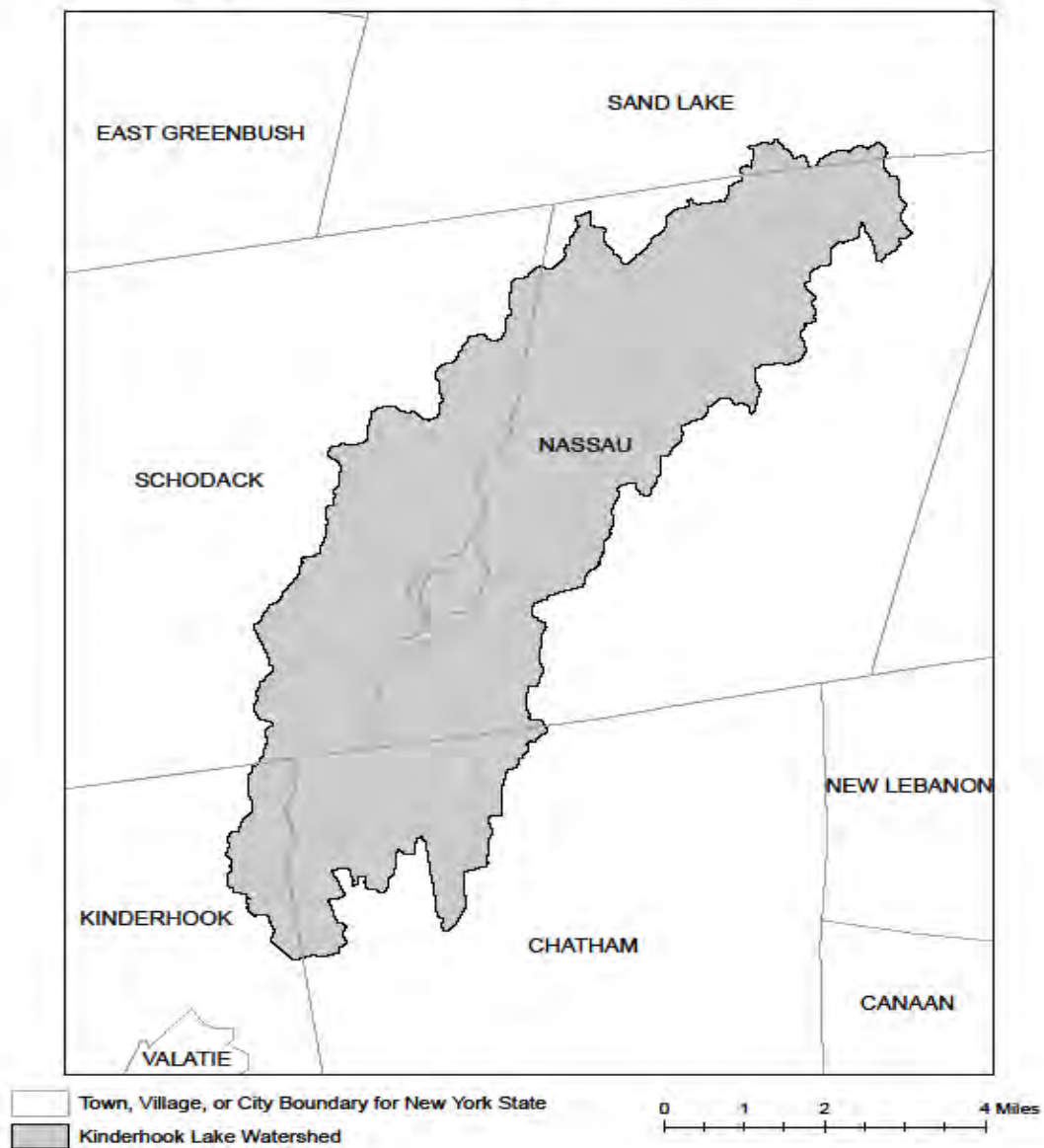


Figure 5: Kinderhook Lake Watershed



APPENDIX D

Watersheds 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

XII. APPENDIX E

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). *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	COUNTY	WATERBODY
Albany	Ann Lee (Shakers) Pond, Stump Pond	Greene	Sleepy Hollow Lake
Albany	Basic Creek Reservoir	Herkimer	Steele Creek tribs
Allegheny	Amity Lake, Saunders Pond	Kings	Hendrix Creek
Bronx	Van Cortlandt Lake	Lewis	Mill Creek/South Branch and tribs
Broome	Whitney Point Lake/Reservoir	Livingston	Conesus Lake
Broome	Fly Pond, Deer Lake	Livingston	Jaycox Creek and tribs
Broome	Minor Tribs to Lower Susquehanna (north)	Livingston	Mill Creek and minor tribs
Cattaraugus	Allegheny River/Reservoir	Livingston	Bradner Creek and tribs
Cattaraugus	Case Lake	Livingston	Christie Creek and tribs
Cattaraugus	Linlyco/Club Pond	Monroe	Lake Ontario Shoreline, Western
Cayuga	Duck Lake	Monroe	Mill Creek/Blue Pond Outlet and tribs
Chautauqua	Chautauqua Lake, North	Monroe	Rochester Embayment - East
Chautauqua	Chautauqua Lake, South	Monroe	Rochester Embayment - West
Chautauqua	Bear Lake	Monroe	Unnamed Trib to Honeoye Creek
Chautauqua	Chadakoin River and tribs	Monroe	Genesee River, Lower, Main Stem
Chautauqua	Lower Cassadaga Lake	Monroe	Genesee River, Middle, Main Stem
Chautauqua	Middle Cassadaga Lake	Monroe	Black Creek, Lower, and minor tribs
Chautauqua	Findley Lake	Monroe	Buck Pond
Clinton	Great Chazy River, Lower, Main Stem	Monroe	Long Pond
Columbia	Kinderhook Lake	Monroe	Cranberry Pond
Columbia	Robinson Pond	Monroe	Mill Creek and tribs
Dutchess	Hillside Lake	Monroe	Shipbuilders Creek and tribs
Dutchess	Wappinger Lakes	Monroe	Minor tribs to Irondequoit Bay
Dutchess	Fall Kill and tribs	Monroe	Thomas Creek/White Brook and tribs
Erie	Green Lake	Nassau	Glen Cove Creek, Lower, and tribs
Erie	Scajaquada Creek, Lower, and tribs	Nassau	LI Tribs (fresh) to East Bay
Erie	Scajaquada Creek, Middle, and tribs	Nassau	East Meadow Brook, Upper, and tribs
Erie	Scajaquada Creek, Upper, and tribs	Nassau	Hempstead Bay
Erie	Rush Creek and tribs	Nassau	Hempstead Lake
Erie	Ellicott Creek, Lower, and tribs	Nassau	Grant Park Pond
Erie	Beeman Creek and tribs	Nassau	Beaver Lake
Erie	Murder Creek, Lower, and tribs	Nassau	Camaans Pond
Erie	South Branch Smoke Cr, Lower, and tribs	Nassau	Halls Pond
Erie	Little Sister Creek, Lower, and tribs	Nassau	LI Tidal Tribs to Hempstead Bay
Essex	Lake George (primary county: Warren)	Nassau	Massapequa Creek and tribs
Genesee	Black Creek, Upper, and minor tribs	Nassau	Reynolds Channel, east
Genesee	Tonawanda Creek, Middle, Main Stem	Nassau	Reynolds Channel, west
Genesee	Oak Orchard Creek, Upper, and tribs	Nassau	Silver Lake, Lofts Pond
Genesee	Bowen Brook and tribs	Nassau	Woodmere Channel
Genesee	Bigelow Creek and tribs	Niagara	Hyde Park Lake
Genesee	Black Creek, Middle, and minor tribs	Niagara	Lake Ontario Shoreline, Western
Genesee	LeRoy Reservoir	Niagara	Bergholtz Creek and tribs
Greene	Schoharie Reservoir	Oneida	Ballou, Nail Creeks
		Onondaga	Ley Creek and tribs
		Onondaga	Onondaga Creek, Lower and tribs

APPENDIX E

List of 303(d) segments impaired by pollutants related to construction activity, cont'd.

COUNTY	WATERBODY	COUNTY	WATERBODY
Onondaga	Onondaga Creek, Middle and tribs	Suffolk	Great South Bay, West
Onondaga	Onondaga Creek, Upp, and minor tribs	Suffolk	Mill and Seven Ponds
Onondaga	Harbor Brook, Lower, and tribs	Suffolk	Moriches Bay, East
Onondaga	Ninemile Creek, Lower, and tribs	Suffolk	Moriches Bay, West
Onondaga	Minor tribs to Onondaga Lake	Suffolk	Quantuck Bay
Onondaga	Onondaga Creek, Lower, and tribs	Suffolk	Shinnecock Bay (and Inlet)
Ontario	Honeoye Lake	Sullivan	Bodine, Montgomery Lakes
Ontario	Hemlock Lake Outlet and minor tribs	Sullivan	Davies Lake
Ontario	Great Brook and minor tribs	Sullivan	Pleasure Lake
Orange	Monhagen Brook and tribs	Sullivan	Swan Lake
Orange	Orange Lake	Tompkins	Cayuga Lake, Southern End
Orleans	Lake Ontario Shoreline, Western	Tompkins	Owasco Inlet, Upper, and tribs
Oswego	Pleasant Lake	Ulster	Ashokan Reservoir
Oswego	Lake Neatahwanta	Ulster	Esopus Creek, Upper, and minor tribs
Putnam	Oscawana Lake	Ulster	Esopus Creek, Lower, Main Stem
Putnam	Palmer Lake	Ulster	Esopus Creek, Middle, and minor tribs
Putnam	Lake Carmel	Warren	Lake George
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Warren	Tribs to L.George, Village of L George
Queens	Bergen Basin	Warren	Huddle/Finkle Brooks and tribs
Queens	Shellbank Basin	Warren	Indian Brook and tribs
Rensselaer	Nassau Lake	Warren	Hague Brook and tribs
Rensselaer	Snyders Lake	Washington	Tribs to L.George, East Shr Lk George
Richmond	Grasmere, Arbutus and Wolfes Lakes	Washington	Cossayuna Lake
Rockland	Congers Lake, Swartout Lake	Washington	Wood Cr/Champlain Canal, minor tribs
Rockland	Rockland Lake	Wayne	Port Bay
Saratoga	Ballston Lake	Wayne	Marbletown Creek and tribs
Saratoga	Round Lake	Westchester	Lake Katonah
Saratoga	Dwaas Kill and tribs	Westchester	Lake Mohegan
Saratoga	Tribs to Lake Lonely	Westchester	Lake Shenorock
Saratoga	Lake Lonely	Westchester	Reservoir No.1 (Lake Isle)
Schenectady	Collins Lake	Westchester	Saw Mill River, Middle, and tribs
Schenectady	Duane Lake	Westchester	Silver Lake
Schenectady	Mariaville Lake	Westchester	Teatown Lake
Schoharie	Engleville Pond	Westchester	Truesdale Lake
Schoharie	Summit Lake	Westchester	Wallace Pond
Schuyler	Cayuta Lake	Westchester	Peach Lake
St. Lawrence	Fish Creek and minor tribs	Westchester	Mamaroneck River, Lower
St. Lawrence	Black Lake Outlet/Black Lake	Westchester	Mamaroneck River, Upp, and tribs
Steuben	Lake Salubria	Westchester	Sheldrake River and tribs
Steuben	Smith Pond	Westchester	Blind Brook, Lower
Suffolk	Millers Pond	Westchester	Blind Brook, Upper, and tribs
Suffolk	Mattituck (Marratooka) Pond	Westchester	Lake Lincolndale
Suffolk	Tidal tribs to West Moriches Bay	Westchester	Lake Meahaugh
Suffolk	Canaan Lake	Wyoming	Java Lake
Suffolk	Lake Ronkonkoma	Wyoming	Silver Lake
Suffolk	Beaverdam Creek and tribs		
Suffolk	Big/Little Fresh Ponds		
Suffolk	Fresh Pond		
Suffolk	Great South Bay, East		
Suffolk	Great South Bay, Middle		

Note: The list above identifies those waters from the final New York State "2014 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy", dated January 2015, that are impaired by silt, sediment or nutrients.

LIST OF NYS DEC REGIONAL OFFICES

<u>Region</u>	<u>COVERING THE FOLLOWING COUNTIES:</u>	<u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u>	<u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u>
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 ROAD AVON, 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 AVE. BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX K

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: _____

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:

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: _____

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: _____

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: _____

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: _____

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: _____

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:

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: _____

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: _____

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: _____

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: _____

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: _____

Swale 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: 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: _____

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: _____

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: 7/11/2019 Initial: HJM
DA-1a

Watershed Drainage Area, DA (acres):	HSG(s)	90% Rain, P (inches):
27.07	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 environmentally sensitive areas: floodplain, steep slopes, habitat, ecosystems, bedrock, wetlands, shorelines, shallow groundwater, impervious soils, or unstable soils
- Minimize impervious surfaces: building footprints, parking, roads, sidewalks, and driveways
- Minimize clearing and grading

Water Quality Volume

2. Calculate water quality volume (WQv): $WQv = P \cdot A \cdot Rv / 12$

DA = 27.07 acres Impervious Area*(AI) = 3.87 acres Rv = 0.179 Original WQv = 0.403267 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):

$RRv = 90\% \text{ rain}(P) \times .95 \times S \times AI / 12$

with S = .55 (A soils); .40 (B soils); .30 (C soils); .20 (D soils); OR weighted HSG average in DA

P	S	AI	Minimum RRv required=
1.00	0.3	3.87	<u>0.09198375</u> 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 = 5.63 ac
Riparian buffers/filter strips: contributing AI = 0 ac Area = 0 ac
Tree Planting/tree preservation: contributing AI = 0.064 ac Area = 0.064 ac
Total area reduction: Total Area Reduced = 5.694 ac
Total Impervious area with area reduction: AI in Reduced Area = 0.064 ac

5. Subtract total area reduction from DA:

Remaining drainage area(#2 area-#4 area) Remaining Drainage Area = 21.376 ac
Remaining impervious area(#2 AI-#4 AI) Remaining AI = 3.809 ac

6. Recalculate WQv for site area remaining after area reductions:

Remaining DA = 21.376 Remaining AI = 3.809 ac Rv = 0.210 area reduced WQv = 0.374742 ac-ft
RRv = 0.028525 ac-ft

7. Runoff reduction volume (RRV) from #2: (#2 WQv- #6 WQv) =

8. Incorporate rooftop area disconnection:

Total disconnected rooftop area(now considered pervious for RV calculation(s)) Area = 1.37 ac

9. Recalculate WQv with RV modified for impervious disconnection:

DA(from #5): 21.376 (remaining AI = 2.44 ac) Rv = 0.152689933 Rv reduced WQv = 0.271992 ac-ft

10. Runoff reduction volume: #6 (area reduced WQv - #9 (Rv reduced WQv) =

RRv = 0.10275 ac-ft

Source Control WQv Treatment Practices

(From attached worksheet)

11a. Subtotal DA tributary to Source 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 = 0 (ac-ft)

Total Runoff Reduction Volume (RRv)

12a. Total drainage area treated with area reduction and source control(#4+#11a) DA treated = 5.694 ac-ft
12b. Total Impervious Area treated with area reduction or source control RRv(AI #4+AI#8+AI#11b) Total treated AI = 1.43 ac-ft

13. Total RRv provided(#7+#10+#11c)=Total RRv= Total provided RRv = 0.131275 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) 27.07 - RRv DA(#12a) 5.69 acres = 21.38 acres
Remaining impervious area = Total AI(#2) 3.87 - treated AI(#12b) 1.43 acres = 2.44 acres

STORMWATER MANAGEMENT PLAN WORKSHEET

RZ Engineering, PLLC
6320 Fly Road Suite 109 East Syracuse, NY 13057
315-432-1089

Ponds	DA Tributary	22.6	acres	AI treated	2.58	acres	WQv provided=	21.59417	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) =

17b. Total DA treated with Standard WQv practices (16) =

17c. Total DA treated (17a + 17b) =

5.694	acres
21.38	acres
27.07	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 letter 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=	<u></u> ac-ft	OB volume=	<u></u> ac-ft	ES Volume=	<u></u> ac-ft
Wetlands	CP volume=	<u></u> ac-ft	OB volume=	<u></u> ac-ft	ES Volume=	<u></u> ac-ft
Dry detention	CP volume=	<u></u> ac-ft	OB volume=	<u></u> ac-ft	ES Volume=	<u></u> ac-ft
Underground storage	CP volume=	<u></u> ac-ft	OB volume=	<u></u> ac-ft	ES Volume=	<u></u> ac-ft
Blue roofs	CP volume=	<u></u> ac-ft	OB volume=	<u></u> ac-ft	ES Volume=	<u></u> ac-ft

(complete for all applicable practices and soil types)

11. Source Control WQV Treatment Practices Worksheet

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

EROSION AND SEDIMENT CONTROL NOTES:

- 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 SUPPLY PREPARED FOR THE PROJECT, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- BARRE 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 SEEDDED IMMEDIATELY.
- SITE PREPARATION SHALL INCLUDE:
 - SEEDING PREPARATION - SCARIFY IF COMPACTED, REMOVE DEBRIS AND OBSTACLES SUCH AS ROCKS OR STUMPS.
 - SOIL ADJUSTMENTS
 - LIME TO pH 6.0
 - FERTILIZE WITH 600 LBS OF 5-10-10 OR EQUIVALENT PER ACRE (74 LBS/1000 SQ FT).
 - SEED MIXTURES
 - TEMPORARY SEEDINGS
 - RYEGRASS (ANNUAL OR PERENNIAL) # 30 LBS/ACRE (67 LBS/1000 SQ FT).
 - CERTIFIED "ARIDOSTOCK" WINTER RYE (CEREAL RYE) # 100 LBS/ACRE (125 LBS/1000 SQ FT).
 - PERMANENT SEEDINGS
 - RYEGRASS (PERENNIAL) # 5
 - ROUGH OR OCCASIONALLY MOVED AREAS: LBS/ACRE LBS/1000 SQ FT

ENTIRE BROADCAST	8	0.20
ENTIRE OR COMMON	8	0.20
WIDE CLOVER PLUS	8	0.20
TALL FESCUE PLUS	8	0.20
RED TOP	8	0.20
RYEGRASS (PERENNIAL)	8	0.20
 - ADD NUCLEANT IMMEDIATELY PRIOR TO SEEDING
 - METHOD OF SEEDING
 - BROADCASTING, DRILLING WITH CULTIPACK TYPE SEEDER OR HYDROSEEDING ARE ACCEPTABLE.
 - DISTURBED AREAS SHALL BE SEEDDED 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 SEEDDED AREAS SHALL BE STAKED WITH JUTE MESH OR SODDED.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE STREET PAVEMENT AREAS CLEAN OF DIRT AND DEBRIS.
 - 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.
 - ANY EXISTING DRAINAGE FACILITIES DISRUPTED BY CONSTRUCTION OR IMPACTED BY INSTALLATION OF EROSION CONTROL MEASURES SHALL BE REPLACED TO MATCH EXISTING CONDITIONS OR BETTER.
 - TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES - AS SEDIMENT ACCUMULATES TO THE DEPTH OF THE STORMWATER BASIN, SEDIMENT SHALL BE REMOVED AS OUTLINED IN THE NYS GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL.
 - DIRECT ACCESS SHALL BE PROVIDED TO ALL BASIN/POND AREAS FOR MAINTENANCE AND REHABILITATION.
 - ALL DESIGN AND MAINTENANCE MEASURES OUTLINED IN THE SUPPLY PREPARED FOR THIS PROJECT SHALL BE IMPLEMENTED AND CARRIED OUT BY THE PARTIES DEEMED RESPONSIBLE FOR THOSE DUTIES.
 - THE PERMITTEE # 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 PERMITTEE # ITS SUBCONTRACTORS ARE RESPONSIBLE FOR ANY ADDITIONAL MEASURES DEEMED NECESSARY BY THE ENGINEER, TOWN OR NYSDEC.
 - PROVIDE EROSION CONTROL MEASURES AS NOTED ON THE PLANS AND AS OTHERWISE REQUIRED TO PREVENT EROSION AND SEDIMENTATION ONTO ADJACENT 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:

- MAINTENANCE - THE CONTRACTOR SHALL INSPECT ALL DRAINAGE STRUCTURES AND EROSION CONTROLS ON A WEEKLY BASIS AND AFTER ALL STORMS (1" RAINFALL OR GREATER) INCLUDING BUT NOT LIMITED TO THE FOLLOWING: REPLACING DAMAGED OR SLOTTED IN EROSION CONTROLS, CLEANING OUT STRUCTURES AND DRAINAGE FACILITIES, AND MAINTAINING ALL SLOTTED AREAS.
 - CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE. LAWS HAVE BECOME ESTABLISHED AND ALL SOURCES OF EROSION HAVE BEEN PERMANENTLY STABILIZED.
 - 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 PHASING AND SEQUENCING
- THE PROJECT WILL CREATE A TOTAL SITE DISTURBANCE OF APPROXIMATELY 16.1 ACRES AND WILL BE CONSTRUCTED IN APPROXIMATELY THREE (3) PHASES. THE SITE DISTURBANCE WILL BE PHASED TO LIMIT THE POTENTIAL FOR EROSION AND SEDIMENTATION BASIN DURING THE CONSTRUCTION PHASE. PHASE I WILL INCLUDE EXISTING MANHOLE WORK ONLY. BY OTHERS, SEE BELOW PHASE I DISTURBANCE IS ANTICIPATED TO BE APPROXIMATELY 1.61 ACRES DUE TO ROUGH GRADING IN PREPARATION FOR PHASE II. PHASE II TO DISTURB AN ANTICIPATED 8.1 ACRES, SPEEDS PERMIT WITH 5 ACRE DISTURBANCE PERMITTING WILL BE OBTAINED PRIOR TO CONSTRUCTION. BELOW IS A LISTING OF THE ANTICIPATED PHASING:
- PHASE I: PROPOSED UTILITIES, ROAD, AND CONSTRUCTION
- PHASE I TO CONSIST OF CONSTRUCTION ON PROPOSED UTILITIES, ROAD PROPOSED P-2 WET POND, PROPOSED 0-2 WET SWALES, AND APPLICABLE PROPOSED STORMWATER CONVEYANCE ONLY.
 - PRIOR TO ANY SITE DISTURBANCE, CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT LAKESHORE DRIVE AS SHOWN ON THE DRAWING.
 - 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 SEEDDED IMMEDIATELY FOLLOWING THE COMPLETION OF ANY EARTHWORK PHASE.
 - CLEARING AND GRUBBING - REMOVE ALL TREES, STUMPS AND BRUSH WITHIN PHASE I PRIOR TO EARTHWORK PHASE.
 - STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN AND / OR AGREED UPON LOCATION WITH OWNER. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
 - EXCAVATE PROPOSED P-2 WET POND AND 0-2 WET SWALES. WET POND AND WET SWALES TO BE USED AS A TEMPORARY SEDIMENT BASIN. 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.
 - PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
 - VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
 - PROVIDE DRAINAGE STRUCTURES AND PIPING, INCLUDING DRAINAGE INLET PROTECTION AS SHOWN ON THE DRAWING. (DO NOT INSTALL OUTLET PIPING FOR POND OR WET SWALES).
 - EXCAVATE AND FILL REST OF SITE AREAS FOR ROADWAY, FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE.
 - PLACE ROAD SUBBASE.
 - 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.
 - CLEAN STORMWATER POND AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.

- FINE GRADE, SEED, AND PLANT STORMWATER POND AS NOTED ON THE PLANTING PLAN ON THE SITE PLAN.
 - INSTALL POND AND SWALE OUTLET PIPE(S) WITH STRUCTURES AND TRENCHING AFTER 80% VEGETATIVE STABILIZATION IS ACHIEVED.
 - PHASE II: CONSTRUCTION OF PROPOSED HOUSING
 - PHASE II CONSTRUCTION COMPONENTS INCLUDE CONSTRUCTION OF THE PROPOSED BUILDINGS.
 - EVALUATE EXISTING STORMWATER BMP'S AND CLEAN AS REQUIRED PRIOR TO ANY PHASE II SITE DISTURBANCE.
 - MAINTAIN EXISTING CHECK DAMS FROM PHASE I DISTURBANCE. APPLY ADDITIONAL STABILIZATION MEASURES AND CHECK DAM LOCATIONS AND WHERE INDICATED ON THE PLANS AS NECESSARY PRIOR TO PHASE II SITE DISTURBANCE.
 - SILT FENCE - MAINTAIN EXISTING PERIMETER SILT FENCE AS SHOWN ON PLAN FOR PHASE I DISTURBANCE PRIOR TO PROPOSED EARTHWORK. SILT FENCE SHALL BE UTILIZED ONLY AS A TEMPORARY MEASURE. DISTURBED AREAS SHALL BE SEEDDED IMMEDIATELY FOLLOWING THE COMPLETION OF ANY EARTHWORK PHASE.
 - PROVIDE NEW ADDITIONAL TEMPORARY SEDIMENT BASINS AT DISCHARGE LOCATIONS FROM CURRENT LOCAL CONSTRUCTION. PROVIDE RIP RAP STONE PROTECTION APRONS AND SPILLWAYS AT OUTLET LOCATIONS AS SHOWN ON PLAN. 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.
 - 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.
 - PREPARE BUILDING PAD AND PAVEMENT AREA SUBGRADE.
 - EXCAVATE AND FILL REST OF SITE AREAS. 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.
 - REMOVE TEMPORARY CONSTRUCTION ENTRANCE AFTER ASPHALT BINDER COURSE IS PLACED.
 - CLEAN STORMWATER WET SWALE AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
 - REMOVE TEMPORARY SILT FENCES AND ROCK CHECK DAMS AFTER SITE IS COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
- FINAL CLEAN UP & PREVENTATIVE MAINTENANCE
- REMOVE AND/OR MAINTAIN STOCKPILE AREAS.
 - REMOVE EROSION CONTROL MEASURES FROM STABILIZED AREAS.
 - 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 CLOSURE.
 - CONTRACTOR, ARCHITECT, AND OWNER TO REVIEW SITE FOR COMPLETION. CONTRACTOR TO ADDRESS FINAL COMMENTS ON PUNCH LIST FROM ARCHITECT AND SUPPLY INSPECTION REPORTS.

SOIL RESTORATION NOTES

- 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 REQUIREMENTS
- | TYPE OF SOIL DISTURBANCE | SOIL RESTORATION REQUIREMENT |
|--|---|
| NO SOIL DISTURBANCE | RESTORATION NOT REQUIRED |
| MINOR SOIL DISTURBANCE | RESTORATION NOT REQUIRED |
| AREAS WHERE TOPSOIL IS STRIPPED ONLY - NO CHANGING OF GRADE | HAS A-B - APPLY 6" INCHES OF TOPSOIL
HAS C-D - APPLY 12" INCHES OF TOPSOIL |
| AREAS OF C/D OR FILL | HAS A-B - AERATE AND APPLY 6" INCHES OF TOPSOIL
HAS C-D - APPLY FULL SOIL RESTORATION |
| HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY IN ZONE 1-10 FEET AROUND BUILDINGS BUT NO CHANGING OF GRADE) | APPLY FULL SOIL RESTORATION (DECOMPOSITION AND COMPOST ENHANCEMENT) |
| AREAS WHERE RUNOFF REDUCTION AND INFILTRATION PRACTICES ARE APPLIED | RESTORATION NOT REQUIRED, BUT MAY BE APPLIED TO ENHANCE THE RESTORATION SPECIFIED FOR APPROPRIATE PRACTICES |
- TYPE OF SOIL DISTURBANCE
- REDEVELOPMENT PROJECTS
- VEGETATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COLLARS MAKING A NARROW ALLEY IN THE SOIL. A COLLAR WITH MANY SPACES MAKES INDENTATIONS IN THE SOIL OR PRODS WHICH FACTOR LINE A 10-15-20-30-40-50-60-70-80-90-100-110-120-130-140-150-160-170-180-190-200-210-220-230-240-250-260-270-280-290-300-310-320-330-340-350-360-370-380-390-400-410-420-430-440-450-460-470-480-490-500-510-520-530-540-550-560-570-580-590-600-610-620-630-640-650-660-670-680-690-700-710-720-730-740-750-760-770-780-790-800-810-820-830-840-850-860-870-880-890-900-910-920-930-940-950-960-970-980-990-1000-1010-1020-1030-1040-1050-1060-1070-1080-1090-1100-1110-1120-1130-1140-1150-1160-1170-1180-1190-1200-1210-1220-1230-1240-1250-1260-1270-1280-1290-1300-1310-1320-1330-1340-1350-1360-1370-1380-1390-1400-1410-1420-1430-1440-1450-1460-1470-1480-1490-1500-1510-1520-1530-1540-1550-1560-1570-1580-1590-1600-1610-1620-1630-1640-1650-1660-1670-1680-1690-1700-1710-1720-1730-1740-1750-1760-1770-1780-1790-1800-1810-1820-1830-1840-1850-1860-1870-1880-1890-1900-1910-1920-1930-1940-1950-1960-1970-1980-1990-2000-2010-2020-2030-2040-2050-2060-2070-2080-2090-2100-2110-2120-2130-2140-2150-2160-2170-2180-2190-2200-2210-2220-2230-2240-2250-2260-2270-2280-2290-2300-2310-2320-2330-2340-2350-2360-2370-2380-2390-2400-2410-2420-2430-2440-2450-2460-2470-2480-2490-2500-2510-2520-2530-2540-2550-2560-2570-2580-2590-2600-2610-2620-2630-2640-2650-2660-2670-2680-2690-2700-2710-2720-2730-2740-2750-2760-2770-2780-2790-2800-2810-2820-2830-2840-2850-2860-2870-2880-2890-2900-2910-2920-2930-2940-2950-2960-2970-2980-2990-3000-3010-3020-3030-3040-3050-3060-3070-3080-3090-3100-3110-3120-3130-3140-3150-3160-3170-3180-3190-3200-3210-3220-3230-3240-3250-3260-3270-3280-3290-3300-3310-3320-3330-3340-3350-3360-3370-3380-3390-3400-3410-3420-3430-3440-3450-3460-3470-3480-3490-3500-3510-3520-3530-3540-3550-3560-3570-3580-3590-3600-3610-3620-3630-3640-3650-3660-3670-3680-3690-3700-3710-3720-3730-3740-3750-3760-3770-3780-3790-3800-3810-3820-3830-3840-3850-3860-3870-3880-3890-3900-3910-3920-3930-3940-3950-3960-3970-3980-3990-4000-4010-4020-4030-4040-4050-4060-4070-4080-4090-4100-4110-4120-4130-4140-4150-4160-4170-4180-4190-4200-4210-4220-4230-4240-4250-4260-4270-4280-4290-4300-4310-4320-4330-4340-4350-4360-4370-4380-4390-4400-4410-4420-4430-4440-4450-4460-4470-4480-4490-4500-4510-4520-4530-4540-4550-4560-4570-4580-4590-4600-4610-4620-4630-4640-4650-4660-4670-4680-4690-4700-4710-4720-4730-4740-4750-4760-4770-4780-4790-4800-4810-4820-4830-4840-4850-4860-4870-4880-4890-4900-4910-4920-4930-4940-4950-4960-4970-4980-4990-5000-5010-5020-5030-5040-5050-5060-5070-5080-5090-5100-5110-5120-5130-5140-5150-5160-5170-5180-5190-5200-5210-5220-5230-5240-5250-5260-5270-5280-5290-5300-5310-5320-5330-5340-5350-5360-5370-5380-5390-5400-5410-5420-5430-5440-5450-5460-5470-5480-5490-5500-5510-5520-5530-5540-5550-5560-5570-5580-5590-5600-5610-5620-5630-5640-5650-5660-5670-5680-5690-5700-5710-5720-5730-5740-5750-5760-5770-5780-5790-5800-5810-5820-5830-5840-5850-5860-5870-5880-5890-5900-5910-5920-5930-5940-5950-5960-5970-5980-5990-6000-6010-6020-6030-6040-6050-6060-6070-6080-6090-6100-6110-6120-6130-6140-6150-6160-6170-6180-6190-6200-6210-6220-6230-6240-6250-6260-6270-6280-6290-6300-6310-6320-6330-6340-6350-6360-6370-6380-6390-6400-6410-6420-6430-6440-6450-6460-6470-6480-6490-6500-6510-6520-6530-6540-6550-6560-6570-6580-6590-6600-6610-6620-6630-6640-6650-6660-6670-6680-6690-6700-6710-6720-6730-6740-6750-6760-6770-6780-6790-6800-6810-6820-6830-6840-6850-6860-6870-6880-6890-6900-6910-6920-6930-6940-6950-6960-6970-6980-6990-7000-7010-7020-7030-7040-7050-7060-7070-7080-7090-7100-7110-7120-7130-7140-7150-7160-7170-7180-7190-7200-7210-7220-7230-7240-7250-7260-7270-7280-7290-7300-7310-7320-7330-7340-7350-7360-7370-7380-7390-7400-7410-7420-7430-7440-7450-7460-7470-7480-7490-7500-7510-7520-7530-7540-7550-7560-7570-7580-7590-7600-7610-7620-7630-7640-7650-7660-7670-7680-7690-7700-7710-7720-7730-7740-7750-7760-7770-7780-7790-7800-7810-7820-7830-7840-7850-7860-7870-7880-7890-7900-7910-7920-7930-7940-7950-7960-7970-7980-7990-8000-8010-8020-8030-8040-8050-8060-8070-8080-8090-8100-8110-8120-8130-8140-8150-8160-8170-8180-8190-8200-8210-8220-8230-8240-8250-8260-8270-8280-8290-8300-8310-8320-8330-8340-8350-8360-8370-8380-8390-8400-8410-8420-8430-8440-8450-8460-8470-8480-8490-8500-8510-8520-8530-8540-8550-8560-8570-8580-8590-8600-8610-8620-8630-8640-8650-8660-8670-8680-8690-8700-8710-8720-8730-8740-8750-8760-8770-8780-8790-8800-8810-8820-8830-8840-8850-8860-8870-8880-8890-8900-8910-8920-8930-8940-8950-8960-8970-8980-8990-9000-9010-9020-9030-9040-9050-9060-9070-9080-9090-9100-9110-9120-9130-9140-9150-9160-9170-9180-9190-9200-9210-9220-9230-9240-9250-9260-9270-9280-9290-9300-9310-9320-9330-9340-9350-9360-9370-9380-9390-9400-9410-9420-9430-9440-9450-9460-9470-9480-9490-9500-9510-9520-9530-9540-9550-9560-9570-9580-9590-9600-9610-9620-9630-9640-9650-9660-9670-9680-9690-9700-9710-9720-9730-9740-9750-9760-9770-9780-9790-9800-9810-9820-9830-9840-9850-9860-9870-9880-9890-9900-9910-9920-9930-9940-9950-9960-9970-9980-9990-10000-10010-10020-10030-10040-10050-10060-10070-10080-10090-10100-10110-10120-10130-10140-10150-10160-10170-10180-10190-10200-10210-10220-10230-10240-10250-10260-10270-10280-10290-10300-10310-10320-10330-10340-10350-10360-10370-10380-10390-10400-10410-10420-10430-10440-10450-10460-10470-10480-10490-10500-10510-10520-10530-10540-10550-10560-10570-10580-10590-10600-10610-10620-10630-10640-10650-10660-10670-10680-10690-10700-10710-10720-10730-10740-10750-10760-10770-10780-10790-10800-10810-10820-10830-10840-10850-10860-10870-10880-10890-10900-10910-10920-10930-10940-10950-10960-10970-10980-10990-11000-11010-11020-11030-11040-11050-11060-11070-11080-11090-11100-11110-11120-11130-11140-11150-11160-11170-11180-11190-11200-11210-11220-11230-11240-11250-11260-11270-11280-11290-11300-11310-11320-11330-11340-11350-11360-11370-11380-11390-11400-11410-11420-11430-11440-11450-11460-11470-11480-11490-11500-11510-11520-11530-11540-11550-11560-11570-11580-11590-11600-11610-11620-11630-11640-11650-11660-11670-11680-11690-11700-11710-11720-11730-11740-11750-11760-11770-11780-11790-11800-11810-11820-11830-11840-11850-11860-11870-11880-11890-11900-11910-11920-11930-11940-11950-11960-11970-11980-11990-12000-12010-12020-12030-12040-12050-12060-12070-12080-12090-12100-12110-12120-12130-12140-12150-12160-12170-12180-12190-12200-12210-12220-12230-12240-12250-12260-12270-12280-12290-12300-12310-12320-12330-12340-12350-12360-12370-12380-12390-12400-12410-12420-12430-12440-12450-12460-12470-12480-12490-12500-12510-12520-12530-12540-12550-12560-12570-12580-12590-12600-12610-12620-12630-12640-12650-12660-12670-12680-12690-12700-12710-12720-12730-12740-12750-12760-12770-12780-12790-12800-12810-12820-12830-12840-12850-12860-12870-12880-12890-12900-12910-12920-12930-12940-12950-12960-12970-12980-12990-13000-13010-13020-13030-13040-13050-13060-13070-13080-13090-13100-13110-13120-13130-13140-13150-13160-13170-13180-13190-13200-13210-13220-13230-13240-13250-13260-13270-13280-13290-13300-13310-13320-13330-13340-13350-13360-13370-13380-13390-13400-13410-13420-13430-13440-13450-13460-13470-13480-13490-13500-13510-13520-13530-13540-13550-13560-13570-13580-13590-13600-13610-13620-13630-13640-13650-13660-13670-13680-13690-13700-13710-13720-13730-13740-13750-13760-13770-13780-13790-13800-13810-13820-13830-13840-13850-13860-13870-13880-13890-13900-13910-13920-13930-13940-13950-13960-13970-13980-13990-14000-14010-14020-14030-14040-14050-14060-14070-14080-14090-14100-14110-14120-14130-14140-14150-14160-14170-14180-14190-14200-14210-14220-14230-14240-14250-14260-14270-14280-14290-14300-14310-14320-14330-14340-14350-14360-14370-14380-14390-14400-14410-14420-14430-14440-14450-14460-14470-14480-14490-14500-14510-14520-14530-14540-14550-14560-14570-14580-14590-14600-14610-14620-14630-14640-14650-14660-14670-14680-14690-14700-14710-14720-14730-14740-14750-14760-14770-14780-14790-14800-14810-14820-14830-14840-14850-14860-14870-14880-14890-14900-14910-14920-14930-14940-14950-14960-14970-14980-14990-15000-15010-15020-15030-15040-15050-15060-15070-15080-15090-15100-15110-15120-15130-15140-15150-15160-15170-15

- 1 MEET EXISTING LINE AND GRADE.
- 2 CURE EXPOSING 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 LITE MESH SHALLES PER DETAIL 6A-5000.
- 11 INSTALL ASPHALT DRIVEWAY PER DETAIL 1A-5000.
- 12 FORCE MAIN CHECKPOINT (NO EXPOSED SERVICE, ACCESS TO PIPES ONLY)
- 13 INSTALL WATER LINE PENDING OCCUPA REVIEW AND DESIGN.
- 14 INSTALL FIRE HYDRANT AND VALVE.
- 15 INSTALL THRUST BLOCK.
- 16 INSTALL WATER LINE TO HOUSE, HOME BUILDER TO COORDINATE LOCATION.
- 17 CONNECTION REQUIREMENTS: 50% STANDARD MAXIMUM PROPORTION DENSITY/50% IN SUBGRADE.
- 18 INSTALL FOUNDATION DRAIN PER DETAIL XXXX.
- 19 SUMP PUMP AND FOUNDATION DRAIN DRAINS THAT DAYLIGHT SHALL REQUIRE A RAIN GARDEN.
- 20 TEMPORARY STOCKPILE AREA SHALL START BOUN AT 78000. FINAL FINISH GRADE AT TOP OF STOCKPILE AREA SHALL NOT EXCEED 180000 AND SHALL BE GRADED WITH MINIMUM SIDE SLOPES NOT EXCEEDING 1 VERTICAL TO 3' HORIZONTAL. SIDE SLOPES AREA SHALL BE SEEDDED WITH WILDOORSEED MIX AND (10) BARE ROOT PERFORCIOUS 3" CAL TREES.
- 21 CONTRACT SHALL TO FLOW TOWARDS SHALLE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.



CLIENT:

ISSUED AND REVISIONS NOTIFICATION		
No. Rev.	Description	Date
3	PUBLIC HEARING- MANULIS	03/29/18
4	4 PUBLIC HEARING- MANULIS	05/04/18
5	5 PUBLIC HEARING- MANULIS	06/01/18
6	6 TOWN REV-21 LOTS-MANULIS	10/23/18
7	7 MANULIS-21 HOME LOTS-PL. BD	11/30/18
8	8 21 LOT SITE PLAN REVISIONS	01/04/19
9	9 MANULIS- PLAN SUBMISSION	06/14/19



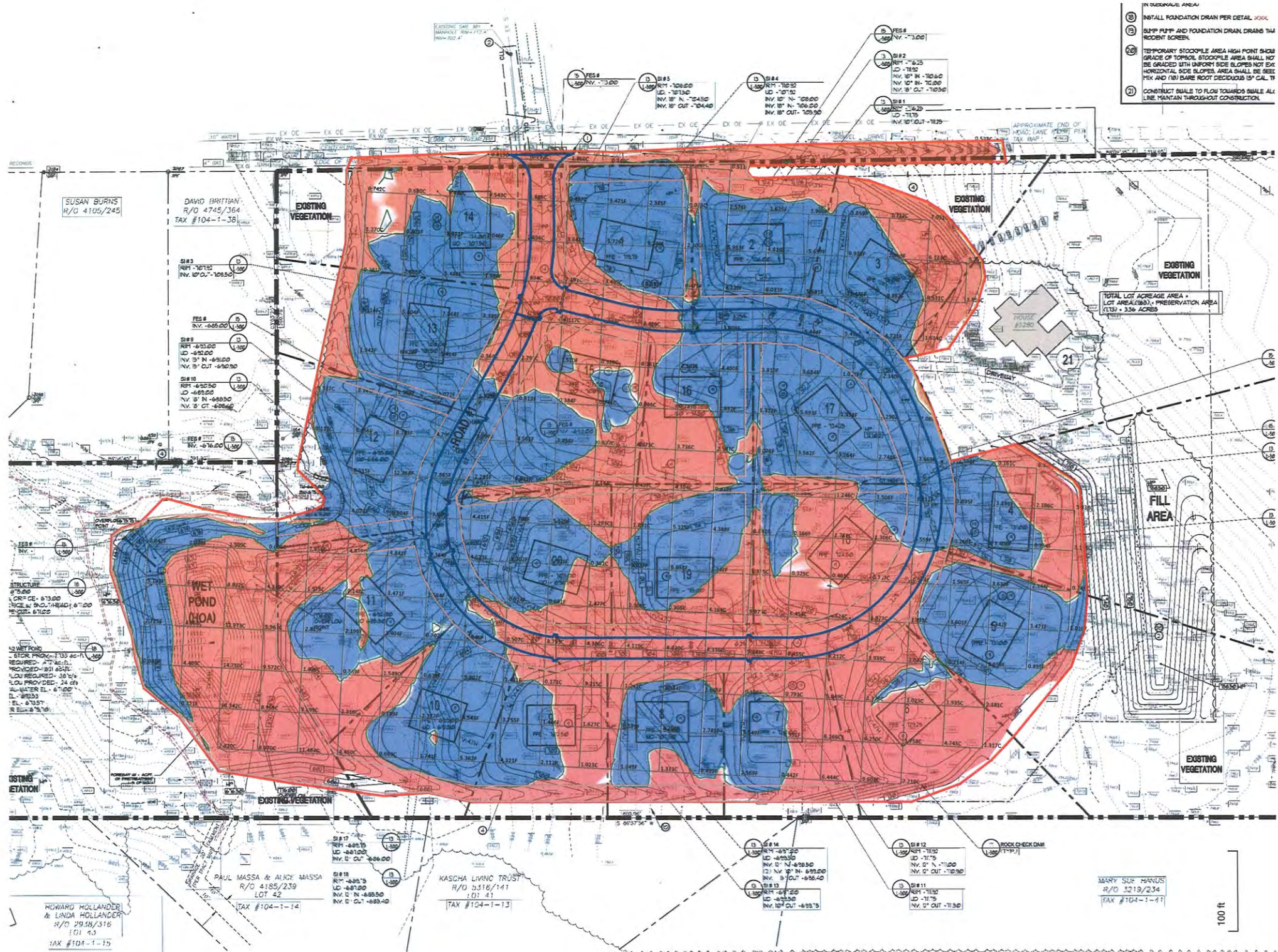
Drawn By: VER
Checked By: SE
KFA Proj. No.: 31050
Date: DECEMBER 1, 2011
Scale: AS NOTED

**CLUSTER
GRADING and
DRAINAGE PLAN-
21 LOTS**

L-200

APPENDIX N

- (1) IN SUBGRADE AREA
- (2) INSTALL FOUNDATION DRAIN PER DETAIL 3006
- (3) SUMP PUMP AND FOUNDATION DRAIN DRAINS THRU RODENT SCREEN
- (4) TEMPORARY STOCKPILE AREA HIGH POINT SHALL GRADE TO TOPSOIL. STOCKPILE AREA SHALL NOT BE GRADED WITH UNIFORM SIDE SLOPES NOT EXCEED HORIZONTAL SIDE SLOPES SHALL BE 3:1 MIN. AND (10) BARE ROOT DECIDUOUS SP. CAL. 15
- (5) CONSTRUCT DRAIN TO FLOW TOWARDS DRAINAGE LINE MAINTAIN THROUGHOUT CONSTRUCTION



'LAN-21 HOUSING LOTS

Project Name		Project Description	
Company Name		Phone: Company Phone No	
Company Address Line 1		Fax: Company Fax No	
Company Address Line 2		Company Website	
Company City, State Company Post Code		Company email	
Company Country			
Project file data		Coordinate System	
Name:	B:\Hoag Lane 5-10-19\Hoag Lane 5-10-19.vce	Name:	Default
Size:	647 KB	Datum:	WGS 1984
Modified:	5/16/2019 3:52:31 PM (UTC:-4)	Zone:	Default
Time zone:	Eastern Standard Time	Geoid:	
Reference number:	Project Reference Number	Vertical datum:	
Description:	Project Description	Calibrated site:	
Comment 1:	Drawing Status e.g. Preliminary		
Comment 2:	Drawing Revision		
Comment 3:	Project Location		

Mass Earthwork Analysis

Volumes for the Single Area of Interest (yd ³)						
Area of Interest	Available Bank Cut	Loose Haulage	Compacted Fill Supplied	Compacted Fill Required	Compacted Excess/Deficit	Loose Waste/Borrow
SITE-AOI	45,565.9	45,565.9	45,565.9	45,848.8	-282.9	-282.9
The mass earthwork analysis for the subject area of interest indicates a requirement for off-site borrow of the following amounts, based on the designated borrow material, which is identified as Undefined.						
Deficit compacted volume:						282.9 yd ³
Loose borrow volume:						282.9 yd ³

Cluster Earthwork Report - Balanced (2019_06_14)

Topsoil Handling

Area-Limited Topsoil Volumes (yd³)

Topsoil Stripping

Area of Interest	Topsoil Material	Richness Grade	Available Bank Stripping	Loose Haulage/Stockpile	Replacement Supplied
SITE-AOI	Undefined	Unknown	4,153.0	4,153.0	4,153.0

Topsoil Replacement

Area of Interest	Topsoil Material	Richness Grade	Replacement Required	Replacement Excess/Deficit	Loose Waste/Borrow
SITE-AOI	On-Site Topsoil	Usable	3,155.7	-3,155.7	-3,857.0

Handling Summary (by Material)

Area of Interest	Topsoil Material	Richness Grade	Stripped	Borrowed	Wasted
SITE-AOI	On-Site Topsoil	Usable	0.0	3,857.0	0.0
SITE-AOI	Undefined	Unknown	4,153.0	0.0	4,153.0
SITE-AOI	On-Site Topsoil	Usable	0.0	3,155.7	0.0
SITE-AOI	Undefined	Unknown	4,153.0	0.0	4,153.0

Site Improvement Quantities

Area-Based Site Improvements

Site Improvement Name	Takeoff Category	Area
Material Category: Name	Material Thickness	Material Volume
Site Improvement Category: Landscaping/Topsoil		
Area of Interest: SITE-AOI		
6" Topsoil Replacement (Topsoil Respread)	Design	11198.1 yd ² (plan)
6" Topsoil Replacement (Topsoil Respread)	Design	3047.4 yd ² (plan)
6" Topsoil Replacement (Topsoil Respread)	Design	4689.0 yd ² (plan)
Site Improvement Category: Road Pavement		
Area of Interest: SITE-AOI		
Pavement - Asphalt (Asphalt Pavement)	Design	51078.1 ft ² (plan)
Earthen (Select): 01 - Hot Mix Asphalt		4.5 in 709.4 yd ³
Earthen (Select): 03 - Aggregate Sub Base		12.0 in 1,891.8 yd ³

Bid Summary

Site Improvement Category: Landscaping/Topsoil

Area-Based Site Improvement Name	Takeoff Category	Area
6" Topsoil Replacement	Design	18934.5 yd ² (plan)

Site Improvement Category: Road Pavement		
Area-Based Site Improvement Name	Takeoff Category	Area
Pavement - Asphalt	Design	51078.1 ft² (plan)

Material Procurement Subtotals (by Site Improvement Category)

Site Improvement Category: Road Pavement

Material Category: Name	Volume	Supplemental Unit Conversion Factor
Earthen (Select): 01 - Hot Mix Asphalt	709.4 yd ³	---
Earthen (Select): 03 - Aggregate Sub Base	1,891.8 yd ³	---

Material Procurement Subtotals (by Site Improvement Type)

Road Pavement : Pavement - Asphalt

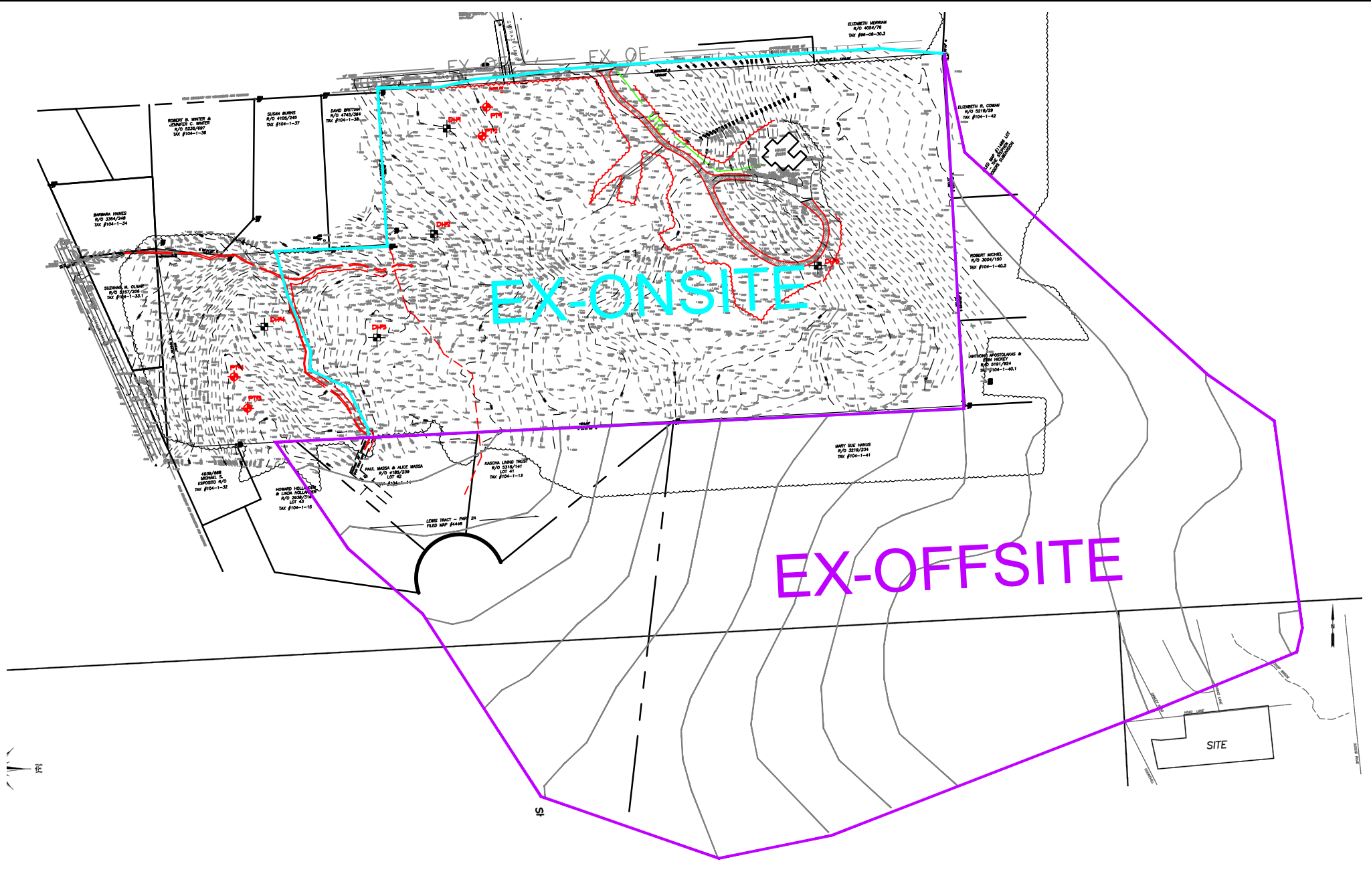
Material Category: Name	Quantity	Supplemental Unit Conversion Factor
Earthen (Select): 01 - Hot Mix Asphalt	709.4 yd ³	---
Earthen (Select): 03 - Aggregate Sub Base	1,891.8 yd ³	---

Material Quantity Summary

Material Category: Name	Quantity	Supplemental Unit	Conversion Factor
Earthen (Select): 01 - Hot Mix Asphalt	709.4 yd ³		---
Earthen (Select): 03 - Aggregate Sub Base	1,891.8 yd ³		---

5/16/2019 4:37:18 PM	B:\Hoag Lane 5-10-19\Hoag Lane 5-10-19.vce	Trimble Business Center
----------------------	--	-------------------------

APPENDIX O



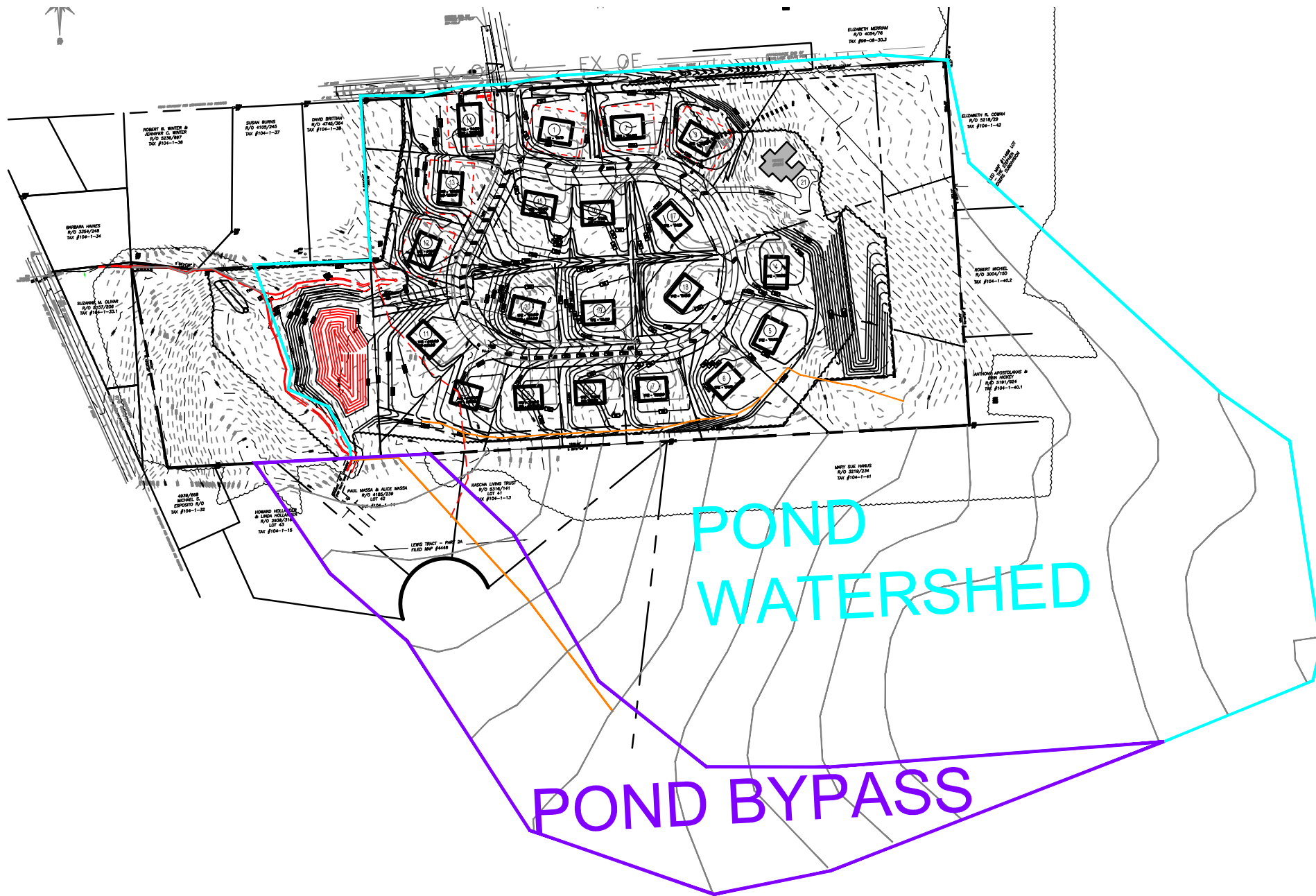
Hoag Lane Subdivision
 Town of Manlius, Onondaga County, NY

Appendix O- Existing Site Watersheds



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

SCALE: 1:300
 Updated: 03/96/18



Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Appendix O- Proposed Watersheds



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



□ = storm inlet
→ = Flow























