TOWN OF WESTPORT
CONSERVATION COMMISSION
CONSERVATION COMMISSION PACKET
JUNE 4, 2025
07:00 PM

TOWN OF WESTPORT

CONSERVATION COMMISSION AGENDA

JUNE 4, 2025
07:00 PM

LEGAL NOTICE AND AGENDA

SPECIAL MEETING
JUNE 4, 2025

Notice is hereby given of a Special Meeting of the Westport Conservation Commission pursuant to the Connecticut Inland Wetlands and Watercourses Act, and the Regulations for the Protection and Preservation of Inland Wetlands and Watercourses of the Town of Westport (IWW Regulations) and the Waterway Protection Line Ordinance (WPLO) to be held on **Wednesday, June 4, 2025 at 7:00 p.m. via Zoom.**

The Flood and Erosion Control Board will be hearing the application at the same time.

Notice Regarding This Electronic Meeting:

There is no physical location for this meeting. This meeting will be held electronically. Meeting materials will be available at https://www.westportct.gov/government/departments-a-z/conservation-department/conservation-commission/commission-meetings

Join Zoom Meeting
https://us02web.zoom.us/j/86415717675?pwd=IV8VXrZm1VckdH15lLUSGwQL5LAdaw.1

Meeting ID: 864 1571 7675
Passcode: 407757

The Commission shall meet to take such action under the purview of the Town's IWW Regulations and the Waterway Protection Line Ordinance as the meeting may determine with regard to the following:

Public Hearing:

1. 13 Hyde Lane (aka Long Lots School): Application #WPL-12151-25 by the Town of Westport to construct a new elementary school, parking lot, athletic fields, playgrounds, and associated site and utility work. Portions of the work are within the upland review area setbacks and the WPLO area of an unnamed tributary of Muddy Brook

Josh Lewi

Chair, Conservation Commission

It is the policy of the Town of Westport that all Town-sponsored public meetings and events are accessible to people with disabilities. If you need assistance in participating in a meeting or event due to a disability as defined under the Americans with Disabilities Act, please contact Westport's ADA Coordinator at 203-341-1043 or eflug@westportct.gov at least three (3) business days prior to the scheduled meeting or event to request an accommodation.

Published in the Westport News twice; once on Friday, May 23, 2025 and once on Friday, May 30, 2025.

Clocked with Town Clerk on May 21, 2025.

Attachment: 13 HL-Application
Attachment: 13 HL-Schedule A
Attachment: 13 HL-Schedule B
Attachment: 13 HL-Schedule C
Attachment: 13 HL-Schedule D
Attachment: 13 HL-Wetland Delineation and Impact Assessment
Attachment: 13 HL-Drainage Report
Attachment: 13 HL-Survey
Attachment: 13 HL-Site Plans
Attachment: 13 HL-Staff Photolog 05-29-25
Attachment: 13 HL- IWW-WPL-12151-25 Staff Report 06-04-25

WESTPORT

CONSERVATION DEPARTMENT
TOWN HALL – 110 MYRTLE AVENUE
WESTPORT, CT 06880
P 203.341.1170 F 203.341.1088

FOR OFFICE USE ONLY	
File #	
Date Filed:	
Class:	
Fee: $	
Date Rec'd:	
☐Cash ☐Check #	
Final Inspection:	Y / N
As-built Required:	Y / N

APPLICATION
WESTPORT CONSERVATION DEPARTMENT

PROJECT LOCATION: 13 Hyde Lane Westport, CT 06880

ASSESSOR'S MAP # G10 TAX LOT # G10058000 ZONING DISTRICT: A/AA

APPLICANT OR AGENT		OWNER
Town of Westport care of Jennifer Tooker (1st Selectwoman)	NAME	Town of Westport
110 Myrtle Avenue	ADDRESS	110 Myrtle Avenue
Westport, CT 06880		Westport, CT 06880
203-341-1111	(H) PHONE (H)	203-341-1111
203-341-1111	(W) PHONE (W)	203-341-1111
jtooker@westportct.gov	E-MAIL	jtooker@westportct.gov

EXISTING CONDITIONS (Describe existing property and structures): The existing property consists of a 152,795 sf school, a 196 space parking lot, a dedicated parent drop off and bus lanes, (2) multipurpose natural turf athletic fields, a baseball field, (2) playgrounds, a paved play area, and community gardens.

PROJECT DESCRIPTION/PURPOSE (Describe the proposed activity): Construction of a new 127,945 sf. elementary school, a 250 space parking lot, a dedicated parent drop off and bus lanes, (2) multipurpose natural turf athletic fields, (2) playgrounds, a basketball court, a paved play area and all associated site and utility construction.

PROJECT COST: $98.2 million

I hereby depose and say that all statements contained herein and all exhibits attached hereto are true and binding to the best of my knowledge:

(Signature of Applicant) (Date)

The act of applying to the Conservation Commission and/or Department implies consent to the proposed activity, and grants permission to the Conservation Commission/Department and its agents to inspect the property herein described for the purpose of resource inventory, impact analysis, and compliance investigation at any time beginning on the date of the application filing, and extending through the pendency of any permit issued, or in the event of permit denial, for the purpose of compliance control.

(Signature of Property Owner) 5-14-2025 (Date)

FOR DEPARTMENT USE ONLY

1. DEPARTMENT FINDINGS:

After preliminary review by department staff, the following areas, resources and levels of environmental licensure have been identified:

- Wetland(s) / Watercourse(s), section: _____
  □ Non-regulated Activity □ Permit Required **FEE $ _____**

- Wetland / Watercourse Setback(s), section: _____
  □ Non-regulated Activity □ Permit Required **FEE $ _____**

- Waterway Protection Line(s), section: _____
  □ Non-regulated Activity □ Permit Required **FEE $ _____**

- Aquifer, section: _____
  □ Non-regulated Activity □ Permit Required **FEE $ _____**

- Staff Site Inspection for Determination of Wetland Boundary
  □ Administrative Review □ Conservation Commission Review **FEE $ _____**

CONSERVATION CERTIFICATE OF COMPLIANCE FEE $ _____
STATE FEE $ _____
NOTICE FEE $ _____
TOTAL FEE DUE $ _____

The application has been classified as requiring the following ruling:
□ DECLARATORY □ SUMMARY □ PLENARY

Public Hearing of the application by the Conservation Commission: □ is not required.
□ is scheduled for _____.

Westport/Weston Health District Approval: _____ Public Sewer: Yes / No
Engineering Dept. review required: Yes/No Date Approved _____
Comments:

_____
_____
_____

2. REQUEST FOR ADDITIONAL INFORMATION:

Please submit the information referenced in the attached schedule(s) by 4:00 p.m. on the _____day of_____, 20___ .

Schedule(s): □ A □ B □ C □ D □ E □ F □ G

Other: _____
_____
_____

3. RESTRICTION, CONDITIONS AND LIMITATIONS:

This review is valid for a period of six (6) months from the date of review, shown below, and is subject to the following data/plan(s)/stipulation(s):

_____
_____
_____
_____
_____

Reviewed by: _____ _____
(Conservation Department Staff Signature) (Date)

WESTPORT

CONSERVATION DEPARTMENT
TOWN HALL – 110 MYRTLE AVENUE
WESTPORT, CT 06880
P 203.341.1170 F 203.341.1088

Application #: IWW-WPL

SCHEDULE A: CONSERVATION APPLICATION CHECKLIST

PROJECT ADDRESS: Long Lots Elementary

A Site Plan, Plot Plan, or other type of surveyed property map or plan of A-2 Survey and known scale must be submitted for permit review. **A separate survey map of existing conditions will be required for all submissions.** The plan must be drawn and signed by a licensed surveyor, professional engineer, professional landscape architect, or professional architect, who must be registered with the State of Connecticut.

If the property is not connected to sanitary sewer, all submittals that include a house, any house addition, deck, swimming pool or repair, replacement or installation of a new septic system, requires verification of approval by Health Department prior to issuance of permit from the Conservation Department.

Applicant/agent to contact Ted Gill, Public Works Dept, for WPL applications and for any further information that may be required by the Flood & Erosion Control Board (P: 203.341.1131).

Form has been completed with staff during a pre-application meeting on 5/8/25 9:45

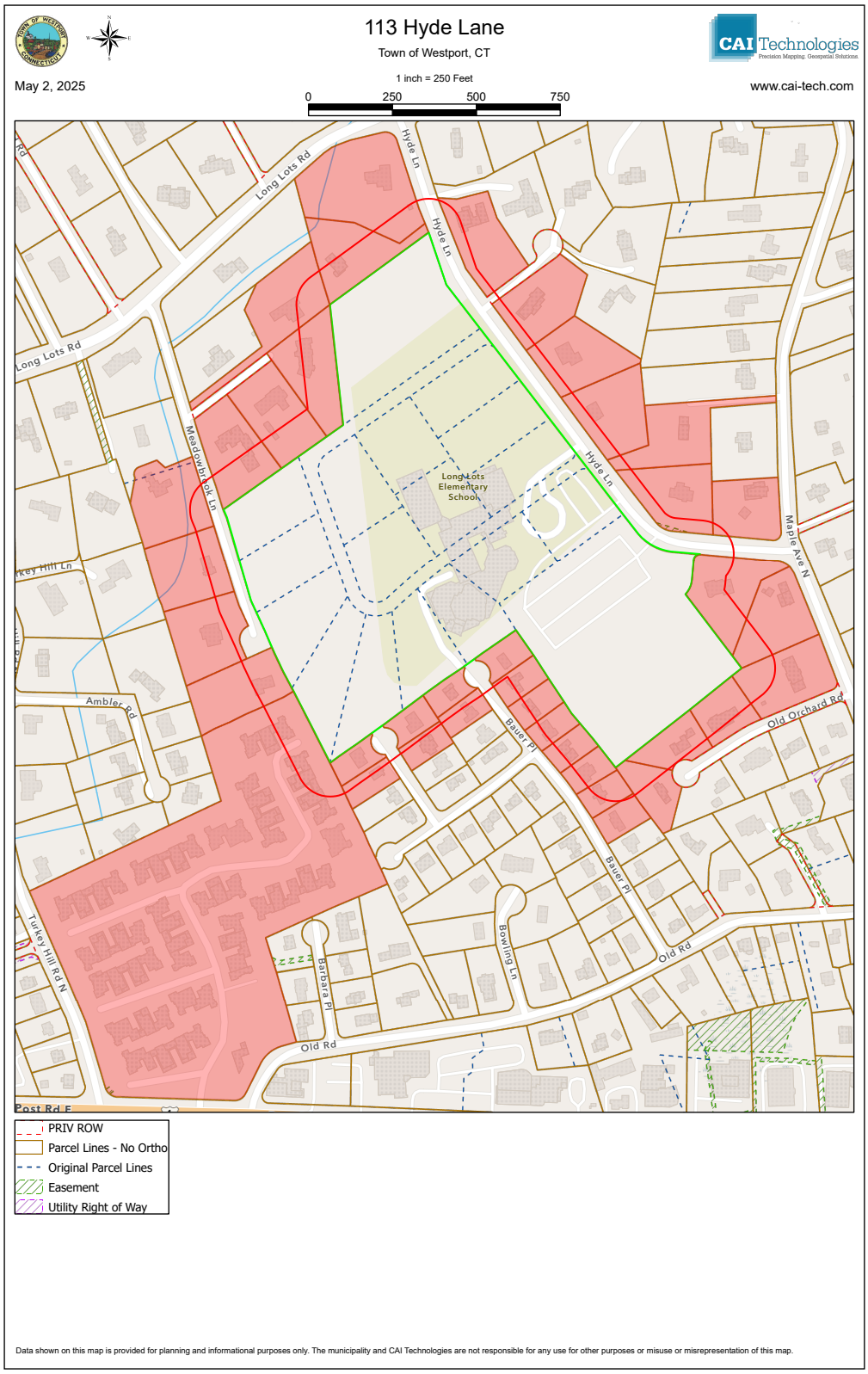
ADMINISTRATIVE REQUIREMENTS	YES	N/A
1. Fee schedule: _____ (fee schedule form to be completed by staff)		✓
2. Authorization from property owner	✓	
3. Health Department approvals List: _____	~~✓~~	~~✓~~
4. Completion of Schedule B	✓	
5. 8 1/2" by 11" copy of Assessor Map with property outlined and adjacent neighbors indicated	✓	
6. Neighbor Notice letter filled out for application and addressed to abutting property owners in Schedule B. One copy of the letter **must** be submitted with the application packet.	✓	
7. Flood & Erosion Control Board Hearing Date: June 4th Conservation Commission Hearing Date: June 18th	✓	
8. Certificate of Mailing for neighbor letter using Postal Service Form #3877 taking neighbor letters to Post Office. **Must be submitted with application packet.**	✓	
9. Completion of Schedule C	✓	
10. Completion of Schedule D	✓	
11. Completion of Schedule E	✓	✓
12. Notification of Dept. of Health by applicant	✓	✓
13. Notification of water company by applicant		✓
14. Notification of abutting municipality IWW agency		✓

May be Deep Approval for 5+ Acres Disturbance

15. Copies of application with associated plans: 9 collated sets of IWW applications_____ 15 collated sets of WPL applications_____ 15 collated sets of IWW,WPL applications_____		
EXISTING ENVIRONMENTAL CONDITIONS & REGULATED AREAS	**Yes**	**N/A**
Existing conditions A-2 survey		
16. Wetland/Watercourse boundary	✓	
17. Wetland/Watercourse setback	✓	
18. Wetland/Watercourse 20' non-disturbance buffer	✓	
19. Waterway	✓	✓
20. 25 year and/or 100 year floodplain boundary	✓	
21. WPLO boundary	✓	
22. Mean High Water Line		✓
23. Tidal Wetlands boundary (as applicable)		✓
24. Biological evaluation		✓
25. Soils report	✓	
26. Water Quality Testing (as requested by staff)		✓
27. Seasonal high groundwater levels (To be obtained during months December-June[1])		
28. Existing Tree trunks and drip line elevations (8" cal at dbh and greater, 4' from the ground, where activities are proposed within or in close proximity to regulated areas. Smaller sized vegetation may be required to be shown at the discretion of staff)	✓	
EXISTING STRUCTURES & USES	**YES**	**N/A**
1. Lot acreage and total coverage tabulation (include impervious and pervious areas SF)	✓	
2. Existing streets abutting property	✓	
3. Neighbors adjacent to property	✓	
4. Existing catch basins and other subsurface drainage appurtenances	✓	
5. Storm water discharge location	✓	
6. Existing septic system location		✓
7. Existing sewer lateral location	✓	
8. Existing well location		✓
9. Existing development (house, driveway, etc.)	✓	
10. Existing topography	✓	
PROPOSED STRUCTURES & USES	**YES**	**N/A**
1. Residence/pool/swimming pool	✓	
2. Deck/Patio/addition/shed	✓	
3. Other structural element (list)		

[1] *Percolation test data taken for septic system can be used to satisfy this requirement, unless otherwise required by staff. Testing dates are usually between December 1st and June 30th but are subject to change by the Westport/Weston Health District.*

4. Proposed grading (fill and excavation areas)	✓	
5. Stockpile locations	✓	
6. Proposed landscaping (natural, native species—used for bio filtration)	✓	
7. Catch basins/other subsurface drainage appurtenances	✓	
8. Storm water discharge outlet locations	✓	
9. Clearing limit line	✓	
10. Proposed limit of disturbance for construction and for project completion	✓	
11. Septic system (new, alteration or repair)		✓
12. Vegetation removal within regulated areas	✓	
13. Cross sections for structures within WPLO (includes building elevation drawings to confirm FEMA compliance.)	✓	
14. Demolition (note location of existing UST)	✓	
15. Proposed total coverage tabulation (include impervious and pervious SF)	✓	
16. Proposed irrigation systems in regulated areas (if applicable)	✓	
PROPOSED MITIGATION	**YES**	**N/A**
1. Silt fence/hay bales, mud-tracking pad	✓	
2. Check dams	✓	
3. Detention basin	✓	
4. Tree protection measures	✓	
5. Tree relocation	✓	
6. Planting Plan within regulated areas to include the following: a) area of planting with associated symbols b) planting details c) plant list with native species (Latin and common name) sizes, spacing and quantities d) "no mow" areas	✓	
7. Permanent demarcation of project limits	✓	


113 Hyde Lane
Town of Westport, CT
May 2, 2025
1 inch = 250 Feet
0
250
500
750
CAI Technologies
Precision Mapping. Geospatial Solutions
www.cai-tech.com
Long Lots Rd
Hyde Ln
Meadowbrook Ln
Long Lots Elementary School
Maple Ave N
Old Orchard Rd
Bauer Pl
Ambler Rd
Turkey Hill Rd N
Barbara Pl
Bowling Ln
Old Rd
Post Rd E
PRIV ROW
Parcel Lines - No Ortho
Original Parcel Lines
Easement
Utility Right of Way
Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

100 feet Abutters List Report

Westport, CT
May 02, 2025

Subject Property:

Parcel Number:	G10058000	Mailing Address:	WESTPORT TOWN OF
CAMA Number:	G10058000		110 MYRTLE AVE
Property Address:	13 HYDE LN		WESTPORT, CT 06880

Abutters:

Parcel Number:	G09070000	Mailing Address:	WHITMAN GLORIA TR
CAMA Number:	G09070000-1081		409 HARVEST CMNS
Property Address:	409 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	MELLIN NISA
CAMA Number:	G09070000-1197		101 HARVEST CMNS
Property Address:	101 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	MICHAELS TOBY TRUSTEE
CAMA Number:	G09070000-1249		129 HARVEST CMNS
Property Address:	129 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	KRAYNAK MATTHEW L
CAMA Number:	G09070000-1271		504 HARVEST CMNS
Property Address:	504 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	CARPENTER DOROTHY JANE
CAMA Number:	G09070000-1524		122 HARVEST CMNS
Property Address:	122 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	FLIESS SARA L
CAMA Number:	G09070000-1543		133 HARVEST CMNS
Property Address:	133 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	NISSIM LAURA TR & DANIEL TR
CAMA Number:	G09070000-1548		204 HARVEST CMNS
Property Address:	204 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	COPLEN CLAUDIA CHRISTINE
CAMA Number:	G09070000-1604		119 HARVEST CMNS
Property Address:	119 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	WOLF ROSALIE J TRUSTEE
CAMA Number:	G09070000-1677		150 EAST 69TH ST 23 J
Property Address:	506 HARVEST CMNS		NEW YORK, NY 10021
Parcel Number:	G09070000	Mailing Address:	BRICKEN ALISON TR
CAMA Number:	G09070000-1703		113 HARVEST CMNS
Property Address:	113 HARVEST CMNS		WESTPORT, CT 06880

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SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410		Postmaster, per *(name of receiving employee)*	CHESHIRE CT MAY 15 2025 USPS DCA10-3990

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	115 HARVEST COMMONS LLC 115 HARVEST COMMONS WESTPORT, CT 06880	$2.89			
2.	BENDER STEPHEN & VALERIE 22 BAUER PL WESTPORT, CT 06880	$2.89			
3.	COHEN CASSIDY & BEN 6 HYDE LN WESTPORT, CT 06880	$2.89			
4.	32 HYDE LANE LLC 30 HYDE LN WESTPORT, CT 06880	$2.89			
5.	BRADY ADELAIDE B 312 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	COHEN JEFFREY BENJAMIN 19 OLD ORCHARD RD WESTPORT, CT 06880	$2.89			

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USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	43 NEWPORT PLACE LLC 12 BAUER PL WESTPORT, CT 06880	$2.89			
2.	BRICKEN ALISON TR 113 HARVEST CMNS WESTPORT, CT 06880	$2.89			
3.	ABADY JOSE & MARISSA 24 BAUER PL WESTPORT, CT 06880	$2.89			
4.	CARPENTER DOROTHY JANE 122 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	COPLEN CLAUDIA CHRISTINE 119 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	ANDERSON SAMUEL W & EDITH 29 HYDE LN WESTPORT, CT 06880	$2.89			

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1.	CASSUTO LINDA R TR 107 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	CORNECK GRAHAM R & MARTHA 35 HYDE LN WESTPORT, CT 06880	$2.89			
3.	ARBELLOT EDOUARD & LEONAR 18 BAUER PL WESTPORT, CT 06880	$2.89			
4.	CENCI DIANE & HILLHOUSE J 106 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	COVALT ANNA A AND SWEARIN 117 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	BAKER DEBORAH PETCH 108 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	CERLON MARTHA H 12 MEADOW BRK LN WESTPORT, CT 06880	$2.89			
2.	CRAWFORD OTIS L 120 HARVEST CMNS WESTPORT, CT 06880	$2.89			
3.	BARD ADAM J & KIMBERLY GA 14 OLD ORCHARD RD WESTPORT, CT 06880	$2.89			
4.	CHINGAS RITA KOHN 306 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	DAVIDSON JO ANN W & JOHN 519 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	BARNHART EDWARD & JOYCE 503 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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1.	CHRISTIANSON DANIEL 402 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	DINALLO RUSSELL & LAPPAS 28 BAUER PL WESTPORT, CT 06880	$2.89			
3.	BECKER FREDERIQUE TR 513 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	CLARK HAYES B & CLARE S 123 HARVEST CMMS WESTPORT, CT 06880	$2.89			
5.	EIGEN JOAN K 2020 IRREVOC 7 MEADOW BRK LN WESTPORT, CT 06880	$2.89			
6.	ENGEL LINDA 105 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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1.	GOLOMB MYRON & KATHERINE 313 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	IMHOFF KEVIN 14 BAUER PL WESTPORT, CT 06880	$2.89			
3.	FARBER SAMANTHA 102 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	GRAHAM ROBERT D & EVELYN 109 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	INGBER DAVID A. 311 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	FELICE MATTHEW SCOTT & DA 10 MEADOW BRK LN WESTPORT, CT 06880	$2.89			

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1.	GREDAN TRUST 606 POST RD E #593 WESTPORT, CT 06880	$2.89			
2.	JANSON JAMES E TRUSTEE 520 HARVEST CMNS WESTPORT, CT 06880	$2.89			
3.	FLIESS SARA L 133 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	GREEN ANDREW J & SHAYNA F 2 TRAILING ROCK LN WESTPORT, CT 06880	$2.89			
5.	KARAZIN EDWARD & IRENE 310 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	FONG KATHLEEN D 131 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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1.	GUARINO JULIETTA TRUSTEE 1180 EMERALD LN SINGER ISLAND, FL 33404	$2.89			
2.	KLUCHNICK PETER C AND WAL 37 BAUER PL EXT WESTPORT, CT 06880	$2.89			
3.	FRIEDSON BERNICE S 125 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	GURDOGAN HANDE & EKREM BE 307 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	KOPIT ROSELYN & NORMAN 405 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	FRYLING NEVILLE H & BRIGI 301 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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	USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.		HACKETT WILLIAM H III & G 8 MEADOW BRK LN WESTPORT, CT 06880	$2.89			
2.		KRAYNAK MATTHEW L 504 HARVEST CMNS WESTPORT, CT 06880	$2.89			
3.		GANS EUGENE H TR & ROSLYN 514 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.		HAMMER WARREN 406 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.		LANG GERALD G TR 116 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.		GIUNTA ROBERT J PO BOX 56 WESTPORT, CT 06881	$2.89			

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See Reverse for Instructions

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410		Postmaster, per *(name of receiving employee)*	CHESHIRE CT MAY 15 2025 USPS 06410-9998

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	HART BRIAN & LIU JENNIFER 411 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	LEVEY ROBIN J 304 HARVEST CMNS WESTPORT, CT 06880	$2.89			
3.	GLAZER ANDREA & JOHNSON G 676 COX ROAD ROSWELL, GA 30075	$2.89			
4.	HOLOD MARK & JUDY 121 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	LIEBERMAN CYNTHIA T TR 6000 ISLAND BOULEVARD UNIT 605 AVENTURA, FL 33160	$2.89			
6.	MALBIN MARJORIE E TRUSTEE 510 HARVEST COMMONS WESTPORT, CT 06880	$2.89			

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UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410			CHESHIRE CT MAY 15 2025 USPS 06410-9998
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	NATHAN JOAN R TRUSTEE 412 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	PERLISS RUTH-ANNE RING 305 HARVEST CMNS WESTPORT, CT 06880	$2.89			
3.	MASON ELLEN G 407 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	NESWALD MIRIAM 403 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	PROBERT NATHANIEL & COLLE 38 BAUER PL EXT WESTPORT, CT 06880	$2.89			
6.	MELLIN NISA 101 HARVEST CMNS WESTPORT, CT 06880	$2.89			

PS Form 3665, January 2017 (Page 11 of 20) PSN 7530-17-000-5549 See Reverse for Instructions

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410		Postmaster, per *(name of receiving employee)*	CHESHIRE CT MAY 15 2025 USPS 06410-9998

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	NISSIM LAURA TR & DANIEL 204 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	REAGAN TRACY D 16 BAUER PL WESTPORT, CT 06880	$2.89			
3.	MICHAELS TOBY TRUSTEE 129 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	NOUVELLE DESTINEE LLC 5 MEADOW BROOK LN WESTPORT, CT 06880	$2.89			
5.	REISS PETER G 518 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	MILLER JOSEPH A TR & LIND 103 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410		Postmaster, per *(name of receiving employee)*	CHESHIRE CT MAY 15 2025 USPS 06410-9998

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	ORLOFF JENNIE & STEPHEN 26 BAUER PL WESTPORT, CT 06880	$2.89			
2.	RESNICK ZACHARY LLOYD 1A MEADOW BRK LN WESTPORT, CT 06880	$2.89			
3.	MORALES MARIA ALEJANDRA R 508 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	PAJOR BIANKA 110 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	SACHS ARLENE CO TR & DRES 501 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	MORTON ANN S & SHEA DAVID 404 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410		Postmaster, per *(name of receiving employee)*	CHESHIRE CT MAY 15 2025 USPS DCM 10-5549

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	PARK VALERIE F 507 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	SACHS RONNIE BERSHAD TR 502 HARVEST CMNS WESTPORT, CT 06880	$2.89			
3.	MOYA KARINA 308 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	PASSAS ARETE 401 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	SAMPSON DAVID J & CAROL H 515 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	MULVEHILL JAMES P & MARIA 20 HYDE LN WESTPORT, CT 06880	$2.89			

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UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410			CHESHIRE CT MAY 15 2025
	Postmaster, per *(name of receiving employee)*		

	USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.		PAULINO BENJAMIN M TR & M 517 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.		SAXONY LLC 3373 MEADOW RIDGE REDDING, CT 06896	$2.89			
3.		MULVEY FRANCIS P AND HEIN 1 HYDE LN WESTPORT, CT 06880	$2.89			
4.		PEARLMAN PENNY N AND 410 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.		SCHWARTZ JOSHUA & LAURA 206 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.		SEIDMAN MARY OBRYAN 303 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410		Postmaster, per *(name of receiving employee)*	CHESHIRE CT MAY 15 2025 USPS 06410-9998

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	TARSHIS KAREN & BARRY 509 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	WERTHEIMER ALON & EMILY 6 MEADOW BRK LN WESTPORT, CT 06880	$2.89			
3.	SISKIND DONALD H 126 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	TAVELLO ROCKY 124 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	WHITMAN GLORIA TR 409 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.	SMITH ANDREW H & TOM ALYS 40 BAUER PL EXT WESTPORT, CT 06880	$2.89			

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UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410		Postmaster, per *(name of receiving employee)*	CHESHIRE CT MAY 15 2025 USPS 06410-9998

	USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.		THORNER PETER AND 3 MEADOWBROOK LN WESTPORT, CT 06880	$2.89			
2.		WILSON ROBERT CHRISTIAN 20 BAUER PL WESTPORT, CT 06880	$2.89			
3.		SORSTEIN ELIZABETH A TR 512 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.		TILIAKOS ORESTIS M & AMY 39 BAUER PL EXT WESTPORT, CT 06880	$2.89			
5.		WINNICK ALAN M TRUST 516 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.		SPINO DARIA 104 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410			CHESHIRE CT MAY 15 2025 USPS DOCUMENTS
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	TRIFILETTI PHILIP & KAREN 118 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	WOLF ROSALIE J TRUSTEE 150 EAST 69TH ST 23 J NEW YORK, NY 10021	$2.89			
3.	STASKO KRISTEN A TR 72 FAIRFIELD PL FAIRFIELD, CT 06824	$2.89			
4.	TZOU SHENG CHIEH & XIAO L 33 MAPLE AVE N WESTPORT, CT 06880	$2.89			
5.	WOLFE BRUCE 16 OLD ORCHARD RD WESTPORT, CT 06880	$2.89			
6.	STEIN STEVEN & NAOMI 522 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410			MAY 15 2025
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	WALKER TIMOTHY & BETTY AN 309 HARVEST CMNS WESTPORT, CT 06880	$2.89			
2.	WOLLNER BARBARA 202 HARVEST CMNS WESTPORT, CT 06880	$2.89			
3.	STEMMER BARBARA J 408 HARVEST CMNS WESTPORT, CT 06880	$2.89			
4.	WALSH JULIE H 511 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	YANNOPOULOS PANOS A & CON 43 MAPLE AVE N WESTPORT, CT 06880	$2.89			
6.	SWIFT PETER J & 111 HARVEST CMNS WESTPORT, CT 06880	$2.89			

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UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
SLR International Corporation 99 REALTY DRIVE CHESHIRE, CT 06410			CHESHIRE CT MAY 15 2025 06410-9998
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	WARSHAVSKY OFER B & LINDA 35 MAPLE AVE N WESTPORT, CT 06880	$2.89			
2.	YOON YVETTE Y 16 HYDE LN WESTPORT, CT 06880	$2.89			
3.	TANENBAUM GREGORY & KELLY 10 BAUER PL WESTPORT, CT 06880	$2.89			
4.	WEADOCK BRYAN T & ELYSE K 315 HARVEST CMNS WESTPORT, CT 06880	$2.89			
5.	ZAVIDOW MARILYN TR 210 HARVEST CMNS WESTPORT, CT 06880	$2.89			
6.		$2.89			

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100 feet Abutters List Report

Westport, CT
May 02, 2025

Parcel Number:	G09070000	Mailing Address:	GRAHAM ROBERT D & EVELYN A
CAMA Number:	G09070000-1834		109 HARVEST CMNS
Property Address:	109 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	PAULINO BENJAMIN M TR & MARY L TR
CAMA Number:	G09070000-1867		517 HARVEST CMNS
Property Address:	517 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	WALKER TIMOTHY & BETTY ANN
CAMA Number:	G09070000-2098		309 HARVEST CMNS
Property Address:	309 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	WOLLNER BARBARA
CAMA Number:	G09070000-2350		202 HARVEST CMNS
Property Address:	202 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	ENGEL LINDA
CAMA Number:	G09070000-2378		105 HARVEST CMNS
Property Address:	105 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	CLARK HAYES B & CLARE S
CAMA Number:	G09070000-2536		123 HARVEST CMMS
Property Address:	123 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	REISS PETER G
CAMA Number:	G09070000-255		518 HARVEST CMNS
Property Address:	518 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	GOLOMB MYRON & KATHERINE
CAMA Number:	G09070000-2666		TRUSTEES
Property Address:	313 HARVEST CMNS		313 HARVEST CMNS
			WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	INGBER DAVID A.
CAMA Number:	G09070000-2758		311 HARVEST CMNS
Property Address:	311 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	FONG KATHLEEN D
CAMA Number:	G09070000-2770		131 HARVEST CMNS
Property Address:	131 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	MOYA KARINA
CAMA Number:	G09070000-2977		308 HARVEST CMNS
Property Address:	308 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	Contact Town For Info
CAMA Number:	G09070000-30003		
Property Address:	HARVEST CMNS		,

100 feet Abutters List Report

Westport, CT
May 02, 2025

Parcel Number:	G09070000	Mailing Address:	SWIFT PETER J &
CAMA Number:	G09070000-3214		111 HARVEST CMNS
Property Address:	111 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	LANG GERALD G TR
CAMA Number:	G09070000-3340		116 HARVEST CMNS
Property Address:	116 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	SACHS ARLENE CO TR & DRESHER
CAMA Number:	G09070000-3535		NEAL CO TR
Property Address:	501 HARVEST CMNS		501 HARVEST CMNS
			WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	FRYLING NEVILLE H & BRIGITTE M
CAMA Number:	G09070000-3540		301 HARVEST CMNS
Property Address:	301 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	WINNICK ALAN M TRUST
CAMA Number:	G09070000-3573		516 HARVEST CMNS
Property Address:	516 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	COVALT ANNA A AND SWEARINGEN
CAMA Number:	G09070000-3688		MAUDE TRSTE
Property Address:	117 HARVEST CMNS		117 HARVEST CMNS
			WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	BAKER DEBORAH PETCH
CAMA Number:	G09070000-3712		108 HARVEST CMNS
Property Address:	108 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	LIEBERMAN CYNTHIA T TR
CAMA Number:	G09070000-382		6000 ISLAND BOULEVARD UNIT 605
Property Address:	208 HARVEST CMNS		AVENTURA, FL 33160
Parcel Number:	G09070000	Mailing Address:	115 HARVEST COMMONS LLC
CAMA Number:	G09070000-3892		115 HARVEST COMMONS
Property Address:	115 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	JANSON JAMES E TRUSTEE
CAMA Number:	G09070000-4013		520 HARVEST CMNS
Property Address:	520 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	CENCI DIANE & HILLHOUSE JOHN
CAMA Number:	G09070000-4039		106 HARVEST CMNS
Property Address:	106 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	KOPIT ROSELYN & NORMAN
CAMA Number:	G09070000-4070		405 HARVEST CMNS
Property Address:	405 HARVEST CMNS		WESTPORT, CT 06880

100 feet Abutters List Report

Westport, CT
May 02, 2025

Parcel Number:	G09070000	Mailing Address:	GLAZER ANDREA & JOHNSON GLENN
CAMA Number:	G09070000-4250		676 COX ROAD
Property Address:	127 HARVEST CMNS		ROSWELL, GA 30075
Parcel Number:	G09070000	Mailing Address:	TAVELLO ROCKY
CAMA Number:	G09070000-4264		124 HARVEST CMNS
Property Address:	124 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	FARBER SAMANTHA
CAMA Number:	G09070000-4379		102 HARVEST CMNS
Property Address:	102 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	GURDOGAN HANDE & EKREM BERK
CAMA Number:	G09070000-452		307 HARVEST CMNS
Property Address:	307 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	SISKIND DONALD H
CAMA Number:	G09070000-4728		126 HARVEST CMNS
Property Address:	126 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	BRADY ADELAIDE B
CAMA Number:	G09070000-4811		312 HARVEST CMNS
Property Address:	312 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	GANS EUGENE H TR & ROSLYN P TR
CAMA Number:	G09070000-4821		514 HARVEST CMNS
Property Address:	514 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	WALSH JULIE H
CAMA Number:	G09070000-5102		511 HARVEST CMNS
Property Address:	511 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	SAXONY LLC
CAMA Number:	G09070000-5111		3373 MEADOW RIDGE
Property Address:	505 HARVEST CMNS		REDDING, CT 06896
Parcel Number:	G09070000	Mailing Address:	STEMMER BARBARA J
CAMA Number:	G09070000-5165		408 HARVEST CMNS
Property Address:	408 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	NATHAN JOAN R TRUSTEE
CAMA Number:	G09070000-523		412 HARVEST CMNS
Property Address:	412 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	GUARINO JULIETTA TRUSTEE
CAMA Number:	G09070000-5265		1180 EMERALD LN
Property Address:	302 HARVEST CMNS		SINGER ISLAND, FL 33404

100 feet Abutters List Report

Westport, CT
May 02, 2025

Parcel Number:	G09070000	Mailing Address:	SEIDMAN MARY OBRYAN
CAMA Number:	G09070000-5365		303 HARVEST CMNS
Property Address:	303 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	NESWALD MIRIAM
CAMA Number:	G09070000-5367		403 HARVEST CMNS
Property Address:	403 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	MILLER JOSEPH A TR & LINDA
CAMA Number:	G09070000-5576		GERMAINE TR
Property Address:	103 HARVEST CMNS		103 HARVEST CMNS
			WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	GIUNTA ROBERT J
CAMA Number:	G09070000-5594		PO BOX 56
Property Address:	114 HARVEST CMNS		WESTPORT, CT 06881
Parcel Number:	G09070000	Mailing Address:	TRIFILETTI PHILIP & KAREN
CAMA Number:	G09070000-5669		118 HARVEST CMNS
Property Address:	118 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	GREDAN TRUST
CAMA Number:	G09070000-5947		606 POST RD E #593
Property Address:	112 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	PARK VALERIE E
CAMA Number:	G09070000-5961		507 HARVEST CMNS
Property Address:	507 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	SCHWARTZ JOSHUA & LAURA
CAMA Number:	G09070000-6282		206 HARVEST CMNS
Property Address:	206 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	DAVIDSON JO ANN W & JOHN C
CAMA Number:	G09070000-6385		TRUSTEES
Property Address:	519 HARVEST CMNS		519 HARVEST CMNS
			WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	PEARLMAN PENNY N AND
CAMA Number:	G09070000-6432		410 HARVEST CMNS
Property Address:	410 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	SACHS RONNIE BERSHAD TR
CAMA Number:	G09070000-66		502 HARVEST CMNS
Property Address:	502 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	LEVEY ROBIN J
CAMA Number:	G09070000-6719		304 HARVEST CMNS
Property Address:	304 HARVEST CMNS		WESTPORT, CT 06880

100 feet Abutters List Report

Westport, CT
May 02, 2025

Parcel Number:	G09070000	Mailing Address:	HART BRIAN & LIU JENNIFER
CAMA Number:	G09070000-6774		411 HARVEST CMNS
Property Address:	411 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	HAMMER WARREN
CAMA Number:	G09070000-6801		406 HARVEST CMNS
Property Address:	406 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	MORTON ANN S & SHEA DAVID
CAMA Number:	G09070000-6864		404 HARVEST CMNS
Property Address:	404 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	FRIEDSON BERNICE S
CAMA Number:	G09070000-6877		125 HARVEST CMNS
Property Address:	125 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	SORSTEIN ELIZABETH A TR
CAMA Number:	G09070000-6915		512 HARVEST CMNS
Property Address:	512 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	KARAZIN EDWARD & IRENE
CAMA Number:	G09070000-7048		310 HARVEST CMNS
Property Address:	310 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	BARNHART EDWARD & JOYCE
CAMA Number:	G09070000-7232		503 HARVEST CMNS
Property Address:	503 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	SAMPSON DAVID J & CAROL H
CAMA Number:	G09070000-7308		515 HARVEST CMNS
Property Address:	515 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	PASSAS ARETE
CAMA Number:	G09070000-7493		401 HARVEST CMNS
Property Address:	401 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	PAJOR BIANKA
CAMA Number:	G09070000-7544		110 HARVEST CMNS
Property Address:	110 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	CHRISTIANSON DANIEL
CAMA Number:	G09070000-7701		402 HARVEST CMNS
Property Address:	402 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	CHINGAS RITA KOHN
CAMA Number:	G09070000-7708		306 HARVEST CMNS
Property Address:	306 HARVEST CMNS		WESTPORT, CT 06880

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Parcel Number:	G09070000	Mailing Address:	MALBIN MARJORIE E TRUSTEE
CAMA Number:	G09070000-7959		510 HARVEST COMMONS
Property Address:	510 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	CASSUTO LINDA R TR
CAMA Number:	G09070000-7999		107 HARVEST CMNS
Property Address:	107 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	BECKER FREDERIQUE TR
CAMA Number:	G09070000-8068		513 HARVEST CMNS
Property Address:	513 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	CRAWFORD OTIS L
CAMA Number:	G09070000-8351		120 HARVEST CMNS
Property Address:	120 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	PERLISS RUTH-ANNE RING
CAMA Number:	G09070000-8356		305 HARVEST CMNS
Property Address:	305 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	TARSHIS KAREN & BARRY
CAMA Number:	G09070000-8419		509 HARVEST CMNS
Property Address:	509 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	MASON ELLEN G
CAMA Number:	G09070000-8685		407 HARVEST CMNS
Property Address:	407 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	MORALES MARIA ALEJANDRA RAMIREZ
CAMA Number:	G09070000-9224		
Property Address:	508 HARVEST CMNS		508 HARVEST CMNS WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	SPINO DARIA
CAMA Number:	G09070000-9301		104 HARVEST CMNS
Property Address:	104 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	WEADOCK BRYAN T & ELYSE K
CAMA Number:	G09070000-9397		315 HARVEST CMNS
Property Address:	315 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	STEIN STEVEN & NAOMI
CAMA Number:	G09070000-9416		522 HARVEST CMNS
Property Address:	522 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09070000	Mailing Address:	ZAVIDOW MARILYN TR
CAMA Number:	G09070000-9490		210 HARVEST CMNS
Property Address:	210 HARVEST CMNS		WESTPORT, CT 06880

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Parcel Number:	G09070000	Mailing Address:	HOLOD MARK & JUDY
CAMA Number:	G09070000-983		121 HARVEST CMNS
Property Address:	121 HARVEST CMNS		WESTPORT, CT 06880
Parcel Number:	G09096000	Mailing Address:	KLUCHNICK PETER C AND WALSH ELIZABETH EST
CAMA Number:	G09096000		37 BAUER PL EXT
Property Address:	37 BAUER PL EXT		WESTPORT, CT 06880
Parcel Number:	G09097000	Mailing Address:	TILIAKOS ORESTIS M & AMY L
CAMA Number:	G09097000		39 BAUER PL EXT
Property Address:	39 BAUER PL EXT		WESTPORT, CT 06880
Parcel Number:	G09098000	Mailing Address:	SMITH ANDREW H & TOM ALYSSA K
CAMA Number:	G09098000		40 BAUER PL EXT
Property Address:	40 BAUER PL EXT		WESTPORT, CT 06880
Parcel Number:	G09099000	Mailing Address:	PROBERT NATHANIEL & COLLEEN
CAMA Number:	G09099000		38 BAUER PL EXT
Property Address:	38 BAUER PL EXT		WESTPORT, CT 06880
Parcel Number:	G10052000	Mailing Address:	32 HYDE LANE LLC
CAMA Number:	G10052000		30 HYDE LN
Property Address:	30 HYDE LN		WESTPORT, CT 06880
Parcel Number:	G10053000	Mailing Address:	DINALLO RUSSELL & LAPPAS KRISTEN A
CAMA Number:	G10053000		28 BAUER PL
Property Address:	28 BAUER PL		WESTPORT, CT 06880
Parcel Number:	G10054000	Mailing Address:	ORLOFF JENNIE & STEPHEN
CAMA Number:	G10054000		26 BAUER PL
Property Address:	26 BAUER PL		WESTPORT, CT 06880
Parcel Number:	G10055000	Mailing Address:	ABADY JOSE & MARISSA
CAMA Number:	G10055000		24 BAUER PL
Property Address:	24 BAUER PL		WESTPORT, CT 06880
Parcel Number:	G10056000	Mailing Address:	BENDER STEPHEN & VALERIE
CAMA Number:	G10056000		22 BAUER PL
Property Address:	22 BAUER PL		WESTPORT, CT 06880
Parcel Number:	G10057000	Mailing Address:	WILSON ROBERT CHRISTIAN
CAMA Number:	G10057000		20 BAUER PL
Property Address:	20 BAUER PL		WESTPORT, CT 06880
Parcel Number:	G10060000	Mailing Address:	ANDERSON SAMUEL W & EDITH A
CAMA Number:	G10060000		29 HYDE LN
Property Address:	29 HYDE LN		WESTPORT, CT 06880

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Parcel Number:	G10061000	Mailing Address:	CORNECK GRAHAM R & MARTHA C
CAMA Number:	G10061000		35 HYDE LN
Property Address:	35 HYDE LN		WESTPORT, CT 06880
Parcel Number:	G10064000	Mailing Address:	RESNICK ZACHARY LLOYD
CAMA Number:	G10064000		1A MEADOW BRK LN
Property Address:	1 MEADOW BRK LN A		WESTPORT, CT 06880
Parcel Number:	G10065000	Mailing Address:	THORNER PETER AND
CAMA Number:	G10065000		3 MEADOWBROOK LN
Property Address:	3 MEADOW BRK LN		WESTPORT, CT 06880
Parcel Number:	G10066000	Mailing Address:	NOUVELLE DESTINEE LLC
CAMA Number:	G10066000		5 MEADOW BROOK LN
Property Address:	5 MEADOW BRK LN		WESTPORT, CT 06880
Parcel Number:	G10067000	Mailing Address:	EIGEN JOAN K 2020 IRREVOC TRUST
CAMA Number:	G10067000		7 MEADOW BRK LN
Property Address:	7 MEADOW BRK LN		WESTPORT, CT 06880
Parcel Number:	G10068000	Mailing Address:	CERLON MARTHA H
CAMA Number:	G10068000		12 MEADOW BRK LN
Property Address:	12 MEADOW BRK LN		WESTPORT, CT 06880
Parcel Number:	G10069000	Mailing Address:	FELICE MATTHEW SCOTT & DANIELLE ERICA
CAMA Number:	G10069000		10 MEADOW BRK LN
Property Address:	10 MEADOW BRK LN		WESTPORT, CT 06880
Parcel Number:	G10070000	Mailing Address:	HACKETT WILLIAM H III & GINA R
CAMA Number:	G10070000		8 MEADOW BRK LN
Property Address:	8 MEADOW BRK LN		WESTPORT, CT 06880
Parcel Number:	G10071000	Mailing Address:	WERTHEIMER ALON & EMILY
CAMA Number:	G10071000		6 MEADOW BRK LN
Property Address:	6 MEADOW BRK LN		WESTPORT, CT 06880
Parcel Number:	H09051000	Mailing Address:	ARBELLOT EDOUARD & LEONARD BLAKE
CAMA Number:	H09051000		18 BAUER PL
Property Address:	18 BAUER PL		WESTPORT, CT 06880
Parcel Number:	H09052000	Mailing Address:	REAGAN TRACY D
CAMA Number:	H09052000		16 BAUER PL
Property Address:	16 BAUER PL		WESTPORT, CT 06880
Parcel Number:	H09053000	Mailing Address:	IMHOFF KEVIN
CAMA Number:	H09053000		14 BAUER PL
Property Address:	14 BAUER PL		WESTPORT, CT 06880

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Parcel Number:	H09054000	Mailing Address:	43 NEWPORT PLACE LLC
CAMA Number:	H09054000		12 BAUER PL
Property Address:	12 BAUER PL		WESTPORT, CT 06880
Parcel Number:	H09055000	Mailing Address:	TANENBAUM GREGORY & KELLY ANNE MCGARRITY
CAMA Number:	H09055000		10 BAUER PL
Property Address:	10 BAUER PL		WESTPORT, CT 06880
Parcel Number:	H09072000	Mailing Address:	COHEN JEFFREY BENJAMIN
CAMA Number:	H09072000		19 OLD ORCHARD RD
Property Address:	19 OLD ORCHARD RD		WESTPORT, CT 06880
Parcel Number:	H09073000	Mailing Address:	WOLFE BRUCE
CAMA Number:	H09073000		16 OLD ORCHARD RD
Property Address:	16 OLD ORCHARD RD		WESTPORT, CT 06880
Parcel Number:	H09074000	Mailing Address:	BARD ADAM J & KIMBERLY GAZES
CAMA Number:	H09074000		14 OLD ORCHARD RD
Property Address:	14 OLD ORCHARD RD		WESTPORT, CT 06880
Parcel Number:	H10001000	Mailing Address:	TZOU SHENG CHIEH & XIAO LING
CAMA Number:	H10001000		33 MAPLE AVE N
Property Address:	33 MAPLE AVE N		WESTPORT, CT 06880
Parcel Number:	H10002000	Mailing Address:	WARSHAVSKY OFER B & LINDA S
CAMA Number:	H10002000		35 MAPLE AVE N
Property Address:	35 MAPLE AVE N		WESTPORT, CT 06880
Parcel Number:	H10003000	Mailing Address:	MULVEY FRANCIS P AND HEINTZ JULIANNE
CAMA Number:	H10003000		1 HYDE LN
Property Address:	1 HYDE LN		WESTPORT, CT 06880
Parcel Number:	H10011000	Mailing Address:	GREEN ANDREW J & SHAYNA FORTES
CAMA Number:	H10011000		2 TRAILING ROCK LN
Property Address:	2 TRAILING ROCK LN		WESTPORT, CT 06880
Parcel Number:	H10012000	Mailing Address:	MULVEHILL JAMES P & MARIA P
CAMA Number:	H10012000		20 HYDE LN
Property Address:	20 HYDE LN		WESTPORT, CT 06880
Parcel Number:	H10013000	Mailing Address:	YOON YVETTE Y
CAMA Number:	H10013000		16 HYDE LN
Property Address:	16 HYDE LN		WESTPORT, CT 06880
Parcel Number:	H10014000	Mailing Address:	COHEN CASSIDY & BEN
CAMA Number:	H10014000		6 HYDE LN
Property Address:	6 HYDE LN		WESTPORT, CT 06880

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Parcel Number:	H10015000	Mailing Address:	STASKO KRISTEN A TR
CAMA Number:	H10015000		72 FAIRFIELD PL
Property Address:	39 MAPLE AVE N		FAIRFIELD, CT 06824

Parcel Number:	H10017000	Mailing Address:	YANNOPOULOS PANOS A &
CAMA Number:	H10017000		CONSTANTIN J
Property Address:	43 MAPLE AVE N		43 MAPLE AVE N
			WESTPORT, CT 06880

CONSERVATION DEPARTMENT
TOWN HALL – 110 MYRTLE AVENUE
WESTPORT, CT 06880
P 203.341.1170 F 203.341.1088

Application #: _____

SCHEDULE C: WETLANDS / WATERCOURSES

PROJECT ADDRESS: 13 Hyde Lane Westport, CT 06880

Due by 4:00 p.m. on _____

1. Pursuant to Section 9.6.2 relating to Soil Sample Data – the applicant/agent is to submit copy of a report by a "soil scientist" duly qualified in accordance with standards set by the U.S. Civil Service Commission, showing soil sample data, soil classifications, and a surveyed delineation of wetland soils as flagged by the scientist, including flag numbers (as requested by agency). See attached report.
2. Pursuant to Section 9.6.3 relating to Biological Evaluations – the applicant/agent is to submit a list and evaluation of the plant and animal life that may be found within, depend upon, or use the wetlands and watercourses (as requested by agency). See attached report.
3. Describe the anticipated impacts to wetlands and watercourses that may occur as the result of that portion of your proposal that may be located in wetlands, watercourses or their setbacks.

   See attached report.

4. Describe the mitigation that is being proposed as part of your application in order to minimize disturbance and pollution of wetlands and watercourses, maintain or improve water quality, and prevent destruction of or enhance the natural habitats and functions of the wetlands and watercourses.

   N/A

5. List the alternatives to the proposed application that were considered and the reason for their abandonment.

   N/A

CONSERVATION DEPARTMENT
TOWN HALL – 110 MYRTLE AVENUE
WESTPORT, CT 06880
P 203.341.1170 F 203.341.1088

Application #: _____

SCHEDULE D: WATERWAY PROTECTION LINES

PROJECT ADDRESS: 13 Hyde Lane Westport, CT 06880

Due by 4:00 p.m. on _____

1. Explain/submit information showing why/how the proposed activity as located within Waterway Protection Lines will not cause flooding, drainage, erosion and/or related conditions hazardous to life and property and will not have an adverse impact upon the flood-carrying and water-storage capacity of the town's waterways, including but not limited to the impact upon flood heights, hydrological energy flow, maintenance of essential and natural patterns of water circulation, drainage and basin configuration and maintenance of fresh- and saltwater exchange through the placement of culverts, tide gates or other drainage flood-control structures. (sec.148-8)

   See attached report.

2. Explain/submit information showing why/how the proposed activity as located within the Waterway Protection Lines will not cause water pollution, erosion and/or environmentally related hazards to life and property and will not have an adverse impact on the preservation of the natural resources and ecosystems of the waterway, including but not limited to impact on ground or surface water, aquifers, plant and aquatic life, nutrient exchange and supply, thermal energy flow, natural pollution filtration and decomposition, habitat diversity, viability and productivity and natural rates and processes or erosion and sedimentation. (sec. 148-9)

   See attached report.

3. Other:_____
   _____
   _____

Wetland Delineation Report and Impact Assessment

Long Lots Elementary School
13 Hyde Lane, Westport, Connecticut

Svigals + Partners, LLP

84 Orange Street, New Haven, Connecticut 06510

Prepared by:

SLR International Corporation

99 Realty Drive, Cheshire, Connecticut, 06410

SLR Project No.: 141.14847.00021

May 14, 2025

Making Sustainability Happen

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Appendices

Acronyms and Abbreviations

CGS	Connecticut General Statues
FEMA	Federal Emergency Management Agency
LF	Linear Feet
NAVD	North American Vertical Datum
NDDB	Natural Diversity Database
NRCS	Natural Resources Conservation Service
S&E	Sediment and Erosion
SLR	SLR International Corporation
URA	Upland Review Area
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture

1.0 Introduction

On behalf of Svigals + Partners, LLP ("the client"), SLR International Corporation (SLR) has prepared the following report to describe the existing conditions of regulated wetland and watercourse resources and potential impacts to these resources resulting from the proposed development of the new Long Lots Elementary School located at 13 Hyde Lane in Westport, Connecticut (**Figure 1**). SLR was retained to delineate and assess regulated wetland resources on site in accordance with all local, state, and federal regulations and to develop the site design, including sedimentation and erosion control measures and stormwater management. This report includes the methods and results of the wetland delineation and an assessment of the potential impacts resulting from proposed activities. All proposed activities are depicted on the site plans prepared by SLR, titled Long Lots Elementary School and dated May 9, 2025.

In summary, three wetland/watercourse areas were identified on site and are herein referred to as Wetland 1, Wetland 2, and Wetland/Watercourse 3. Additionally, there is a man-made stormwater detention basin located upgradient from Wetland 2 that the Town of Westport has elected to take jurisdiction of as a regulated waterbody, herein referred to as Stormwater Basin/Waterbody A.

1.1 Site Description

The approximately 27.9-acre subject parcel is situated in a predominately residential portion of Westport, north of the Post Road East commercial corridor. The site is bounded by Hyde Lane to the east, Meadowbrook Lane to the west, and residential properties to the north and south. Bauer Place and Bauer Place Extension, two residential roads, terminate along the southern property boundary. Accessed from Hyde Lane, the central portion of the site contains the existing Long Lots Elementary School with paved parking lots and bus loop, playground areas to the west, athletic fields to the north, and community garden area to the south. The undeveloped but historically disturbed western portion of the site is generally wooded and situated approximately 20 to 40 vertical feet below the existing school and appurtenances. The site's wooded uplands are characterized as second-growth broadleaf deciduous forest. Topography on site ranges from 50 feet (NAVD 88) in the northwestern portion of the low-lying wooded portion of the property to 108 feet within the wooded periphery of the community garden in the southeastern portion of the property.

Watershed Location

The site lies within a 7.3-square-mile area of the Southwest Shoreline subregional watershed (Basin #7000), which spans southeastern Westport. Surface water from the site flows west toward the onsite wetlands. The onsite watercourse is piped offsite to the west below Meadowbrook Lane, towards Muddy Brook. Muddy Brook continues to flow southwest for approximately 1.8 miles through central Westport, including portions that are piped below Post Road, I-95, and several residential streets, before emptying into Mill Creek. Mill Creek ultimately drains into Long Island Sound at Compo Cove, located roughly 2.4 miles southeast of the site.

FEMA Mapping

According to the most recent Federal Emergency Management Agency (FEMA) mapping, effective July 8, 2013, no special flood hazard areas (SFHA) are mapped onsite. Offsite to the west of Meadowbrook Lane, Muddy River is mapped as a regulatory floodway with an associated 100-year floodplain and base flood elevation between 45.1 feet and 49 feet.

Natural Diversity Database Mapping

Based on the current Connecticut Department of Energy and Environmental Protection (CTDEEP) Natural Diversity Database (NDDB) data (December 2024), no polygons indicating the presence of state-listed species or critical habitat are mapped on or adjacent to the site.

2.0 Methodology

On May 11, 2023, Matthew Sanford, Registered Soil Scientist and Professional Wetland Scientist, and Meaghan Fogarty, Wetland Professional in Training, both of SLR, visited the site to determine the presence or absence of wetlands and/or watercourses, to demarcate (flag) the boundaries of wetlands and watercourses identified and to identify onsite soil types. Inland wetlands and watercourses within the project area were delineated in accordance with the regulations of the Town of Westport, Connecticut, the State of Connecticut Inland Wetlands and Watercourses Act, Connecticut General Statutes (CGS) 22a-36 through 45, and federal regulations.

Inland wetland delineation methods followed the 1987 U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (USACE, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Northcentral and Northeast Region* (USACE, 2012). The classification system of the National Cooperative Soil Survey and *Field Indicators of Hydric Soils in the United States* (USDA, 2017) were used in this investigation. A second-order soil survey in accordance with the principles and practices noted in the United States Department of Agriculture (USDA) publication *Soil Survey Manual* (1993) was completed at the subject site. Soil types were identified by observation of soil morphology (soil texture, color, structure, etc.). To observe the morphology of the property's soils, hand auger borings (maximum depth of 2 feet) were completed at the site. Wetland determinations were completed based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land (e.g., a pond). Intermittent watercourse determinations were made based on the presence of a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation. Wetland boundaries were demarcated (flagged) with pink and blue surveyor's tape hung from sturdy vegetation and generally spaced a maximum of every 30 to 50 feet. Complete boundaries are located along the lines that connect these sequentially numbered flags (**Figure 2**). The wetland boundaries are subject to change until adopted by local, state, or federal regulatory agencies.

On the day of the review, weather conditions were sunny and dry, with an air temperature of approximately 65º Fahrenheit. Site conditions were suitable for wetland delineation work.

3.0 Results

3.1 Soils

Geospatial data were accessed via the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) web soil survey mapping. The soil survey mapping is appended (**Figure 3**). The survey identifies the following soil mapping units with associated NRCS map number in the project area:

- Agawam fine sandy loam, 3-8% slopes (29B) – Well drained
- Sutton fine sandy loam, 3-8% slopes (50B) – Moderately well drained

- Canton and Charlton fine sandy loams, 8-15% slopes (60C) – Well drained
- Sutton-Urban land complex, 0-8% slopes (250B) – Moderately well drained
- Charlton-Urban land complex, 3-8% slopes (260B) – Well drained
- Urban land (307) – Variable
- Udorthents, smoothed (308) – Moderately well drained

Soils were examined using a Dutch auger. Please note that SLR did not delineate the wetland boundaries outside of proposed work areas, nor were upland soil types fully delineated within the project parcel. NRCS mapping does not identify any wetland soil units onsite; however, field investigations determined that aquents are present within the delineated wetlands. Aquents are recently formed, poorly to very poorly drained soils typically formed in human transported material or on excavated landscapes.

3.2 Wetland and Watercourses

Wetland 1

Wetland 1 is located in the southwestern portion of the property and occupies approximately 0.4 acres, demarcated by flags WA-1 through WA-9 and WA-101 through WA-112 (**Figure 2**). It is characterized as a depressional palustrine forested wetland, though the canopy is sparse primarily due to ongoing die-off of ash (*Fraxinus* sp.) trees caused by the invasive emerald ash borer (*Agrilus planipennis*). Hydrology is driven by a seasonally high groundwater table, as well as stormwater runoff from the adjacent terminus of Bauer Place Extension, and an unregulated drainage swale onsite. The drainage swale emanates from a 15-inch diameter reinforced concrete pipe (RCP) within a stone masonry headwall near Bauer Place and conveys stormwater southwest along the property boundary; it conveyed no flow on the day of investigation and is vegetated primarily by garlic mustard (*Alliara petiolata*) and shaded by a canopy of Norway maple (*Acer platanoides*). In contrast, the delineated wetland is vegetated by red maple (*Acer rubrum*), along with dead and dying ash, and an understory of forsythia (*Forsythia suspensa*), Morrow's honeysuckle (*Lonicera morrowii*), Japanese barberry (*Berberis thunbergii*), American elderberry (*Sambucus nigra*), soft rush (*Juncus effusus*), water primrose (*Ludwigia palustris*), reed canary grass (*Phalaris arundinacea*), jack-in-the-pulpit (*Arisaema triphyllum*), skunk cabbage (*Symplocarpus foetidus*), wineberry (*Rubus phoenicolasius*), jewelweed (*Impatiens capensis*), garlic mustard, sedges (*Carex* sp.), and grasses. Standing water was pooled near flag WA-101 adjacent to a stormwater outfall from Bauer Place Extension on the day of investigation. Soils within this wetland are classified as aquents.

Wetland 2

Wetland 2 is located in the western-central portion of the property, immediately northwest (downgradient) of the stormwater detention basin, and occupies approximately 0.3 acres. It is demarcated by flags WB-01 through WB-10 and WB-101 through WB-117 (**Figure 2**). It receives overflow from the stormwater detention basin via a 12-inch diameter RCP within a concrete headwall that discharges towards Wetland 2 via a man-made riprap-lined channel. The wetland is further hydrologically supported by a seasonally high groundwater table. Soils within this wetland are classified as aquents. Vegetation consists primarily of red maple, Japanese barberry, soft rush, skunk cabbage, sensitive fern (*Onoclea sensibilis*), grasses, and sedges.

An unregulated stormwater feature is located to the west of this wetland, along the western property boundary. An approximately 20-foot by 20-foot area surrounded by chain-link fence

contains a cobble-lined scour hole that receives stormwater from a pipe of unknown size, with a concrete flared end section and rebar grate. This feature is man-made, not hydrologically connected to any onsite wetlands, and appears to receive stormwater from two catchbasins on Meadowbrook Lane.

Wetland/Watercourse 3

Wetland/Watercourse 3 is located in the northwestern portion of the site demarcated by flags OHW-1 through OHW-9, OHW-101 through OHW-108 (watercourse), and WB-201 through WB-204 (wetland). An unnamed watercourse emanates from two adjacent outfalls: an 18-inch diameter RCP within a headwall, and partially buried pipe of smaller unknown size with a concrete flared end section. The watercourse may be intermittent at times during the later summer/early fall months. The watercourse flows from northeast to southwest for approximately 400 feet through a man-made linear, riprap-lined, trapezoidal channel that is approximately 10 feet in width. Near its downstream extent, a small depressional palustrine forested wetland occupies approximately 330 SF along the watercourse's southern bank, vegetated primarily by red maple and sensitive fern. Near the western property boundary, water flows into an 18-inch diameter RCP and is piped offsite below Meadowbrook Lane. Apart from the small wetland inclusion along the southern bank, the channel flows through uplands. Vegetation along the banks consists of multiflora rose (*Rosa multiflora*), Japanese barberry, burning bush (*Euonymus alatus*), European privet (*Ligustrum vulgare*), Asiatic bittersweet (*Celastrus orbiculatus),* garlic mustard, wineberry, poison ivy (*Toxicodendron radicans*), garlic mustard, jewelweed, bitterdock (*Rumex obtusifolius*), sedges, and grasses.

Stormwater Basin/Waterbody A

A man-made stormwater basin, likely constructed within uplands during the construction of the existing school, is located just west of the school and playground areas. Steep earthen fill slopes surround the basin on all sides, bounded by a perimeter chain-link fence. The side slopes of the basin are extremely densely vegetated, primarily with invasive vegetation such as multiflora rose, European privet, and autumn olive (*Elaeagnus umbellata*). The basin bottom contained an unknown depth of standing water on the day of investigation; the water's surface supported duckweed (*Limna* sp.). A large stand of common reed (*Phragmites australis*) occupies much of the basin. Other vegetation includes red maple, American elm (*Ulmus americana*), willows (*Salix* sp.), silky dogwood (*Swida amomum*), grape (*Vitis* sp.), Asiatic bittersweet, and sensitive fern. Despite its man-made origins, the basin supports some limited wetland functions and values, and the Town of Westport Conservation Commission has elected to take jurisdiction of this feature as a regulated waterbody.

3.3 Functions and Values

Wetlands perform certain functions and possess values based on wetland type, hydrologic connectivity, habitat, and a variety of other measurable parameters. Using the USACE *Highway Methodology Workbook Supplement*, SLR completed wetland Function-Value Evaluations for the onsite wetland resources. The principal functions and values each of the onsite wetland resources are provided below in **Tables 1 through 4**.

Table 1: Functions and Values Assessment – Wetland 1

	Functions and Values	Comment
	Groundwater Recharge/Discharge	Yes – Groundwater discharge is a source of hydrology as well as stormwater runoff.
	Flood Flow Alteration (Storage and Desynchronization)	No – This wetland is not mapped within a FEMA flood hazard area.
	Fish and Shellfish Habitat	No – The limited hydrology and landscape position do not allow for finfish or shellfish habitat.
	Sediment/Toxicant Retention	Limited – The small size of this wetland and moderate stem density allows for some sediment trapping from stormwater from Bauer Place Extension.
	Nutrient Removal/Retention/ Transformation	Limited – The small size of this wetland and moderate stem density allows for some nutrient uptake.
	Production Export (Nutrient)	No – No indications of export are present.
	Sediment/Shoreline/Watercourse Bank Stabilization	No – There are no watercourses or waterbodies associated with this wetland.
	Wildlife Habitat	Limited – The wetland's small size, disturbance, and adjacent development limit the potential for significant and/or critical wildlife habitat.
	Recreation (Consumptive and Non-Consumptive)	No – The wetland does not provide recreational opportunities.
	Educational Scientific Value	No – Despite being on a school property, the wetland is disturbed and is not easily/safely accessible.
	Uniqueness/Heritage	No – This wetland does not present uniqueness or heritage values.
	Visual Quality/Aesthetics	No – The wetland does not provide visual quality/aesthetic value.
ES	Endangered Species	No – No portion of the subject property is mapped within a Natural Diversity Data Base (NDDB) polygon.

The principal functions of Wetland 1 include the following:

- Groundwater discharge

Table 2: Functions and Values Assessment – Wetland 2

	Functions and Values	Comment
	Groundwater Recharge/Discharge	Yes – Groundwater discharge contributes to hydrology, in addition to stormwater discharge from the adjacent basin.
	Flood Flow Alteration (Storage and Desynchronization)	No – This wetland is not mapped within a FEMA flood hazard area.
	Fish and Shellfish Habitat	No – The limited hydrology and landscape position do not allow for finfish or shellfish habitat.
	Sediment/Toxicant Retention	Yes – Stormwater flows into this wetland from the east; its landscape position and moderate stem density contribute to this function.
	Nutrient Removal/Retention/ Transformation	Yes – Stormwater flows into this wetland from the east; its landscape position and moderate stem density contribute to this function.
	Production Export (Nutrient)	No – No indications of export are present.
	Sediment/Shoreline/Watercourse Bank Stabilization	No – The man-made channel within the wetland is riprap lined; no other watercourses or waterbodies are present.
	Wildlife Habitat	Limited – The wetland's small size, disturbance, and adjacent development limit the potential for significant and/or critical wildlife habitat.
	Recreation (Consumptive and Non-Consumptive)	No – The wetland does not provide recreational opportunities.
	Educational Scientific Value	No – Despite being on a school property, the wetland is disturbed and is not easily/safely accessible.
	Uniqueness/Heritage	No – This wetland area has no uniqueness or special heritage characteristics.
	Visual Quality/Aesthetics	No – The wetland area does not provide visual quality or aesthetics.
ES	Endangered Species	No – No portion of the property is mapped within an NDDB polygon.

The principal functions of Wetland 2 include the following:

- Groundwater discharge
- Sediment/Toxicant Retention
- Nutrient Removal/Retention/Transformation

Table 3: Functions and Values Assessment – Wetland/Watercourse 3

	Functions and Values	Comment
	Groundwater Recharge/Discharge	Limited – Watercourse hydrology appears to be dominated by piped stormwater inputs. Minor groundwater discharge occurs in the small adjacent wetland.
	Flood Flow Alteration (Storage and Desynchronization)	No – This wetland/watercourse is not mapped within a FEMA flood hazard area.
	Fish and Shellfish Habitat	No – The artificial channel, intermittent flow, and lack of natural substrate preclude viable and sustainable fish habitat.
	Sediment/Toxicant Retention	Limited – The linear, high-velocity, channelized flow prevents meaningful retention.
	Nutrient Removal/Retention/ Transformation	Limited – Some limited nutrient uptake may occur in the small adjacent wetland.
	Production Export (Nutrient)	Yes – Organic debris from adjacent wetland and upland vegetation are likely exported downstream (offsite).
	Sediment/Shoreline/Watercourse Bank Stabilization	No – The banks are artificially stabilized by riprap.
	Wildlife Habitat	Limited – The wetland/watercourse's artificial channel, disturbance, and lack of structural diversity limit the potential for wildlife habitat.
	Recreation (Consumptive and Non-Consumptive)	No – The wetland/watercourse does not provide recreational opportunities.
	Educational Scientific Value	No – Despite being on a school property, the watercourse is man-made and not easily/safely accessible.
	Uniqueness/Heritage	No – This wetland/watercourse does not present uniqueness or heritage values.
	Visual Quality/Aesthetics	No – The wetland/watercourse does not provide visual quality/aesthetic value.
ES	Endangered Species	No – No portion of the subject property is mapped within a Natural Diversity Data Base (NDDB) polygon.

The principal functions of Wetland/Watercourse 3 include the following:

- Production export

Table 4: Functions and Values Assessment – Stormwater Basin/Waterbody A

	Functions and Values	Comment
	Groundwater Recharge/Discharge	No – Likely lined or compacted, the basin was constructed to retain water rather than allow for infiltration.
	Flood Flow Alteration (Storage and Desynchronization)	Yes – Though not mapped within a FEMA flood hazard area, the basin was designed to provide detention and peak flow attenuation.
	Fish and Shellfish Habitat	No – This man-made basin has no hydrologic connectivity to allow for fish or shellfish habitat.
	Sediment/Toxicant Retention	Yes – High stem density and stormwater basin design allow for sedimentation.
	Nutrient Removal/Retention/ Transformation	Yes – High stem density and stormwater basin design allow for nutrient uptake.
	Production Export (Nutrient)	Yes – Organic debris from dense vegetation is likely exported towards Wetland 2 with overflow.
	Sediment/Shoreline/Watercourse Bank Stabilization	No – Man-made upland side slopes surround the basin. Discharges via riprap lined channel.
	Wildlife Habitat	Limited – High stem density and standing water allow for some habitat value; limited by invasives and perimeter fencing. Amphibians such as green frogs and bullfrogs are likely inhabiting the stormwater basin. The dense shrub thicket provides some refuge and nesting opportunities for passerine birds.
	Recreation (Consumptive and Non-Consumptive)	No – This basin/waterbody does not provide recreational opportunities.
	Educational Scientific Value	Limited – Potential to serve as an example of stormwater detention, but it is not maintained or easily/safely accessible due to dense vegetation.
	Uniqueness/Heritage	No – This basin/waterbody does not present uniqueness or heritage values.
	Visual Quality/Aesthetics	No – The basin/waterbody does not provide visual quality/aesthetic value.
ES	Endangered Species	No – No portion of the subject property is mapped within a Natural Diversity Data Base (NDDB) polygon.

The principal functions of wetland series WA include the following:

- Flood Flow Alteration

- Sediment/Toxicant Retention
- Nutrient Removal/Retention/Transformation
- Production Export

4.0 Proposed Project

The proposed project involves the full redevelopment of an active elementary school site to accommodate a new, modernized school facility. The existing school building, associated pavement, and related site infrastructure will be removed to allow for the construction of a new school building, parking areas, recreational spaces, and stormwater management systems.

The project has been carefully designed to avoid and minimize impacts to onsite wetlands and watercourses to the greatest extent practicable. Site layout, grading, and utility routing were configured to reduce the project footprint near sensitive resource areas, and proposed stormwater management features have been strategically located and designed to provide both water quality treatment and hydrologic attenuation without compromising the functions or values of the site's wetlands and watercourses.

4.1 Wetland Impacts

Proposed regulated activities, labeled Regulated Activity #A through #F, are depicted and described on Sheet GR of the project plans. The project includes two areas of direct wetland impact, both necessary to improve stormwater conveyance, totaling 303 square feet (SF). Both impact areas occur within man-made wetland resources at the locations of existing stormwater infrastructure: the outlet of Stormwater Basin/Waterbody A and the outfall to the riprap lined channel of Wetland/Watercourse 3. In addition to direct impacts, the project team evaluated activities within the Town of Westport's 75-foot review area setback for non-residential structures, referred to herein as the Upland Review Area (URA). Activities in the URA to onsite wetlands are considered indirect impacts and total approximately 36,630 SF, or 0.9 acres. Finally, one proposed work area also falls within the Town's Waterway Protection Line Ordinance (WPLO), which regulates work within 15 feet of the top of bank or surrounding inland wetland boundary of unnamed waterways. The replacement of two existing stormwater pipes discharging to the man-made channel of Wetland/Watercourse 3 will result in 727 SF of disturbance within the WPLO boundary.

The table below summarizes the proposed direct wetland impacts, indirect impacts within the 75-foot URA boundary, and activities within the WPLO boundary for each regulated activity (**Table 1**).

Table 1: Summary of Regulated Activities

Regulated Activity #	Direct Wetland Impact (SF)	Indirect Wetland/ Upland Review Area Impacts (SF)	WPLO Disturbance (SF)	Associated Wetland	Activity Description
A	0	15,997	0	Stormwater Basin/ Waterbody A	Fencing, bituminous concrete walk, retaining wall, stormwater basin and associated infrastructure, grading and clearing limits, riprap overflow spillway.

Regulated Activity #	Direct Wetland Impact (SF)	Indirect Wetland/ Upland Review Area Impacts (SF)	WPLO Disturbance (SF)	Associated Wetland	Activity Description
B	0	5,947	0	Wetland 1	Stormwater infrastructure, grading and clearing.
C	132	88	0	Stormwater Basin/ Waterbody A & Wetland 2	Removal of existing headwall and installation of outlet control structure.
D	0	2,795	0	Wetland 2 & Wetland/ Watercourse 3	Fencing, grading and clearing associated with stormwater basin construction.
E	0	11,803	0	Wetland/ Watercourse 3	Construction of stormwater basin and level spreader, associated grading and clearing.
F	171	2,684	727	Wetland/ Watercourse 3	Fencing, removal and replacement of existing storm piping, flared end section and endwall, and associated grading and clearing.
Total	**303**	**39,314**	**727**		

Direct Impact Area #1

The proposed replacement of the existing outlet at the northwestern edge of Stormwater Basin/Waterbody A (identified as Regulated Activity #C on the plans) is intended to enhance stormwater conveyance from the man-made basin. The existing headwall will be removed and replaced in situ with a grated outlet control structure. The addition of a grated control structure will improve the ability to regulate outflows for better stormwater attenuation. This upgrade will result in approximately 132 SF of direct impact to the basin/waterbody and 88 SF of additional disturbance within the URA, which consists of the man-made earthen berm surrounding the basin/waterbody. The proposed improvements will not alter the existing hydrology that supports the basin and surrounding vegetation under normal flow conditions. Given the small scale of the disturbance and the artificial nature of the basin/waterbody and berm, no significant adverse impacts to wetland resources are anticipated. In the long term, the improved outlet structure is expected to support enhanced basin function and overall stormwater management on site.

Direct Impact Area #2

The second area of proposed direct wetland impact (identified as Regulated Activity #F on the plans) involves the replacement of two stormwater outfalls that discharge to the man-made, riprap-lined channel of Wetland/Watercourse 3. All direct impacts will occur within the man-made channel portion of Wetland/Watercourse 3 and will not affect the small, vegetated wetland located further downstream.

The first structure, a concrete endwall with an 18-inch diameter RCP, is in poor condition and has been determined to be undersized for its current stormwater conveyance needs. Notably, this pipe conveys stormwater entirely from offsite sources, with no input from the subject parcel. It will be replaced in situ by a 30-inch diameter high-density polyethylene pipe (HDPE) pipe within a new endwall.

Adjacent to this structure, a second 18-inch diameter RCP with a concrete flared end section located within the watercourse also requires replacement. This pipe conveys stormwater from the school's athletic fields via a network of perforated pipes and catch basins. As part of the proposed improvements, this catchment area will be extended eastward to improve field drainage and further enhanced with underground detention chambers to attenuate flows prior to discharge. To minimize potential impacts during replacement of this pipe, a temporary water handling plan will be implemented. A cofferdam will be installed in the channel at the terminus of the existing flared end section to isolate the work area, and flow will be bypassed using a pump system that diverts clean water around the work area. As the water should be clean it is not anticipated that additional water quality treatment measures are required. The new pipe and flared end section with riprap dissipator will be installed immediately upgradient of the channel. In addition to the two outfalls mentioned above, a new riprap lined swale will be constructed to convey surface water runoff from adjacent upland areas and into the watercourse.

The direct wetland (i.e., watercourse) impact from these improvements is limited to 171 SF. Temporary direct impacts associated with the water handling plan, required to maintain water quality during construction, consist of 114 SF. An additional 727 SF of work is proposed within the Town's Waterway Protection Line Ordinance (WPLO) boundary, which is also accounted for within the URA impact total of 2,684 SF for Regulated Activity #F.

Indirect Impacts

A total of approximately 39,314 square-feet (0.9 acres) of work is proposed within the Town's 75-foot "review area setback" (i.e., URA), representing indirect impacts associated with regulated activities near onsite wetland resources. These activities are largely associated with the construction of two new stormwater basins and associated infrastructure, which are necessary to meet Connecticut Department of Energy and Environmental Protection (CTDEEP) 2024 *Stormwater Quality Manual* guidelines based on the post-development hydrologic modelling and computations.

URA disturbance will primarily occur near Stormwater Basin/Waterbody A (Regulated Activities #A and #C), Wetland/Watercourse 3 (Activities #D, #E, and #F), and Wetland 1 (Activity #B). Indirect impacts include grading, vegetation clearing, and the installation of stormwater management infrastructure (outlet control structures, piping, flared end sections), placement of riprap for the basins (spillways, scour holes, filter berms, swale, and level spreader), piping, fencing, and a small portion of bituminous concrete walkway. Although these activities occur within regulated activity areas, they are not expected to result in adverse impacts to wetland or watercourse functions. All work has been designed to minimize impervious areas within the URA, and to align infrastructure within previously disturbed or nonregulated areas. Proposed stormwater basins and detention systems will improve site drainage, reduce peak flow rates, and enhance water quality prior to discharge into wetland and/or watercourse resources. The basins will be seeded with two native seed mixes: New England Conservation and Wildlife mix for the upland side slopes, and New England Erosion Control and Restoration mix for the basin bottoms. These URA activities support long-term improvements to site drainage and flood control without resulting in any significant adverse impacts to the functions and values of onsite wetland resources.

4.2 Sedimentation and Erosion Control

A Sediment and Erosion (S&E) Control Plan has been developed to minimize potential short-term impacts during construction. The S&E Control Plan includes descriptive specifications concerning land grading, topsoiling, temporary and permanent vegetative cover, and erosion checks. Details have been provided for all erosion controls with corresponding labels on the S&E Control Plan. Control measures during construction will include construction entrances to minimize tracking, inlet protections on catch basins, temporary sediment traps with diversion berms, soil stockpile protections, erosion control blanketing, and staked hay bales and/or geotextile silt fence along the downgradient limits of disturbance. All S&E controls provided are in accordance with the Town of Westport regulations as well as the *2024 Connecticut Guidelines for Soil Erosion and Sediment Control.*

4.3 Stormwater Management

The project includes a comprehensive stormwater management system that has been designed and will be installed and maintained in accordance with municipal and state standards, including the *2024 Connecticut Stormwater Quality Manual*. The system design and components employ standard engineering practices that are regularly used throughout the Town and the Northeast to prevent stormwater pollution. The stormwater management system includes water quantity and water quality protections. The proposed stormwater treatment train consists of two additional stormwater basins, catch basins with 2-foot sumps, underground detention systems, and hydrodynamic separators. The existing stormwater basin near the center of the site will remain in place, with outlet structure improvements as previously described. In addition, two new basins will be constructed, both of which will be seeded with native seed mixes.

The southern basin will primarily receive stormwater from the parking lot and larger athletic field. Stormwater will be conveyed through a series of seven underground detention systems followed by a hydrodynamic separator to receive valuable retention time and sediment removal prior to reaching the basin. A riprap spillway will convey any excess stormwater into the existing central stormwater basin.

The northern basin will collect runoff from the school's roof and internal courtyard as well as the bus loop, the latter of which will first be routed through a hydrodynamic separator. The basin will include a sediment forebay and discharge via a level spreader to uplands adjacent to Wetland/Watercourse 3. A riprap-lined spillway will provide secondary overflow routing in the same direction.

Runoff from the northern athletic field will continue to be directed to the man-made channel of Wetland/Watercourse 3 through two new underground detention systems, offering additional peak flow control, and a new outfall with flared end section.

Hydrologic analysis demonstrates no increases in peak-flow rates from the proposed development (drainage report prepared by SLR under separate cover). The proposed stormwater management system provides sufficient water quality protection and water volume retention to comply with regulations. No impacts to the hydrology of wetlands or watercourses resulting from the proposed stormwater management measures are anticipated.

5.0 Conclusion

The proposed project involves the redevelopment of Long Lots Elementary School in Westport, Connecticut. Existing structures within the project area will be demolished, and a new school and necessary appurtenances will be constructed. Direct wetland impacts are limited to 303 SF, which are necessary to improve stormwater quality and flow conditions.

The proposed stormwater management system will provide protections for water quality and ensure no increase in the peak rate of discharge from the property. A comprehensive S&E Control Plan has been designed and will be used through the construction period. Direct wetland impacts and work in the URA have been minimized to the maximum extent practicable.

Through the avoidance of direct and indirect impacts to the maximum extent possible, the use of S&E controls and stormwater management measures are being implemented to avoid short-term and long-term impacts. It is SLR's professional opinion that the proposed project will not result in any significant adverse impacts or effect on regulated wetland/watercourse/waterbody resources.

If you have any questions regarding this report, please do not hesitate to contact either of the undersigned at (203) 271-1773.

SLR International Corporation

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Environmental Scientist
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Appendix A Figures

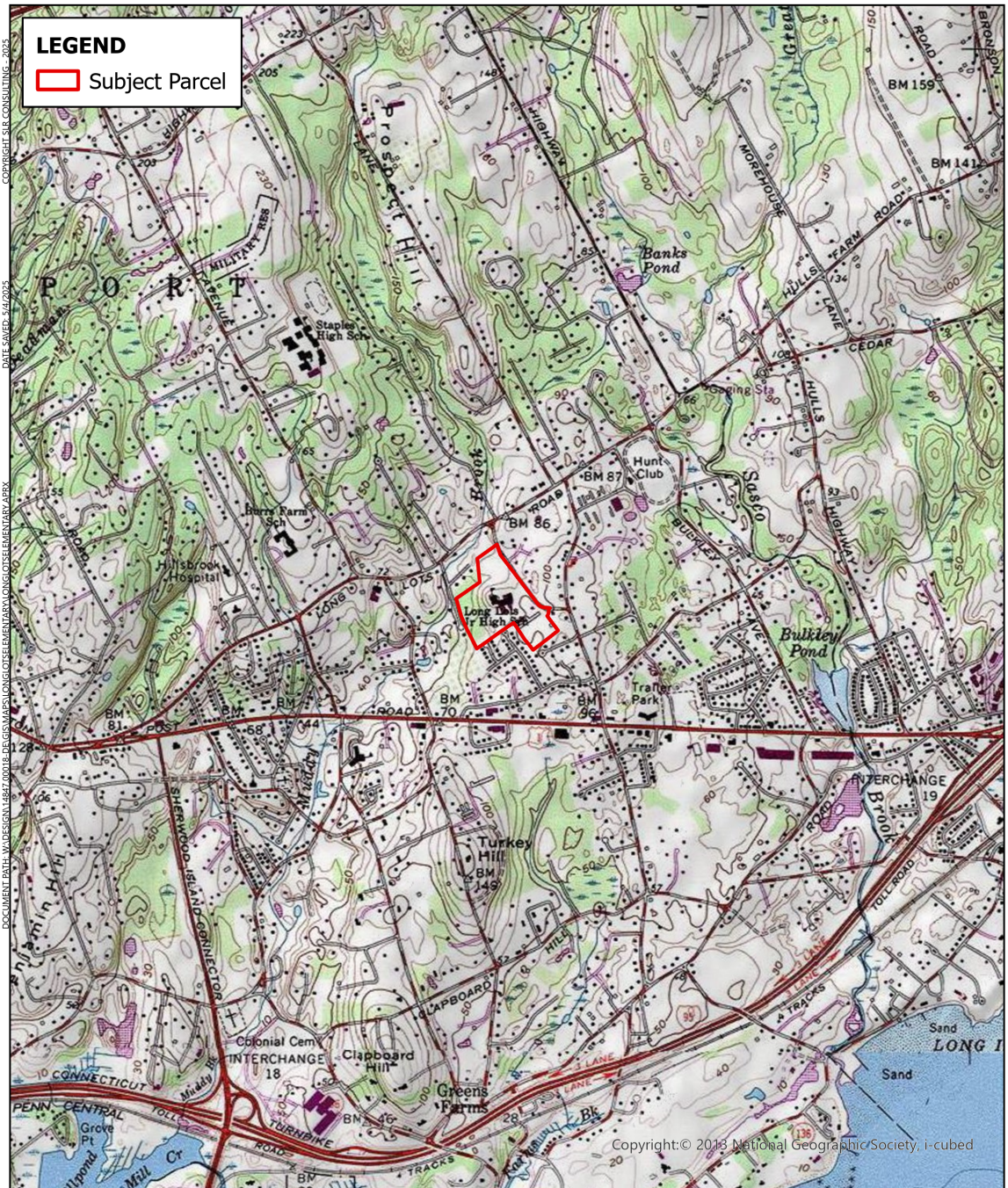
Wetland Delineation Report and Impact Assessment

Long Lots Elementary School 13 Hyde Lane, Westport, Connecticut

Svigals + Partners, LLP

SLR Project No.: 141.14847.00021

May 14, 2025


LEGEND
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USGS LOCUS MAP
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SVIGALS + PARTNERS, LLP
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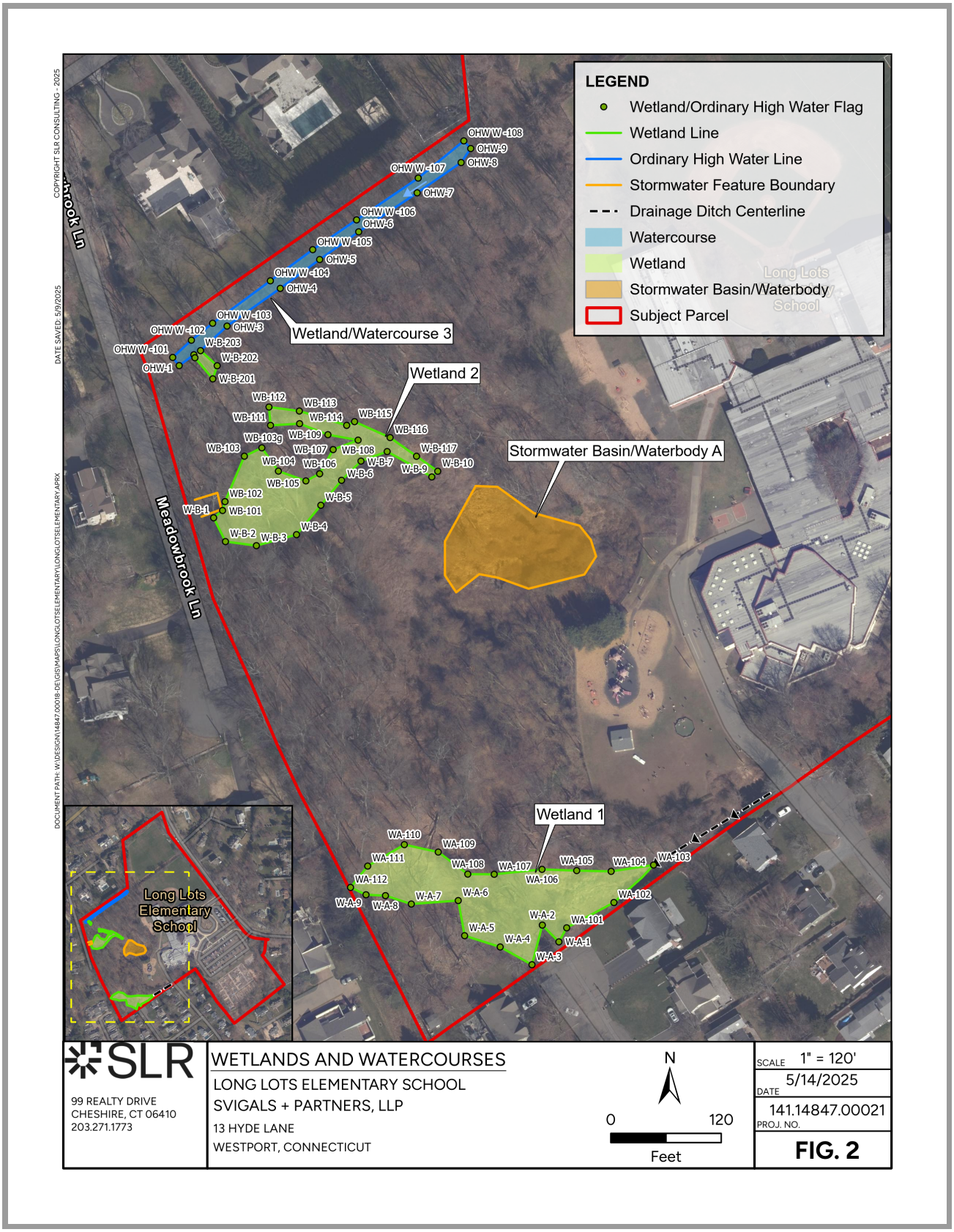
LEGEND
Wetland/Ordinary High Water Flag
Wetland Line
Ordinary High Water Line
Stormwater Feature Boundary
Drainage Ditch Centerline
Watercourse
Wetland
Stormwater Basin/Waterbody
Subject Parcel
Wetland/Watercourse 3
Wetland 2
Wetland 1
Stormwater Basin/Waterbody A
Meadowbrook Ln
Long Lots School
Long Lots Elementary School
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WETLANDS AND WATERCOURSES
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SVIGALS + PARTNERS, LLP
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FIG. 2

Soil Map—State of Connecticut, Western Part
(Figure 3 - Long Lots Elementary School, Westport, CT)

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

5/5/2025
Page 1 of 3

Soil Map—State of Connecticut, Western Part
(Figure 3 - Long Lots Elementary School, Westport, CT)

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29B	Agawam fine sandy loam, 3 to 8 percent slopes	2.2	8.0%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	2.9	10.5%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	4.1	14.8%
250B	Sutton-Urban land complex, 0 to 8 percent slopes	1.2	4.2%
260B	Charlton-Urban land complex, 3 to 8 percent slopes	6.2	22.4%
307	Urban land	6.6	23.8%
308	Udorthents, smoothed	4.5	16.3%
Totals for Area of Interest		**27.9**	**100.0%**

Appendix B Photographic Log

Wetland Delineation Report and Impact Assessment

Long Lots Elementary School 13 Hyde Lane, Westport, Connecticut

Svigals + Partners, LLP

SLR Project No.: 141.14847.00021

May 14, 2025

SLR

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Svigals + Partners, LLP	Long Lots Elementary School, 13 Hyde Ln, Westport, CT	141.14847.00021

Photo No.	Date:
1	5/11/2023

Direction Photo Taken:
Southeast

Description:
View of Wetland 1, a primarily palustrine forested wetland with a sparse canopy.

Photo No.	Date:
2	5/11/2023

Direction Photo Taken:
Southwest

Description:
Standing water pooled within Wetland 1 near the terminus of Bauer Place Extension.

SLR

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Svigals + Partners, LLP	Long Lots Elementary School, 13 Hyde Ln, Westport, CT	141.14847.00021

Photo No.	Date:
3	5/11/2023

Direction Photo Taken:
East

Description:
Non-regulated drainage ditch that conveys stormwater toward Wetland 1.

Photo No.	Date:
4	5/11/2023

Direction Photo Taken:
East

Description:
View of Wetland 2, a palustrine forested wetland.

SLR

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Svigals + Partners, LLP	Long Lots Elementary School, 13 Hyde Ln, Westport, CT	141.14847.00021

Photo No.	Date:
5	5/11/2023

Direction Photo Taken:
Northwest

Description:
Non-regulated fenced stormwater feature adjacent to Wetland 2 near Meadowbrook Lane.

Photo No.	Date:
6	5/11/2023

Direction Photo Taken:
Northeast

Description:
Wetland/Watercourse 3 from atop its downstream-most headwall, facing upstream.

SLR

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Svigals + Partners, LLP	Long Lots Elementary School, 13 Hyde Ln, Westport, CT	141.14847.00021

Photo No.	Date:
7	5/5/2025

Direction Photo Taken:
Northeast

Description:
Endwall at the upstream onsite extent of Wetland/Watercourse 3.

Photo No.	Date:
8	5/5/2025

Direction Photo Taken:
Northeast

Description:
Flared end section at the upstream onsite extent of Wetland/Watercourse 3

SLR

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Svigals + Partners, LLP	Long Lots Elementary School, 13 Hyde Ln, Westport, CT	141.14847.00021

Photo No.	Date:
9	5/11/2023

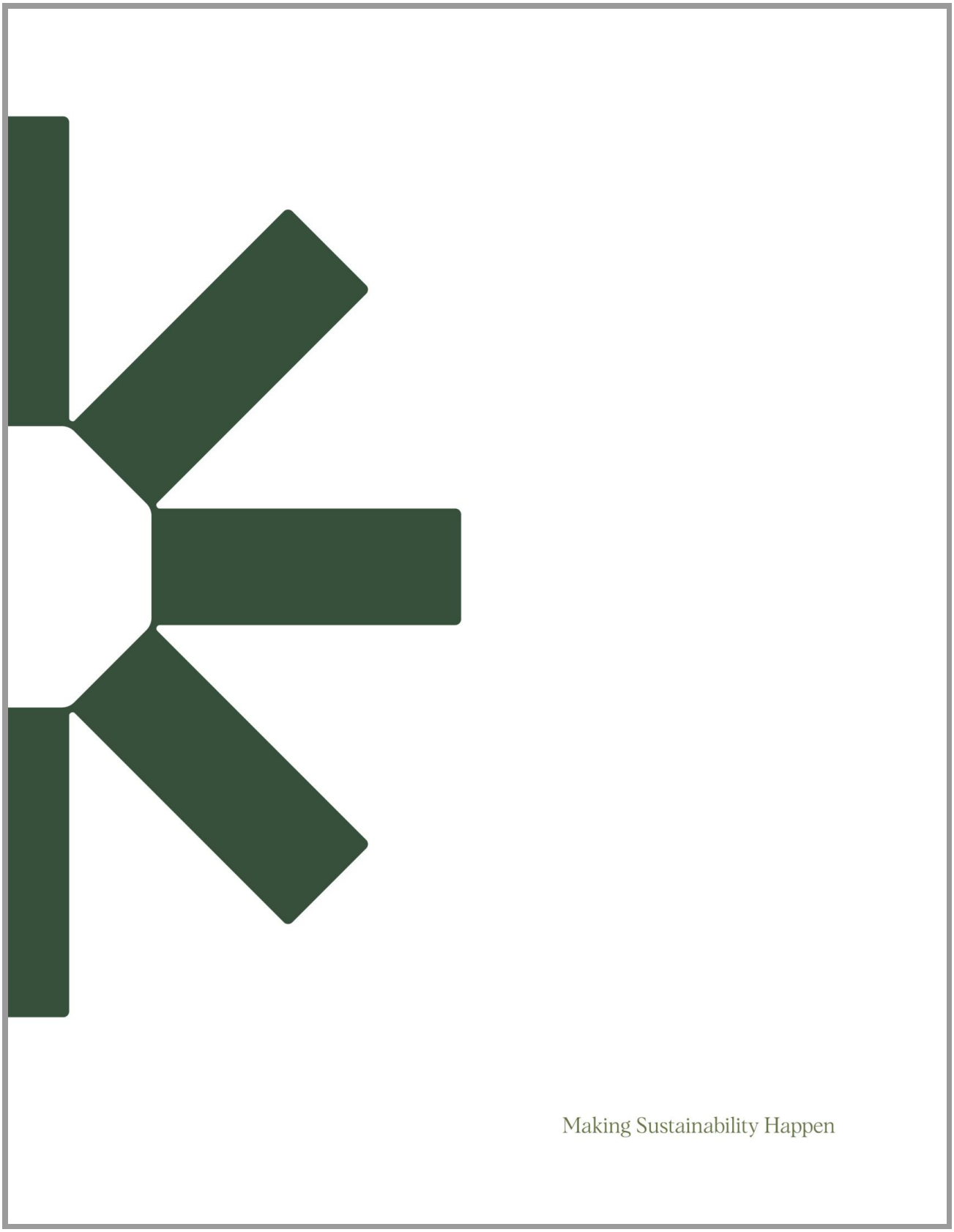
Direction Photo Taken:
West

Description:
View of Stormwater Basin/Waterbody A from its upland side slope.

Photo No.	Date:
10	5/11/2023

Direction Photo Taken:
West

Description:
View of Stormwater Basin/Waterbody A interior.


Making Sustainability Happen

Long Lots Elementary School

13 Hyde Lane, Westport, Connecticut

Drainage Report

Prepared for:
Svigals and Partners, an FCA Company

84 Orange Street
New Haven, Connecticut 06510

Prepared by:

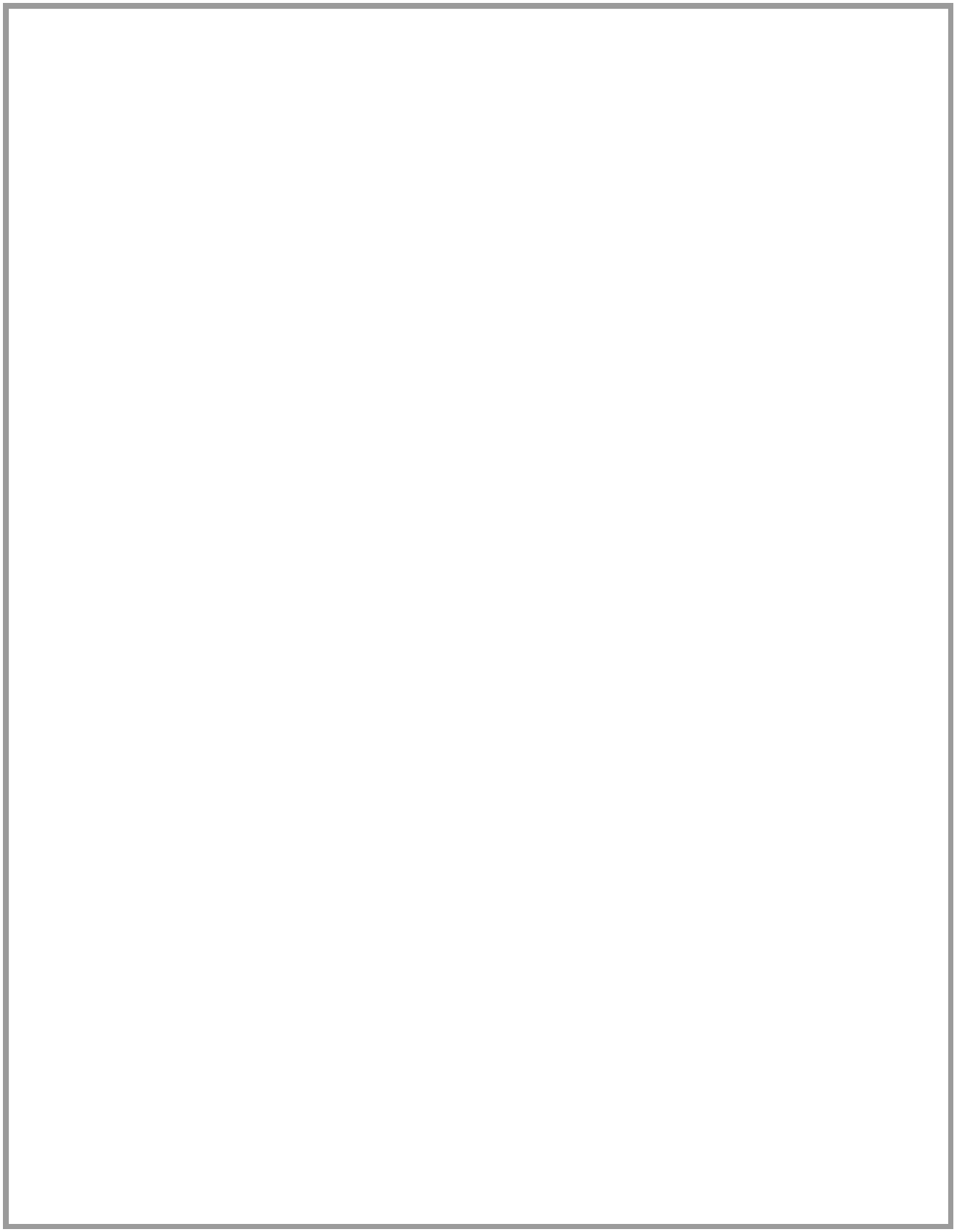
SLR International Corporation

99 Realty Drive, Cheshire, Connecticut, 06410

SLR Project No.: 141.14847.00021

May 14, 2025

Making Sustainability Happen



Prepared for:
Svigals and Partners, an FCA Company
Long Lots Elementary School

May 14, 2025
SLR Project No.: 141.14847.00021

Drainage Report

Long Lots Elementary School
13 Hyde Lane
Westport, Connecticut
May 14, 2025
SLR Project No.: 141.14847.00021

This Drainage Report has been prepared in support of the new Long Lots Elementary School on Hyde Lane in the town of Westport, Connecticut. The project will consist of the construction of a new school building, demolition of the current school building, new parking areas and sidewalks, and the development of new multi-purpose fields.

Figure 1 – 13 Hyde Lane, Westport, Connecticut

Table 1 – Stormwater Data

Parcel Size Total	28.07 acres
Existing Impervious Area (On-site Watersheds)	5.7 acres
Proposed Impervious Area (On-site Watersheds)	6.4 acres
Soil Type (Hydrologic Soil Group)	"B" and "D"
Existing Land Use	Undeveloped Condition: Woods; Offsite Watersheds: Woods, open space, dirt, roadway and driveway, sidewalks, building
Proposed Land Use	Woods, open space, dirt, gravel, pavement, sidewalks, building
Design Storm for Stormwater Management	No increases in peak rates of runoff for the 2-, 10-, 25-, 50-, and 100-year storms compared to the undeveloped existing condition; Connecticut Department of Energy & Environmental Protection (CTDEEP) water quality flow treatment (WQF) and water quality volume (WQV)
Water Quality Measures	Catch basins with 2-foot sumps, hydrodynamic separators, sediment forebays with riprap filter berms, retention storage for WQV (required retention volume)
Design Storm for Storm Drainage	25-year storm
Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas	Area of Minimal Flood Hazard (Zone X)
Connecticut Department of Energy & Environmental Protection Aquifer Protection Areas	N/A

Stormwater Management Approach

The proposed stormwater management system for the project focuses on providing water quality management while attenuating proposed peak-flows compared to the undeveloped existing condition. Water quality treatment in accordance with the CTDEEP requirements for water quality volume (WQV) and water quality flow (WQF) is provided. The proposed stormwater treatment train consists of catch basins with 2-foot sumps, hydrodynamic separators, sediment forebays with riprap filter berms, and retention storage for the WQV (required retention volume).

The computer program entitled *Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2023* by Autodesk, Inc. was used for designing the proposed storm drainage collection system. Storm drainage computations performed include pipe capacity, hydraulic grade line, and gutter spread

calculations. The contributing watershed to each individual catch basin inlet was delineated to determine the drainage area and land coverage. These values were used to determine the stormwater runoff to each inlet using the Rational Method. The rainfall intensities for the site were obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 10, Precipitation Frequency Data Server (PFDS). The proposed storm drainage system is designed to provide adequate capacity to convey the 25-year storm event.

Water Quality Management

Water quality measures or Best Management Practices (BMPs) have been incorporated into the design to maintain water quality to provide protection of the areas downgradient of the proposed development. The proposed stormwater management system will include catch basins with 2-foot sumps, sediment forebays with riprap filter berms, hydrodynamic separators, and retention storage for the WQV (required retention volume).

Hydrodynamic separators, such as *Cascade*® devices manufactured by Contech Engineered Solutions, will be installed in the proposed storm drainage system prior to discharging stormwater to the stormwater management basins. These units will further remove suspended solids before discharging downgradient, which will in turn remove other pollutants that tend to attach to the suspended solids and effectively remove other debris and floatables that may be present in stormwater runoff. The hydrodynamic separators have been designed to meet criteria recommended by the CTDEEP 2024 *Stormwater Quality Manual*. The devices were designed based on the determined WQF, which is the peak-flow rate associated with the Water Quality Volume (WQV) and sized based on the manufacturer's specifications. The hydrodynamic separators are equipped with an internal bypass, providing total suspended solids (TSS) removal rates like an offline structure without the need for a separate bypass structure.

The CTDEEP 2024 *Stormwater Quality Manual* requires that post-development stormwater runoff volume is retained onsite using structural stormwater BMPs. For a new development, the Required Retention Volume (RRV) is equal to 100% of the site's WQV.

Each proposed stormwater basin will provide retention volume along its bottom, thus creating a water quality feature within it. This serves several purposes, including stormwater renovation and first-flush retention. The vegetation will provide pollutant removal by filtering stormwater runoff and utilizing excess nutrients that may be present in the stormwater. The CTDEEP 2024 *Stormwater Quality Manual* (Chapter 4) recommends methods for sizing stormwater treatment measures with WQV computations. The WQV addresses the initial stormwater runoff, also commonly referred to as the "first-flush" runoff. The WQV provides adequate volume to store the runoff associated with the first 1.3 inches of rainfall, which tends to contain the highest concentration of potential pollutants. Supporting calculations have been included in the Appendix of this report.

Hydrologic Analysis

A hydrologic analysis was conducted to analyze the pre-development and post-development peak-flow rates from the site. The pre-development analysis included an analysis of the site as completely undeveloped as well as the current condition of the site. Five analysis points that

receive runoff from the site were selected. Analysis Point A represents the 18” reinforced concrete pipe (RCP) in Meadow Brook Lane that receives runoff from a wetland channel located on the site that carries offsite runoff. Analysis Point B represents the 15” RCP also located in Meadow Brook Lane that receives runoff from the site including the discharge of the existing stormwater detention basin located on the site. Analysis Point C represents a depressed area located on the southwest corner of the site that overflows to Meadow Brook Lane and eventually Harvest Commons. Analysis Point D represents the parcel located northwest of the site where a small area of the site drains via overland flow. Analysis Point E represents the southern property corner where runoff collects before eventually overflowing towards Bauer Place. The total watershed area delineated is approximately 71.4 acres under both existing and proposed conditions.

The method of predicting the surface water runoff rates utilized in this analysis was a computer program *HydroCAD 10.20-6a* by HydroCAD Software Solutions LLC. The *HydroCAD* program is a computer model that utilizes the methodologies set forth in the *Technical Release No. 55* (TR-55) manual and *Technical Release No. 20* (TR-20) computer model, originally developed by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS). The *HydroCAD* computer modeling program is primarily used for conducting hydrology studies such as this one.

The *HydroCAD* computer program forecasts the rate of surface water runoff based upon several factors. The input data includes information on land use, hydrologic soil type, vegetation, contributing watershed area, time of concentration, rainfall data, storage volumes, and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time, with the ability to include the attenuation effect due to dams, lakes, large wetlands, floodplains, and stormwater management basins. The input data for rainfalls with statistical recurrence frequencies of 2, 10, 25, 50, and 100 years was obtained from the NOAA Atlas 14, Volume 10 database. The corresponding rainfall totals are listed below.

Storm Frequency	Rainfall (inches)
2-year	3.49
10-year	5.36
25-year	6.53
50-year	7.40
100-year	8.33

Land use for the site under existing and proposed conditions was determined from field survey and aerial photogrammetry. For the undeveloped existing conditions analysis, woods was used as the sole land use type for the on-site watersheds. Land use types used in the analysis of the current existing condition and the proposed condition included woods, grassed or open space, dirt, gravel, building, and impervious (paved) cover. Soil types in the watershed were determined from the CTDEEP Geographic Information System (GIS) database of the USDA-NRCS soil survey for Fairfield County, Connecticut. For the analysis, the site was determined to contain hydrologic soil types "B" and "D", as classified by USDA-NRCS. Composite runoff Curve Numbers (CN) for each subwatershed were calculated based on the different land use and soil types. The time of concentration (Tc) was estimated for each subwatershed using the TR-55

methodology and was computed by summing all travel times through the watershed as sheet flow, shallow concentrated flow, and channel flow.

Test pits were performed in the location of the proposed stormwater basin DET 220. Samples were taken from each test pit and falling head permeameter tests were performed to determine the infiltration rate. The slowest infiltration rate observed in DET 220 was at TP-8 with a rate of 6.29 inches per hour (in/hr). For the hydrologic model, 50% of the observed rate was utilized, resulting in a design infiltration rate of 3.1 in/hr.

Locations of each test pit are shown on the site plans and the test pit logs and falling head permeameter results are included in Appendix E of this report.

The undeveloped condition and current condition were modeled with the *HydroCAD* program to determine the peak-flow rates for the various storm events at each analysis point. A revised model was developed incorporating the proposed site conditions, the stormwater management basins, and the underground chamber systems. The flows obtained with the revised model were then compared to the results of the undeveloped condition model. Peak-flow rates from the project site were controlled by the storage volume provided within the stormwater management basins and underground chambers.

The following peak rates of runoff were obtained from the *HydroCAD* hydrology results:

Analysis Point A – 18" RCP in Meadow Brook Lane					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Current Existing Condition	31.3	81.1	116.3	143.6	173.5
Undeveloped Condition	29.2	77.7	112.2	139.1	168.6
Proposed Conditions	29.1	73.9	106.2	130.8	161.3
% Reduction to Current Condition	7%	9%	9%	9%	7%

Underground Chamber System 110*					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	61.8	62.9	63.6	64.2	64.5

***Top of Chamber Elevation = 64.7**

Analysis Point B – 15" RCP in Meadow Brook Lane					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Current Existing Condition	5.3	9.6	16.4	28.7	42.2
Undeveloped Condition	5.6	16.9	25.2	31.8	39.1
Proposed Conditions	3.7	9.2	15.3	21.8	26.1
% Reduction to Current Condition	30%	4%	7%	24%	38%

Detention Basin 210**					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	72.7	74.3	75.5	76.2	76.7

****Top of Berm Elevation = 77.6**

Detention Basin 220***					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	75.8	76.3	76.5	76.7	76.8

*****Top of Berm Elevation = 78.0**

Detention Basin 230****					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	73.1	73.8	74.2	74.3	74.4

******Top of Berm Elevation = 76.0**

Underground Chamber System 221*****					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	90.8	91.8	92.2	92.4	92.5

*****Top of Chamber Elevation = 93.0**

Underground Chamber System 222******					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	90.4	91.1	91.5	91.8	92.0

******Top of Chamber Elevation = 92.5**

Underground Chamber System 223*******					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	90.1	91.0	91.2	91.3	91.6

*******Top of Chamber Elevation = 92.5**

Underground Chamber System 224********					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	90.5	91.7	92.4	92.9	93.3

********Top of Chamber Elevation = 93.5**

Underground Chamber System 225*********					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	92.3	93.4	94.2	94.8	95.2

*********Top of Chamber Elevation = 96.0**

Analysis Point C – Southwestern Low Area that Overflows to Meadow Brook Lane					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Current Existing Condition	5.7	13.6	19.1	23.3	27.9
Undeveloped Condition	5.0	12.1	17.1	20.9	25.1
Proposed Conditions	4.8	11.7	16.5	20.2	24.2
% Reduction to Current Condition	16%	14%	14%	13%	13%

Analysis Point D – Northwestern Property Boundary					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Current Existing Condition	0.6	2.1	3.2	4.0	5.0
Undeveloped Condition	0.2	1.2	2.0	2.6	3.4
Proposed Conditions	0.1	0.4	0.6	0.8	1.0
% Reduction to Current Condition	83%	81%	81%	80%	80%

Analysis Point E – Southern Property Corner towards Bauer Place					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Current Existing Condition	1.5	4.4	6.4	8.0	9.7
Undeveloped Condition	0.4	2.0	3.4	4.5	5.8
Proposed Conditions	0.4	1.5	2.3	3.0	3.7
% Reduction to Current Condition	73%	66%	64%	63%	62%

Conclusion

The results of the hydrologic analysis demonstrate that there will be no increases in peak-flow rates from the proposed development. This was achieved for the storm events modeled through a planned stormwater management system with detention provided in the stormwater management basins and underground chambers. The proposed development will also introduce a new stormwater treatment train consisting of catch basins with 2-foot sumps, hydrodynamic separators, sediment forebays with riprap filter berms, and retention storage for the WQV (required retention volume).

All supporting documentation and stormwater-related computations are attached to this report along with the *Hydrographs* model results for stormwater management and *Hydraflow Storm Sewers* model results for the proposed storm drainage system. Illustrative Watershed Maps for both existing and proposed conditions are also attached to this report.

Appendices

Appendix A	United States Geological Survey Location Map
Appendix B	Federal Emergency Management Agency Flood Insurance Rate Map
Appendix C	Natural Resources Conservation Service Hydrologic Soil Group Map
Appendix D	Storm Drainage Computations
Appendix E	Soil Testing Results
Appendix F	Water Quality Computations
Appendix G	Hydrologic Analysis – Input Computations
Appendix H	Hydrologic Analysis – Computer Model Results
Appendix I	Watershed Maps

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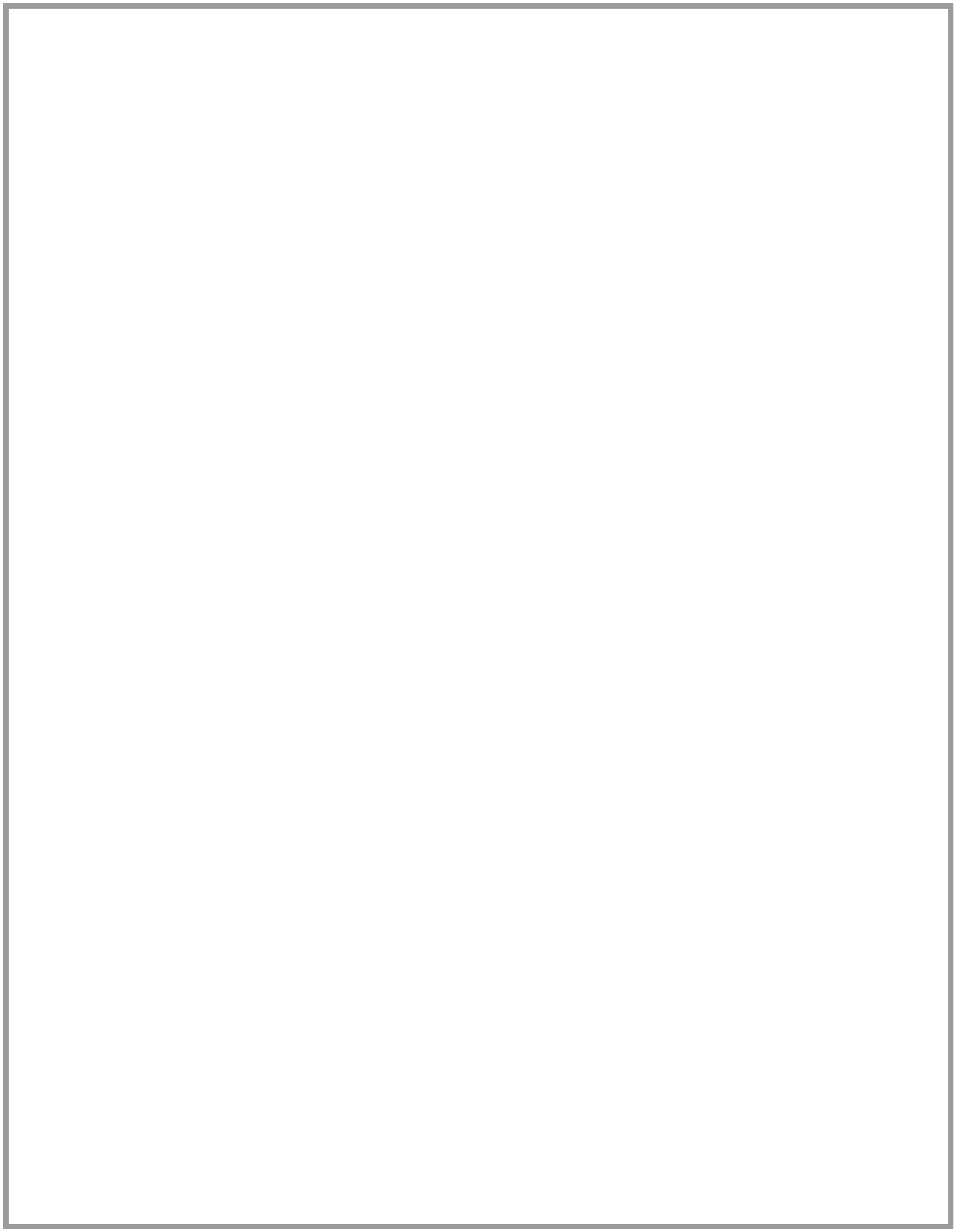


Appendix A
United States Geological Survey Location Map

Long Lots Elementary School

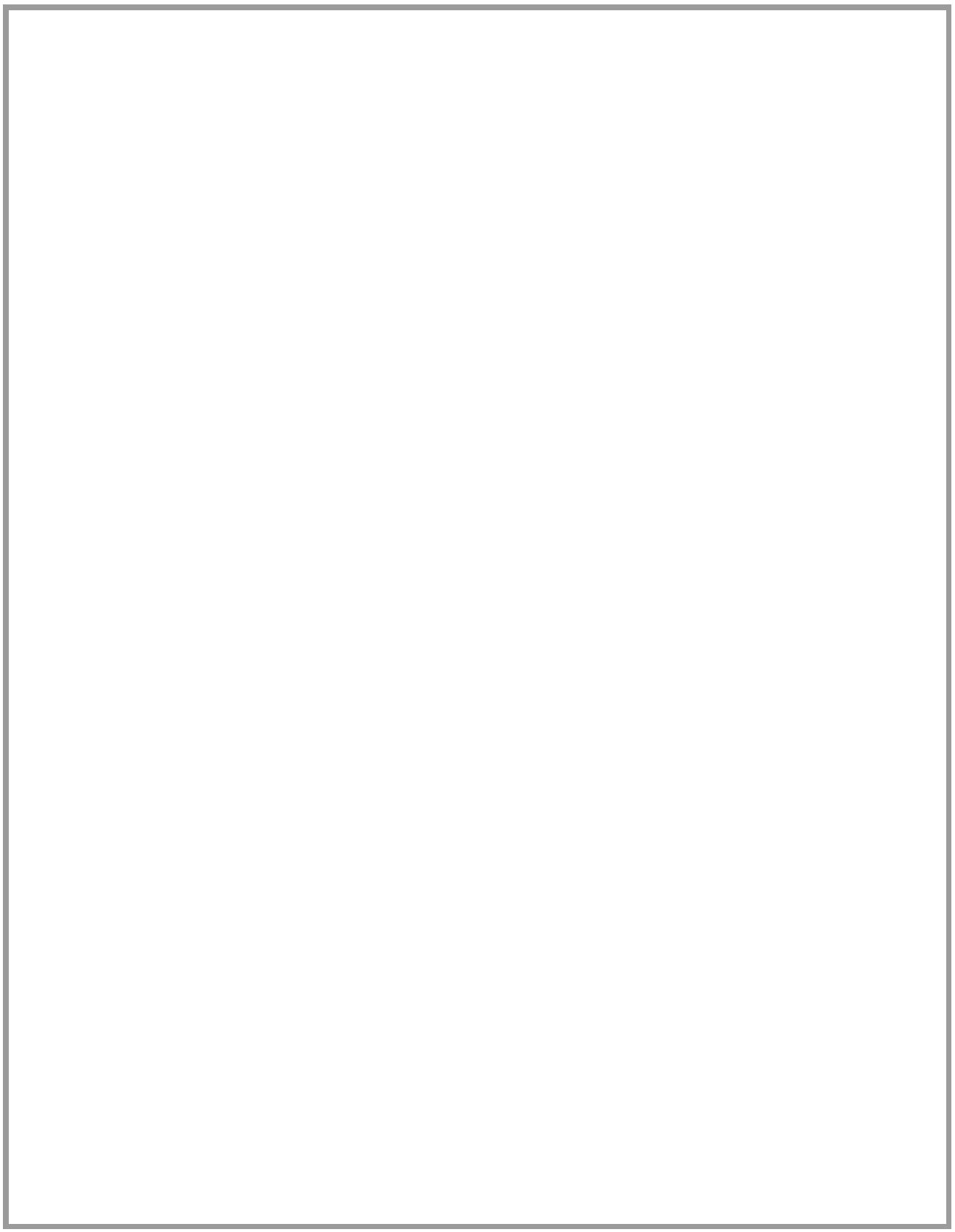
13 Hyde Lane, Westport, Connecticut

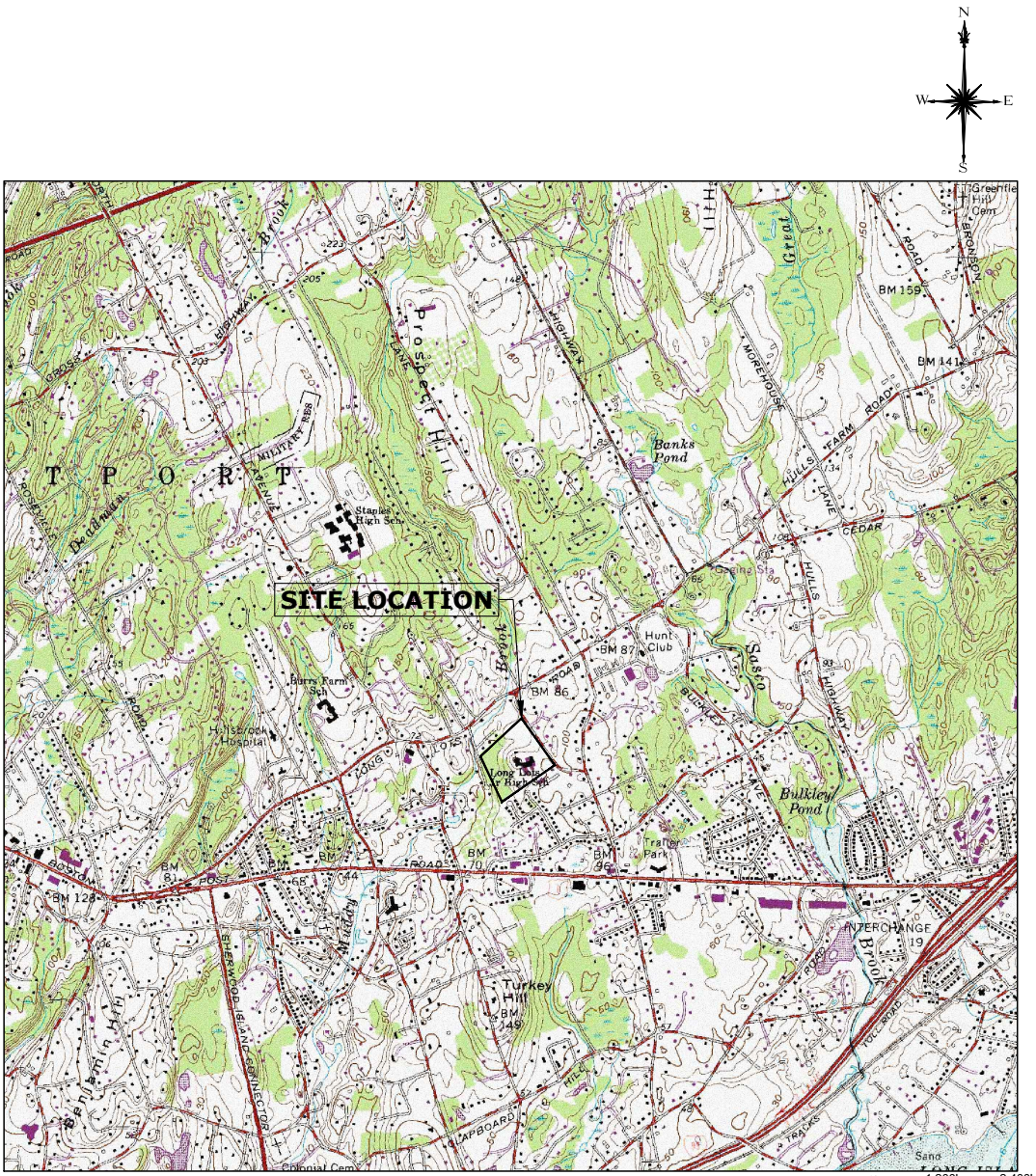
Drainage Report

Prepared for:
Svigals and Partners, an FCA Company
84 Orange Street
New Haven, CT 06510

SLR Project No.: 141.14847.00021

May 14, 2025





SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

USGS QUADRANGLE MAP, QUAD NO. 108

LONG LOTS ELEMENTARY SCHOOL

13 HYDE LANE
WESTPORT, CONNECTICUT

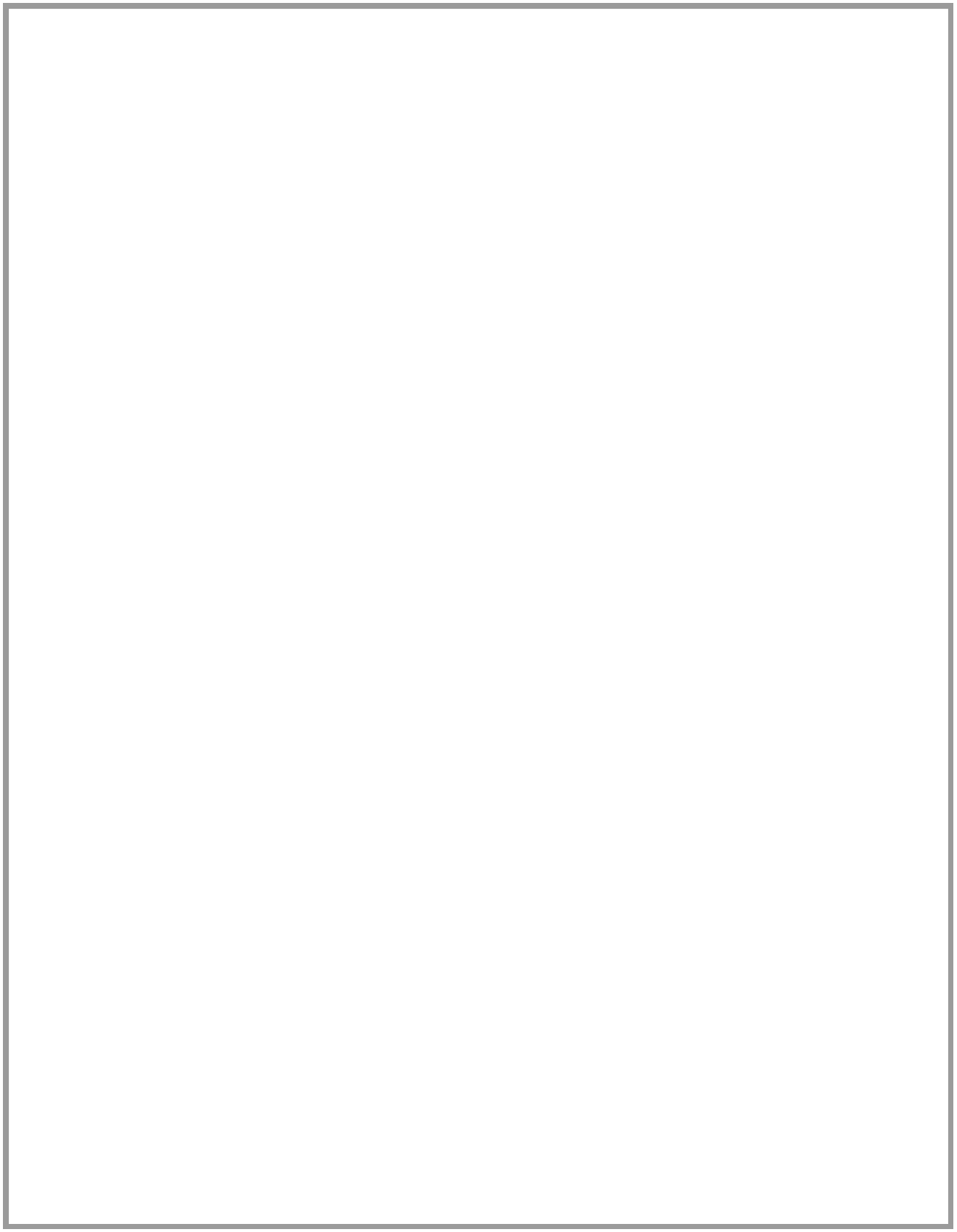
PROJECT PHASE:

REV: ---

DATE	MAY 9, 2025
SCALE	1"=2,400'
PROJ. NO.	14847.00021
DESIGNED	---
DRAWN	MCB
CHECKED	---

DRAWING NAME:

LOC



Appendix B
FEMA Flood Insurance Rate Map

Long Lots Elementary School

13 Hyde Lane, Westport, Connecticut

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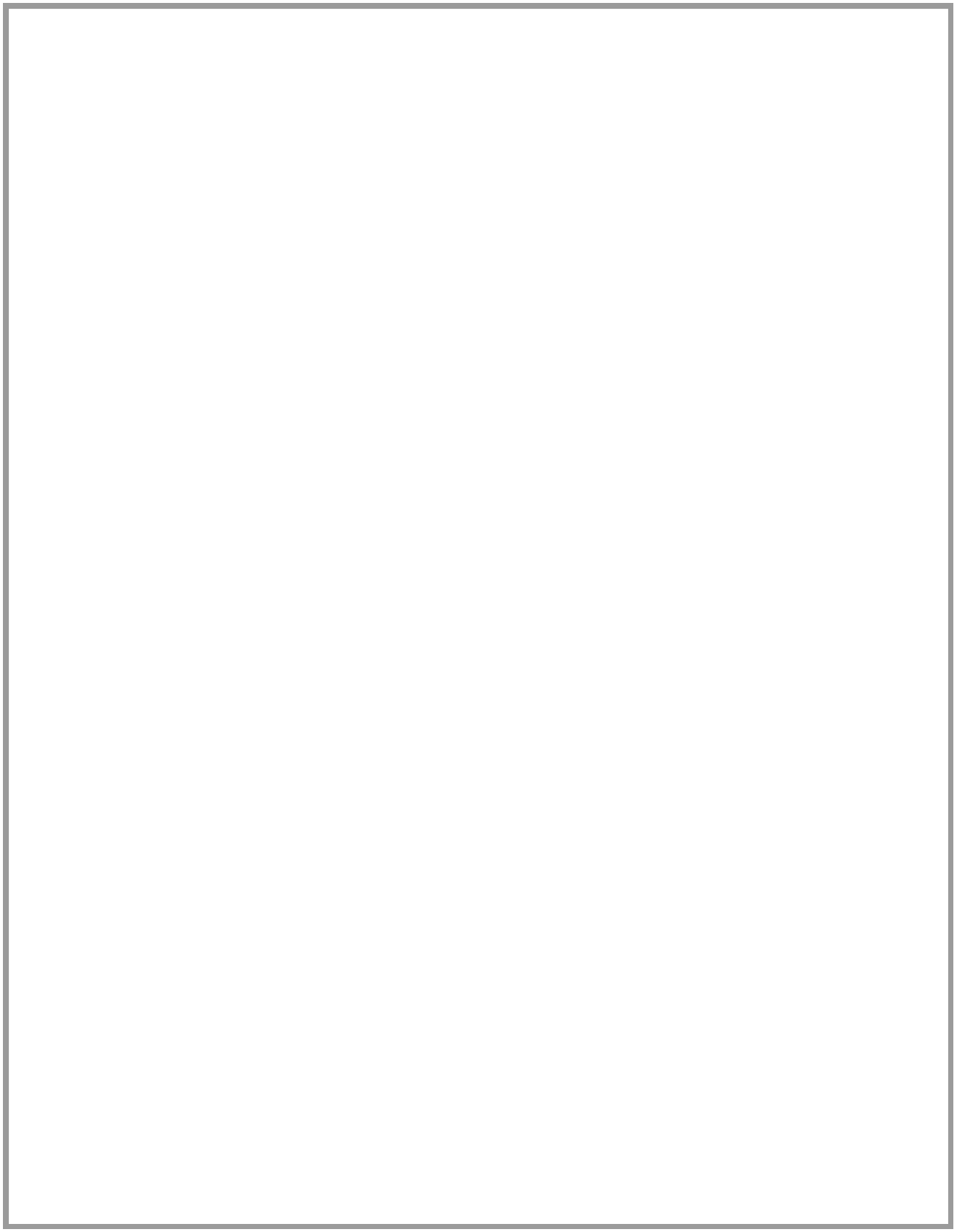
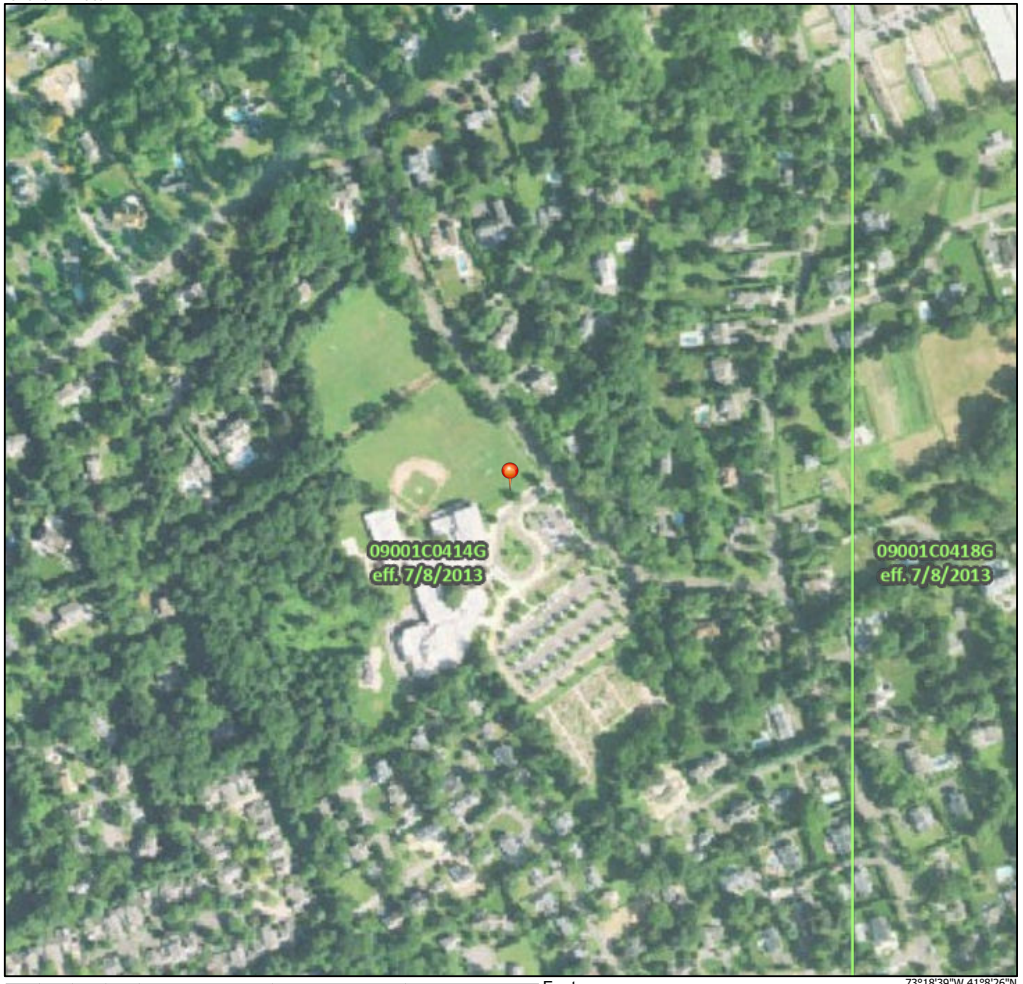


National Flood Hazard Layer FIRMette

FEMA

73°19'16"W 41°8'53"N



73°18'39"W 41°8'26"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

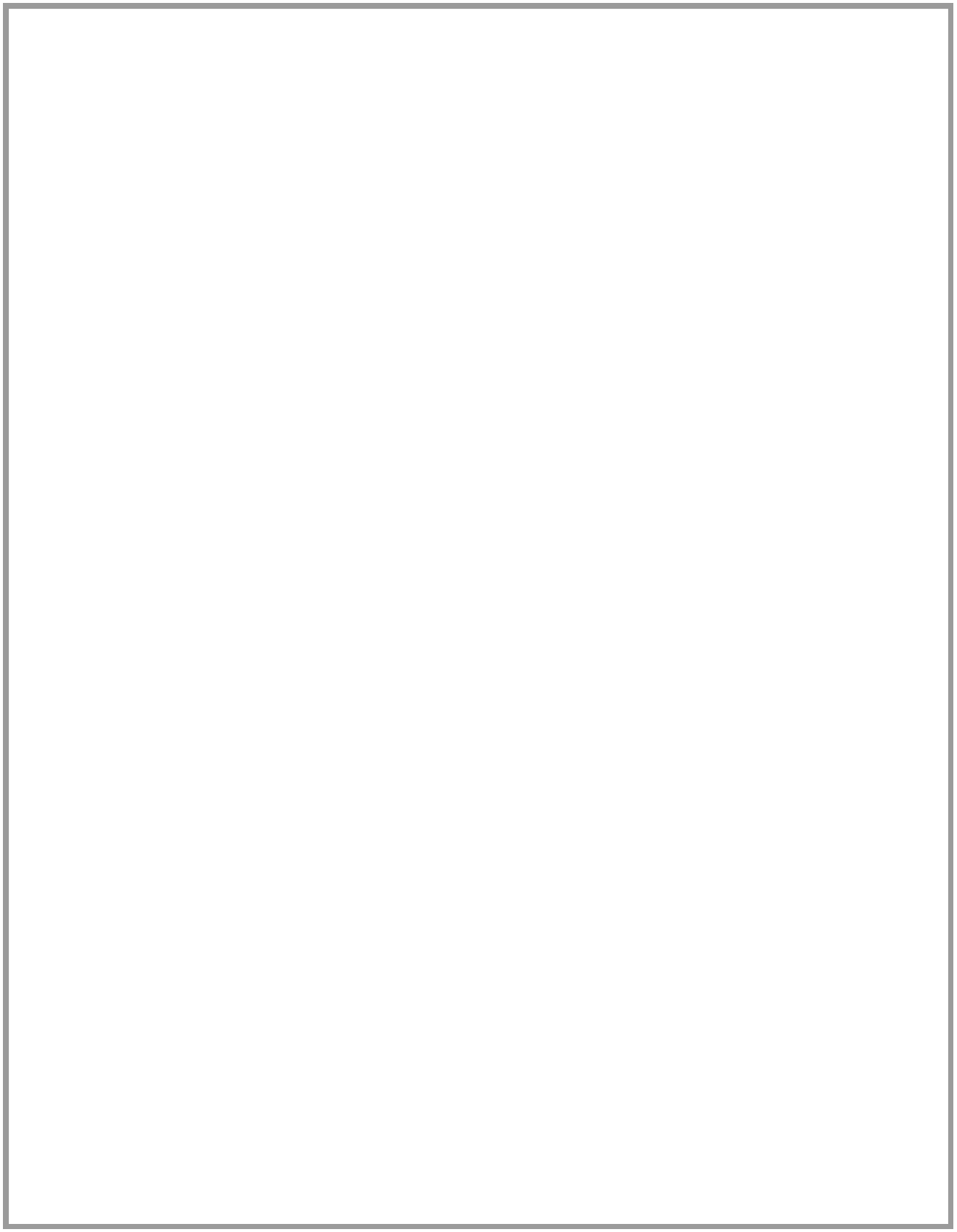
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/19/2024 at 10:46 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



Appendix C
Natural Resources Conservation Service Hydrologic Soil Group Map

Long Lots Elementary School

13 Hyde Lane, Westport, Connecticut

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New Haven, CT 06510

SLR Project No.: 141.14847.00021

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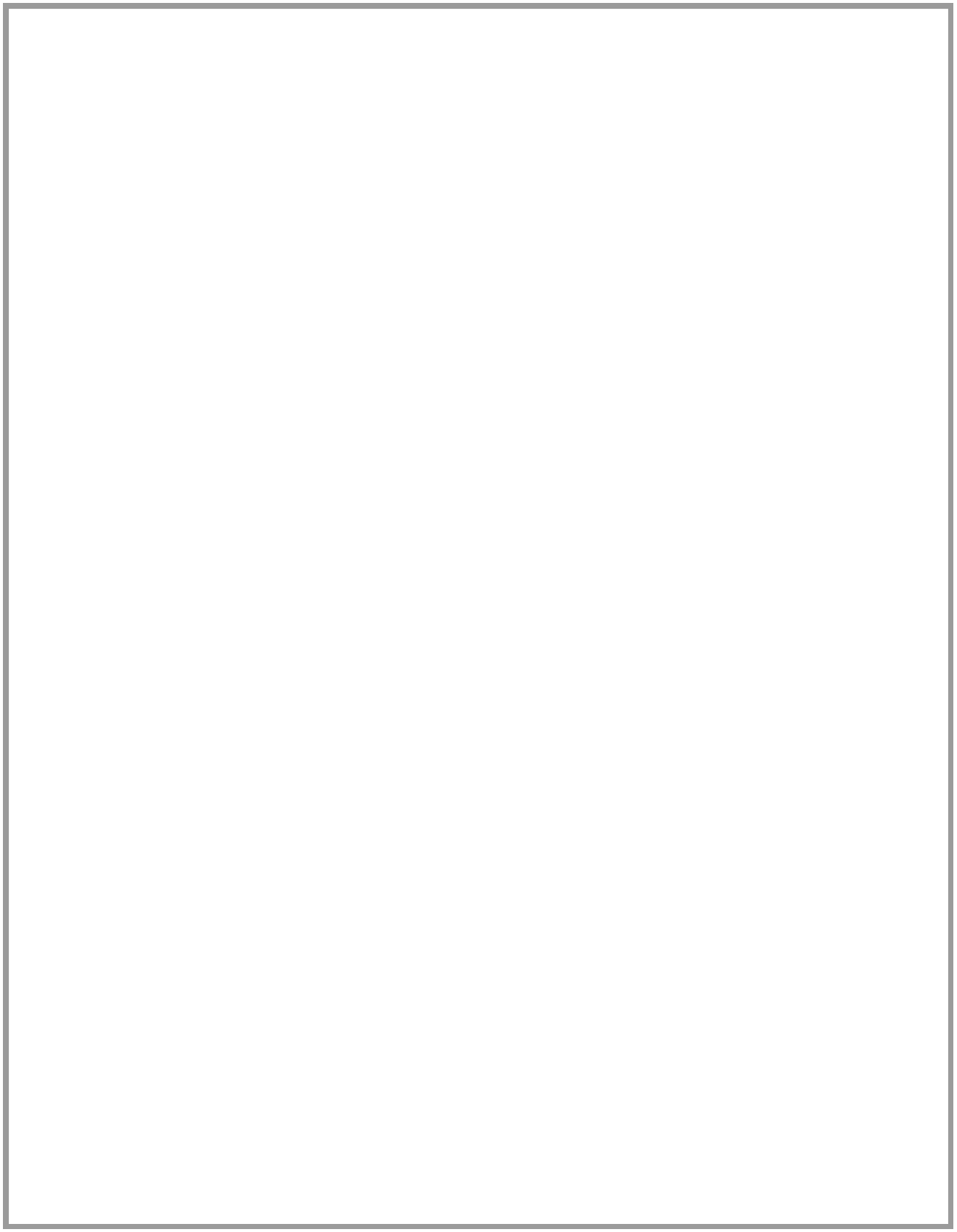
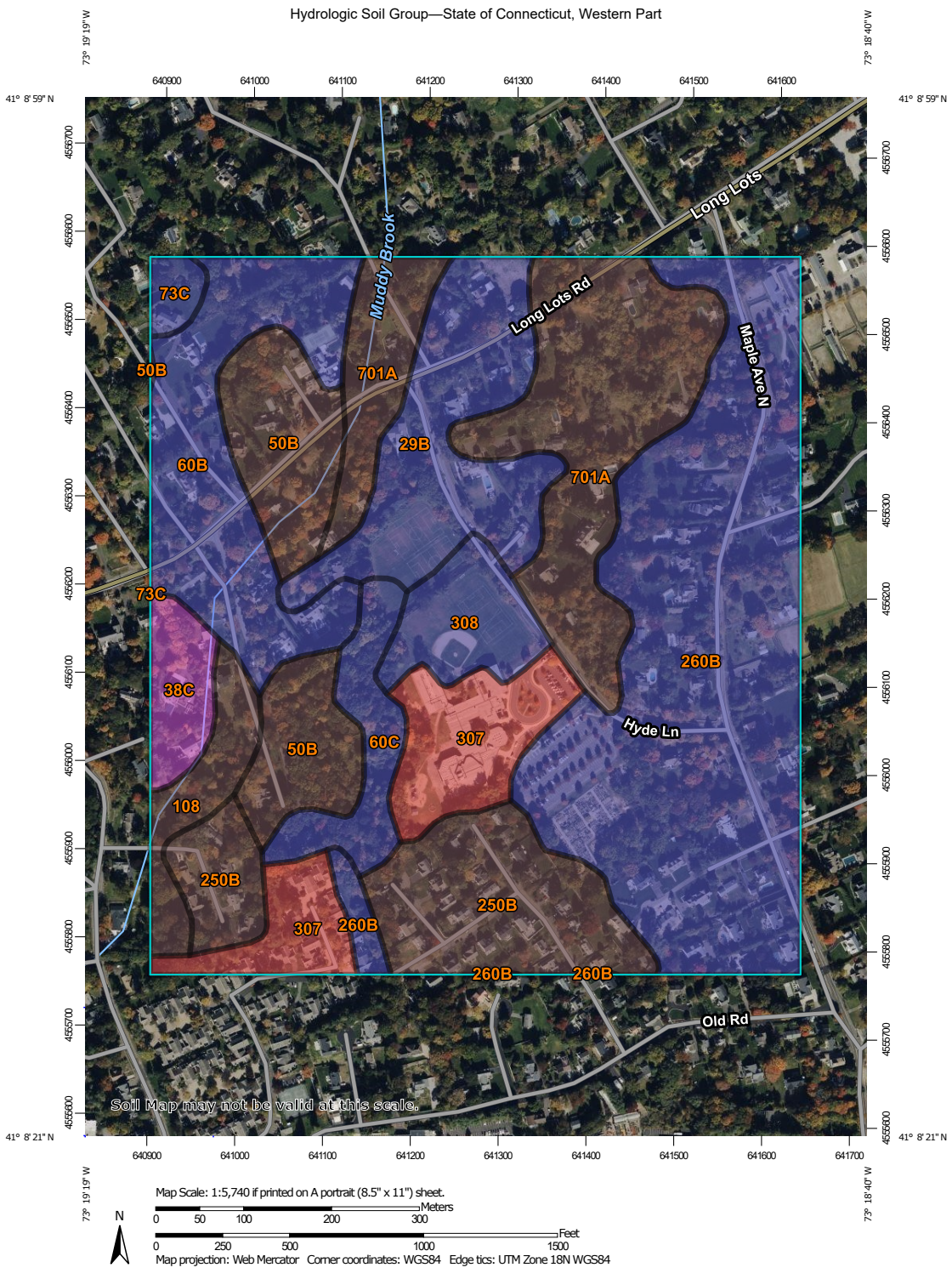
SLR




Hydrologic Soil Group—State of Connecticut, Western Part
73° 19' 19" W
73° 18' 40" W
41° 8' 59" N
41° 8' 21" N
640900
641000
641100
641200
641300
641400
641500
641600
641700
4556700
4556600
4556500
4556400
4556300
4556200
4556100
4556000
4555900
4555800
4555700
4555600
Muddy Brook
Long Lots
Long Lots Rd
Maple Ave N
Hyde Ln
Old Rd
73C
50B
701A
29B
60B
308
260B
38C
60C
307
108
250B
Soil Map may not be valid at this scale.
Map Scale: 1:5,740 if printed on A portrait (8.5" x 11") sheet.
Meters
0 50 100 200 300
Feet
0 250 500 1000 1500
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84
USDA
Natural Resources Conservation Service
Web Soil Survey
National Cooperative Soil Survey
11/19/2024
Page 1 of 4

Hydrologic Soil Group—State of Connecticut, Western Part

MAP LEGEND

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

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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
29B	Agawam fine sandy loam, 3 to 8 percent slopes	B	13.7	9.2%
38C	Hinckley loamy sand, 3 to 15 percent slopes	A	3.4	2.3%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	B/D	12.0	8.0%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	B	15.4	10.3%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	B	5.0	3.3%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	1.2	0.8%
108	Saco silt loam, frequently ponded, 0 to 2 percent slopes, frequently flooded	B/D	4.1	2.8%
250B	Sutton-Urban land complex, 0 to 8 percent slopes	B/D	14.6	9.8%
260B	Charlton-Urban land complex, 3 to 8 percent slopes	B	42.3	28.3%
307	Urban land	D	10.6	7.1%
308	Udorthents, smoothed	B	5.0	3.4%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	B/D	22.2	14.9%
Totals for Area of Interest			**149.5**	**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

Appendix D
Storm Drainage Computations

Long Lots Elementary School

13 Hyde Lane, Westport, Connecticut

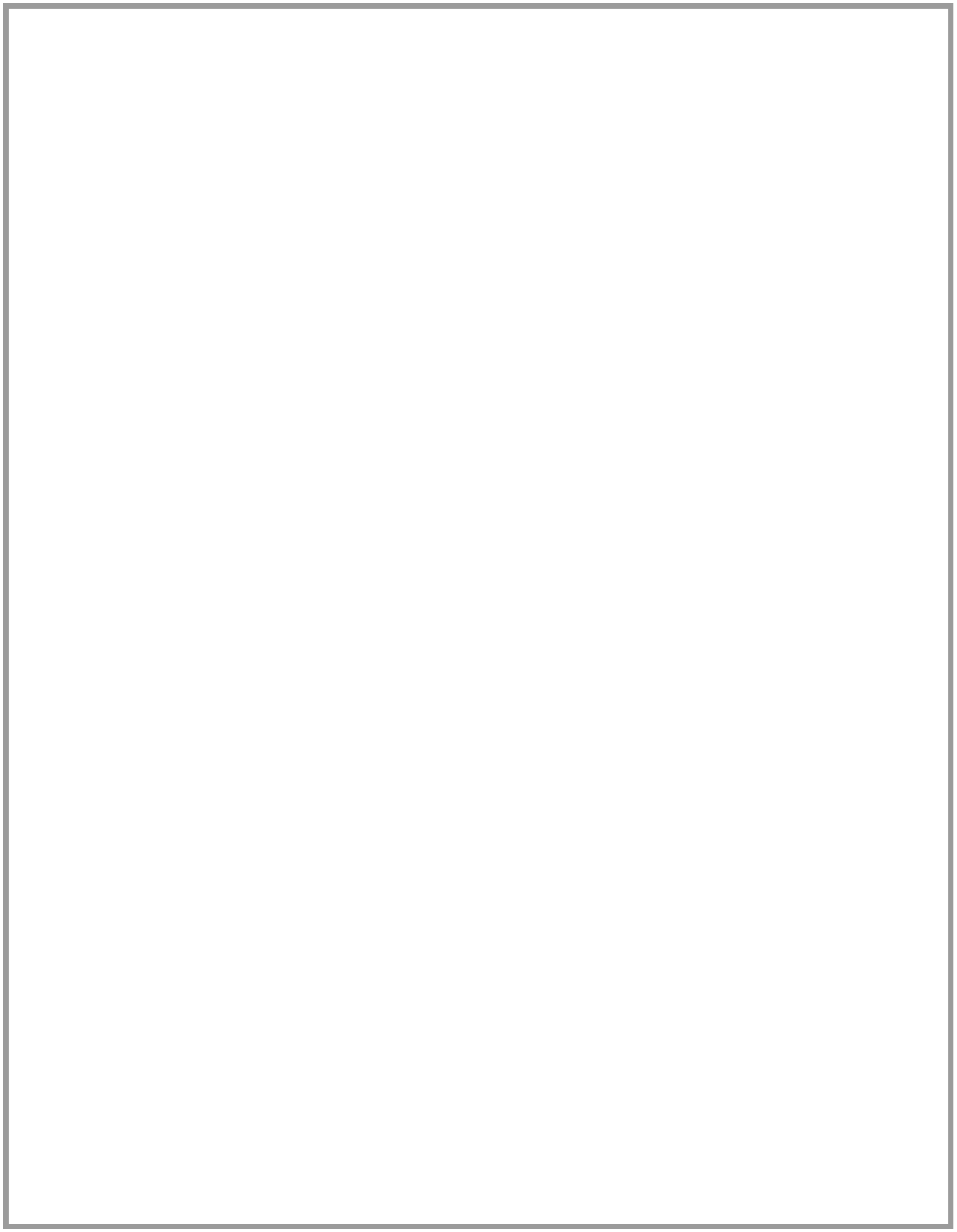
Drainage Report

Prepared for:
Svigals and Partners, an FCA Company
84 Orange Street
New Haven, CT 06510

SLR Project No.: 141.14847.00021

May 14, 2025

SLR



Rational Method Individual Basin Calculations

Project: Long Lots Elementary School | By: MCB | Date: 4/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 5/5/25

Basin Name	Impervious Area C=0.9 (sf)	Grassed Area C=0.3 (sf)	Wooded Area C=0.2 (sf)	Total Area (sf)	Total Area (ac)	Weighted C	Tc (min)
Storm 11							
AD 8	264	11981	677	12922	0.30	0.31	5.0
AD 9	223	5839	306	6368	0.15	0.32	5.0
AD 10	399	8528	572	9499	0.22	0.32	5.0
AD 11	2554	24760	1410	28724	0.66	0.35	5.0
AD 12	770	6695	0	7465	0.17	0.36	10.0
AD 13	0	16671	0	16671	0.38	0.30	10.0
AD 14	6633	54773	4118	65524	1.50	0.35	10.0
Storm 21							
AD 76	0	747	0	747	0.02	0.30	5.0
AD 78	274	4112	0	4332	0.10	0.34	5.0
AD 79	0	1730	0	1730	0.04	0.30	5.0
AD 80	0	1939	0	1939	0.04	0.30	5.0
Storm 22							
CLCB 18	11708	32481	0	44189	1.01	0.46	5.0
CLCB 20	0	7643	7918	15561	0.36	0.25	5.0
CLCB 22	6350	0	0	6350	0.15	0.90	5.0
CCB 33	6323	658	0	6981	0.16	0.84	5.0
CLCB 34	4751	1003	0	5754	0.13	0.80	5.0
AD 38	1003	1999	0	3002	0.07	0.50	5.0
AD 39	722	7268	0	7990	0.18	0.35	5.0
CCB 40	15675	4459	0	20134	0.46	0.77	5.0
CLCB 41	588	3403	0	3991	0.09	0.39	5.0
Storm 23							
CCB 65	0	930	0	930	0.02	0.30	5.0
CCB 66	11629	11401	0	23030	0.53	0.60	5.0
CCB 67	1536	2458	0	3994	0.09	0.53	5.0
MH 68	933	10109	0	11042	0.25	0.35	5.0
MH 69	0	1114	0	1114	0.03	0.30	5.0
CCB 70	1302	182	0	1484	0.03	0.83	5.0
AD 71	0	4048	0	4048	0.09	0.30	5.0
AD 72	0	4831	0	4831	0.11	0.30	5.0
AD 73	0	3763	0	3763	0.09	0.30	5.0
AD 74	0	3257	0	3257	0.07	0.30	5.0
Storm 221							
CLCB 24	7734	3445	0	11179	0.26	0.72	5.0
CLCB 25	10671	4109	0	14780	0.34	0.73	5.0
CCB 26	10482	1849	0	12331	0.28	0.81	5.0
CCB 27	5756	1562	0	7318	0.17	0.77	5.0
Storm 222							
CLCB 29	8663	3543	0	12206	0.28	0.73	5.0
CLCB 30	10179	4137	0	14316	0.33	0.73	5.0
CCB 31	10261	3370	0	13631	0.31	0.75	5.0
CCB 32	7663	4281	0	11944	0.27	0.68	5.0
Storm 223							
CLCB 35	9915	2495	0	12410	0.28	0.78	5.0
CLCB 36	13541	3665	0	17206	0.39	0.77	5.0
CCB 37	2420	4332	0	6752	0.16	0.52	5.0
Storm 224							
CLCB 48	612	4940	0	5552	0.13	0.37	5.0
CLCB 49	362	7066	0	7428	0.17	0.33	5.0
CLCB 50	0	8559	459	9018	0.21	0.29	5.0
AD 51	0	15098	2924	18022	0.41	0.28	5.0
AD 52	0	16375	107	16482	0.38	0.30	5.0
AD 53	0	18972	5139	24111	0.55	0.28	5.0
AD 54	1466	22348	10186	34000	0.78	0.30	5.0
AD 55	1317	21648	7671	30636	0.70	0.30	5.0
CCB 56	3061	561	0	3622	0.08	0.81	5.0
CCB 57	3259	1611	0	4870	0.11	0.70	5.0
Storm 225							
AD 43	0	2732	1047	3779	0.09	0.27	5.0
AD 44	0	22132	3506	25638	0.59	0.29	10.0
AD 45	0	18711	1484	20195	0.46	0.29	10.0
AD 46	0	24481	3765	28246	0.65	0.29	10.0

SLR International Corporation, Inc.

Rational Method Roof Drain System Calculations

Project: Long Lots Elementary School | By: MCB | Date: 4/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 5/5/25

Total Roof Runoff to Proposed Storm Drainage System (In Hydraflow Model)

	ROOF TO MH 61	ROOF TO MH 64	ROOF TO MH 68	AREA TO MH 69	ROOF TO AD 71	ROOF TO AD 73	
C	0.90	0.90	0.90	0.90	0.90	0.90	
I	8.74	8.74	8.74	8.74	8.74	8.74	
A	0.47	0.17	0.20	0.58	0.23	0.19	
Q	3.70	1.34	1.57	4.56	1.81	1.46	

Known Q's:	**100-Year**	**25-Year**
OCS 210	12.91 cfs	-
OCS 230	13.4 cfs	-
OCS 221	7.78 cfs	4.46 cfs
OCS 222	7.43 cfs	5.05 cfs
OCS 223	6.15 cfs	5.13 cfs
OCS 224	10.51 cfs	5.06 cfs
OCS 225	3.28 cfs	1.09 cfs

NOAA Atlas 14, Volume 10, Version 3
Location name: Westport, Connecticut, USA*
Latitude: 41.1434°, Longitude: -73.3168°
Elevation: 93 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.32 (3.42-5.40)	5.08 (4.02-6.35)	6.31 (4.99-7.93)	7.33 (5.75-9.26)	8.74 (6.61-11.5)	9.80 (7.25-13.1)	10.9 (7.80-15.1)	12.1 (8.21-17.2)	13.8 (8.95-20.3)	15.1 (9.56-22.7)
10-min	3.06 (2.42-3.82)	3.59 (2.84-4.50)	4.47 (3.53-5.62)	5.20 (4.08-6.56)	6.19 (4.69-8.14)	6.95 (5.14-9.31)	7.73 (5.52-10.7)	8.57 (5.81-12.2)	9.76 (6.35-14.4)	10.7 (6.77-16.1)
15-min	2.40 (1.90-3.00)	2.82 (2.23-3.53)	3.50 (2.76-4.40)	4.07 (3.20-5.14)	4.86 (3.67-6.38)	5.45 (4.03-7.31)	6.06 (4.33-8.41)	6.73 (4.56-9.58)	7.66 (4.98-11.3)	8.40 (5.32-12.6)
30-min	1.67 (1.33-2.09)	1.96 (1.56-2.46)	2.44 (1.93-3.07)	2.84 (2.23-3.59)	3.39 (2.56-4.45)	3.80 (2.81-5.09)	4.23 (3.01-5.85)	4.68 (3.17-6.66)	5.29 (3.44-7.79)	5.78 (3.66-8.68)
60-min	1.07 (0.850-1.34)	1.26 (0.998-1.58)	1.57 (1.24-1.97)	1.82 (1.43-2.30)	2.17 (1.64-2.85)	2.44 (1.80-3.26)	2.71 (1.93-3.74)	3.00 (2.03-4.26)	3.38 (2.20-4.98)	3.68 (2.33-5.53)
2-hr	0.688 (0.550-0.855)	0.819 (0.654-1.02)	1.03 (0.822-1.29)	1.21 (0.957-1.52)	1.46 (1.11-1.90)	1.64 (1.22-2.19)	1.83 (1.32-2.53)	2.05 (1.39-2.89)	2.34 (1.53-3.43)	2.59 (1.64-3.86)
3-hr	0.527 (0.422-0.652)	0.631 (0.505-0.781)	0.801 (0.639-0.996)	0.942 (0.747-1.18)	1.14 (0.869-1.48)	1.28 (0.959-1.71)	1.44 (1.04-1.98)	1.61 (1.10-2.27)	1.86 (1.21-2.71)	2.06 (1.31-3.06)
6-hr	0.332 (0.268-0.408)	0.400 (0.322-0.492)	0.511 (0.410-0.630)	0.603 (0.481-0.748)	0.729 (0.561-0.946)	0.824 (0.620-1.09)	0.925 (0.673-1.27)	1.04 (0.711-1.46)	1.21 (0.792-1.75)	1.35 (0.861-1.99)
12-hr	0.203 (0.165-0.248)	0.245 (0.199-0.300)	0.314 (0.254-0.385)	0.371 (0.298-0.457)	0.450 (0.348-0.579)	0.508 (0.385-0.669)	0.571 (0.418-0.781)	0.643 (0.442-0.895)	0.751 (0.493-1.08)	0.841 (0.538-1.23)
24-hr	0.119 (0.097-0.144)	0.145 (0.118-0.176)	0.187 (0.153-0.228)	0.223 (0.180-0.273)	0.272 (0.212-0.348)	0.308 (0.235-0.403)	0.347 (0.256-0.473)	0.393 (0.271-0.543)	0.463 (0.305-0.661)	0.522 (0.335-0.760)
2-day	0.065 (0.054-0.079)	0.081 (0.067-0.098)	0.107 (0.088-0.130)	0.129 (0.105-0.157)	0.159 (0.125-0.203)	0.181 (0.139-0.236)	0.205 (0.153-0.279)	0.234 (0.162-0.322)	0.280 (0.185-0.397)	0.320 (0.206-0.462)
3-day	0.047 (0.039-0.056)	0.058 (0.048-0.070)	0.078 (0.064-0.093)	0.093 (0.076-0.113)	0.115 (0.091-0.147)	0.131 (0.101-0.171)	0.149 (0.111-0.202)	0.171 (0.118-0.233)	0.204 (0.135-0.289)	0.234 (0.151-0.337)
4-day	0.037 (0.031-0.045)	0.047 (0.039-0.056)	0.062 (0.051-0.074)	0.074 (0.061-0.090)	0.092 (0.072-0.116)	0.104 (0.081-0.135)	0.118 (0.089-0.160)	0.135 (0.094-0.184)	0.162 (0.107-0.228)	0.185 (0.119-0.265)
7-day	0.025 (0.021-0.030)	0.031 (0.026-0.037)	0.040 (0.033-0.048)	0.048 (0.040-0.058)	0.059 (0.047-0.074)	0.067 (0.052-0.086)	0.075 (0.056-0.101)	0.085 (0.059-0.116)	0.101 (0.067-0.142)	0.114 (0.074-0.163)
10-day	0.020 (0.017-0.024)	0.025 (0.020-0.029)	0.031 (0.026-0.037)	0.037 (0.031-0.044)	0.045 (0.036-0.056)	0.051 (0.039-0.065)	0.057 (0.043-0.076)	0.064 (0.045-0.087)	0.075 (0.050-0.105)	0.084 (0.054-0.120)
20-day	0.014 (0.012-0.017)	0.017 (0.014-0.020)	0.020 (0.017-0.024)	0.024 (0.020-0.028)	0.028 (0.022-0.034)	0.031 (0.024-0.039)	0.035 (0.026-0.045)	0.038 (0.027-0.051)	0.043 (0.029-0.060)	0.048 (0.031-0.067)
30-day	0.012 (0.010-0.014)	0.013 (0.011-0.016)	0.016 (0.013-0.019)	0.018 (0.015-0.022)	0.021 (0.017-0.026)	0.024 (0.018-0.030)	0.026 (0.019-0.034)	0.029 (0.020-0.038)	0.032 (0.021-0.044)	0.035 (0.022-0.049)
45-day	0.010 (0.008-0.011)	0.011 (0.009-0.013)	0.013 (0.011-0.015)	0.014 (0.012-0.017)	0.017 (0.013-0.020)	0.018 (0.014-0.023)	0.020 (0.015-0.026)	0.022 (0.015-0.029)	0.024 (0.016-0.033)	0.026 (0.016-0.036)
60-day	0.008 (0.007-0.010)	0.009 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.010-0.014)	0.014 (0.011-0.017)	0.015 (0.012-0.019)	0.017 (0.012-0.021)	0.018 (0.013-0.024)	0.019 (0.013-0.027)	0.021 (0.013-0.029)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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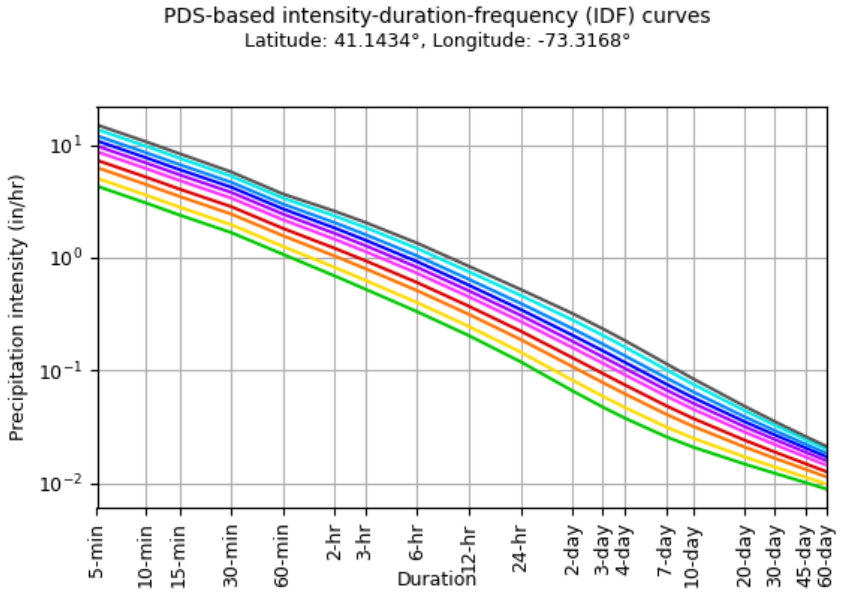
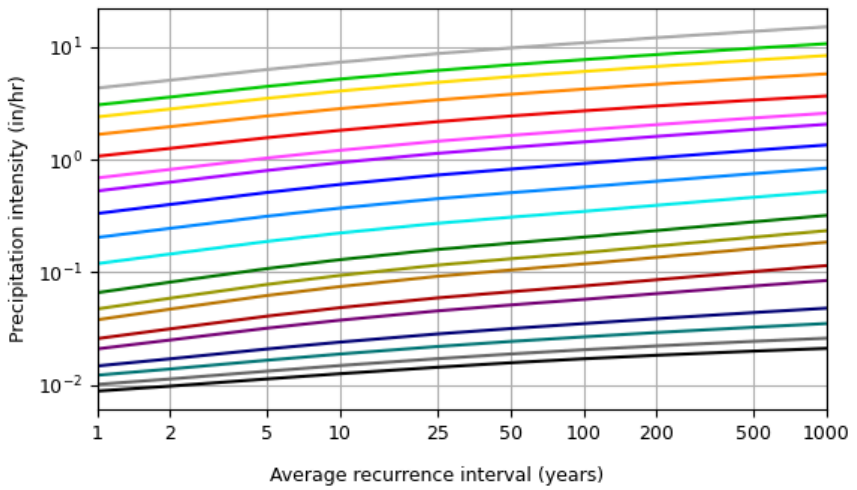
PF graphical





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Created (GMT): Tue Nov 19 22:44:55 2024

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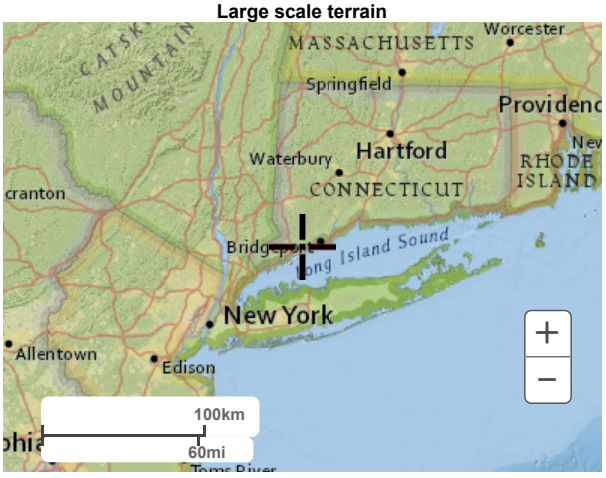
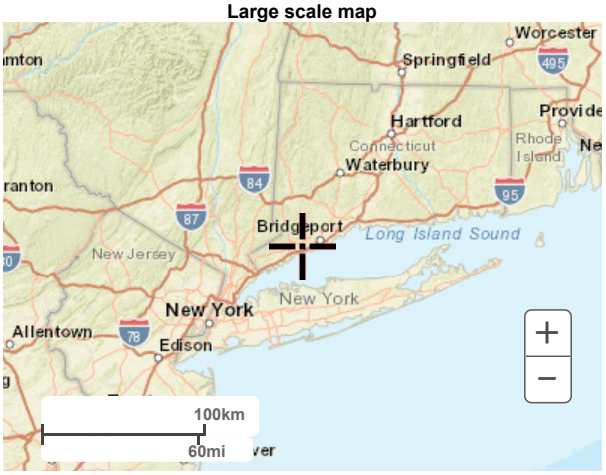
Maps & aerials

Small scale terrain

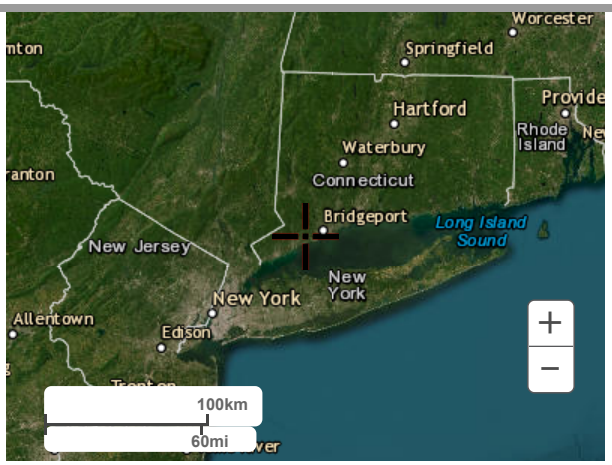
Large scale terrain



Large scale map



Large scale aerial



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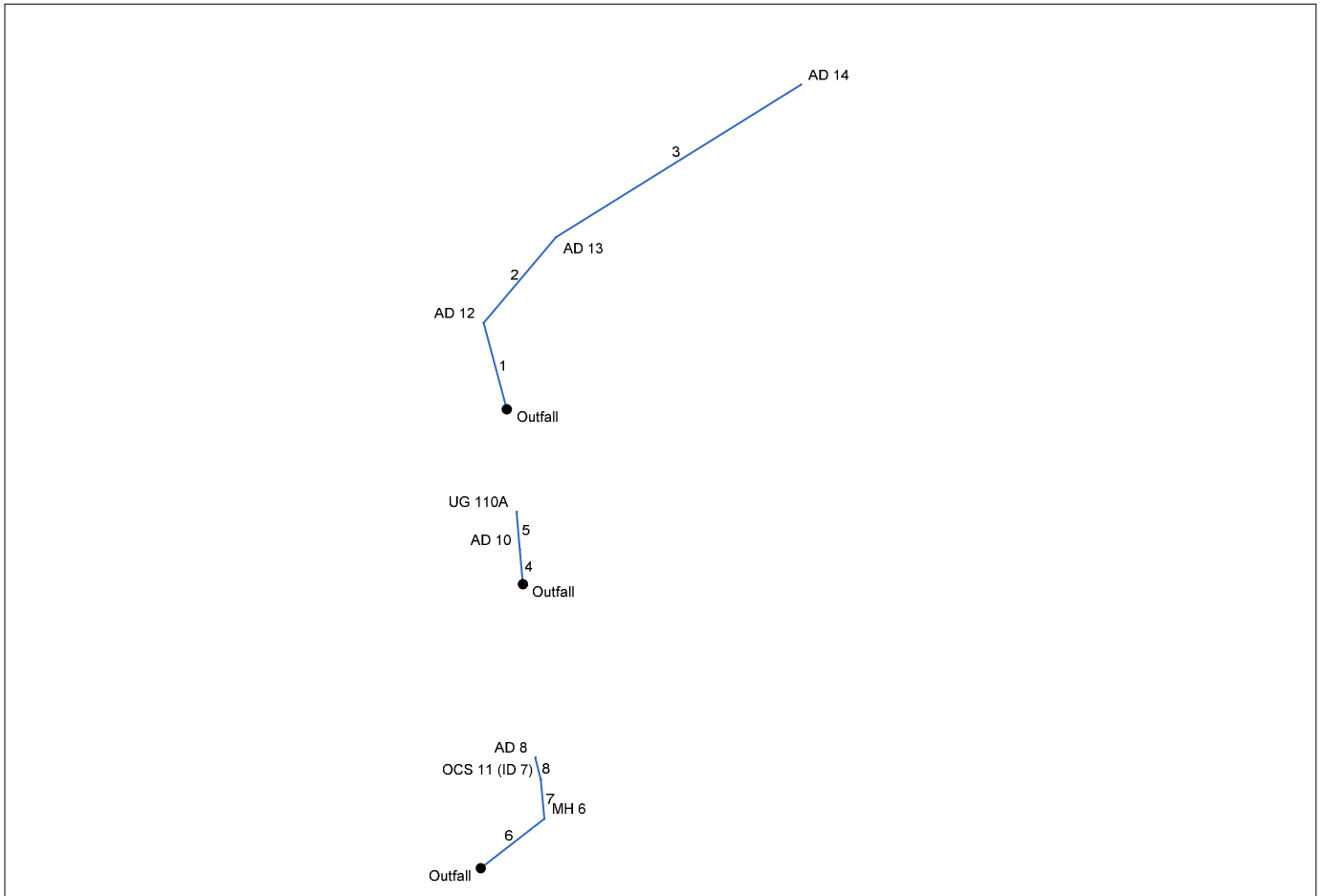
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm WS 11.stm	Number of lines: 8	Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	59	-105	DrGrt	0.00	0.17	0.36	10.0	62.20	0.68	62.60	15	Cir	0.012	1.27	67.00	UG110A-AD 12
2	1	74	55	DrGrt	0.00	0.38	0.30	10.0	62.60	0.54	63.00	15	Cir	0.012	0.54	67.00	AD 12-AD 13
3	2	190	18	DrGrt	0.00	1.50	0.35	10.0	63.00	0.53	64.00	15	Cir	0.012	1.00	67.00	AD 13-AD 14
4	End	23	-95	DrGrt	0.00	0.22	0.32	5.0	61.20	0.87	61.40	18	Cir	0.012	0.50	65.70	UG 110B-AD 10
5	4	25	0	DrGrt	4.71	0.66	0.35	5.0	61.40	1.20	61.70	15	Cir	0.012	1.00	65.70	AD 10-UG110A
6	End	53	-38	MH	0.00	0.00	0.00	0.0	60.60	0.57	60.90	18	Cir	0.012	0.87	67.00	FES 6A-MH 6
7	6	26	-57	MH	0.00	0.00	0.00	0.0	60.90	0.77	61.10	18	Cir	0.012	0.19	65.80	MH 6-OCS (ID 7)
8	7	15	-9	DrGrt	2.48	0.30	0.31	5.0	61.20	0.00	61.20	12	Cir	0.012	1.00	65.70	OCS 11 (ID 7)-UG11

Project File: Storm WS 11.stm | Number of lines: 8 | Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	59	0.17	2.05	0.36	0.06	0.70	10.0	11.1	6.7	4.71	5.76	5.17	15	0.68	62.20	62.60	63.06	63.48	0.00	67.00	UG110A-AD 12
2	1	74	0.38	1.88	0.30	0.11	0.64	10.0	10.8	6.8	4.33	5.14	4.69	15	0.54	62.60	63.00	63.48	63.88	67.00	67.00	AD 12-AD 13
3	2	190	1.50	1.50	0.35	0.53	0.53	10.0	10.0	6.9	3.65	5.08	3.93	15	0.53	63.00	64.00	64.06	64.77	67.00	67.00	AD 13-AD 14
4	End	23	0.22	0.88	0.32	0.07	0.30	5.0	5.1	8.2	7.19	10.61	5.42	18	0.87	61.20	61.40	62.27	62.44	0.00	65.70	UG 110B-AD 10
5	4	25	0.66	0.66	0.35	0.23	0.23	5.0	5.0	8.2	6.62	7.66	6.08	15	1.20	61.40	61.70	62.44	62.73	65.70	65.70	AD 10-UG110A
6	End	53	0.00	0.30	0.00	0.00	0.09	0.0	5.2	8.2	3.24	8.56	4.31	18	0.57	60.60	60.90	61.24	61.59	0.00	67.00	FES 6A-MH 6
7	6	26	0.00	0.30	0.00	0.00	0.09	0.0	5.1	8.2	3.25	9.98	4.12	18	0.77	60.90	61.10	61.59	61.79	67.00	65.80	MH 6-OCS (ID 7)
8	7	15	0.30	0.30	0.31	0.09	0.09	5.0	5.0	8.2	3.25	0.00	4.57	12	0.00	61.20	61.20	61.97	62.20	65.80	65.70	OCS 11 (ID 7)-UG

Project File: Storm WS 11.stm | Number of lines: 8 | Run Date: 5/13/2025

NOTES:Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	AD 12	0.43	0.00	0.07	0.36	DrGrt	0.0	0.00	0.00	0.83	0.63	0.125	2.00	0.020	0.020	0.013	0.04	6.10	0.04	6.10	0.0	Off
2	AD 13	0.79	0.00	0.79	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.012	0.012	0.000	0.16	28.15	0.16	28.15	0.0	Off
3	AD 14	3.65	0.00	3.65	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.050	0.050	0.000	0.43	19.38	0.43	19.38	0.0	Off
4	AD 10	0.58	0.00	0.58	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.010	0.010	0.000	0.13	27.52	0.13	27.52	0.0	Off
5	UG 110A	6.62*	0.00	6.62	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.050	0.050	0.000	1.21	50.33	1.21	50.33	0.0	Off
6	MH 6	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	OCS 11 (ID 7)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	AD 8	3.25*	0.00	3.25	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.010	0.010	0.000	0.40	82.44	0.40	82.44	0.0	Off

Project File: Storm WS 11.stm | Number of lines: 8 | Run Date: 5/13/2025

NOTES: Inlet N-Values = 0.016; Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period = 25 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

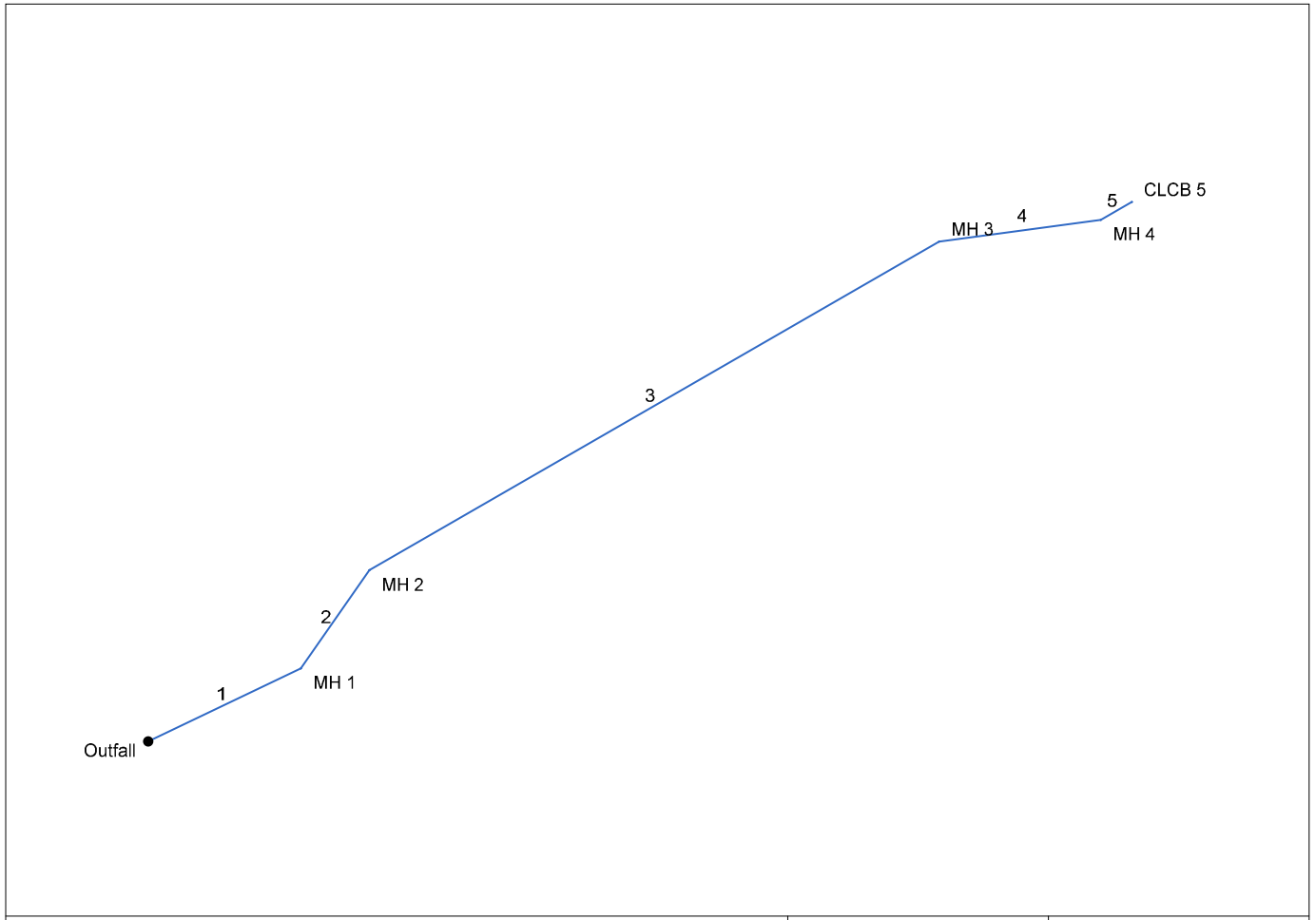
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	15	4.71	62.20	63.06	0.86	0.90	5.23	0.41	63.47	0.000	59	62.60	63.48	0.88**	0.92	5.11	0.41	63.88	0.000	0.000	n/a	1.27	0.51
2	15	4.33	62.60	63.48	0.88*	0.92	4.70	0.34	63.82	0.540	74	63.00	63.88	0.88	0.92	4.69	0.34	64.22	0.539	0.540	0.399	0.54	0.18
3	15	3.65	63.00	64.06	1.06	0.79	3.27	0.17	64.23	0.255	190	64.00	64.77	0.77**	0.79	4.59	0.33	65.10	0.554	0.405	n/a	1.00	0.33
4	18	7.19	61.20	62.27	1.07	1.30	5.33	0.47	62.74	0.000	23	61.40	62.44 j	1.04**	1.30	5.51	0.47	62.91	0.000	0.000	n/a	0.50	0.24
5	15	6.62	61.40	62.44	1.04	1.09	6.08	0.58	63.01	0.000	25	61.70	62.73 j	1.03**	1.09	6.09	0.58	63.31	0.000	0.000	n/a	1.00	0.58
6	18	3.24	60.60	61.24	0.64*	0.72	4.51	0.26	61.50	0.000	53	60.90	61.59	0.69**	0.79	4.12	0.26	61.85	0.000	0.000	n/a	0.87	n/a
7	18	3.25	60.90	61.59	0.69	0.79	4.13	0.26	61.85	0.000	26	61.10	61.79	0.69**	0.79	4.12	0.26	62.05	0.000	0.000	n/a	0.19	n/a
8	12	3.25	61.20	61.97	0.77*	0.65	5.00	0.39	62.36	0.801	15	61.20	62.20	1.00	0.79	4.13	0.27	62.47	0.694	0.747	0.112	1.00	0.27

Project File: Storm WS 11.stm | Number of lines: 8 | Run Date: 5/13/2025

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm WS 12.stm	Number of lines: 5	Date: 4/29/2025

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	79	-32	MH	0.00	0.00	0.00	0.0	63.70	4.18	67.00	30	Cir	0.012	0.56	72.00	EX. ENDWALL-MH 1
2	1	64	-30	MH	0.00	0.00	0.00	0.0	67.10	0.63	67.50	30	Cir	0.012	0.48	74.50	MH 1-MH 2
3	2	313	25	MH	0.00	0.00	0.00	0.0	67.50	0.64	69.50	24	Cir	0.012	0.51	74.20	MH 3-MH 3
4	3	72	27	MH	0.00	0.00	0.00	0.0	70.20	3.89	73.00	18	Cir	0.012	0.51	77.90	MH 3-MH 4
5	4	17	-27	Grate	102.10	0.00	0.00	0.0	73.50	1.18	73.70	18	Cir	0.012	1.00	77.50	MH 5-CLCB 5

Project File: Storm WS 12.stm | Number of lines: 5 | Date: 4/29/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	79	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	102.1	90.81	20.80	30	4.18	63.70	67.00	66.20	70.37	0.00	72.00	EX. ENDWALL-M
2	1	64	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	102.1	35.12	20.80	30	0.63	67.10	67.50	74.14	77.52	72.00	74.50	MH 1-MH 2
3	2	313	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	102.1	19.59	32.50	24	0.64	67.50	69.50	80.75	135.11	74.50	74.20	MH 3-MH 3
4	3	72	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	102.1	22.43	57.78	18	3.89	70.20	73.00	143.49	201.52	74.20	77.90	MH 3-MH 4
5	4	17	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	102.1	12.34	57.78	18	1.18	73.50	73.70	227.99	241.70	77.90	77.50	MH 5-CLCB 5

Project File: Storm WS 12.stm | Number of lines: 5 | Run Date: 4/29/2025

NOTES:Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 1	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	MH 2	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	MH 3	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	MH 4	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
5	CLCB 5	102.10*	0.00	16.22	85.88	Grate	0.0	0.00	0.00	2.31	1.35	0.022	2.53	0.078	0.078	0.013	1.08	13.90	1.02	13.03	0.0	Off

Project File: Storm WS 12.stm | Number of lines: 5 | Run Date: 4/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

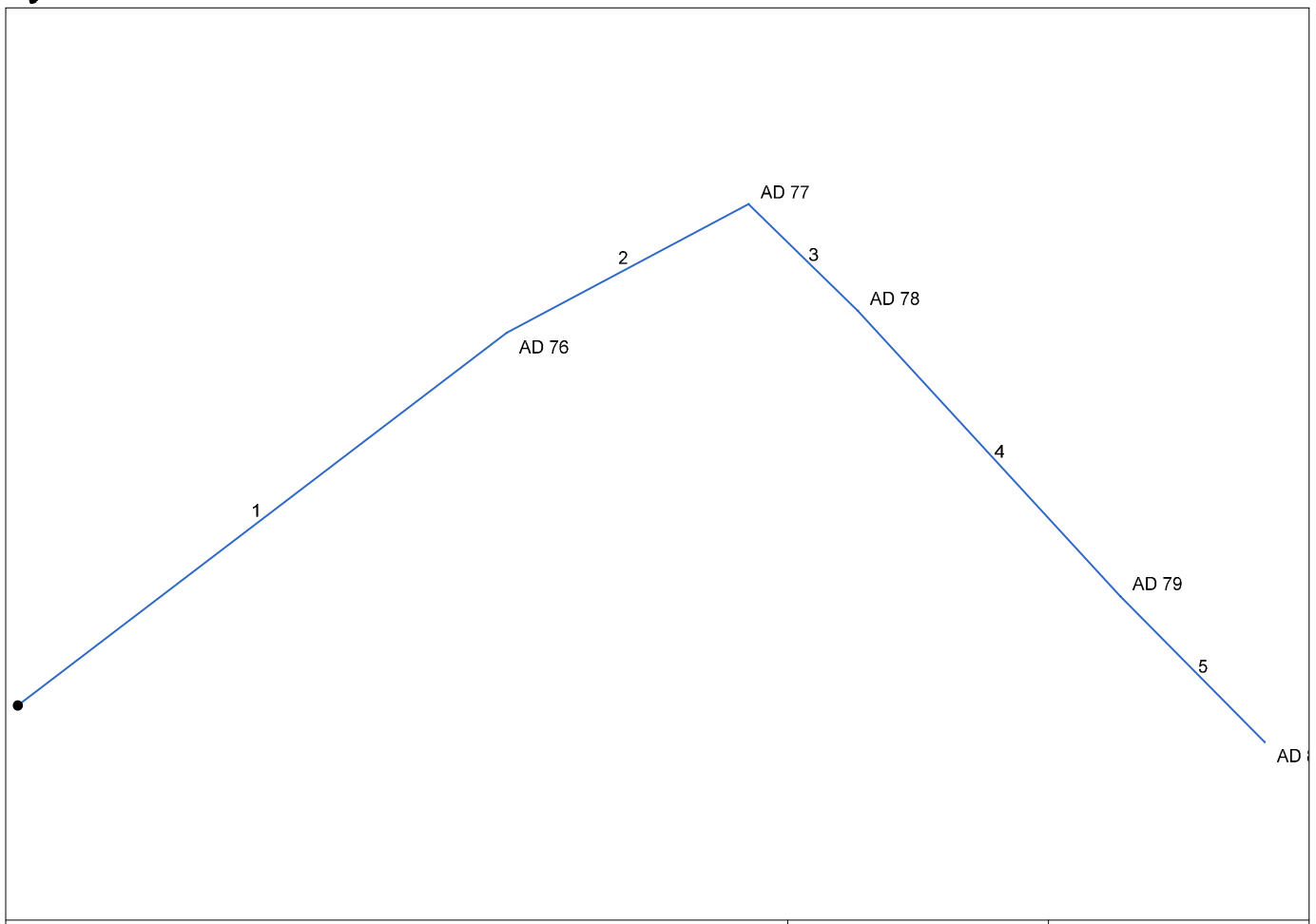
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	30	102.1	63.70	66.20	2.50	4.91	20.80	6.73	72.93	5.276	79	67.00	70.37	2.50	4.91	20.80	6.73	77.10	5.281	5.278	4.170	0.56	3.77
2	30	102.1	67.10	74.14	2.50	4.91	20.80	6.73	80.87	5.283	64	67.50	77.52	2.50	4.91	20.80	6.73	84.25	5.281	5.282	3.381	0.48	3.23
3	24	102.1	67.50	80.75	2.00	3.14	32.51	16.43	97.18	17.371	313	69.50	135.11	2.00**	3.14	32.50	16.42	151.54	17.364	17.367	54.36	0.51	8.37
4	18	102.1	70.20	143.49	1.50	1.77	57.79	51.92	195.41	80.582	72	73.00	201.52	1.50**	1.77	57.78	51.90	253.42	80.552	80.567	58.01	0.51	26.47
5	18	102.1	73.50	227.99	1.50	1.77	57.79	51.92	279.90	80.582	17	73.70	241.70	1.50**	1.77	57.78	51.90	293.60	80.552	80.567	13.70	1.00	51.90

Project File: Storm WS 12.stm | Number of lines: 5 | Run Date: 4/29/2025

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	136	-45	DrGrt	0.00	0.02	0.30	5.0	80.50	1.69	82.80	12	Cir	0.012	0.50	87.30	MH 75-AD 76
2	1	58	10	MH	0.00	0.00	0.00	0.0	82.80	0.69	83.20	12	Cir	0.012	1.00	88.50	AD 76-AD 77
3	2	35	87	DrGrt	0.00	0.10	0.34	5.0	83.20	0.86	83.50	12	Cir	0.012	0.50	87.50	AD 77-AD 78
4	3	90	3	DrGrt	0.00	0.04	0.30	5.0	83.50	0.56	84.00	12	Cir	0.012	0.50	87.50	AD 78-AD 79
5	4	47	-2	DrGrt	0.00	0.04	0.30	5.0	84.00	0.64	84.30	12	Cir	0.012	1.00	87.50	AD 79-AD 80

Project File: Storm WS 21.stm | Number of lines: 5 | Date: 4/29/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	136	0.02	0.20	0.30	0.01	0.06	5.0	7.1	7.5	0.48	5.02	3.30	12	1.69	80.50	82.80	80.71	83.09	85.00	87.30	MH 75-AD 76
2	1	58	0.00	0.18	0.00	0.00	0.06	0.0	6.7	7.7	0.45	3.20	2.46	12	0.69	82.80	83.20	83.09	83.48	87.30	88.50	AD 76-AD 77
3	2	35	0.10	0.18	0.34	0.03	0.06	5.0	6.5	7.8	0.45	3.57	2.55	12	0.86	83.20	83.50	83.48	83.78	88.50	87.50	AD 77-AD 78
4	3	90	0.04	0.08	0.30	0.01	0.02	5.0	5.6	8.3	0.20	2.88	1.58	12	0.56	83.50	84.00	83.78	84.18	87.50	87.50	AD 78-AD 79
5	4	47	0.04	0.04	0.30	0.01	0.01	5.0	5.0	8.7	0.10	3.08	1.38	12	0.64	84.00	84.30	84.18	84.43	87.50	87.50	AD 79-AD 80

Project File: Storm WS 21.stm | Number of lines: 5 | Run Date: 4/29/2025

NOTES:Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	AD 76	0.05	0.00	0.05	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.025	0.025	0.000	0.03	4.63	0.03	4.63	0.0	Off
2	AD 77	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	AD 78	0.30	0.00	0.30	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.013	0.013	0.000	0.10	18.08	0.10	18.08	0.0	Off
4	AD 79	0.10	0.00	0.10	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.025	0.025	0.000	0.05	6.17	0.05	6.17	0.0	Off
5	AD 80	0.10	0.00	0.10	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.025	0.025	0.000	0.05	6.17	0.05	6.17	0.0	Off

Project File: Storm WS 21.stm | Number of lines: 5 | Run Date: 4/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewers v2023.00

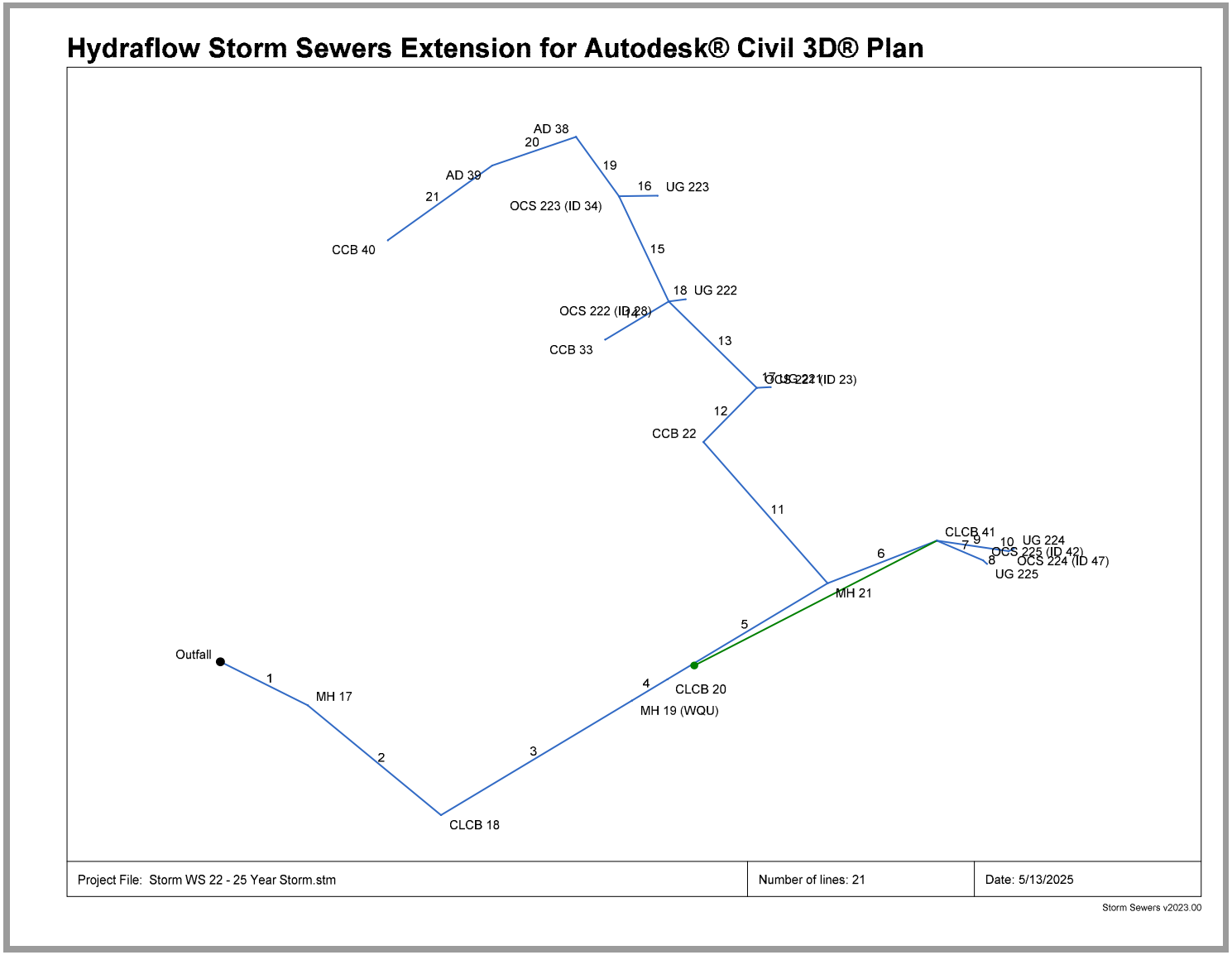
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	0.48	80.50	80.71	0.21	0.12	4.02	0.10	80.81	0.000	136	82.80	83.09	0.29**	0.19	2.58	0.10	83.19	0.000	0.000	n/a	0.50	0.05
2	12	0.45	82.80	83.09	0.29	0.18	2.39	0.10	83.19	0.000	58	83.20	83.48 j	0.28**	0.18	2.52	0.10	83.58	0.000	0.000	n/a	1.00	n/a
3	12	0.45	83.20	83.48	0.28	0.18	2.56	0.10	83.58	0.000	35	83.50	83.78	0.28**	0.18	2.53	0.10	83.88	0.000	0.000	n/a	0.50	n/a
4	12	0.20	83.50	83.78	0.28	0.10	1.12	0.06	83.84	0.000	90	84.00	84.18 j	0.18**	0.10	2.03	0.06	84.25	0.000	0.000	n/a	0.50	n/a
5	12	0.10	84.00	84.18	0.18	0.06	1.06	0.05	84.23	0.000	47	84.30	84.43 j	0.13**	0.06	1.71	0.05	84.48	0.000	0.000	n/a	1.00	0.05

Project File: Storm WS 21.stm | Number of lines: 5 | Run Date: 4/29/2025

Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewers v2023.00


Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan
AD 38
20
AD 39
21
19
16
UG 223
OCS 223 (ID 34)
CCB 40
15
18
UG 222
OCS 222 (ID 28)
CCB 33
13
OCS 221 (ID 23)
12
CCB 22
11
CLCB 41
7
9
10
UG 224
OCS 225 (ID 42)
8
OCS 224 (ID 47)
UG 225
6
MH 21
5
Outfall
1
MH 17
4
CLCB 20
MH 19 (WQU)
2
3
CLCB 18
Project File: Storm WS 22 - 25 Year Storm.stm
Number of lines: 21
Date: 5/13/2025
Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	67	33	MH	0.00	0.00	0.00	0.0	73.00	0.75	73.50	36	Cir	0.012	0.29	77.00	FES 16-MH 17
2	1	126	14	Grate	0.00	1.01	0.46	5.0	73.50	0.71	74.40	36	Cir	0.012	1.50	80.00	MH 17-CLCB 18
3	2	156	-85	MH	0.00	0.00	0.00	0.0	75.00	1.28	77.00	30	Cir	0.012	0.15	87.70	CLCB 18-MH 19 (WQU
4	3	29	0	Grate	0.00	0.36	0.25	5.0	77.00	1.03	77.30	30	Cir	0.012	0.50	85.80	MH 19 (WQU)-CLCB 2
5	4	131	0	MH	0.00	0.00	0.00	0.0	77.30	1.07	78.70	30	Cir	0.012	1.00	89.50	CLCB 20-MH 21
6	5	79	11	Grate	0.00	0.09	0.39	5.0	84.00	5.06	88.00	15	Cir	0.012	1.50	94.50	MH 21-CLCB 41
7	6	34	56	MH	0.00	0.00	0.00	0.0	91.00	2.94	92.00	12	Cir	0.012	0.43	96.90	CLCB 41-OCS 225 (I
8	7	4	22	None	1.09	0.00	0.00	0.0	92.00	0.00	92.00	12	Cir	0.012	1.00	0.00	OCS 225 (ID 42) -
9	6	47	38	MH	0.00	0.00	0.00	0.0	88.00	3.19	89.50	15	Cir	0.012	0.72	97.40	CLCB 41-OCS 224 (I
10	9	4	-42	None	5.06	0.00	0.00	0.0	89.50	0.00	89.50	18	Cir	0.012	1.00	0.00	OCS 224 (ID 47) -
11	5	143	-86	Comb	0.00	0.15	0.90	5.0	79.30	1.89	82.00	24	Cir	0.012	1.43	94.50	MH 21-CCB 22
12	11	57	71	MH	0.00	0.00	0.00	0.0	82.00	1.75	83.00	24	Cir	0.012	0.97	95.30	CCB 22-OCS 221 (ID
13	12	92	-75	MH	0.00	0.00	0.00	0.0	83.00	0.87	83.80	24	Cir	0.012	1.00	94.30	OCS 221(ID 23) -OC
14	13	52	-90	Comb	0.00	0.16	0.84	5.0	89.50	0.96	90.00	12	Cir	0.012	1.00	93.20	OCS 222 (ID 28)-CC
15	13	94	18	Grate	0.00	0.13	0.80	5.0	84.30	1.81	86.00	18	Cir	0.012	1.50	93.00	OCS 222(ID 28)-OCS
16	15	25	109	None	5.13	0.00	0.00	0.0	88.50	0.00	88.50	15	Cir	0.012	1.00	0.00	OCS 223 (ID 34)-UG
17	12	9	49	None	4.46	0.00	0.00	0.0	89.00	0.00	89.00	18	Cir	0.012	1.00	0.00	OCS 221 (ID 23)-UG
18	13	11	118	None	5.05	0.00	0.00	0.0	88.50	0.00	88.50	18	Cir	0.012	1.00	0.00	OCS 222(ID 28)-UG
19	15	57	-9	DrGrt	0.00	0.07	0.50	5.0	86.30	1.23	87.00	15	Cir	0.012	1.50	94.00	OCS 223 (ID 34)-AD
20	19	59	-85	DrGrt	0.00	0.18	0.35	5.0	87.00	0.85	87.50	15	Cir	0.012	0.57	93.50	AD 38-AD 39
21	20	92	-19	Comb	0.00	0.46	0.77	5.0	87.50	0.65	88.10	15	Cir	0.012	1.00	91.30	AD 39-CCB 40

Project File: Storm WS 22 - 25 Year Storm.stm | Number of lines: 21 | Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	67	0.00	2.61	0.00	0.00	1.42	0.0	7.6	7.3	31.07	62.42	7.10	36	0.75	73.00	73.50	74.76	75.31	1.15	77.00	FES 16-MH 17
2	1	126	1.01	2.61	0.46	0.46	1.42	5.0	7.3	7.4	31.27	61.06	7.02	36	0.71	73.50	74.40	75.31	76.21	77.00	80.00	MH 17-CLCB 18
3	2	156	0.00	1.60	0.00	0.00	0.95	0.0	7.0	7.5	27.96	50.31	8.95	30	1.28	75.00	77.00	76.33	78.80	80.00	87.70	CLCB 18-MH 19 (
4	3	29	0.36	1.60	0.25	0.09	0.95	5.0	7.0	7.6	27.99	45.19	7.39	30	1.03	77.00	77.30	78.80	79.10	87.70	85.80	MH 19 (WQU)-CL
5	4	131	0.00	1.24	0.00	0.00	0.86	0.0	6.7	7.7	27.44	45.93	7.28	30	1.07	77.30	78.70	79.10	80.48	85.80	89.50	CLCB 20-MH 21
6	5	79	0.09	0.09	0.39	0.04	0.04	5.0	5.0	8.7	6.46	15.74	9.10	15	5.06	84.00	88.00	84.56	89.02	89.50	94.50	MH 21-CLCB 41
7	6	34	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.09	6.62	4.75	12	2.94	91.00	92.00	91.27	92.44	94.50	96.90	CLCB 41-OCS 22
8	7	4	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.09	0.00	3.01	12	0.00	92.00	92.00	92.44	92.51	96.90	0.00	OCS 225 (ID 42) -
9	6	47	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.06	12.50	4.99	15	3.19	88.00	89.50	89.02	90.41	94.50	97.40	CLCB 41-OCS 22
10	9	4	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.06	0.00	4.35	18	0.00	89.50	89.50	90.41	90.47	97.40	0.00	OCS 224 (ID 47) -
11	5	143	0.15	1.15	0.90	0.14	0.83	5.0	6.4	7.9	21.13	33.67	9.28	24	1.89	79.30	82.00	80.48	83.65	89.50	94.50	MH 21-CCB 22
12	11	57	0.00	1.00	0.00	0.00	0.69	0.0	6.3	7.9	20.12	32.45	7.35	24	1.75	82.00	83.00	83.65	84.61	94.50	95.30	CCB 22-OCS 221
13	12	92	0.00	1.00	0.00	0.00	0.69	0.0	6.0	8.1	15.76	22.85	6.19	24	0.87	83.00	83.80	84.61	85.23	95.30	94.30	OCS 221(ID 23) -
14	13	52	0.16	0.16	0.84	0.13	0.13	5.0	5.0	8.7	1.17	3.78	3.80	12	0.96	89.50	90.00	89.88	90.46	94.30	93.20	OCS 222 (ID 28)-
15	13	94	0.13	0.84	0.80	0.10	0.56	5.0	5.8	8.2	9.69	15.30	7.41	18	1.81	84.30	86.00	85.23	87.20	94.30	93.00	OCS 222(ID 28)-
16	15	25	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.13	0.00	4.75	15	0.00	88.50	88.50	89.42	89.73	93.00	0.00	OCS 223 (ID 34)-
17	12	9	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.46	0.00	4.19	18	0.00	89.00	89.00	89.81	89.95	95.30	0.00	OCS 221 (ID 23)-
18	13	11	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.05	0.00	4.35	18	0.00	88.50	88.50	89.36	89.53	94.30	0.00	OCS 222(ID 28)-U
19	15	57	0.07	0.71	0.50	0.04	0.45	5.0	5.6	8.3	3.77	7.75	4.32	15	1.23	86.30	87.00	87.20	87.78	93.00	94.00	OCS 223 (ID 34)-
20	19	59	0.18	0.64	0.35	0.06	0.42	5.0	5.4	8.5	3.53	6.44	4.45	15	0.85	87.00	87.50	87.78	88.26	94.00	93.50	AD 38-AD 39
21	20	92	0.46	0.46	0.77	0.35	0.35	5.0	5.0	8.7	3.09	5.65	4.14	15	0.65	87.50	88.10	88.26	88.81	93.50	91.30	AD 39-CCB 40

Project File: Storm WS 22 - 25 Year Storm.stm | Number of lines: 21 | Run Date: 5/13/2025

NOTES:Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 17	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CLCB 18	4.05	0.00	1.69	2.36	Grate	0.0	0.00	0.00	2.31	1.35	0.041	2.53	0.010	0.040	0.013	0.17	6.19	0.13	5.26	0.0	Off
3	MH 19 (WQU)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	CLCB 20	0.78	0.07	0.86	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.010	0.020	0.000	0.15	9.01	0.15	9.01	0.0	Off
5	MH 21	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
6	CLCB 41	0.31	0.00	0.23	0.07	Grate	0.0	0.00	0.00	2.31	1.35	0.050	2.53	0.010	0.100	0.013	0.05	2.80	0.03	2.57	0.0	4
7	OCS 225 (ID 42)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	UG 225	1.09*	0.00	0.00	1.09	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
9	OCS 224 (ID 47)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	UG 224	5.06*	0.00	0.00	5.06	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	CCB 22	1.18	0.00	1.18	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.010	0.015	0.000	0.13	9.31	0.13	9.31	0.0	Off
12	OCS 221 (ID 23)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
13	OCS 222 (ID 28)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
14	CCB 33	1.17	0.00	1.17	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.010	0.030	0.000	0.11	5.31	0.11	5.31	0.0	Off
15	OCS 223 (ID 34)	0.91	0.00	0.91	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.010	0.050	0.000	0.16	5.23	0.16	5.23	0.0	Off
16	UG 223	5.13*	0.00	0.00	5.13	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	UG 221	4.46*	0.00	0.00	4.46	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
18	UG 222	5.05*	0.00	0.00	5.05	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
19	AD 38	0.31	0.00	0.31	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.11	12.66	0.11	12.66	0.0	Off
20	AD 39	0.55	0.00	0.55	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.017	0.017	0.000	0.16	20.56	0.16	20.56	0.0	Off
21	CCB 40	3.09	0.00	3.09	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.010	0.030	0.000	0.22	9.13	0.22	9.13	0.0	Off

Project File: Storm WS 22 - 25 Year Storm.stm | Number of lines: 21 | Run Date: 5/13/2025

NOTES: Inlet N-Values = 0.016; Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewers v2023.00

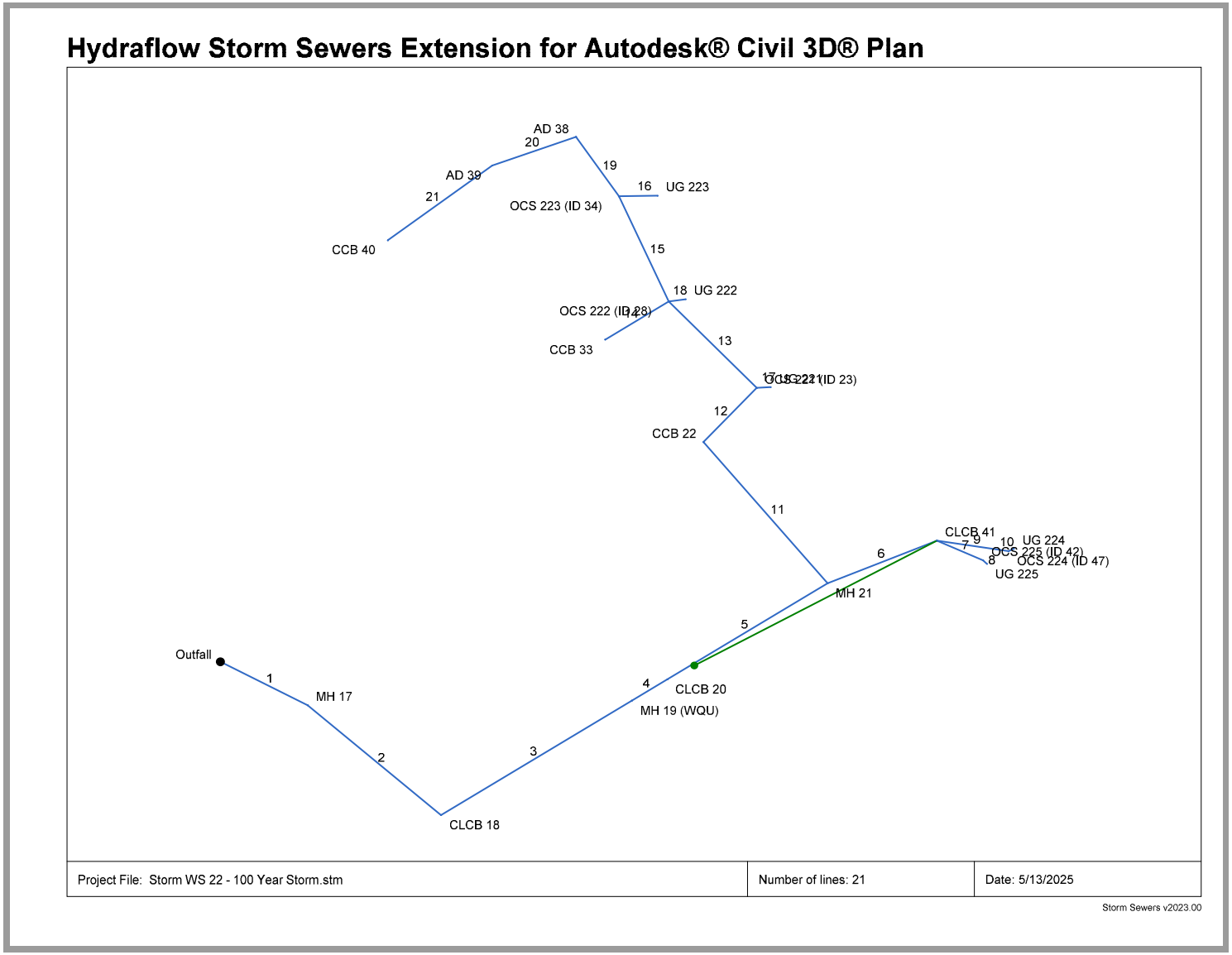
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	36	31.07	73.00	74.76	1.76	4.31	7.21	0.76	75.52	0.000	67	73.50	75.31	1.81**	4.44	6.99	0.76	76.07	0.000	0.000	n/a	0.29	0.22
2	36	31.27	73.50	75.31	1.81	4.44	7.03	0.76	76.07	0.000	126	74.40	76.21	1.81**	4.46	7.01	0.76	76.97	0.000	0.000	n/a	1.50	n/a
3	30	27.96	75.00	76.33	1.33*	2.66	10.51	0.85	77.18	0.000	156	77.00	78.80	1.80**	3.79	7.38	0.85	79.65	0.000	0.000	n/a	0.15	0.13
4	30	27.99	77.00	78.80	1.80	3.79	7.39	0.85	79.65	0.000	29	77.30	79.10	1.80**	3.79	7.39	0.85	79.95	0.000	0.000	n/a	0.50	0.42
5	30	27.44	77.30	79.10	1.80	3.75	7.24	0.83	79.94	0.000	131	78.70	80.48 j	1.78**	3.75	7.32	0.83	81.32	0.000	0.000	n/a	1.00	n/a
6	15	6.46	84.00	84.56	0.56*	0.53	12.19	0.56	85.12	0.000	79	88.00	89.02	1.02**	1.08	6.00	0.56	89.58	0.000	0.000	n/a	1.50	0.84
7	12	1.09	91.00	91.27	0.27*	0.18	6.22	0.17	91.44	0.000	34	92.00	92.44	0.44**	0.33	3.28	0.17	92.61	0.000	0.000	n/a	0.43	n/a
8	12	1.09	92.00	92.44	0.44*	0.33	3.28	0.17	92.61	0.502	4	92.00	92.51	0.51	0.40	2.73	0.12	92.62	0.306	0.404	0.016	1.00	0.12
9	15	5.06	88.00	89.02	1.02	0.96	4.71	0.43	89.46	0.000	47	89.50	90.41 j	0.91**	0.96	5.28	0.43	90.84	0.000	0.000	n/a	0.72	n/a
10	18	5.06	89.50	90.41	0.91	1.12	4.50	0.32	90.73	0.422	4	89.50	90.47	0.97	1.20	4.20	0.27	90.74	0.354	0.388	0.016	1.00	0.27
11	24	21.13	79.30	80.48	1.18	1.94	10.91	0.91	81.39	0.000	143	82.00	83.65	1.65**	2.76	7.64	0.91	84.55	0.000	0.000	n/a	1.43	n/a
12	24	20.12	82.00	83.65	1.65	2.71	7.28	0.86	84.50	0.000	57	83.00	84.61 j	1.61**	2.71	7.43	0.86	85.47	0.000	0.000	n/a	0.97	0.83
13	24	15.76	83.00	84.61	1.61	2.40	5.82	0.67	85.28	0.000	92	83.80	85.23 j	1.43**	2.40	6.56	0.67	85.90	0.000	0.000	n/a	1.00	n/a
14	12	1.17	89.50	89.88	0.38*	0.28	4.25	0.18	90.06	0.000	52	90.00	90.46	0.46**	0.35	3.36	0.18	90.63	0.000	0.000	n/a	1.00	0.18
15	18	9.69	84.30	85.23	0.93	1.15	8.42	0.63	85.86	0.000	94	86.00	87.20	1.20**	1.52	6.39	0.63	87.84	0.000	0.000	n/a	1.50	n/a
16	15	5.13	88.50	89.42	0.92*	0.97	5.31	0.44	89.86	0.681	25	88.50	89.73	1.23	1.22	4.20	0.27	90.00	0.485	0.583	0.146	1.00	0.27
17	18	4.46	89.00	89.81	0.81*	0.97	4.58	0.33	90.14	0.476	9	89.00	89.95	0.95	1.17	3.80	0.22	90.17	0.293	0.385	0.035	1.00	0.22
18	18	5.05	88.50	89.36	0.86*	1.05	4.79	0.36	89.72	0.495	11	88.50	89.53	1.03	1.29	3.92	0.24	89.77	0.298	0.397	0.044	1.00	0.24
19	15	3.77	86.30	87.20	0.90	0.81	3.98	0.34	87.54	0.000	57	87.00	87.78 j	0.78**	0.81	4.65	0.34	88.12	0.000	0.000	n/a	1.50	n/a
20	15	3.53	87.00	87.78	0.78	0.78	4.36	0.32	88.10	0.000	59	87.50	88.26 j	0.76**	0.78	4.54	0.32	88.58	0.000	0.000	n/a	0.57	0.18
21	15	3.09	87.50	88.26	0.76	0.72	3.97	0.29	88.55	0.000	92	88.10	88.81 j	0.71**	0.72	4.32	0.29	89.10	0.000	0.000	n/a	1.00	0.29

Project File: Storm WS 22 - 25 Year Storm.stm | Number of lines: 21 | Run Date: 5/13/2025

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewers v2023.00


Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan
AD 38
20
AD 39
21
19
16 UG 223
OCS 223 (ID 34)
CCB 40
15
18 UG 222
OCS 222 (ID 28)
CCB 33
13
OCS 221 (ID 23)
12
CCB 22
11
CLCB 41
7 9
10 UG 224
OCS 225 (ID 42)
8
OCS 224 (ID 47)
UG 225
6
MH 21
5
Outfall
1
MH 17
4
CLCB 20
MH 19 (WQU)
2
3
CLCB 18
Project File: Storm WS 22 - 100 Year Storm.stm
Number of lines: 21
Date: 5/13/2025
Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	67	33	MH	0.00	0.00	0.00	0.0	73.00	0.45	73.30	36	Cir	0.012	0.29	77.00	FES 16-MH 17
2	1	126	14	Grate	0.00	1.01	0.46	5.0	73.50	0.71	74.40	36	Cir	0.012	1.50	80.00	MH 17-CLCB 18
3	2	156	-85	MH	0.00	0.00	0.00	0.0	75.00	1.28	77.00	30	Cir	0.012	0.15	87.70	CLCB 18-MH 19 (WQU
4	3	29	0	Grate	0.00	0.36	0.25	5.0	77.00	1.03	77.30	30	Cir	0.012	0.50	85.80	MH 19 (WQU)-CLCB 2
5	4	131	0	MH	0.00	0.00	0.00	0.0	77.30	1.07	78.70	30	Cir	0.012	1.00	89.50	CLCB 20-MH 21
6	5	79	11	Grate	0.00	0.09	0.39	5.0	84.00	5.06	88.00	15	Cir	0.012	1.50	94.50	MH 21-CLCB 41
7	6	34	56	MH	0.00	0.00	0.00	0.0	91.00	2.94	92.00	12	Cir	0.012	0.43	96.90	CLCB 41-OCS 225 (I
8	7	4	22	None	3.28	0.00	0.00	0.0	92.00	0.00	92.00	12	Cir	0.012	1.00	0.00	OCS 225 (ID 42) -
9	6	47	38	MH	0.00	0.00	0.00	0.0	88.00	3.19	89.50	15	Cir	0.012	0.72	97.40	CLCB 41-OCS 224 (I
10	9	4	-42	None	10.51	0.00	0.00	0.0	89.50	0.00	89.50	18	Cir	0.012	1.00	0.00	OCS 224 (ID 47) -
11	5	143	-86	Comb	0.00	0.15	0.90	5.0	79.30	1.89	82.00	24	Cir	0.012	1.43	94.50	MH 21-CCB 22
12	11	57	71	MH	0.00	0.00	0.00	0.0	82.00	1.75	83.00	24	Cir	0.012	0.97	95.30	CCB 22-OCS 221 (ID
13	12	92	-75	MH	0.00	0.00	0.00	0.0	83.00	0.87	83.80	24	Cir	0.012	1.00	94.30	OCS 221(ID 23) -OC
14	13	52	-90	Comb	0.00	0.16	0.84	5.0	89.50	0.96	90.00	12	Cir	0.012	1.00	93.20	OCS 222 (ID 28)-CC
15	13	94	18	Grate	0.00	0.13	0.80	5.0	84.30	1.81	86.00	18	Cir	0.012	1.50	93.00	OCS 222(ID 28)-OCS
16	15	25	109	None	6.15	0.00	0.00	0.0	88.50	0.00	88.50	15	Cir	0.012	1.00	0.00	OCS 223 (ID 34)-UG
17	12	9	49	None	7.78	0.00	0.00	0.0	89.00	0.00	89.00	18	Cir	0.012	1.00	0.00	OCS 221 (ID 23)-UG
18	13	11	118	None	7.43	0.00	0.00	0.0	88.50	0.00	88.50	18	Cir	0.012	1.00	0.00	OCS 222(ID 28)-UG
19	15	57	-9	DrGrt	0.00	0.07	0.50	5.0	86.30	1.23	87.00	15	Cir	0.012	1.50	94.00	OCS 223 (ID 34)-AD
20	19	59	-85	DrGrt	0.00	0.18	0.35	5.0	87.00	0.85	87.50	15	Cir	0.012	0.57	93.50	AD 38-AD 39
21	20	92	-19	Comb	0.00	0.46	0.77	5.0	87.50	0.65	88.10	15	Cir	0.012	1.00	91.30	AD 39-CCB 40

Project File: Storm WS 22 - 100 Year Storm.stm | Number of lines: 21 | Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	67	0.00	2.61	0.00	0.00	1.42	0.0	7.8	9.0	47.86	48.35	6.77	36	0.45	73.00	73.30	76.79	77.08	1.15	77.00	FES 16-MH 17
2	1	126	1.01	2.61	0.46	0.46	1.42	5.0	7.4	9.1	48.10	61.06	6.81	36	0.71	73.50	74.40	77.29	77.85	77.00	80.00	MH 17-CLCB 18
3	2	156	0.00	1.60	0.00	0.00	0.95	0.0	7.2	9.3	44.01	50.31	8.97	30	1.28	75.00	77.00	78.93	80.46	80.00	87.70	CLCB 18-MH 19 (
4	3	29	0.36	1.60	0.25	0.09	0.95	5.0	7.1	9.4	44.04	45.19	8.97	30	1.03	77.00	77.30	80.65	80.93	87.70	85.80	MH 19 (WQU)-CL
5	4	131	0.00	1.24	0.00	0.00	0.86	0.0	6.9	9.5	43.33	45.93	8.83	30	1.07	77.30	78.70	81.56	82.81	85.80	89.50	CLCB 20-MH 21
6	5	79	0.09	0.09	0.39	0.04	0.04	5.0	5.0	10.9	14.17	15.74	13.05	15	5.06	84.00	88.00	84.93	89.23	89.50	94.50	MH 21-CLCB 41
7	6	34	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.28	6.62	6.71	12	2.94	91.00	92.00	91.50	92.77	94.50	96.90	CLCB 41-OCS 22
8	7	4	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.28	0.00	4.73	12	0.00	92.00	92.00	92.77	92.89	96.90	0.00	OCS 225 (ID 42) -
9	6	47	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	10.51	12.50	8.64	15	3.19	88.00	89.50	89.23	90.69	94.50	97.40	CLCB 41-OCS 22
10	9	4	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	10.51	0.00	6.44	18	0.00	89.50	89.50	90.74	90.88	97.40	0.00	OCS 224 (ID 47) -
11	5	143	0.15	1.15	0.90	0.14	0.83	5.0	6.6	9.7	29.34	33.67	9.34	24	1.89	79.30	82.00	84.02	86.07	89.50	94.50	MH 21-CCB 22
12	11	57	0.00	1.00	0.00	0.00	0.69	0.0	6.5	9.7	28.08	32.45	8.94	24	1.75	82.00	83.00	88.01	88.76	94.50	95.30	CCB 22-OCS 221
13	12	92	0.00	1.00	0.00	0.00	0.69	0.0	6.3	9.9	20.41	22.85	6.50	24	0.87	83.00	83.80	89.96	90.60	95.30	94.30	OCS 221(ID 23) -
14	13	52	0.16	0.16	0.84	0.13	0.13	5.0	5.0	10.9	1.46	3.78	1.86	12	0.96	89.50	90.00	91.26	91.33	94.30	93.20	OCS 222 (ID 28)-
15	13	94	0.13	0.84	0.80	0.10	0.56	5.0	6.0	10.1	11.75	15.30	6.65	18	1.81	84.30	86.00	91.26	92.26	94.30	93.00	OCS 222(ID 28)-
16	15	25	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	6.15	0.00	5.01	15	0.00	88.50	88.50	93.29	93.48	93.00	0.00	OCS 223 (ID 34)-
17	12	9	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	7.78	0.00	5.31	18	0.00	89.00	89.00	90.08	90.26	95.30	0.00	OCS 221 (ID 23)-
18	13	11	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	7.43	0.00	4.20	18	0.00	88.50	88.50	91.26	91.31	94.30	0.00	OCS 222(ID 28)-U
19	15	57	0.07	0.71	0.50	0.04	0.45	5.0	5.8	10.2	4.63	7.75	3.78	15	1.23	86.30	87.00	93.29	93.54	93.00	94.00	OCS 223 (ID 34)-
20	19	59	0.18	0.64	0.35	0.06	0.42	5.0	5.5	10.5	4.36	6.44	3.56	15	0.85	87.00	87.50	93.87	94.10	94.00	93.50	AD 38-AD 39
21	20	92	0.46	0.46	0.77	0.35	0.35	5.0	5.0	10.9	3.85	5.65	3.14	15	0.65	87.50	88.10	94.22	94.49	93.50	91.30	AD 39-CCB 40

Project File: Storm WS 22 - 100 Year Storm.stm | Number of lines: 21 | Run Date: 5/13/2025

NOTES:Intensity = 49.88 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 17	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CLCB 18	5.05	0.00	2.01	3.04	Grate	0.0	0.00	0.00	2.31	1.35	0.041	2.53	0.010	0.040	0.013	0.19	6.64	0.15	5.67	0.0	Off
3	MH 19 (WQU)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	CLCB 20	0.98	0.10	1.08	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.010	0.020	0.000	0.18	10.23	0.18	10.23	0.0	Off
5	MH 21	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
6	CLCB 41	0.38	0.00	0.28	0.10	Grate	0.0	0.00	0.00	2.31	1.35	0.050	2.53	0.010	0.100	0.013	0.06	2.85	0.03	2.60	0.0	4
7	OCS 225 (ID 42)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	UG 225	3.28*	0.00	0.00	3.28	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
9	OCS 224 (ID 47)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	UG 224	10.51*	0.00	0.00	10.51	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	CCB 22	1.47	0.00	1.47	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.010	0.015	0.000	0.15	10.63	0.15	10.63	0.0	Off
12	OCS 221 (ID 23)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
13	OCS 222 (ID 28)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
14	CCB 33	1.46	0.00	1.46	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.010	0.030	0.000	0.13	5.97	0.13	5.97	0.0	Off
15	OCS 223 (ID 34)	1.13	0.00	1.13	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.010	0.050	0.000	0.18	5.72	0.18	5.72	0.0	Off
16	UG 223	6.15*	0.00	0.00	6.15	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	UG 221	7.78*	0.00	0.00	7.78	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
18	UG 222	7.43*	0.00	0.00	7.43	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
19	AD 38	0.38	0.00	0.38	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.12	14.34	0.12	14.34	0.0	Off
20	AD 39	0.68	0.00	0.68	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.017	0.017	0.000	0.18	23.48	0.18	23.48	0.0	Off
21	CCB 40	3.85	0.00	3.85	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.010	0.030	0.000	0.26	10.39	0.26	10.39	0.0	Off

Project File: Storm WS 22 - 100 Year Storm.stm | Number of lines: 21 | Run Date: 5/13/2025

NOTES: Inlet N-Values = 0.016; Intensity = 49.88 / (Inlet time + 3.80) ^ 0.70; Return period = 100 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

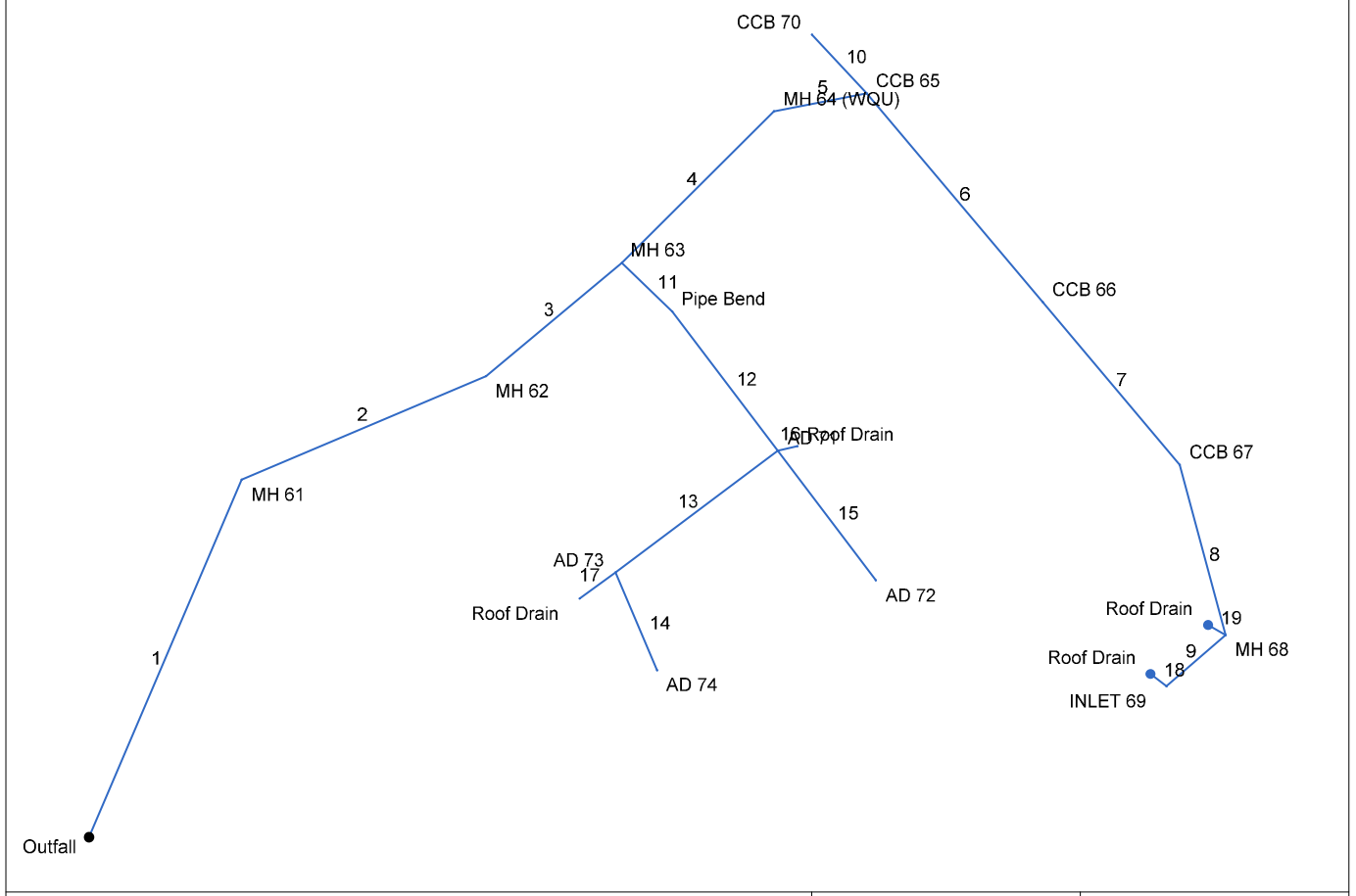
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	36	47.86	73.00	76.79	3.00	7.07	6.77	0.71	77.50	0.439	67	73.30	77.08	3.00	7.07	6.77	0.71	77.80	0.439	0.439	0.294	0.29	0.21
2	36	48.10	73.50	77.29	3.00	7.07	6.81	0.72	78.01	0.443	126	74.40	77.85	3.00	7.07	6.80	0.72	78.57	0.443	0.443	0.559	1.50	1.08
3	30	44.01	75.00	78.93	2.50	4.91	8.97	1.25	80.18	0.982	156	77.00	80.46	2.50	4.91	8.97	1.25	81.71	0.981	0.981	1.531	0.15	0.19
4	30	44.04	77.00	80.65	2.50	4.91	8.97	1.25	81.90	0.983	29	77.30	80.93	2.50	4.91	8.97	1.25	82.19	0.983	0.983	0.285	0.50	0.63
5	30	43.33	77.30	81.56	2.50	4.91	8.83	1.21	82.77	0.951	131	78.70	82.81	2.50	4.91	8.83	1.21	84.02	0.951	0.951	1.246	1.00	1.21
6	15	14.17	84.00	84.93	0.93*	0.98	14.51	2.08	87.01	0.000	79	88.00	89.23	1.23**	1.22	11.58	2.08	91.32	0.000	0.000	n/a	1.50	n/a
7	12	3.28	91.00	91.50	0.50*	0.39	8.40	0.39	91.89	0.000	34	92.00	92.77	0.77**	0.65	5.02	0.39	93.17	0.000	0.000	n/a	0.43	n/a
8	12	3.28	92.00	92.77	0.77*	0.65	5.02	0.39	93.17	0.808	4	92.00	92.89	0.89	0.74	4.45	0.31	93.20	0.643	0.726	0.029	1.00	0.31
9	15	10.51	88.00	89.23	1.23	1.21	8.59	1.18	90.41	0.000	47	89.50	90.69 j	1.19**	1.21	8.70	1.18	91.87	0.000	0.000	n/a	0.72	0.85
10	18	10.51	89.50	90.74	1.24*	1.57	6.70	0.70	91.44	0.835	4	89.50	90.88	1.38	1.70	6.17	0.59	91.48	0.740	0.788	0.032	1.00	0.59
11	24	29.34	79.30	84.02	2.00	3.14	9.34	1.36	85.37	1.434	143	82.00	86.07	2.00	3.14	9.34	1.36	87.43	1.434	1.434	2.051	1.43	1.94
12	24	28.08	82.00	88.01	2.00	3.14	8.94	1.24	89.25	1.314	57	83.00	88.76	2.00	3.14	8.94	1.24	90.00	1.314	1.314	0.749	0.97	1.21
13	24	20.41	83.00	89.96	2.00	3.14	6.50	0.66	90.62	0.694	92	83.80	90.60	2.00	3.14	6.50	0.66	91.26	0.694	0.694	0.639	1.00	0.66
14	12	1.46	89.50	91.26	1.00	0.79	1.86	0.05	91.31	0.143	52	90.00	91.33	1.00	0.79	1.86	0.05	91.39	0.143	0.143	0.074	1.00	0.05
15	18	11.75	84.30	91.26	1.50	1.77	6.65	0.69	91.95	1.067	94	86.00	92.26	1.50	1.77	6.65	0.69	92.95	1.066	1.066	1.002	1.50	1.03
16	15	6.15	88.50	93.29	1.25	1.23	5.01	0.39	93.68	0.773	25	88.50	93.48	1.25	1.23	5.01	0.39	93.88	0.773	0.773	0.193	1.00	0.39
17	18	7.78	89.00	90.08	1.08*	1.36	5.71	0.51	90.59	0.621	9	89.00	90.26	1.26	1.59	4.91	0.37	90.64	0.448	0.534	0.048	1.00	0.37
18	18	7.43	88.50	91.26	1.50	1.77	4.21	0.27	91.53	0.427	11	88.50	91.31	1.50	1.77	4.20	0.27	91.58	0.427	0.427	0.047	1.00	0.27
19	15	4.63	86.30	93.29	1.25	1.23	3.78	0.22	93.51	0.439	57	87.00	93.54	1.25	1.23	3.78	0.22	93.76	0.439	0.439	0.250	1.50	0.33
20	15	4.36	87.00	93.87	1.25	1.23	3.56	0.20	94.07	0.389	59	87.50	94.10	1.25	1.23	3.56	0.20	94.30	0.389	0.389	0.230	0.57	0.11
21	15	3.85	87.50	94.22	1.25	1.23	3.14	0.15	94.37	0.303	92	88.10	94.49	1.25	1.23	3.14	0.15	94.65	0.303	0.303	0.278	1.00	0.15

Project File: Storm WS 22 - 100 Year Storm.stm | Number of lines: 21 | Run Date: 5/13/2025

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	194	-67	MH	3.70	0.00	0.00	0.0	70.00	0.62	71.20	30	Cir	0.012	0.74	77.50	FES 60-MH 61
2	1	132	44	MH	0.00	0.00	0.00	0.0	71.20	0.61	72.00	24	Cir	0.012	0.34	81.10	MH 61-MH 62
3	2	88	-17	MH	0.00	0.00	0.00	0.0	72.00	0.91	72.80	24	Cir	0.012	1.00	80.70	MH 62-MH 63
4	3	107	-5	MH	1.34	0.00	0.00	0.0	72.80	0.56	73.40	24	Cir	0.012	0.61	80.10	MH 63-MH 64 (WQU)
5	4	47	34	Comb	0.00	0.02	0.30	5.0	73.80	1.06	74.30	18	Cir	0.012	1.50	79.50	MH 64 (WQU)-CCB 65
6	5	136	61	Comb	0.00	0.53	0.60	5.0	74.30	0.96	75.60	18	Cir	0.012	0.50	79.10	CCB 65-CCB 66
7	6	106	0	Comb	0.00	0.09	0.53	5.0	75.60	1.23	76.90	18	Cir	0.012	0.72	80.40	CCB 66-CCB 67
8	7	88	25	DrGrt	0.00	0.25	0.35	5.0	76.90	2.39	79.00	15	Cir	0.012	1.50	86.70	CCB 67-MH 68
9	8	39	64	Comb	0.00	0.03	0.30	5.0	79.00	2.56	80.00	15	Cir	0.012	1.48	85.50	MH 68-INLET69
10	5	40	-122	Comb	0.00	0.03	0.83	5.0	75.00	0.75	75.30	12	Cir	0.012	1.00	78.50	CCB 65-CCB 70
11	3	35	84	None	0.00	0.00	0.00	0.0	73.00	3.43	74.20	12	Cir	0.012	0.19	0.00	MH 63-Pipe Bend
12	11	87	9	DrGrt	0.00	0.09	0.30	5.0	74.20	3.56	77.30	12	Cir	0.012	2.09	81.50	Pipe Bend-AD 71
13	12	101	90	DrGrt	0.00	0.11	0.30	5.0	77.50	0.50	78.00	12	Cir	0.012	1.46	81.50	AD 71-AD 73
14	13	53	-76	DrGrt	0.00	0.09	0.30	5.0	78.00	0.57	78.30	12	Cir	0.012	1.00	81.50	AD 73-AD 74
15	12	81	0	DrGrt	0.00	0.07	0.30	5.0	77.50	0.99	78.30	12	Cir	0.012	1.00	81.50	AD 71-AD 72
16	12	10	-66	MH	1.81	0.00	0.00	0.0	77.50	3.00	77.80	12	Cir	0.012	1.00	0.00	AD 71 - Roof Drain
17	13	22	1	MH	1.46	0.00	0.00	0.0	78.00	1.36	78.30	12	Cir	0.012	1.00	0.00	AD 73 - Roof Drain
18	9	10	79	MH	4.56	0.00	0.00	0.0	80.00	0.50	80.05	12	Cir	0.012	1.00	0.00	MH 69 - Roof Drain
19	8	10	135	MH	1.57	0.00	0.00	0.0	79.25	0.60	79.31	12	Cir	0.012	1.00	0.00	MH 68 - Roof Drain

Project File: Storm WS 23 - 25 Year Storm.stm | Number of lines: 19 | Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	194	0.00	1.31	0.00	0.00	0.60	0.0	7.1	7.5	18.95	34.94	6.78	30	0.62	70.00	71.20	71.31	72.67	71.63	77.50	FES 60-MH 61
2	1	132	0.00	1.31	0.00	0.00	0.60	0.0	6.8	7.7	15.35	19.08	6.33	24	0.61	71.20	72.00	72.67	73.41	77.50	81.10	MH 61-MH 62
3	2	88	0.00	1.31	0.00	0.00	0.60	0.0	6.5	7.8	15.42	23.36	6.50	24	0.91	72.00	72.80	73.41	74.21	81.10	80.70	MH 62-MH 63
4	3	107	0.00	0.95	0.00	0.00	0.49	0.0	6.2	8.0	11.41	18.35	5.27	24	0.56	72.80	73.40	74.21	74.61	80.70	80.10	MH 63-MH 64 (W
5	4	47	0.02	0.95	0.30	0.01	0.49	5.0	6.1	8.0	10.10	11.73	7.01	18	1.06	73.80	74.30	74.87	75.52	80.10	79.50	MH 64 (WQU)-CC
6	5	136	0.53	0.90	0.60	0.32	0.46	5.0	5.7	8.3	9.95	11.12	6.47	18	0.96	74.30	75.60	75.52	76.81	79.50	79.10	CCB 65-CCB 66
7	6	106	0.09	0.37	0.53	0.05	0.14	5.0	5.4	8.5	7.35	12.60	5.18	18	1.23	75.60	76.90	76.81	77.95	79.10	80.40	CCB 66-CCB 67
8	7	88	0.25	0.28	0.35	0.09	0.10	5.0	5.1	8.6	6.96	10.81	6.31	15	2.39	76.90	79.00	77.95	80.06	80.40	86.70	CCB 67-MH 68
9	8	39	0.03	0.03	0.30	0.01	0.01	5.0	5.0	8.7	4.64	11.20	4.63	15	2.56	79.00	80.00	80.06	80.87	86.70	85.50	MH 68-INLET69
10	5	40	0.03	0.03	0.83	0.02	0.02	5.0	5.0	8.7	0.22	3.34	1.30	12	0.75	75.00	75.30	75.52	75.49	79.50	78.50	CCB 65-CCB 70
11	3	35	0.00	0.36	0.00	0.00	0.11	0.0	6.4	7.8	4.12	7.14	5.50	12	3.43	73.00	74.20	74.21	75.06	80.70	0.00	MH 63-Pipe Bend
12	11	87	0.09	0.36	0.30	0.03	0.11	5.0	6.2	8.0	4.13	7.28	5.77	12	3.56	74.20	77.30	75.06	78.16	0.00	81.50	Pipe Bend-AD 71
13	12	101	0.11	0.20	0.30	0.03	0.06	5.0	5.7	8.2	1.95	2.71	3.73	12	0.50	77.50	78.00	78.16	78.61	81.50	81.50	AD 71-AD 73
14	13	53	0.09	0.09	0.30	0.03	0.03	5.0	5.0	8.7	0.24	2.90	1.21	12	0.57	78.00	78.30	78.95	78.50	81.50	81.50	AD 73-AD 74
15	12	81	0.07	0.07	0.30	0.02	0.02	5.0	5.0	8.7	0.18	3.83	1.16	12	0.99	77.50	78.30	78.16	78.48	81.50	81.50	AD 71-AD 72
16	12	10	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.81	6.68	3.60	12	3.00	77.50	77.80	78.16	78.37	81.50	0.00	AD 71 - Roof Drai
17	13	22	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.46	4.51	2.75	12	1.36	78.00	78.30	78.95	78.81	81.50	0.00	AD 73 - Roof Drai
18	9	10	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.56	2.73	5.81	12	0.50	80.00	80.05	81.00	81.14	85.50	0.00	MH 69 - Roof Drai
19	8	10	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.57	2.99	3.01	12	0.60	79.25	79.31	80.06	79.84	86.70	0.00	MH 68 - Roof Drai

Project File: Storm WS 23 - 25 Year Storm.stm | Number of lines: 19 | Run Date: 5/13/2025

NOTES:Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 61	3.70*	0.00	0.00	3.70	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	MH 62	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	MH 63	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	MH 64 (WQU)	1.34*	0.00	0.00	1.34	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
5	CCB 65	0.05	0.00	0.05	0.00	Comb	4.0	2.73	0.00	2.31	1.35	0.031	2.53	0.015	0.015	0.013	0.03	2.14	0.00	0.01	0.0	Off
6	CCB 66	2.77	0.15	2.92	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.016	0.016	0.000	0.34	21.03	0.34	21.03	0.0	Off
7	CCB 67	0.42	0.00	0.27	0.15	Comb	4.0	2.73	0.00	2.31	1.35	0.057	2.53	0.016	0.016	0.013	0.06	3.98	0.04	2.69	0.0	6
8	MH 68	0.76	0.00	0.76	0.00	DrGrt	0.0	0.00	1.36	1.17	1.17	Sag	2.00	0.030	0.030	0.000	0.14	11.56	0.14	11.56	0.0	Off
9	INLET 69	0.08	0.00	0.08	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.050	0.050	0.000	0.05	1.07	0.05	1.07	0.0	Off
10	CCB 70	0.22	0.00	0.16	0.06	Comb	4.0	2.73	0.00	2.31	1.35	0.013	2.53	0.016	0.016	0.013	0.07	4.12	0.04	2.57	0.0	Off
11	Pipe Bend	0.00	0.00	0.00	0.00	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	AD 71	0.24	0.00	0.24	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.09	10.96	0.09	10.96	0.0	Off
13	AD 73	0.29	0.00	0.29	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.10	12.25	0.10	12.25	0.0	Off
14	AD 74	0.24	0.00	0.24	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.09	10.96	0.09	10.96	0.0	Off
15	AD 72	0.18	0.00	0.18	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.08	9.58	0.08	9.58	0.0	Off
16	Roof Drain	1.81*	0.00	0.00	1.81	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	Roof Drain	1.46*	0.00	0.00	1.46	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
18	Roof Drain	4.56*	0.00	0.00	4.56	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
19	Roof Drain	1.57*	0.00	0.00	1.57	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Storm WS 23 - 25 Year Storm.stm | Number of lines: 19 | Run Date: 5/13/2025

NOTES: Inlet N-Values = 0.016; Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

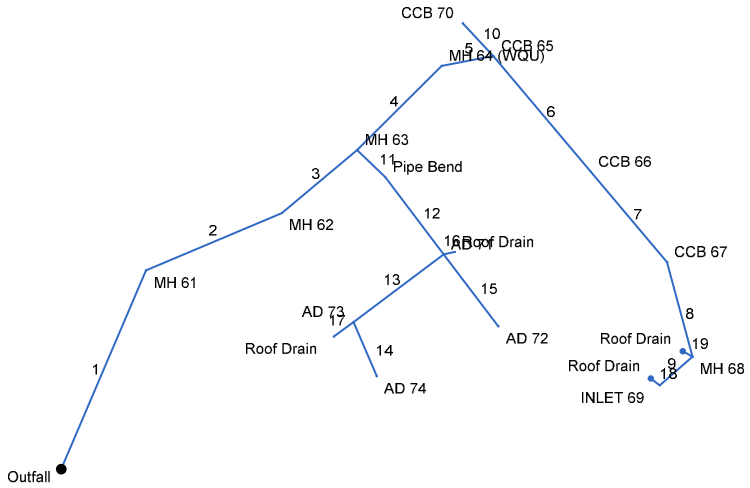
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	30	18.95	70.00	71.31	1.31	2.61	7.26	0.61	71.93	0.000	194	71.20	72.67	1.47**	3.01	6.29	0.61	73.29	0.000	0.000	n/a	0.74	0.46
2	24	15.35	71.20	72.67	1.47	2.37	6.18	0.65	73.33	0.000	132	72.00	73.41 j	1.41**	2.37	6.48	0.65	74.06	0.000	0.000	n/a	0.34	n/a
3	24	15.42	72.00	73.41	1.41	2.37	6.51	0.66	74.07	0.000	88	72.80	74.21	1.41**	2.37	6.49	0.66	74.87	0.000	0.000	n/a	1.00	n/a
4	24	11.41	72.80	74.21	1.41	1.99	4.80	0.51	74.73	0.000	107	73.40	74.61 j	1.21**	1.99	5.73	0.51	75.12	0.000	0.000	n/a	0.61	0.31
5	18	10.10	73.80	74.87	1.07*	1.35	7.47	0.67	75.54	0.000	47	74.30	75.52	1.22**	1.54	6.54	0.67	76.19	0.000	0.000	n/a	1.50	1.00
6	18	9.95	74.30	75.52	1.22	1.53	6.45	0.65	76.18	0.000	136	75.60	76.81 j	1.21**	1.53	6.49	0.65	77.47	0.000	0.000	n/a	0.50	0.33
7	18	7.35	75.60	76.81	1.21	1.32	4.79	0.48	77.30	0.000	106	76.90	77.95 j	1.05**	1.32	5.57	0.48	78.43	0.000	0.000	n/a	0.72	0.35
8	15	6.96	76.90	77.95	1.05	1.10	6.33	0.62	78.56	0.000	88	79.00	80.06	1.06**	1.11	6.29	0.62	80.67	0.000	0.000	n/a	1.50	0.92
9	15	4.64	79.00	80.06	1.06	0.91	4.19	0.40	80.46	0.000	39	80.00	80.87 j	0.87**	0.91	5.07	0.40	81.27	0.000	0.000	n/a	1.48	n/a
10	12	0.22	75.00	75.52	0.52	0.10	0.52	0.07	75.59	0.000	40	75.30	75.49	0.19**	0.10	2.07	0.07	75.56	0.000	0.000	n/a	1.00	n/a
11	12	4.12	73.00	74.21	1.00	0.72	5.24	0.43	74.64	1.139	35	74.20	75.06 j	0.86**	0.72	5.75	0.51	75.57	1.060	1.100	n/a	0.19	n/a
12	12	4.13	74.20	75.06	0.86	0.72	5.77	0.52	75.57	0.000	87	77.30	78.16	0.86**	0.72	5.76	0.52	78.67	0.000	0.000	n/a	2.09	1.08
13	12	1.95	77.50	78.16	0.66	0.55	3.57	0.20	78.36	0.433	101	78.00	78.61	0.61	0.50	3.89	0.24	78.85	0.540	0.487	0.491	1.46	0.34
14	12	0.24	78.00	78.95	0.95	0.11	0.30	0.07	79.02	0.000	53	78.30	78.50	0.20**	0.11	2.12	0.07	78.57	0.000	0.000	n/a	1.00	0.07
15	12	0.18	77.50	78.16	0.66	0.09	0.33	0.06	78.22	0.000	81	78.30	78.48 j	0.18**	0.09	1.98	0.06	78.54	0.000	0.000	n/a	1.00	n/a
16	12	1.81	77.50	78.16	0.66	0.46	3.30	0.24	78.39	0.000	10	77.80	78.37 j	0.57**	0.46	3.89	0.24	78.61	0.000	0.000	n/a	1.00	n/a
17	12	1.46	78.00	78.95	0.95	0.40	1.89	0.20	79.16	0.000	22	78.30	78.81	0.51**	0.40	3.61	0.20	79.01	0.000	0.000	n/a	1.00	n/a
18	12	4.56	80.00	81.00	1.00*	0.79	5.81	0.52	81.52	1.398	10	80.05	81.14	1.00	0.79	5.81	0.52	81.66	1.397	1.397	0.140	1.00	0.52
19	12	1.57	79.25	80.06	0.81	0.42	2.31	0.21	80.27	0.000	10	79.31	79.84	0.53**	0.42	3.70	0.21	80.05	0.000	0.000	n/a	1.00	0.21

Project File: Storm WS 23 - 25 Year Storm.stm | Number of lines: 19 | Run Date: 5/13/2025

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm WS 23 - 100 Year Storm.stm	Number of lines: 19	Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	194	-67	MH	4.61	0.00	0.00	0.0	70.00	0.62	71.20	30	Cir	0.012	0.74	77.50	FES 60-MH 61
2	1	132	44	MH	0.00	0.00	0.00	0.0	71.20	0.61	72.00	24	Cir	0.012	0.34	81.10	MH 61-MH 62
3	2	88	-17	MH	0.00	0.00	0.00	0.0	72.00	0.91	72.80	24	Cir	0.012	1.00	80.70	MH 62-MH 63
4	3	107	-5	MH	1.67	0.00	0.00	0.0	72.80	0.56	73.40	24	Cir	0.012	0.61	80.10	MH 63-MH 64 (WQU)
5	4	47	34	Comb	0.00	0.02	0.30	5.0	73.80	1.06	74.30	18	Cir	0.012	1.50	79.50	MH 64 (WQU)-CCB 65
6	5	136	61	Comb	0.00	0.53	0.60	5.0	74.30	0.96	75.60	18	Cir	0.012	0.50	79.10	CCB 65-CCB 66
7	6	106	0	Comb	0.00	0.09	0.53	5.0	75.60	1.23	76.90	18	Cir	0.012	0.72	80.40	CCB 66-CCB 67
8	7	88	25	DrGrt	0.00	0.25	0.35	5.0	76.90	2.39	79.00	15	Cir	0.012	1.50	86.70	CCB 67-MH 68
9	8	39	64	DrGrt	0.00	0.03	0.30	5.0	79.00	2.56	80.00	15	Cir	0.012	1.48	85.50	MH 68-INLET 69
10	5	40	-122	Comb	0.00	0.03	0.83	5.0	75.00	0.75	75.30	12	Cir	0.012	1.00	78.50	CCB 65-CCB 70
11	3	35	84	None	0.00	0.00	0.00	0.0	73.00	3.43	74.20	12	Cir	0.012	0.19	0.00	MH 63-Pipe Bend
12	11	87	9	DrGrt	0.00	0.09	0.30	5.0	74.20	3.56	77.30	12	Cir	0.012	2.09	81.50	Pipe Bend-AD 71
13	12	101	90	DrGrt	0.00	0.11	0.30	5.0	77.50	0.50	78.00	12	Cir	0.012	1.46	81.50	AD 71-AD 73
14	13	53	-76	DrGrt	0.00	0.09	0.30	5.0	78.00	0.57	78.30	12	Cir	0.012	1.00	81.50	AD 73-AD 74
15	12	81	0	DrGrt	0.00	0.07	0.30	5.0	77.50	0.99	78.30	12	Cir	0.012	1.00	81.50	AD 71-AD 72
16	12	10	-66	MH	2.26	0.00	0.00	0.0	77.50	3.00	77.80	12	Cir	0.012	1.00	0.00	AD 71 - Roof Drain
17	13	22	1	MH	1.82	0.00	0.00	0.0	78.00	1.36	78.30	12	Cir	0.012	1.00	0.00	AD 73 - Roof Drain
18	9	10	79	MH	5.69	0.00	0.00	0.0	80.00	0.50	80.05	12	Cir	0.012	1.00	0.00	MH 69 - Roof Drain
19	8	10	135	MH	1.96	0.00	0.00	0.0	79.25	0.60	79.31	12	Cir	0.012	1.00	0.00	MH 68 - Roof Drain

Project File: Storm WS 23 - 100 Year Storm.stm | Number of lines: 19 | Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	194	0.00	1.31	0.00	0.00	0.60	0.0	10.6	7.7	22.63	34.94	4.61	30	0.62	70.00	71.20	74.13	74.63	71.63	77.50	FES 60-MH 61
2	1	132	0.00	1.31	0.00	0.00	0.60	0.0	10.2	7.8	18.11	19.08	5.77	24	0.61	71.20	72.00	74.88	75.60	77.50	81.10	MH 61-MH 62
3	2	88	0.00	1.31	0.00	0.00	0.60	0.0	10.0	7.9	18.17	23.36	5.78	24	0.91	72.00	72.80	75.78	76.26	81.10	80.70	MH 62-MH 63
4	3	107	0.00	0.95	0.00	0.00	0.49	0.0	7.0	9.4	13.95	18.35	4.44	24	0.56	72.80	73.40	76.78	77.13	80.70	80.10	MH 63-MH 64 (W
5	4	47	0.02	0.95	0.30	0.01	0.49	5.0	6.9	9.5	12.31	11.73	6.97	18	1.06	73.80	74.30	77.31	77.86	80.10	79.50	MH 64 (WQU)-CC
6	5	136	0.53	0.90	0.60	0.32	0.46	5.0	5.7	10.3	12.41	11.12	7.03	18	0.96	74.30	75.60	79.00	80.62	79.50	79.10	CCB 65-CCB 66
7	6	106	0.09	0.37	0.53	0.05	0.14	5.0	5.3	10.6	9.17	12.60	5.19	18	1.23	75.60	76.90	81.00	81.69	79.10	80.40	CCB 66-CCB 67
8	7	88	0.25	0.28	0.35	0.09	0.10	5.0	5.1	10.7	8.69	10.81	7.08	15	2.39	76.90	79.00	81.99	83.35	80.40	86.70	CCB 67-MH 68
9	8	39	0.03	0.03	0.30	0.01	0.01	5.0	5.0	10.9	5.79	11.20	4.72	15	2.56	79.00	80.00	84.52	84.78	86.70	85.50	MH 68-INLET 69
10	5	40	0.03	0.03	0.83	0.02	0.02	5.0	5.0	10.9	0.27	3.34	0.34	12	0.75	75.00	75.30	79.00	79.00	79.50	78.50	CCB 65-CCB 70
11	3	35	0.00	0.36	0.00	0.00	0.11	0.0	9.9	8.0	4.94	7.14	6.29	12	3.43	73.00	74.20	76.78	77.35	80.70	0.00	MH 63-Pipe Bend
12	11	87	0.09	0.36	0.30	0.03	0.11	5.0	9.6	8.1	4.95	7.28	6.31	12	3.56	74.20	77.30	77.47	78.90	0.00	81.50	Pipe Bend-AD 71
13	12	101	0.11	0.20	0.30	0.03	0.06	5.0	7.4	9.2	2.37	2.71	3.02	12	0.50	77.50	78.00	80.20	80.58	81.50	81.50	AD 71-AD 73
14	13	53	0.09	0.09	0.30	0.03	0.03	5.0	5.0	10.9	0.29	2.90	0.37	12	0.57	78.00	78.30	80.79	80.79	81.50	81.50	AD 73-AD 74
15	12	81	0.07	0.07	0.30	0.02	0.02	5.0	5.0	10.9	0.23	3.83	0.29	12	0.99	77.50	78.30	80.20	80.20	81.50	81.50	AD 71-AD 72
16	12	10	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.26	6.68	2.88	12	3.00	77.50	77.80	80.20	80.23	81.50	0.00	AD 71 - Roof Drai
17	13	22	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.82	4.51	2.32	12	1.36	78.00	78.30	80.79	80.83	81.50	0.00	AD 73 - Roof Drai
18	9	10	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.69	2.73	7.25	12	0.50	80.00	80.05	85.30	85.51	85.50	0.00	MH 69 - Roof Drai
19	8	10	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.96	2.99	2.50	12	0.60	79.25	79.31	84.52	84.54	86.70	0.00	MH 68 - Roof Drai

Project File: Storm WS 23 - 100 Year Storm.stm | Number of lines: 19 | Run Date: 5/13/2025

NOTES:Intensity = 49.88 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 61	4.61*	0.00	0.00	4.61	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	MH 62	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	MH 63	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	MH 64 (WQU)	1.67*	0.00	0.00	1.67	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
5	CCB 65	0.07	0.00	0.07	0.00	Comb	4.0	2.73	0.00	2.31	1.35	0.031	2.53	0.015	0.015	0.013	0.03	2.32	0.00	0.01	0.0	Off
6	CCB 66	3.45	0.20	3.65	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.016	0.016	0.000	0.39	24.23	0.39	24.23	0.0	Off
7	CCB 67	0.52	0.00	0.32	0.20	Comb	4.0	2.73	0.00	2.31	1.35	0.057	2.53	0.016	0.016	0.013	0.07	4.33	0.05	3.01	0.0	6
8	MH 68	0.95	0.00	0.95	0.00	DrGrt	0.0	0.00	1.36	1.17	1.17	Sag	2.00	0.030	0.030	0.000	0.17	13.06	0.17	13.06	0.0	Off
9	INLET 69	0.10	0.00	0.10	0.00	DrGrt	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.050	0.050	0.000	0.03	3.61	0.03	3.61	0.0	Off
10	CCB 70	0.27	0.00	0.18	0.09	Comb	4.0	2.73	0.00	2.31	1.35	0.013	2.53	0.016	0.016	0.013	0.07	4.48	0.05	2.91	0.0	Off
11	Pipe Bend	0.00	0.00	0.00	0.00	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	AD 71	0.29	0.00	0.29	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.10	12.38	0.10	12.38	0.0	Off
13	AD 73	0.36	0.00	0.36	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.12	13.86	0.12	13.86	0.0	Off
14	AD 74	0.29	0.00	0.29	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.10	12.38	0.10	12.38	0.0	Off
15	AD 72	0.23	0.00	0.23	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.09	10.78	0.09	10.78	0.0	Off
16	Roof Drain	2.26*	0.00	0.00	2.26	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	Roof Drain	1.82*	0.00	0.00	1.82	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
18	Roof Drain	5.69*	0.00	0.00	5.69	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
19	Roof Drain	1.96*	0.00	0.00	1.96	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Storm WS 23 - 100 Year Storm.stm | Number of lines: 19 | Run Date: 5/13/2025

NOTES: Inlet N-Values = 0.016; Intensity = 49.88 / (Inlet time + 3.80) ^ 0.70; Return period = 100 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

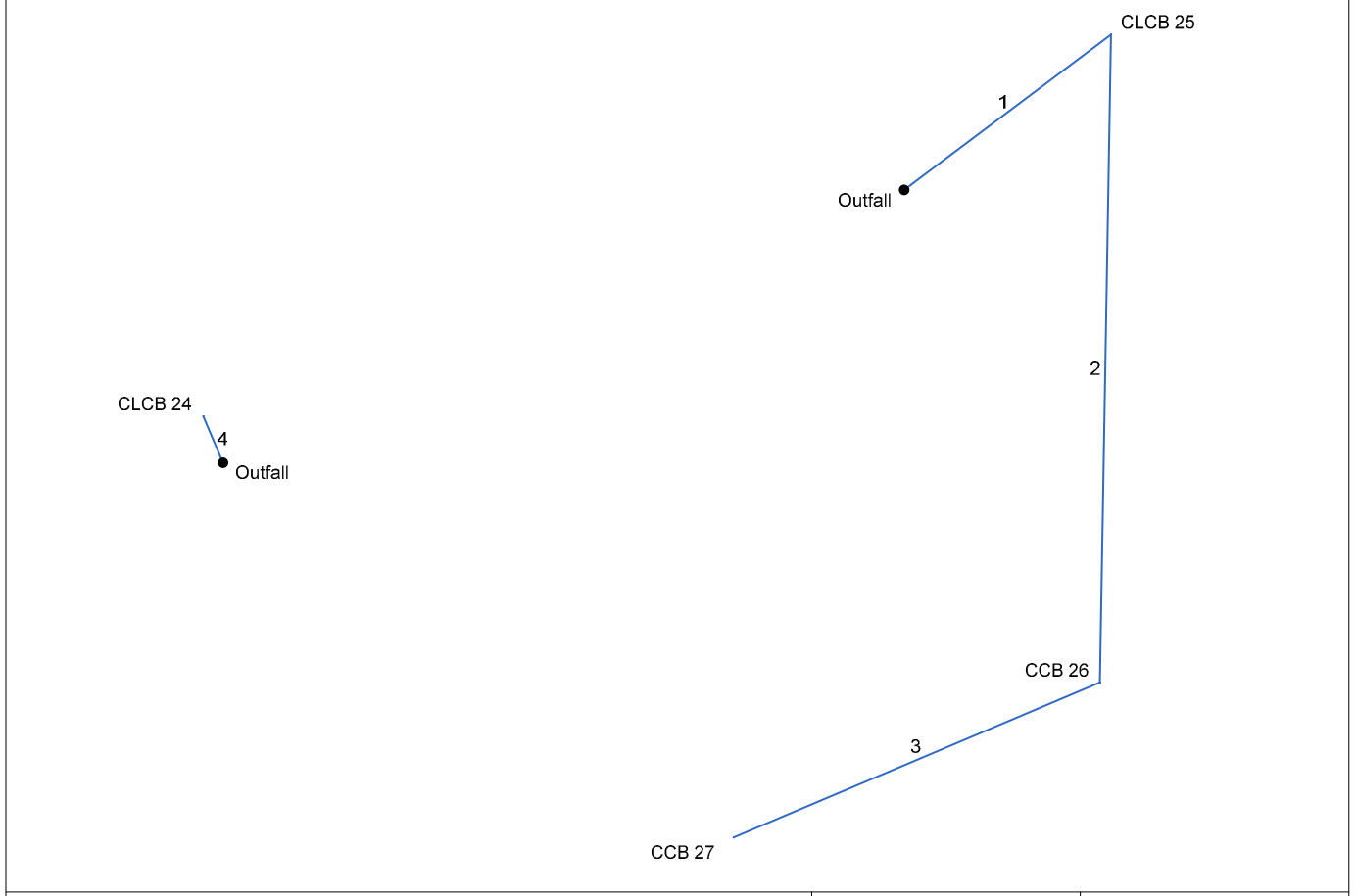
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	30	22.63	70.00	74.13	2.50	4.91	4.61	0.33	74.46	0.260	194	71.20	74.63	2.50	4.91	4.61	0.33	74.96	0.260	0.260	0.504	0.74	0.24
2	24	18.11	71.20	74.88	2.00	3.14	5.77	0.52	75.40	0.547	132	72.00	75.60	2.00	3.14	5.76	0.52	76.12	0.546	0.546	0.721	0.34	0.18
3	24	18.17	72.00	75.78	2.00	3.14	5.79	0.52	76.30	0.550	88	72.80	76.26	2.00	3.14	5.78	0.52	76.78	0.550	0.550	0.484	1.00	0.52
4	24	13.95	72.80	76.78	2.00	3.14	4.44	0.31	77.09	0.324	107	73.40	77.13	2.00	3.14	4.44	0.31	77.43	0.324	0.324	0.347	0.61	0.19
5	18	12.31	73.80	77.31	1.50	1.77	6.97	0.75	78.07	1.171	47	74.30	77.86	1.50	1.77	6.97	0.75	78.62	1.171	1.171	0.550	1.50	1.13
6	18	12.41	74.30	79.00	1.50	1.77	7.03	0.77	79.76	1.191	136	75.60	80.62	1.50	1.77	7.02	0.77	81.38	1.191	1.191	1.620	0.50	0.38
7	18	9.17	75.60	81.00	1.50	1.77	5.19	0.42	81.42	0.651	106	76.90	81.69	1.50	1.77	5.19	0.42	82.11	0.650	0.651	0.690	0.72	0.30
8	15	8.69	76.90	81.99	1.25	1.23	7.08	0.78	82.77	1.543	88	79.00	83.35	1.25	1.23	7.08	0.78	84.13	1.542	1.542	1.357	1.50	1.17
9	15	5.79	79.00	84.52	1.25	1.23	4.72	0.35	84.86	0.685	39	80.00	84.78	1.25	1.23	4.72	0.35	85.13	0.685	0.685	0.267	1.48	0.51
10	12	0.27	75.00	79.00	1.00	0.79	0.34	0.00	79.00	0.005	40	75.30	79.00	1.00	0.79	0.34	0.00	79.00	0.005	0.005	0.002	1.00	0.00
11	12	4.94	73.00	76.78	1.00	0.79	6.29	0.62	77.40	1.641	35	74.20	77.35	1.00	0.79	6.29	0.62	77.97	1.640	1.641	0.574	0.19	0.12
12	12	4.95	74.20	77.47	1.00	0.79	6.31	0.62	78.09	1.648	87	77.30	78.90	1.00	0.79	6.30	0.62	79.52	1.647	1.648	1.433	2.09	1.29
13	12	2.37	77.50	80.20	1.00	0.79	3.02	0.14	80.34	0.378	101	78.00	80.58	1.00	0.79	3.02	0.14	80.72	0.378	0.378	0.382	1.46	0.21
14	12	0.29	78.00	80.79	1.00	0.79	0.37	0.00	80.79	0.006	53	78.30	80.79	1.00	0.79	0.37	0.00	80.79	0.006	0.006	0.003	1.00	0.00
15	12	0.23	77.50	80.20	1.00	0.79	0.29	0.00	80.20	0.003	81	78.30	80.20	1.00	0.79	0.29	0.00	80.20	0.003	0.003	0.003	1.00	0.00
16	12	2.26	77.50	80.20	1.00	0.79	2.88	0.13	80.33	0.343	10	77.80	80.23	1.00	0.79	2.88	0.13	80.36	0.343	0.343	0.034	1.00	0.13
17	12	1.82	78.00	80.79	1.00	0.79	2.32	0.08	80.87	0.223	22	78.30	80.83	1.00	0.79	2.32	0.08	80.92	0.223	0.223	0.049	1.00	0.08
18	12	5.69	80.00	85.30	1.00	0.79	7.25	0.82	86.11	2.176	10	80.05	85.51	1.00	0.79	7.24	0.82	86.33	2.175	2.176	0.218	1.00	0.82
19	12	1.96	79.25	84.52	1.00	0.79	2.50	0.10	84.61	0.258	10	79.31	84.54	1.00	0.79	2.50	0.10	84.64	0.258	0.258	0.026	1.00	0.10

Project File: Storm WS 23 - 100 Year Storm.stm | Number of lines: 19 | Run Date: 5/13/2025

; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm WS 221.stm	Number of lines: 4	Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	41	-37	Grate	0.00	0.34	0.73	5.0	90.50	0.73	90.80	15	Cir	0.012	1.50	94.20	UG 221-CLCB 25
2	1	103	128	Comb	0.00	0.28	0.81	5.0	91.00	0.97	92.00	12	Cir	0.012	1.39	95.30	CLCB 25-CCB 26
3	2	63	66	Comb	0.00	0.17	0.77	5.0	92.10	0.79	92.60	12	Cir	0.012	1.00	95.80	CCB 26-CCB 27
4	End	8	-113	Grate	0.00	0.26	0.72	5.0	90.90	1.25	91.00	12	Cir	0.012	1.00	94.20	UG 221-CLCB 24

Project File: Storm WS 221.stm | Number of lines: 4 | Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	41	0.34	0.79	0.73	0.25	0.61	5.0	5.7	8.0	4.86	5.98	5.18	15	0.73	90.50	90.80	91.39	91.69	0.00	94.20	UG 221-CLCB 25
2	1	103	0.28	0.45	0.81	0.23	0.36	5.0	5.4	8.1	2.91	3.80	4.87	12	0.97	91.00	92.00	91.69	92.73	94.20	95.30	CLCB 25-CCB 26
3	2	63	0.17	0.17	0.77	0.13	0.13	5.0	5.0	8.2	1.08	3.44	2.67	12	0.79	92.10	92.60	92.73	93.04	95.30	95.80	CCB 26-CCB 27
4	End	8	0.26	0.26	0.72	0.19	0.19	5.0	5.0	8.2	1.54	4.31	3.68	12	1.25	90.90	91.00	91.43	91.53	0.00	94.20	UG 221-CLCB 24

Project File: Storm WS 221.stm | Number of lines: 4 | Run Date: 5/13/2025

NOTES:Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CLCB 25	2.05	0.00	2.05	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.020	0.020	0.000	0.28	13.90	0.28	13.90	0.0	Off
2	CCB 26	1.87	0.00	1.87	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.016	0.016	0.000	0.25	15.93	0.25	15.93	0.0	Off
3	CCB 27	1.08	0.00	1.08	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.014	0.014	0.000	0.18	12.87	0.18	12.87	0.0	Off
4	CLCB 24	1.54	0.00	1.54	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.020	0.020	0.000	0.23	11.63	0.23	11.63	0.0	Off

Project File: Storm WS 221.stm | Number of lines: 4 | Run Date: 5/13/2025

NOTES: Inlet N-Values = 0.016; Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period = 25 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

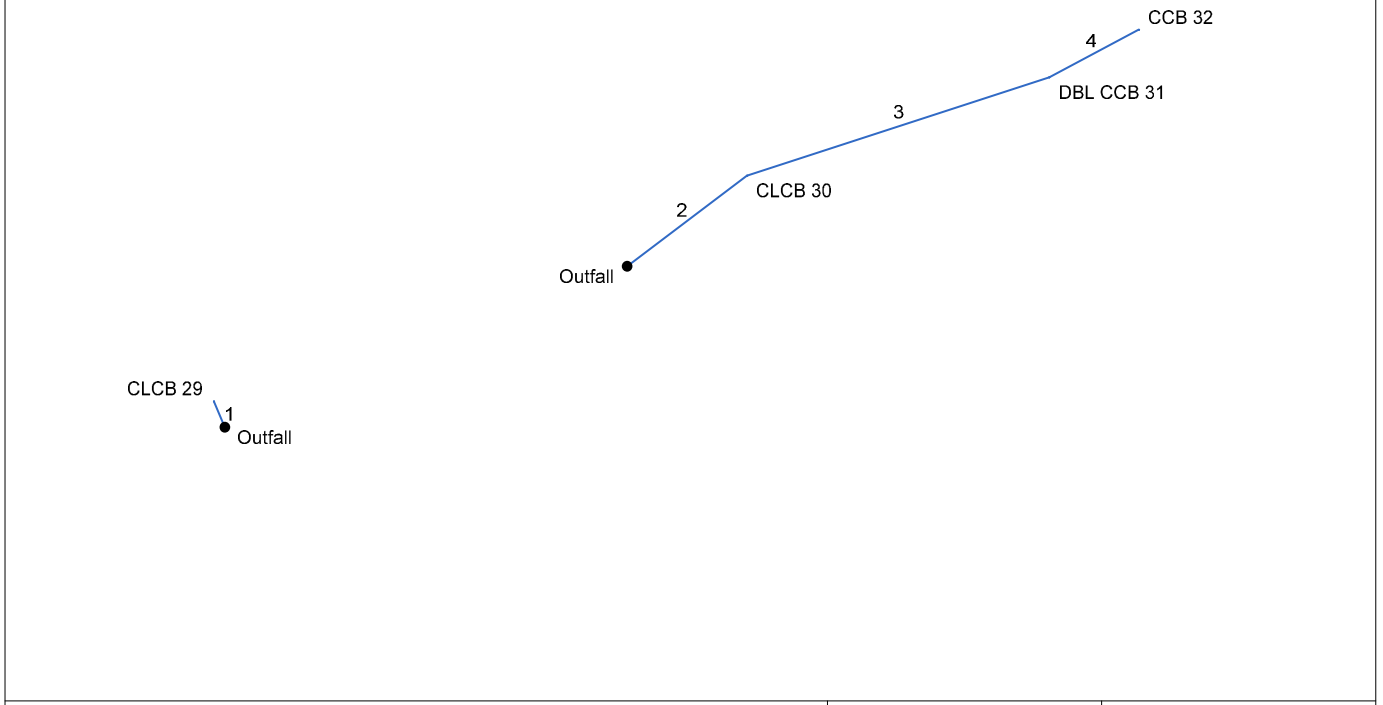
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	15	4.86	90.50	91.39	0.89	0.94	5.18	0.42	91.81	0.000	41	90.80	91.69	0.89**	0.94	5.18	0.42	92.11	0.000	0.000	n/a	1.50	n/a
2	12	2.91	91.00	91.69	0.69	0.58	5.00	0.35	92.04	0.000	103	92.00	92.73	0.73**	0.61	4.73	0.35	93.08	0.000	0.000	n/a	1.39	n/a
3	12	1.08	92.10	92.73	0.63	0.33	2.07	0.17	92.90	0.000	63	92.60	93.04 j	0.44**	0.33	3.28	0.17	93.20	0.000	0.000	n/a	1.00	0.17
4	12	1.54	90.90	91.43	0.53*	0.42	3.68	0.21	91.64	0.000	8	91.00	91.53	0.53**	0.42	3.68	0.21	91.74	0.000	0.000	n/a	1.00	n/a

Project File: Storm WS 221.stm | Number of lines: 4 | Run Date: 5/13/2025

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm WS 222.stm	Number of lines: 4	Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	8	-113	Grate	0.00	0.28	0.73	5.0	90.00	1.25	90.10	12	Cir	0.012	1.00	93.30	UG222-CLCB 29
2	End	43	-37	Grate	0.00	0.33	0.73	5.0	88.80	0.70	89.10	15	Cir	0.012	0.57	93.30	UG 222-CLCB 30
3	2	91	19	Comb	0.00	0.31	0.75	5.0	89.10	0.55	89.60	15	Cir	0.012	0.50	93.00	CLCB 30-DBL CCB 31
4	3	29	-10	Comb	0.00	0.27	0.68	5.0	89.60	0.69	89.80	12	Cir	0.012	1.00	93.00	DBL CCB 31-CCB 32

Project File: Storm WS 222.stm | Number of lines: 4 | Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	8	0.28	0.28	0.73	0.20	0.20	5.0	5.0	8.7	1.78	4.31	4.54	12	1.25	90.00	90.10	90.45	90.67	0.00	93.30	UG222-CLCB 29
2	End	43	0.33	0.91	0.73	0.24	0.66	5.0	5.7	8.3	5.44	5.84	5.42	15	0.70	88.80	89.10	89.74	90.06	0.00	93.30	UG 222-CLCB 30
3	2	91	0.31	0.58	0.75	0.23	0.42	5.0	5.2	8.6	3.57	5.19	3.37	15	0.55	89.10	89.60	90.32	90.49	93.30	93.00	CLCB 30-DBL CC
4	3	29	0.27	0.27	0.68	0.18	0.18	5.0	5.0	8.7	1.60	3.20	2.16	12	0.69	89.60	89.80	90.60	90.64	93.00	93.00	DBL CCB 31-CCB

Project File: Storm WS 222.stm | Number of lines: 4 | Run Date: 5/13/2025

NOTES:Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CLCB 29	1.78	0.00	1.78	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.018	0.018	0.000	0.25	14.08	0.25	14.08	0.0	Off
2	CLCB 30	2.10	0.00	2.10	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.018	0.018	0.000	0.28	15.68	0.28	15.68	0.0	Off
3	DBL CCB 31	2.03	0.00	2.03	0.00	Comb	4.0	5.46	6.24	4.62	1.35	Sag	5.00	0.021	0.021	0.000	0.24	11.28	0.24	11.28	0.0	Off
4	CCB 32	1.60	0.00	1.60	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.021	0.021	0.000	0.24	11.31	0.24	11.31	0.0	Off

Project File: Storm WS 222.stm | Number of lines: 4 | Run Date: 5/13/2025

NOTES: Inlet N-Values = 0.016; Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

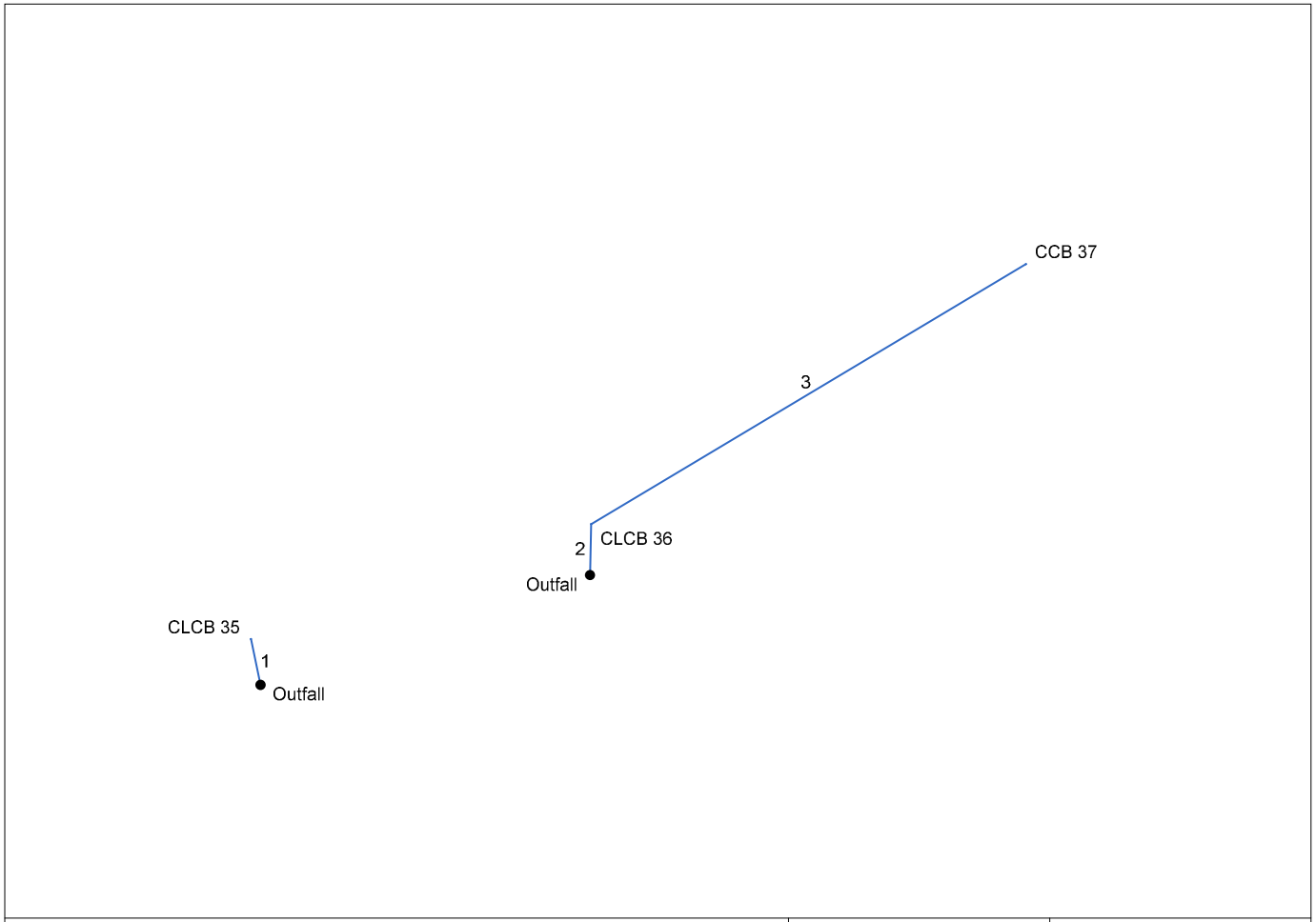
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	1.78	90.00	90.45	0.45	0.34	5.20	0.23	90.68	0.000	8	90.10	90.67	0.57**	0.46	3.87	0.23	90.90	0.000	0.000	n/a	1.00	0.23
2	15	5.44	88.80	89.74	0.94*	0.99	5.47	0.46	90.21	0.715	43	89.10	90.06	0.96	1.01	5.36	0.45	90.51	0.684	0.700	0.301	0.57	0.25
3	15	3.57	89.10	90.32	1.22	1.22	2.93	0.13	90.45	0.230	91	89.60	90.49	0.89	0.94	3.81	0.23	90.72	0.353	0.292	0.265	0.50	0.11
4	12	1.60	89.60	90.60	1.00	0.79	2.04	0.06	90.67	0.172	29	89.80	90.64	0.84	0.70	2.28	0.08	90.72	0.166	0.169	0.049	1.00	0.08

Project File: Storm WS 222.stm | Number of lines: 4 | Run Date: 5/13/2025

Notes: * depth assumed; ** Critical depth. ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm WS 223.stm	Number of lines: 3	Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	11	-102	Grate	0.00	0.28	0.78	5.0	89.90	0.91	90.00	12	Cir	0.012	1.00	93.00	UG 223-CLCB 35
2	End	12	-89	Grate	0.00	0.39	0.77	5.0	89.50	0.83	89.60	12	Cir	0.012	1.31	93.00	UG 223-CLCB 36
3	2	119	58	Comb	0.00	0.16	0.52	5.0	89.60	0.50	90.20	12	Cir	0.012	1.00	93.40	CLCB 36-CCB 37

Project File: Storm WS 223.stm | Number of lines: 3 | Date: 5/13/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	11	0.28	0.28	0.78	0.22	0.22	5.0	5.0	8.7	1.90	3.68	4.35	12	0.91	89.90	90.00	90.41	90.59	0.00	93.00	UG 223-CLCB 35
2	End	12	0.39	0.55	0.77	0.30	0.38	5.0	6.0	8.1	3.11	3.52	4.78	12	0.83	89.50	89.60	90.29	90.35	0.00	93.00	UG 223-CLCB 36
3	2	119	0.16	0.16	0.52	0.08	0.08	5.0	5.0	8.7	0.73	2.74	2.02	12	0.50	89.60	90.20	90.35	90.56	93.00	93.40	CLCB 36-CCB 37

Project File: Storm WS 223.stm | Number of lines: 3 | Run Date: 5/13/2025

NOTES:Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CLCB 35	1.90	0.00	1.90	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.025	0.025	0.000	0.27	10.76	0.27	10.76	0.0	Off
2	CLCB 36	2.62	0.00	2.62	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.025	0.025	0.000	0.33	13.15	0.33	13.15	0.0	Off
3	CCB 37	0.73	0.00	0.73	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.016	0.016	0.000	0.14	9.02	0.14	9.02	0.0	Off

Project File: Storm WS 223.stm | Number of lines: 3 | Run Date: 5/13/2025

NOTES: Inlet N-Values = 0.016; Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

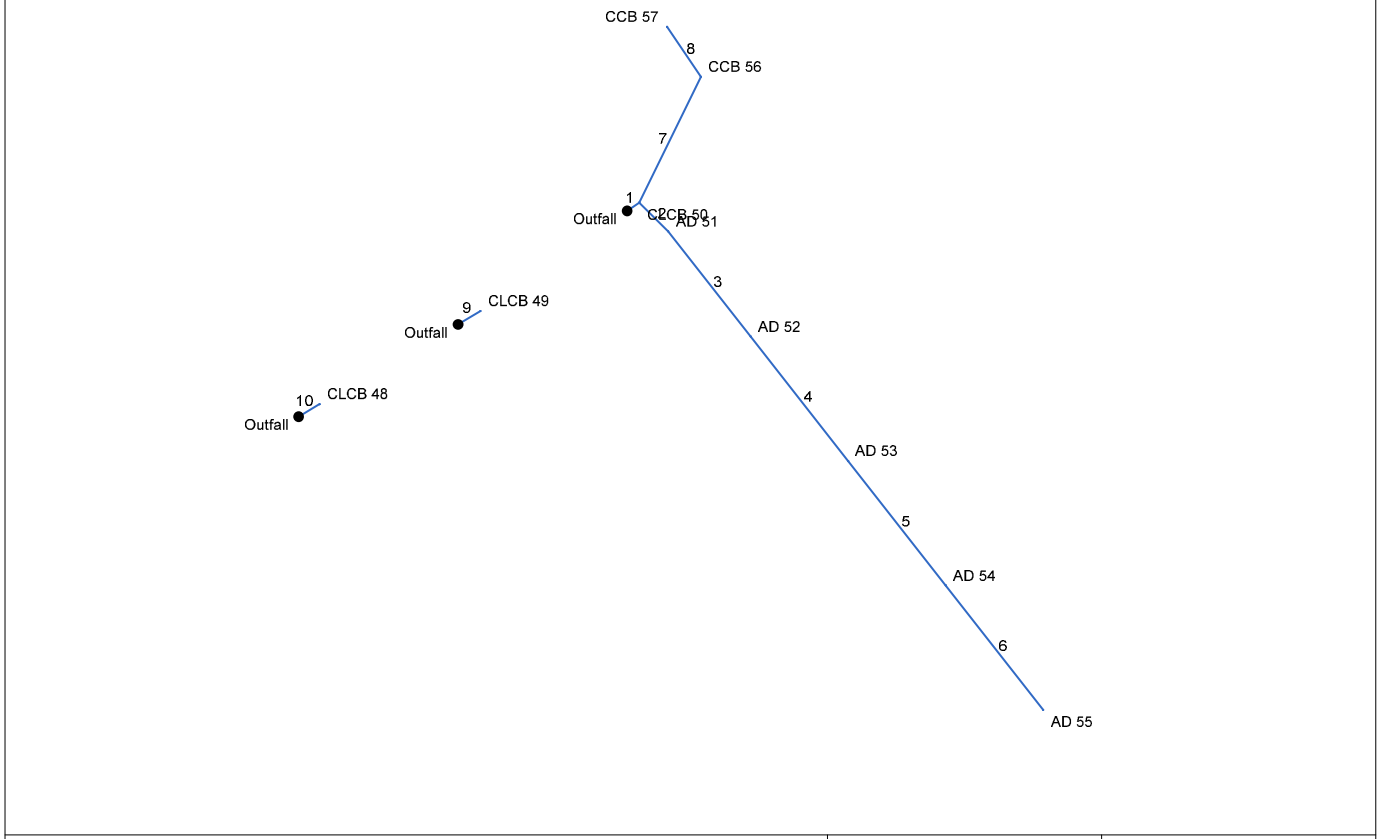
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	1.90	89.90	90.41	0.51	0.40	4.72	0.24	90.66	0.000	11	90.00	90.59	0.59**	0.48	3.97	0.24	90.83	0.000	0.000	n/a	1.00	0.24
2	12	3.11	89.50	90.29	0.79	0.64	4.67	0.37	90.66	0.000	12	89.60	90.35	0.75**	0.64	4.88	0.37	90.73	0.000	0.000	n/a	1.31	0.49
3	12	0.73	89.60	90.35	0.75	0.25	1.14	0.13	90.49	0.000	119	90.20	90.56	0.36**	0.25	2.90	0.13	90.69	0.000	0.000	n/a	1.00	n/a

Project File: Storm WS 223.stm | Number of lines: 3 | Run Date: 5/13/2025

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm WS 224.stm	Number of lines: 10	Date: 4/29/2025

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	9	-35	Grate	0.00	0.21	0.29	5.0	90.50	2.22	90.70	15	Cir	0.012	1.82	95.50	UG 224A-CLCB 50
2	1	25	80	DrGrt	0.00	0.41	0.28	5.0	91.00	1.60	91.40	15	Cir	0.012	0.50	97.00	CLCB 50-AD 51
3	2	82	7	DrGrt	0.00	0.38	0.30	5.0	91.40	0.85	92.10	15	Cir	0.012	0.50	97.00	AD 51-AD 52
4	3	97	0	DrGrt	0.00	0.55	0.28	5.0	92.10	0.62	92.70	15	Cir	0.012	0.50	97.00	AD 52-AD 53
5	4	97	0	DrGrt	0.00	0.78	0.30	5.0	92.70	0.72	93.40	15	Cir	0.012	0.50	97.00	AD 53-AD 54
6	5	97	0	DrGrt	0.00	0.70	0.30	5.0	93.40	0.62	94.00	12	Cir	0.012	1.00	97.00	AD 54-AD 55
7	1	86	-29	Comb	0.00	0.08	0.81	5.0	90.70	0.58	91.20	12	Cir	0.012	1.33	94.90	CLCB 50-CCB 56
8	7	37	-60	Comb	0.00	0.11	0.70	5.0	91.10	0.54	91.30	12	Cir	0.012	1.00	94.50	CCB 56-CCB 57
9	End	16	-31	Grate	0.00	0.17	0.33	5.0	90.00	1.25	90.20	18	Cir	0.012	1.00	95.50	UG 224B-CLCB 49
10	End	15	-31	Grate	0.00	0.13	0.37	5.0	89.50	2.00	89.80	18	Cir	0.012	1.00	96.40	UG 224C-CLCB 48

Project File: Storm WS 224.stm | Number of lines: 10 | Date: 4/29/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	9	0.21	3.22	0.29	0.06	1.03	5.0	6.5	7.8	8.02	10.43	8.16	15	2.22	90.50	90.70	91.32	91.82	0.00	95.50	UG 224A-CLCB 5
2	1	25	0.41	2.82	0.28	0.11	0.83	5.0	6.5	7.8	6.47	8.85	6.82	15	1.60	91.00	91.40	91.82	92.42	95.50	97.00	CLCB 50-AD 51
3	2	82	0.38	2.41	0.30	0.11	0.71	5.0	6.2	8.0	5.67	6.46	5.43	15	0.85	91.40	92.10	92.42	93.06	97.00	97.00	AD 51-AD 52
4	3	97	0.55	2.03	0.28	0.15	0.60	5.0	5.9	8.1	4.87	5.50	4.99	15	0.62	92.10	92.70	93.06	93.60	97.00	97.00	AD 52-AD 53
5	4	97	0.78	1.48	0.30	0.23	0.44	5.0	5.5	8.4	3.73	5.94	3.94	15	0.72	92.70	93.40	93.80	94.18	97.00	97.00	AD 53-AD 54
6	5	97	0.70	0.70	0.30	0.21	0.21	5.0	5.0	8.7	1.83	3.03	3.35	12	0.62	93.40	94.00	94.18	94.58	97.00	97.00	AD 54-AD 55
7	1	86	0.08	0.19	0.81	0.06	0.14	5.0	5.3	8.5	1.21	2.94	1.81	12	0.58	90.70	91.20	91.82	91.89	95.50	94.90	CLCB 50-CCB 56
8	7	37	0.11	0.11	0.70	0.08	0.08	5.0	5.0	8.7	0.67	2.84	1.88	12	0.54	91.10	91.30	91.98	91.64	94.90	94.50	CCB 56-CCB 57
9	End	16	0.17	0.17	0.33	0.06	0.06	5.0	5.0	8.7	0.49	12.72	2.93	18	1.25	90.00	90.20	90.20	90.46	0.00	95.50	UG 224B-CLCB 4
10	End	15	0.13	0.13	0.37	0.05	0.05	5.0	5.0	8.7	0.42	16.09	3.11	18	2.00	89.50	89.80	89.67	90.04	0.00	96.40	UG 224C-CLCB 4

Project File: Storm WS 224.stm | Number of lines: 10 | Run Date: 4/29/2025

NOTES:Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CLCB 50	0.53	0.00	0.53	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.015	0.015	0.000	0.12	7.85	0.12	7.85	0.0	Off
2	AD 51	1.00	0.00	1.00	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.020	0.020	0.000	0.18	20.35	0.18	20.35	0.0	Off
3	AD 52	0.99	0.00	0.99	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.020	0.020	0.000	0.18	20.27	0.18	20.27	0.0	Off
4	AD 53	1.34	0.00	1.34	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.020	0.020	0.000	0.22	24.32	0.22	24.32	0.0	Off
5	AD 54	2.04	0.00	2.04	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.020	0.020	0.000	0.30	31.51	0.30	31.51	0.0	Off
6	AD 55	1.83	0.00	1.83	0.00	DrGrt	0.0	0.00	1.12	1.06	1.06	Sag	2.00	0.020	0.020	0.000	0.27	29.45	0.27	29.45	0.0	Off
7	CCB 56	0.57	0.00	0.31	0.26	Comb	4.0	2.31	0.00	2.31	1.35	0.016	2.53	0.015	0.015	0.013	0.09	5.91	0.07	4.39	0.0	Off
8	CCB 57	0.67	0.00	0.35	0.32	Comb	4.0	2.31	0.00	2.31	1.35	0.016	2.53	0.015	0.015	0.013	0.09	6.30	0.07	4.78	0.0	Off
9	CLCB 49	0.49	0.00	0.49	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.015	0.015	0.000	0.11	7.46	0.11	7.46	0.0	Off
10	CLCB 48	0.42	0.00	0.42	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.015	0.015	0.000	0.10	6.80	0.10	6.80	0.0	Off

Project File: Storm WS 224.stm | Number of lines: 10 | Run Date: 4/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

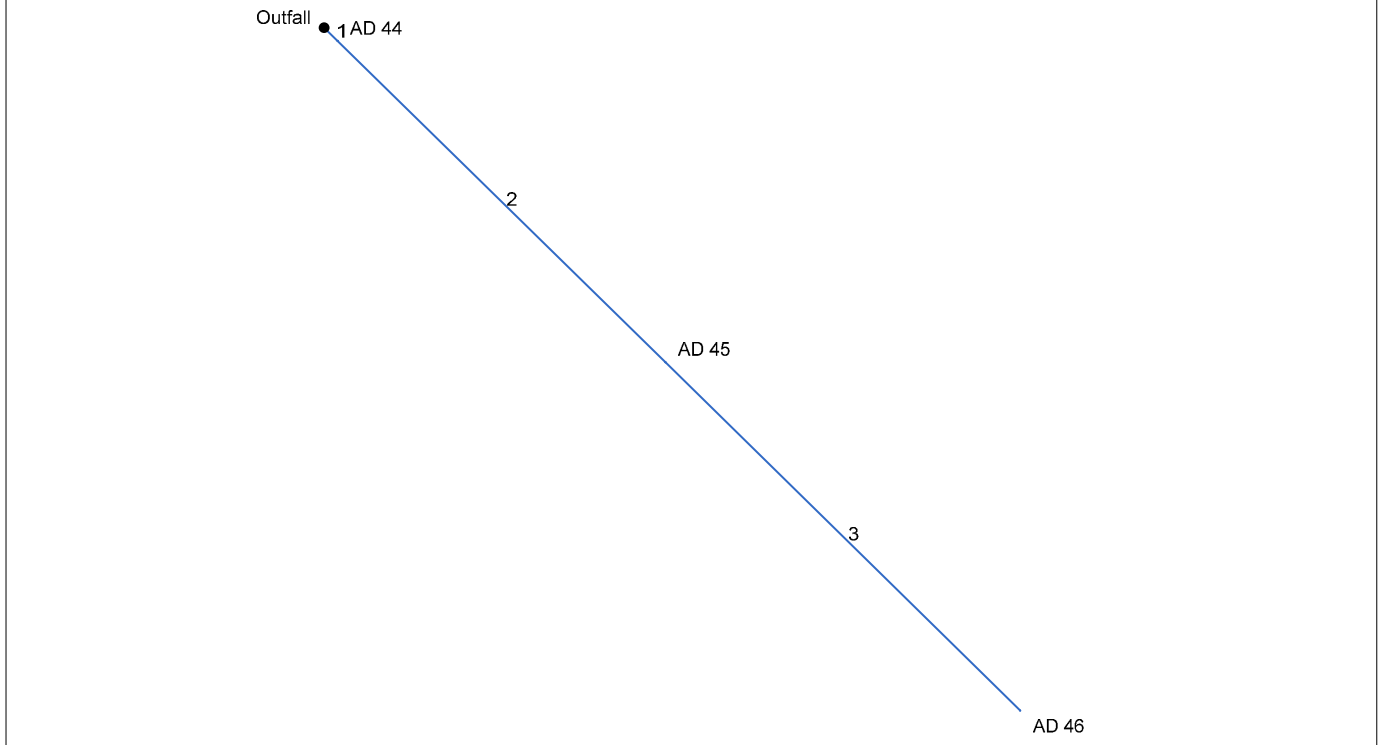
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	15	8.02	90.50	91.32	0.82	0.86	9.37	0.75	92.07	0.000	9	90.70	91.82	1.12**	1.16	6.94	0.75	92.56	0.000	0.000	n/a	1.82	1.36
2	15	6.47	91.00	91.82	0.82	0.85	7.63	0.56	92.38	0.000	25	91.40	92.42	1.02**	1.08	6.01	0.56	92.99	0.000	0.000	n/a	0.50	n/a
3	15	5.67	91.40	92.42	1.02	1.01	5.27	0.49	92.91	0.000	82	92.10	93.06 j	0.96**	1.01	5.59	0.49	93.55	0.000	0.000	n/a	0.50	n/a
4	15	4.87	92.10	93.06	0.96	0.94	4.80	0.36	93.42	0.549	97	92.70	93.60	0.90**	0.94	5.17	0.42	94.01	0.649	0.599	0.581	0.50	0.21
5	15	3.73	92.70	93.80	1.10	0.81	3.25	0.33	94.14	0.000	97	93.40	94.18 j	0.78**	0.81	4.63	0.33	94.51	0.000	0.000	n/a	0.50	n/a
6	12	1.83	93.40	94.18	0.78	0.47	2.79	0.24	94.42	0.000	97	94.00	94.58	0.58**	0.47	3.91	0.24	94.81	0.000	0.000	n/a	1.00	n/a
7	12	1.21	90.70	91.82	1.00	0.79	1.53	0.04	91.85	0.098	86	91.20	91.89	0.69	0.58	2.09	0.07	91.96	0.146	0.122	0.105	1.33	0.09
8	12	0.67	91.10	91.98	0.88	0.24	0.92	0.13	92.10	0.000	37	91.30	91.64	0.34**	0.24	2.84	0.13	91.77	0.000	0.000	n/a	1.00	0.13
9	18	0.49	90.00	90.20	0.20*	0.14	3.46	0.09	90.29	0.000	16	90.20	90.46	0.26**	0.20	2.41	0.09	90.55	0.000	0.000	n/a	1.00	n/a
10	18	0.42	89.50	89.67	0.17*	0.11	3.90	0.08	89.75	0.000	15	89.80	90.04	0.24**	0.18	2.31	0.08	90.12	0.000	0.000	n/a	1.00	0.08

Project File: Storm WS 224.stm | Number of lines: 10 | Run Date: 4/29/2025

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm WS 225.stm	Number of lines: 3	Date: 4/29/2025

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	4	52	DrGrt	0.00	0.59	0.29	10.0	92.00	2.50	92.10	12	Cir	0.012	0.50	96.40	UG 225-AD 44
2	1	97	0	DrGrt	0.00	0.46	0.29	10.0	92.10	0.62	92.70	12	Cir	0.012	0.50	96.40	AD 44-AD 45
3	2	105	0	DrGrt	0.00	0.65	0.29	10.0	92.80	0.57	93.40	12	Cir	0.012	1.00	96.20	AD 45-AD 46

Project File: Storm WS 225.stm | Number of lines: 3 | Date: 4/29/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	4	0.59	1.70	0.29	0.17	0.49	10.0	11.0	6.1	2.99	6.10	6.26	12	2.50	92.00	92.10	92.49	92.84	0.00	96.40	UG 225-AD 44
2	1	97	0.46	1.11	0.29	0.13	0.32	10.0	10.5	6.2	1.99	3.03	3.62	12	0.62	92.10	92.70	92.84	93.30	96.40	96.40	AD 44-AD 45
3	2	105	0.65	0.65	0.29	0.19	0.19	10.0	10.0	6.4	1.20	2.92	3.21	12	0.57	92.80	93.40	93.30	93.86	96.40	96.20	AD 45-AD 46

Project File: Storm WS 225.stm | Number of lines: 3 | Run Date: 4/29/2025

NOTES:Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	AD 44	1.09	0.00	1.09	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.25	26.88	0.25	26.88	0.0	Off
2	AD 45	0.85	0.00	0.85	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.21	23.07	0.21	23.07	0.0	Off
3	AD 46	1.20	0.00	1.20	0.00	DrGrt	0.0	0.00	0.52	0.83	0.63	Sag	2.00	0.020	0.020	0.000	0.27	28.54	0.27	28.54	0.0	Off

Project File: Storm WS 225.stm | Number of lines: 3 | Run Date: 4/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 40.16 / (Inlet time + 3.80) ^ 0.70; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewers v2023.00

Hydraulic Grade Line Computations

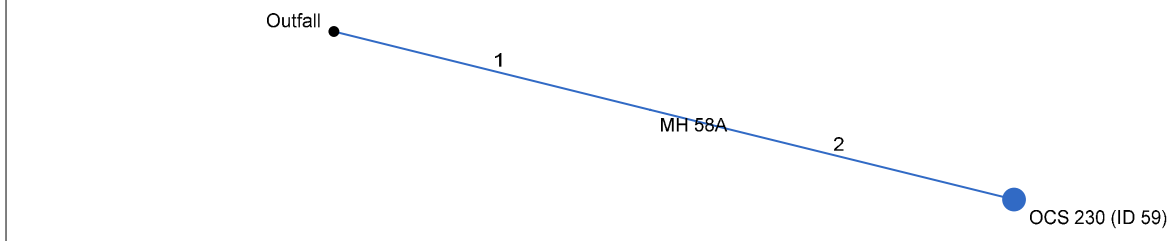
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	12	2.99	92.00	92.49	0.49	0.39	7.72	0.36	92.85	0.000	4	92.10	92.84	0.74**	0.62	4.79	0.36	93.20	0.000	0.000	n/a	0.50	n/a
2	12	1.99	92.10	92.84	0.74	0.49	3.20	0.25	93.09	0.000	97	92.70	93.30 j	0.60**	0.49	4.04	0.25	93.55	0.000	0.000	n/a	0.50	0.13
3	12	1.20	92.80	93.30	0.50	0.35	3.04	0.18	93.48	0.000	105	93.40	93.86 j	0.46**	0.35	3.38	0.18	94.04	0.000	0.000	n/a	1.00	n/a

Project File: Storm WS 225.stm | Number of lines: 3 | Run Date: 4/29/2025

Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm WS 23 - Outlet.stm	Number of lines: 2	Date: 4/29/2025

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	60	14	MH	0.00	0.00	0.00	0.0	53.00	5.00	56.00	15	Cir	0.012	0.15	62.30	FES 58-MH 58A
2	1	69	0	MH	13.40	0.00	0.00	0.0	59.00	10.87	66.50	15	Cir	0.012	1.00	75.00	MH 58A-OCS 230 (ID

Project File: Storm WS 23 - Outlet.stm | Number of lines: 2 | Date: 4/29/2025

Storm Sewers v2023.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	60	0.00	0.00	0.00	0.00	0.00	0.0	0.1	0.0	13.40	15.64	12.64	15	5.00	53.00	56.00	53.89	57.23	54.10	62.30	FES 58-MH 58A
2	1	69	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	13.40	23.06	15.22	15	10.87	59.00	66.50	59.68	67.73	62.30	75.00	MH 58A-OCS 230

Project File: Storm WS 23 - Outlet.stm | Number of lines: 2 | Run Date: 4/29/2025

NOTES:Intensity = 49.88 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewers v2023.00

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	13.40	53.00	53.89	0.89	0.94	14.32	1.87	55.76	0.000	60	56.00	57.23	1.23**	1.22	10.96	1.87	59.10	0.000	0.000	n/a	0.15	n/a
2	15	13.40	59.00	59.68	0.68*	0.69	19.48	1.87	61.55	0.000	69	66.50	67.73	1.23**	1.22	10.96	1.87	69.60	0.000	0.000	n/a	1.00	n/a

Project File: Storm WS 23 - Outlet.stm | Number of lines: 2 | Run Date: 4/29/2025

Notes: * depth assumed; ** Critical depth. ; c = cir e = ellip b = box

Storm Sewers v2023.00

Outlet Protection Calculations

Project:	Long Lots Elementary School		By: ACD	Date:	05/12/25
Location:	Westport, CT		Checked: MCB	Date:	05/13/25
Outlet I.D.	**FES 6A**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

WS 11 Outlet

Design Criteria (25-yr Storm Event):

Q (cfs) =	3.2	R_p (ft)=	1.5
D (in) =	18	S_p (ft) =	1.5
V (fps) =	3.2	Tw (ft)=	0.37

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-12.1** use Type 'A' ---> TW< 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	9	ft
W1 = 3.0(S_p) min.	=	5	ft
W2 = 3.0(Sp)+0.7(La) min.	=	11	ft
d (Depth of Stone)	=	12	inches

Outlet Protection Calculations

Project:	Long Lots Elementary School		By: ACD	Date:	4/30/2025
Location:	Westport, CT		Checked: MCB	Date:	5/5/2025
Outlet I.D.	**FES 60**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

FES 60

Design Criteria (25-yr Storm Event):

Q (cfs) = 18.51	R_p (ft)=	2
D (in) = 24	S_p (ft) =	2
V (fps) = 3.77	Tw (ft)=	4.13

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11.13.1,** A *Preformed Scour Hole* is used *One Half Pipe Rise Depression (Type I)*

Rip Rap Stone Size:

D_{50} Computed (ft)	Rip Rap Specification	D_{50} Stone Size Required
0.059	Modified	5 inches

Preformed Scour Hole Dimensions:

$F = 0.5(R_p)$	=	1 ft
$C = 3.0(S_p)+6.0(F)$	=	12ft
$B = 2.0(S_p)+6.0(F)$	=	10ft
d (Depth of Stone)	=	12 inches

SLR

Outlet Protection Calculations

Project:	Long Lots Elementary School		By: ACD	Date:	4/30/2025
Location:	Westport, CT		Checked: MCB	Date:	5/5/2025
Outlet I.D.	**FES 16**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

FES 16

Design Criteria (25-yr Storm Event):

Q (cfs) = 47.86	R_p (ft)=	3
D (in) = 36	S_p (ft) =	3
V (fps) = 6.77	Tw (ft)=	3.52

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11.13.1,** A *Preformed Scour Hole* is used *One Half Pipe Rise Depression (Type I)*

Rip Rap Stone Size:

D_{50} Computed (ft)	Rip Rap Specification	D_{50} Stone Size Required
0.142	Modified	5 inches

Preformed Scour Hole Dimensions:

$F = 0.5(R_p)$	=	1.5 ft
$C = 3.0(S_p)+6.0(F)$	=	18ft
$B = 2.0(S_p)+6.0(F)$	=	10ft
d (Depth of Stone)	=	12 inches

SLR

Level Spreader Design

Level Spreader 230

Broad Crest Elevation (ft)	54.00	
Length (ft)	**30**	
Discharge Coefficient	3.2	
Elevation Increment	0.05	
Q-100 year (cfs)	13.40	(DET 230 Discharge)

Elevation (Feet)	Weir Discharge (cfs)	Area (sf)	Velocity (fps)
54.00	0.00	0.00	0.00
54.05	1.07	1.50	0.72
54.10	3.04	3.00	1.01
54.15	5.58	4.50	1.24
54.20	8.59	6.00	1.43
54.25	12.00	7.50	1.60
54.27	13.40	8.07	1.66
54.30	15.77	9.00	1.75
54.35	19.88	10.50	1.89
54.40	24.29	12.00	2.02
54.45	28.98	13.50	2.15
54.50	33.94	15.00	2.26

Long Lots Elementary School
Westport, CT

SLR

Appendix E
Soil Testing Results

Long Lots Elementary School

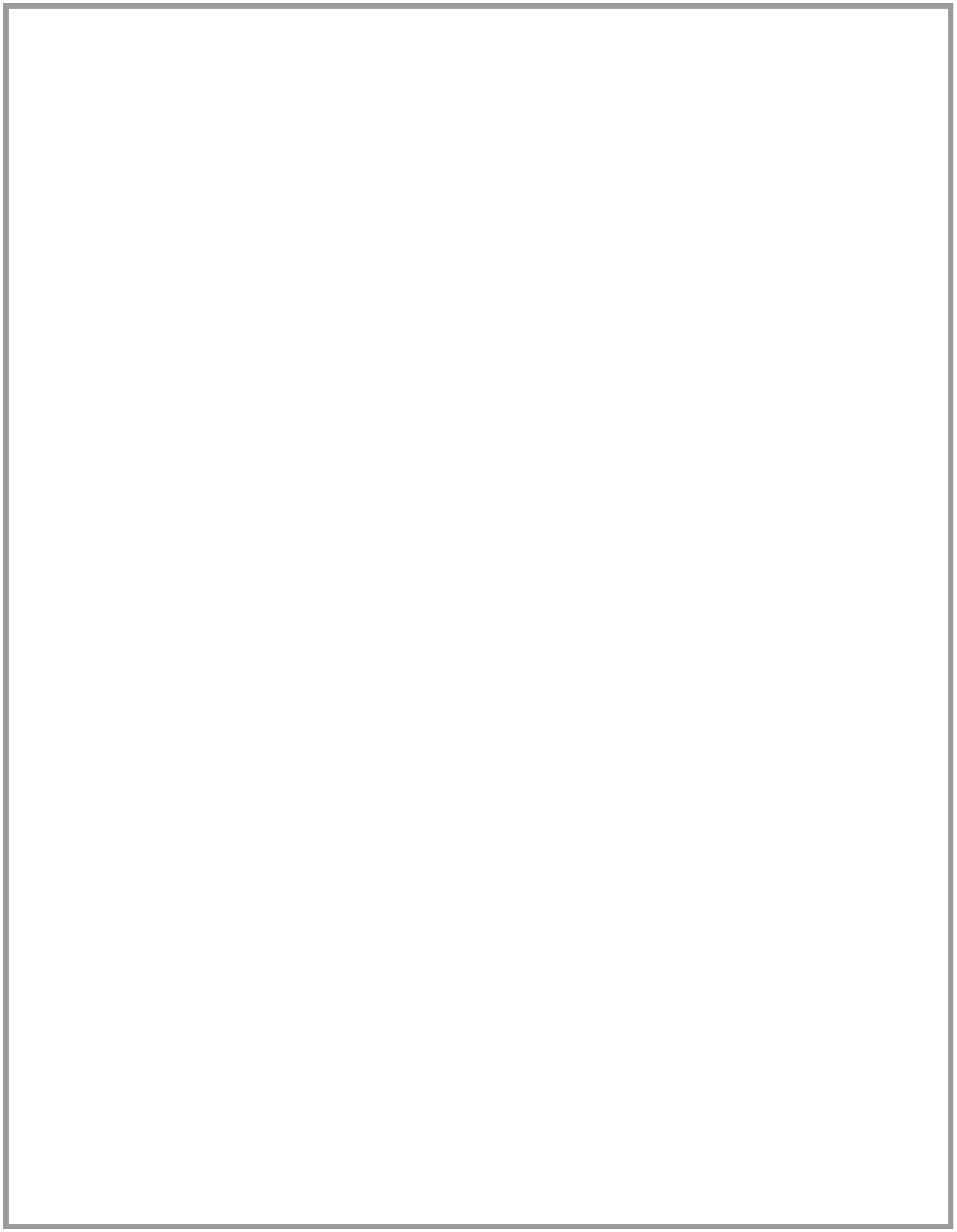
13 Hyde Lane, Westport, Connecticut

Drainage Report

Prepared for:
Svigals and Partners, an FCA Company
84 Orange Street
New Haven, CT 06510

SLR Project No.: 141.14847.00021

May 14, 2025



Long Lots Elementary School

13 Hyde Ln, Westport, CT 06880

Soil Testing – Test Pit Logs for Test Pits #6-11 Conducted on August 21st, 2024 by Scott Nolan, PE

Weather: Partly Cloudy, 72 Degrees Fahrenheit

Test Pit #6

0”-12”	Topsoil
12”-44”	Orange-Brown Sandy Silt, some gravel
44”-55”	Brown & Gray Decomp. Schist
Notes:	Roots @ 1”-22”, Permeability Sample Taken @ 42”

Test Pit #7

0”-13”	Topsoil
13”-36”	Orange-Brown Sandy Silt, some gravel
36”-44”	Brown & Gray Decomp. Schist
Notes:	Roots @ 1”-22”, Permeability Sample Taken @ 30”

Test Pit #8

0”-10”	Topsoil
10”-24”	Orange-Brown Sandy Silt, some gravel
24”-90”	Brown Medium Sand, with cobbles
Notes:	Roots @ 1”-20”, Hardpan @ 90”, Permeability Sample Taken @ 37”

Test Pit #9

0”-10”	Topsoil
10”-30”	Orange-Brown Sandy Silt, some gravel
30”-82”	Brown Medium Sand, with cobbles
Notes:	Roots @ 1”-12”, Seepage @ 80”, Hardpan @ 82”, Permeability Sample Taken @ 36”

Test Pit #10

0”-8”	Topsoil
8”-44”	Orange-Brown Sandy Silt, some gravel
44”-72”	Brown Medium Sand, with cobbles
Notes:	Roots @ 1”-30”, Hardpan @ 72”, Permeability Sample Taken @ 48”

Test Pit #11

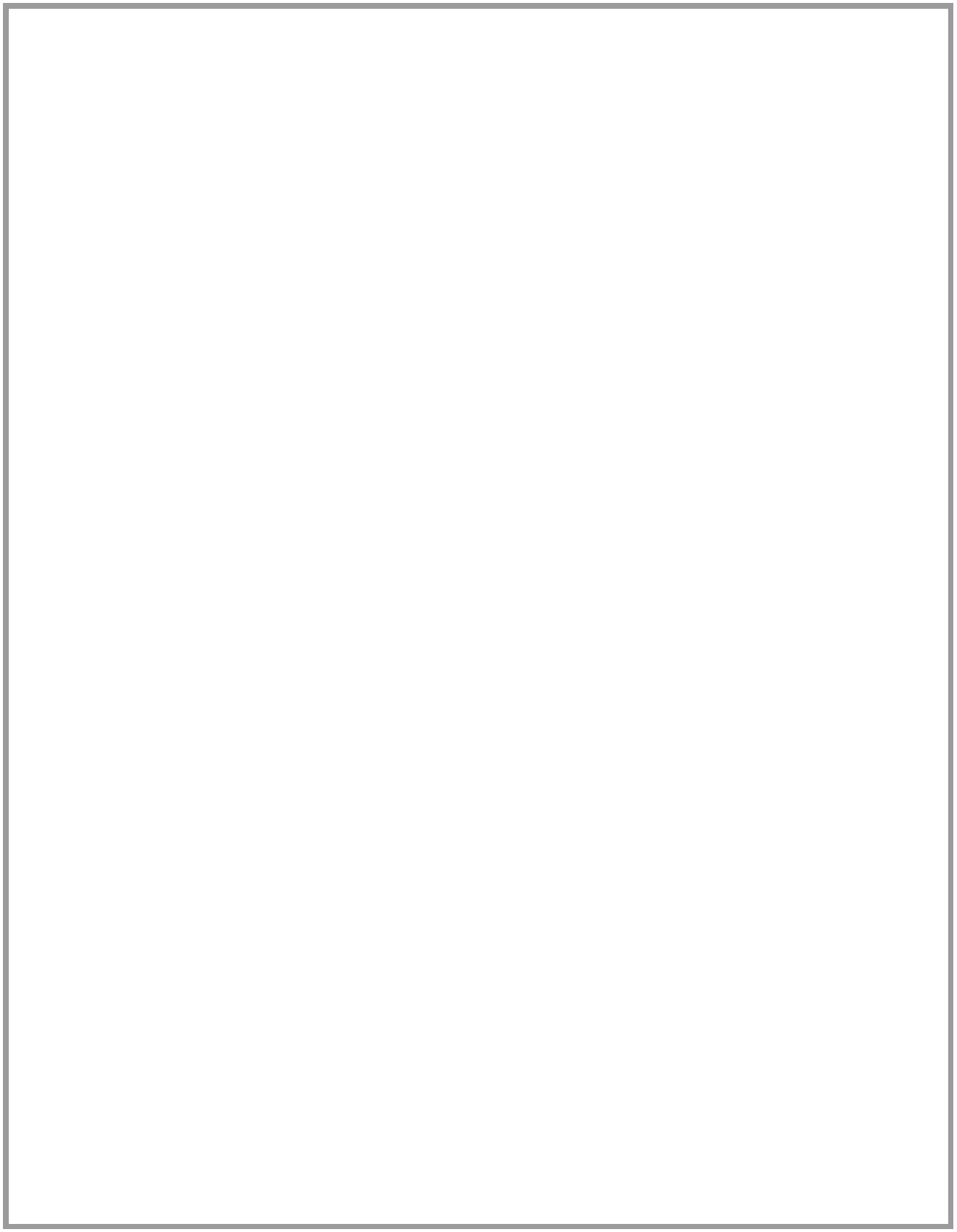
0”-6”	Topsoil
6”-11”	FILL: Light Brown Fine/Medium Sand, some silt
11”-19”	FILL: Dark Brown Medium Sand, some cobbles & silt
19”-40”	FILL: Gray Silty Sand, with gravel
40”-64”	FILL: Light Gray Silt, with fine sand
64”-68”	FILL: Brown Silty Sand, some gravel & cobbles
68”-69”	FILL: Dark Brown Organics Layer
69”-85”	Orange-Brown Medium Sand, with gravel, trace silt
Notes:	Seepage @84”, Hardpan @ 85”

Falling Head Permeameter Test Results

Sample	Sample Round	L (inches)	H1 (inches)	H2 (inches)	t (min)	t (hours)	K (in/hr)	K (ft/day)
TP-8 Depth 37"	1	4.25	8	7.50	1.00	0.017	16.45	32.903
	2	4.25	7.50	7.20	1.00	0.017	10.41	20.816
	3	4.25	7.20	7.00	1.00	0.017	7.18	14.366
	4	4.25	7.00	6.80	1.00	0.017	7.39	14.783
	5	4.25	6.80	6.70	1.00	0.017	3.78	7.556
	6	4.25	6.70	6.60	1.00	0.017	3.83	7.669
	7	4.25	6.60	6.50	1.00	0.017	3.89	7.786
	8	4.25	6.50	6.40	1.00	0.017	3.95	7.907
	9	4.25	6.40	6.30	1.00	0.017	4.02	8.031
	10	4.25	6.30	6.20	1.00	0.017	4.08	8.160
	11	4.25	6.20	6.10	1.00	0.017	4.15	8.293
							6.29	12.570

Sample	Sample Round	L (inches)	H1 (inches)	H2 (inches)	t (min)	t (hours)	K (in/hr)	K (ft/day)
TP-9 Depth 36"	1	6	8	8.00	1.00	0.017	0.00	0.000
	2	6	8.00	8.00	1.00	0.017	0.00	0.000
	3	6	8.00	8.00	1.00	0.017	0.00	0.000
	4	6	8.00	8.00	1.00	0.017	0.00	0.000
	5	6	8.00	8.00	1.00	0.017	0.00	0.000
	6	6	8.00	8.00	1.00	0.017	0.00	0.000
	7	6	8.00	8.00	1.00	0.017	0.00	0.000
	8	6	8.00	8.00	1.00	0.017	0.00	0.000
	9	6	8.00	8.00	1.00	0.017	0.00	0.000
	10	6	8.00	8.00	1.00	0.017	0.00	0.000
	11	6	8.00	8.00	1.00	0.017	0.00	0.000
							0.00	0.000

Sample	Sample Round	L (inches)	H1 (inches)	H2 (inches)	t (min)	t (hours)	K (in/hr)	K (ft/day)
TP-10 Depth 48"	1	6	8	7.40	1.00	0.017	28.05	56.104
	2	6	7.40	7.10	1.00	0.017	14.90	29.793
	3	6	7.10	6.90	1.00	0.017	10.29	20.571
	4	6	6.90	6.75	1.00	0.017	7.91	15.824
	5	6	6.75	6.60	1.00	0.017	8.09	16.180
	6	6	6.60	6.40	1.00	0.017	11.08	22.154
	7	6	6.40	6.25	1.00	0.017	8.54	17.075
	8	6	6.25	6.10	1.00	0.017	8.74	17.490
	9	6	6.10	5.90	1.00	0.017	12.00	24.000
	10	6	5.90	5.80	1.00	0.017	6.15	12.308
	11	6	5.80	5.70	1.00	0.017	6.26	12.522
							11.09	22.184



Appendix F
Water Quality Computations

Long Lots Elementary School

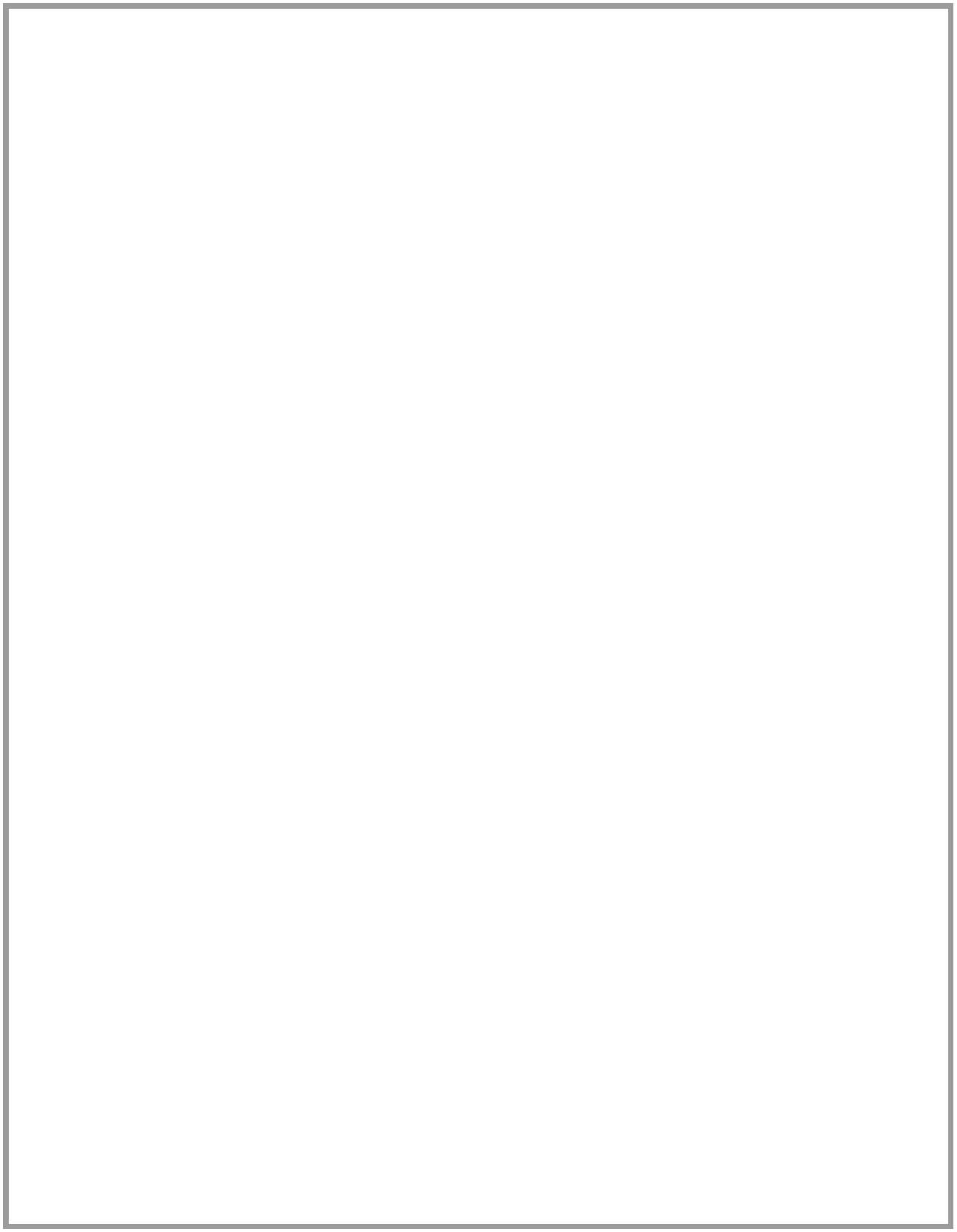
13 Hyde Lane, Westport, Connecticut

Drainage Report

Prepared for:
Svigals and Partners, an FCA Company
84 Orange Street
New Haven, CT 06510

SLR Project No.: 141.14847.00021

May 14, 2025



STORMWATER QUALITY CALCULATIONS
Water Quality Volume (WQV)

Basin ID	Total Area (ac.)	Impervious Area (ac.)	Percent Impervious	Volumetric Runoff Coeff., R	WQV (ac-ft)	Total Volume Required (ac-ft)	Total Volume Provided[1.] (ac-ft)
220	11.66	3.59	31%	0.33	0.413	0.413	***0.440***
230	3.71	2.58	70%	0.68	0.272	0.272	***0.285***

1. - Volume provided below low-flow orifice or overflow

$$\text{WQV} = \frac{(1.3 \text{ inches}) \times A \times R}{12}$$

Where:

WQV = Water Quality Volume in acre-feet
A = Contributing Area in acres
R = 0.05 + 0.009 (I)
I = Site Imperviousness as percent

Long Lots Elementary School
Westport, CT
LL-WQV_01.xls

Page 1 of 1

SLR

STORMWATER QUALITY CALCULATIONS
Water Quality Volume (WQV)

DET 220

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
73.0	6,115	0.0	0.000	**0.000**
74.0	7,054	6,584.5	0.151	**0.151**
75.0	8,050	7,552.0	0.173	**0.325**
75.6	8,682	5,019.6	0.115	**0.440**

DET 230

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
70.0	5,565	0.0	0.000	**0.000**
71.0	6,577	6,071.0	0.139	**0.139**
71.9	7,537	6,351.3	0.146	**0.285**

	SLR Consulting	Project	**14847.00021**
	COMPUTATION SHEET - WATER QUALITY FLOW (WQF)	Made By:	MCB
Subject:	**Long Lots Elementary School**	Date:	4/30/2025
		Chkd by:	RJM
		Date:	4/30/2025

MH 19

Contributing Basins	Imperv. Area (acres)	Total Area (acres)
Total	3.28	10.00

Table 4.1: WQV = (P)(R_v)(A)/12 = 0.374 acre-feet

Where:

I = % of Impervious Cover = 33%

R_v = volumetric runoff coeff. 0.05 + 0.009(I) = 0.345

P = design precipitation (1.3" for water quality storm) = 1.3 inch

A = site area (acres) = 10 acres = 0.0156 $miles^2$

Q = runoff depth (in watershed inches) = [WQV(acrefeet)]*[12(inches/foot)]/drainage area (acres)

Q = 0.449

CN = 1000 / [10+ 5P + 10Q -10(Q^2 + 1.25QP)$^{0.5}$] = 88

Where:

Q = runoff depth (in watershed inches)

t_c = 0.197 hours

Type III Rainfall Distribution:

From Table 4-1, Ia = 0.273 Ia/P = 0.21

(TR-55)

From Exhibit 4-III, q_u = 505 csm/in.

(TR-55)

WQF = (qu)(A)(Q) = 3.54 cfs **Cascade CS-6 CTDOT Flow = 4.0 cfs**

	SLR Consulting	Project	**14847.00021**
	COMPUTATION SHEET - WATER QUALITY FLOW (WQF)	Made By:	MCB
Subject:	**Long Lots Elementary School**	Date:	4/30/2025
		Chkd by:	RJM
		Date:	4/30/2025

MH 64

Contributing Basins	Imperv. Area (acres)	Total Area (acres)
Total	1.30	1.90

Table 4.1: WQV = (P)(R_v)(A)/12 = 0.137 acre-feet

Where:

I = % of Impervious Cover = 68%

R_v = volumetric runoff coeff. 0.05 + 0.009(I) = 0.666

P = design precipitation (1.3" for water quality storm) = 1.3 inch

A = site area (acres) = 1.9 acres = 0.0030 $miles^2$

Q = runoff depth (in watershed inches) = [WQV(acrefeet)]*[12(inches/foot)]/drainage area (acres)

Q = 0.866

CN = 1000 / [10+ 5P + 10Q -10(Q^2 + 1.25QP)$^{0.5}$] = 95

Where:

Q = runoff depth (in watershed inches)

t_c = 0.238 hours

Type III Rainfall Distribution:

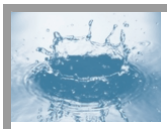
From Table 4-1, Ia = 0.105 Ia/P = 0.0808

(TR-55)

From Exhibit 4-III, q_u = 530 csm/in.

(TR-55)

WQF = (qu)(A)(Q) = 1.36 cfs **Cascade CS-4 CTDOT Flow = 1.8 cfs**



2. Compute the time of concentration (t_c) based on the methods described in Chapter 3 of TR-55. A minimum value of 0.167 hours (10 minutes) should be used. For sheet flow, the flow path should not be longer than 300 feet.

3. Using the computed CN, t_c, and drainage area (A) in acres, compute the peak discharge for the water quality storm (i.e., the water quality flow [WQF]), based on the procedures described in Chapter 4 of TR-55.

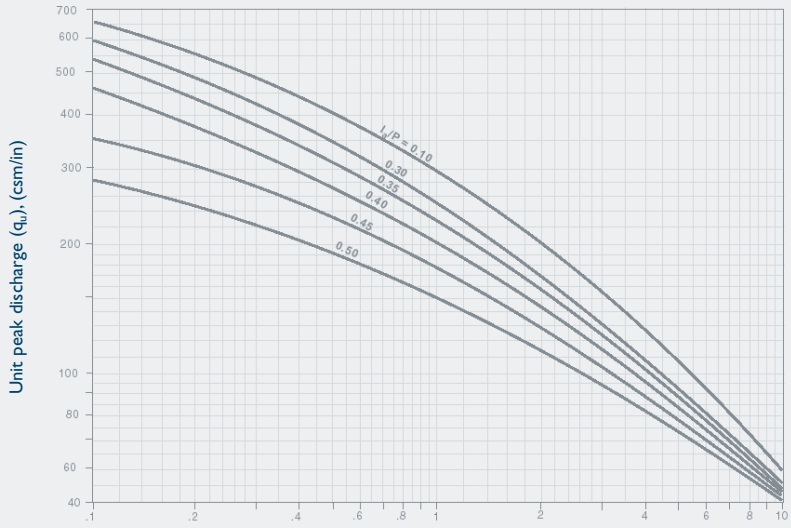
   ❍ *Read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55 (reproduced below); compute I_a/P*

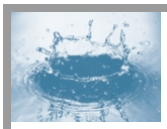
Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	55	1.636	70	0.857	85	0.353
41	2.878	56	1.571	71	0.817	86	0.326
42	2.762	57	1.509	72	0.778	87	0.299
43	2.651	58	1.448	73	0.740	88	0.273
44	2.545	59	1.390	74	0.703	89	0.247
45	2.444	60	1.333	75	0.667	90	0.222
46	2.348	61	1.279	76	0.632	91	0.198
47	2.255	62	1.226	77	0.597	92	0.174
48	2.167	63	1.175	78	0.564	93	0.151
49	2.082	64	1.125	79	0.532	94	0.128
50	2.000	65	1.077	80	0.500	95	0.105
51	1.922	66	1.030	81	0.469	96	0.083
52	1.846	67	0.985	82	0.439	97	0.062
53	1.774	68	0.941	83	0.410	98	0.041
54	1.704	69	0.899	84	0.381		

   ❍ *Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 (reproduced below) for appropriate t_c*

Exhibit 4-111 Unit peak discharge (q_u) for NRCS (SCS) type III rainfall distribution





2. Compute the time of concentration (t_c) based on the methods described in Chapter 3 of TR-55. A minimum value of 0.167 hours (10 minutes) should be used. For sheet flow, the flow path should not be longer than 300 feet.

3. Using the computed CN, t_c, and drainage area (A) in acres, compute the peak discharge for the water quality storm (i.e., the water quality flow [WQF]), based on the procedures described in Chapter 4 of TR-55.

   ❍ *Read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55 (reproduced below); compute I_a/P*

Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	55	1.636	70	0.857	85	0.353
41	2.878	56	1.571	71	0.817	86	0.326
42	2.762	57	1.509	72	0.778	87	0.299
43	2.651	58	1.448	73	0.740	88	0.273
44	2.545	59	1.390	74	0.703	89	0.247
45	2.444	60	1.333	75	0.667	90	0.222
46	2.348	61	1.279	76	0.632	91	0.198
47	2.255	62	1.226	77	0.597	92	0.174
48	2.167	63	1.175	78	0.564	93	0.151
49	2.082	64	1.125	79	0.532	94	0.128
50	2.000	65	1.077	80	0.500	95	0.105
51	1.922	66	1.030	81	0.469	96	0.083
52	1.846	67	0.985	82	0.439	97	0.062
53	1.774	68	0.941	83	0.410	98	0.041
54	1.704	69	0.899	84	0.381		

   ❍ *Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 (reproduced below) for appropriate t_c*

Exhibit 4-111 Unit peak discharge (q_u) for NRCS (SCS) type III rainfall distribution

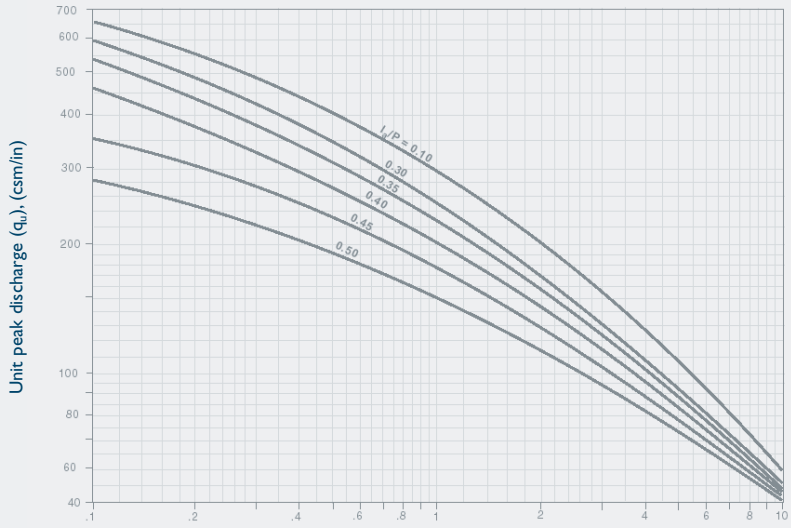
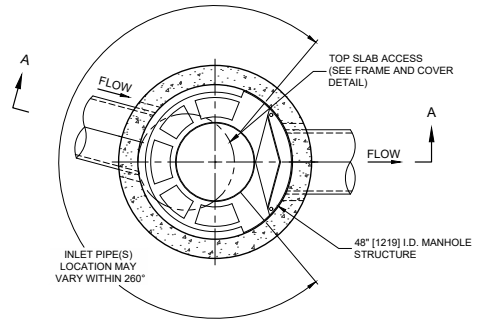


TABLE 2 - PERFORMANCE MATRIX FOR CTDOT QUALIFIED HYDRODYNAMIC SEPARATORS

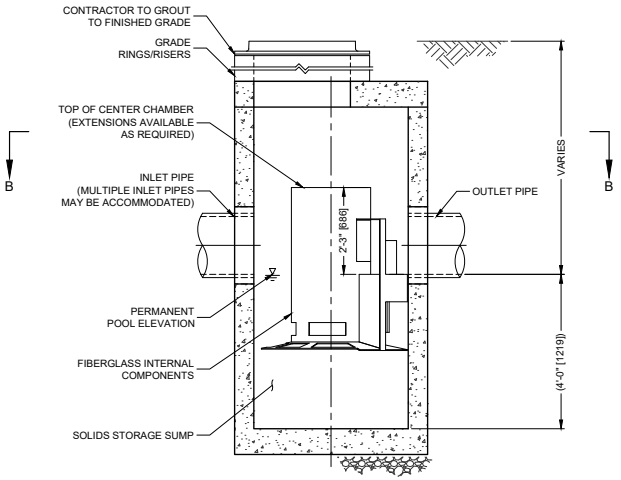
Max WQF (cfs)	Product Model											
	Barracuda MAX	*Cascade*	*CDS*	*Concentrator*	*Downstream Defender*	*DVS*	*First Defense*	*HydroDome*	*HydroStorm*	*SAFL*	*SciCloneX*	*Xcelerator*
0.1	Barracuda MAX S3(3)	CS-3(3)	CDS-3(3)	AS-2(2.5)	4ft(4)	DVS-36(3)	3ft(3)	HD3(3)	HS3(3)	60x36	SCX-3(3)	XC-2(2.5)
0.2	Barracuda MAX S3(3)	CS-3(3)	CDS-3(3)	AS-2(2.5)	4ft(4)	DVS-36(3)	3ft(3)	HD3(3)	HS3(3)	60x36	SCX-3(3)	XC-2(2.5)
0.3	Barracuda MAX S3(3)	CS-3(3)	CDS-3(3)	AS-2(2.5)	4ft(4)	DVS-36(3)	3ft(3)	HD3(3)	HS3(3)	72x36	SCX-3(3)	XC-2(2.5)
0.4	Barracuda MAX S3(3)	CS-3(3)	CDS-3(3)	AS-3(3.5)	4ft(4)	DVS-36(3)	3ft(3)	HD3(3)	HS3(3)	84x46	SCX-3(3)	XC-2(2.5)
0.5	Barracuda MAX S3(3)	CS-3(3)	CDS-3(3)	AS-3(3.5)	4ft(4)	DVS-36(3)	3ft(3)	HD3(3)	HS3(3)	84x46	SCX-3(3)	XC-2(2.5)
0.6	Barracuda MAX S3(3)	CS-3(3)	CDS-4(4)	AS-3(3.5)	4ft(4)	DVS-48(4)	3ft(3)	HD3(3)	HS4(4)	96x46	SCX-3(3)	XC-3(3.5)
0.7	Barracuda MAX S3(3)	CS-3(3)	CDS-4(4)	AS-3(3.5)	4ft(4)	DVS-48(4)	3ft(3)	HD3(3)	HS4(4)	108x46	SCX-3(3)	XC-3(3.5)
0.8	Barracuda MAX S3(3)	CS-3(3)	CDS-4(4)	AS-4(4.5)	4ft(4)	DVS-48(4)	3ft(3)	HD3(3)	HS4(4)	108x46	SCX-3(3)	XC-3(3.5)
0.9	Barracuda MAX S4(4)	CS-3(3)	CDS-4(4)	AS-4(4.5)	4ft(4)	DVS-48(4)	3ft(3)	HD4(4)	HS5(5)	120x57	SCX-3(3)	XC-3(3.5)
1.0	Barracuda MAX S4(4)	CS-3(3)	CDS-5(5)	AS-4(4.5)	4ft(4)	DVS-48(4)	3ft(3)	HD4(4)	HS5(5)	120x57	SCX-3(3)	XC-3(3.5)
1.1	Barracuda MAX S4(4)	CS-4(4)	CDS-5(5)	AS-4(4.5)	4ft(4)	DVS-60(5)	4ft(4)	HD4(4)	HS5(5)		SCX-4(4)	XC-3(3.5)
1.2	Barracuda MAX S4(4)	CS-4(4)	CDS-5(5)	AS-5(5)	6ft(6)	DVS-60(5)	4ft(4)	HD4(4)	HS5(5)		SCX-4(4)	XC-4(4.5)
1.3	Barracuda MAX S4(4)	CS-4(4)	CDS-5(5)	AS-5(5)	6ft(6)	DVS-60(5)	4ft(4)	HD4(4)	HS5(5)		SCX-4(4)	XC-4(4.5)
1.4	Barracuda MAX S4(4)	CS-4(4)	CDS-5(5)	AS-5(5)	6ft(6)	DVS-60(5)	4ft(4)	HD4(4)	HS6(6)		SCX-4(4)	XC-4(4.5)
1.5	Barracuda MAX S4(4)	CS-4(4)	CDS-5(5)	AS-6(6)	6ft(6)	DVS-60(5)	4ft(4)	HD4(4)	HS6(6)		SCX-4(4)	XC-4(4.5)
1.6	Barracuda MAX S5(5)	CS-4(4)	CDS-6(6)	AS-6(6)	6ft(6)	DVS-72(6)	4ft(4)	HD5(5)	HS6(6)		SCX-4(4)	XC-4(4.5)
1.7	Barracuda MAX S5(5)	CS-4(4)	CDS-6(6)	AS-6(6)	6ft(6)	DVS-72(6)	4ft(4)	HD5(5)	HS6(6)		SCX-4(4)	XC-4(4.5)
1.8	Barracuda MAX S5(5)	CS-4(4)	CDS-6(6)	AS-6(6)	6ft(6)	DVS-72(6)	4ft(4)	HD5(5)	HS6(6)		SCX-4(4)	XC-4(4.5)

TABLE 2 - PERFORMANCE MATRIX FOR CTDOT QUALIFIED HYDRODYNAMIC SEPARATORS (continued)

Max WQF (cfs)	Product Model											
	Barracuda MAX	*Cascade*	*CDS*	*Concentrator*	*Downstream Defender*	*DVS*	*First Defense*	*HydroDome*	*HydroStorm*	*SAFL*	*SciCloneX*	*Xcelerator*
1.9	Barracuda MAX S5(5)	CS-5(5)	CDS-6(6)	AS-6(6)	6ft(6)	DVS-72(6)	5ft(5)	HD5(5)	HS6(6)		SCX-5(5)	XC-5(5.5)
2.0	Barracuda MAX S5(5)	CS-5(5)	CDS-6(6)	AS-6(6)	6ft(6)	DVS-72(6)	5ft(5)	HD5(5)	HS7(7)		SCX-5(5)	XC-5(5.5)
2.1	Barracuda MAX S5(5)	CS-5(5)	CDS-6(6)	AS-6(6)	6ft(6)	DVS-72(6)	5ft(5)	HD5(5)	HS7(7)		SCX-5(5)	XC-5(5.5)
2.2	Barracuda MAX S5(5)	CS-5(5)	CDS-7(7)	AS-7(7)	6ft(6)	DVS-72(6)	5ft(5)	HD5(5)	HS7(7)		SCX-5(5)	XC-5(5.5)
2.3	Barracuda MAX S5(5)	CS-5(5)	CDS-7(7)	AS-7(7)	6ft(6)	DVS-84(7)	5ft(5)	HD5(5)	HS7(7)		SCX-5(5)	XC-5(5.5)
2.4	Barracuda MAX S6(6)	CS-5(5)	CDS-7(7)	AS-7(7)	6ft(6)	DVS-84(7)	5ft(5)	HD6(6)	HS7(7)		SCX-5(5)	XC-5(5.5)
2.5	Barracuda MAX S6(6)	CS-5(5)	CDS-7(7)	AS-7(7)	6ft(6)	DVS-84(7)	5ft(5))	HD6(6)	HS7(7)		SCX-5(5)	XC-5(5.5)
2.6	Barracuda MAX S6(6)	CS-5(5)	CDS-7(7)	AS-7(7)	8ft(8)	DVS-84(7)	5ft(5)	HD6(6)	HS7(7)		SCX-5(5)	XC-5(5.5)
2.7	Barracuda MAX S6(6)	CS-5(5)	CDS-7(7)	AS-7(7)	8ft(8)	DVS-84(7)	5ft(5)	HD6(6)	HS8(8)		SCX-5(5)	XC-5(5.5)
2.8	Barracuda MAX S6(6)	CS-5(5)	CDS-7(7)	AS-7(7)	8ft(8)	DVS-84(7)	5ft(5)	HD6(6)	HS8(8)		SCX-5(5)	XC-6(6.5)
2.9	Barracuda MAX S6(6)	CS-6(6)	CDS-8(8)	AS-8(8)	8ft(8)	DVS-84(7)	6ft(6)	HD6(6)	HS8(8)		SCX-6(6)	XC-6(6.5)
3.0	Barracuda MAX S6(6)	CS-6(6)	CDS-8(8)	AS-8(8)	8ft(8)	DVS-84(7)	6ft(6)	HD6(6)	HS8(8)		SCX-6(6)	XC-6(6.5)
3.1	Barracuda MAX S6(6)	CS-6(6)	CDS-8(8)	AS-8(8)	8ft(8)	DVS-96(8)	6ft(6)	HD6(6)	HS8(8)		SCX-6(6)	XC-6(6.5)
3.2	Barracuda MAX S6(6)	CS-6(6)	CDS-8(8)	AS-8(8)	8ft(8)	DVS-96(8)	6ft(6)	HD6(6)	HS8(8)		SCX-6(6)	XC-6(6.5)
3.3	Barracuda MAX S6(6)	CS-6(6)	CDS-8(8)	AS-8(8)	8ft(8)	DVS-96(8)	6ft(6)	HD6(6)	HS8(8)		SCX-6(6)	XC-6(6.5)
3.4	Barracuda MAX S6(6)	CS-6(6)	CDS-8(8)	AS-8(8)	8ft(8)	DVS-96(8)	6ft(6)	HD6(6)	HS8(8)		SCX-6(6)	XC-6(6.5)
3.5	Barracuda MAX S8(8)	CS-6(6)	CDS-8(8)	AS-8(8)	8ft(8)	DVS-96(8)	6ft(6)	HD7(7)	HS8(8)		SCX-6(6)	XC-6(6.5)
3.6	Barracuda MAX S8(8)	CS-6(6)	CDS-8(8)	AS-8(8)	8ft(8)	DVS-96(8)	6ft(6)	HD7(7)	HS9(9)		SCX-6(6)	XC-6(6.5)



PLAN VIEW B-B
NOT TO SCALE



ELEVATION A-A
NOT TO SCALE

CASCADE separator™

CASCADE SEPARATOR DESIGN NOTES
THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.
CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES

FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID			
WATER QUALITY FLOW RATE (cfs [L/s])			
PEAK FLOW RATE (cfs [L/s])			
RETURN PERIOD OF PEAK FLOW (yrs)			
RIM ELEVATION			
PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
NOTES / SPECIAL REQUIREMENTS:			

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' [610], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION, ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CS-4
CASCADE SEPARATOR
STANDARD DETAIL

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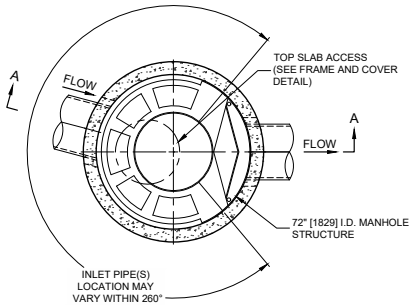
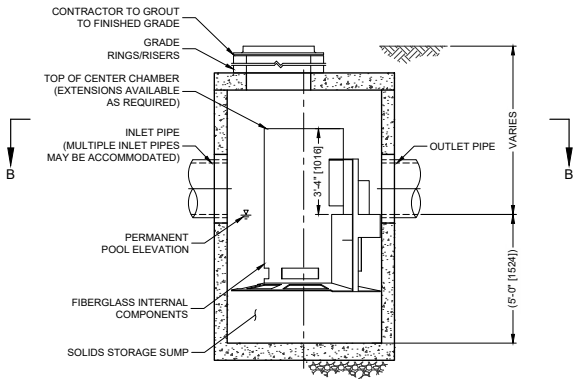


PLAN VIEW B-B
NOT TO SCALE



ELEVATION A-A
NOT TO SCALE

CASCADE separator™

CASCADE SEPARATOR DESIGN NOTES

THE STANDARD CS-6 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES

FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (cfs [L/s])	
PEAK FLOW RATE (cfs [L/s])	
RETURN PERIOD OF PEAK FLOW (yrs)	
RIM ELEVATION	

PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			

NOTES / SPECIAL REQUIREMENTS:

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' [610], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

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CS-6
CASCADE SEPARATOR
STANDARD DETAIL

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CONTECH®
ENGINEERED SOLUTIONS

Cascade Separator™ Inspection and Maintenance Guide

CASCADE
separator™

Maintenance

The Cascade Separator™ system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects sediment and debris will depend upon on-site activities and site pollutant characteristics. For example, unstable soils or heavy winter sanding will cause the sediment storage sump to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (i.e. spring and fall). However, more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment wash-down areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

A visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet chamber, flumes or outlet channel. The inspection should also quantify the accumulation of hydrocarbons, trash and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided in this Inspection and Maintenance Guide.

Access to the Cascade Separator unit is typically achieved through one manhole access cover. The opening allows for inspection and cleanout of the center chamber (cylinder) and sediment storage sump, as well as inspection of the inlet chamber and slanted skirt. For large units, multiple manhole covers allow access to the chambers and sump.

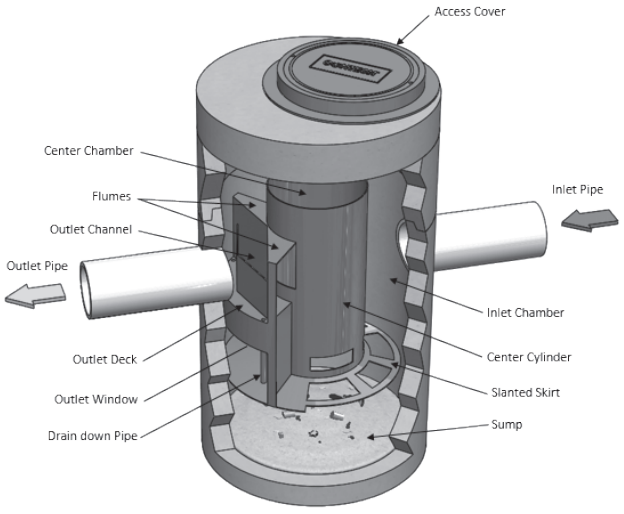
The Cascade Separator system should be cleaned before the level of sediment in the sump reaches the maximum sediment depth and/or when an appreciable level of hydrocarbons and trash has accumulated. If sorbent material is used, it must be replaced when significant discoloration has occurred. Performance may be impacted when maximum sediment storage capacity is exceeded. Contech recommends maintaining the system when sediment level reaches 50% of maximum storage volume. The level of sediment is easily determined by measuring the distance from the system outlet invert (standing water level) to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Finer, silty particles at the top of the pile typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the chart in this document to determine if the height of the sediment pile off the bottom of the sump floor exceeds 50% of the maximum sediment storage.

Cleaning

Cleaning of a Cascade Separator system should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole cover and insert the vacuum tube down through the center chamber and into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The areas outside the center chamber and the slanted skirt should also be washed off if pollutant build-up exists in these areas.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. Then the system should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and to ensure proper safety precautions. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the Cascade Separator system must be done in accordance with local regulations. In many locations, disposal of evacuated sediments may be handled in the same manner as disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal. If any components are damaged, replacement parts can be ordered from the manufacturer.



Cascade Separator™ Maintenance Indicators and Sediment Storage Capacities

Model Number	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CS-4	4	1.2	1.5	0.5	0.7	0.5
CS-5	5	1.3	1.5	0.5	1.1	0.8
CS-6	6	1.8	1.5	0.5	1.6	1.2
CS-8	8	2.4	1.5	0.5	2.8	2.1
CS-10	10	3.0	1.5	0.5	4.4	3.3
CS-12	12	3.6	1.5	0.5	6.3	4.8

Note: The information in the chart is for standard units. Units may have been designed with non-standard sediment storage depth.

A Cascade Separator unit can be easily cleaned in less than 30 minutes.

A vacuum truck excavates pollutants from the systems.

Cascade Separator™ Inspection & Maintenance Log

Cascade Model:			Location:		
Date	Depth Below Invert to Top of Sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The depth to sediment is determined by taking a measurement from the manhole outlet invert (standing water level) to the top of the sediment pile. Once this measurement is recorded, it should be compared to the chart in the maintenance guide to determine if the height of the sediment pile off the bottom of the sump floor exceeds 50% of the maximum sediment storage. Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.
2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SUPPORT

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, and earth stabilization products. For information, visit www.ContechES.com or call 800.338.1122

CONTECH ENGINEERED SOLUTIONS
800.925.5240
www.ContechES.com

Appendix G
Hydrologic Analysis - Input Computations

Long Lots Elementary School

13 Hyde Lane, Westport, Connecticut

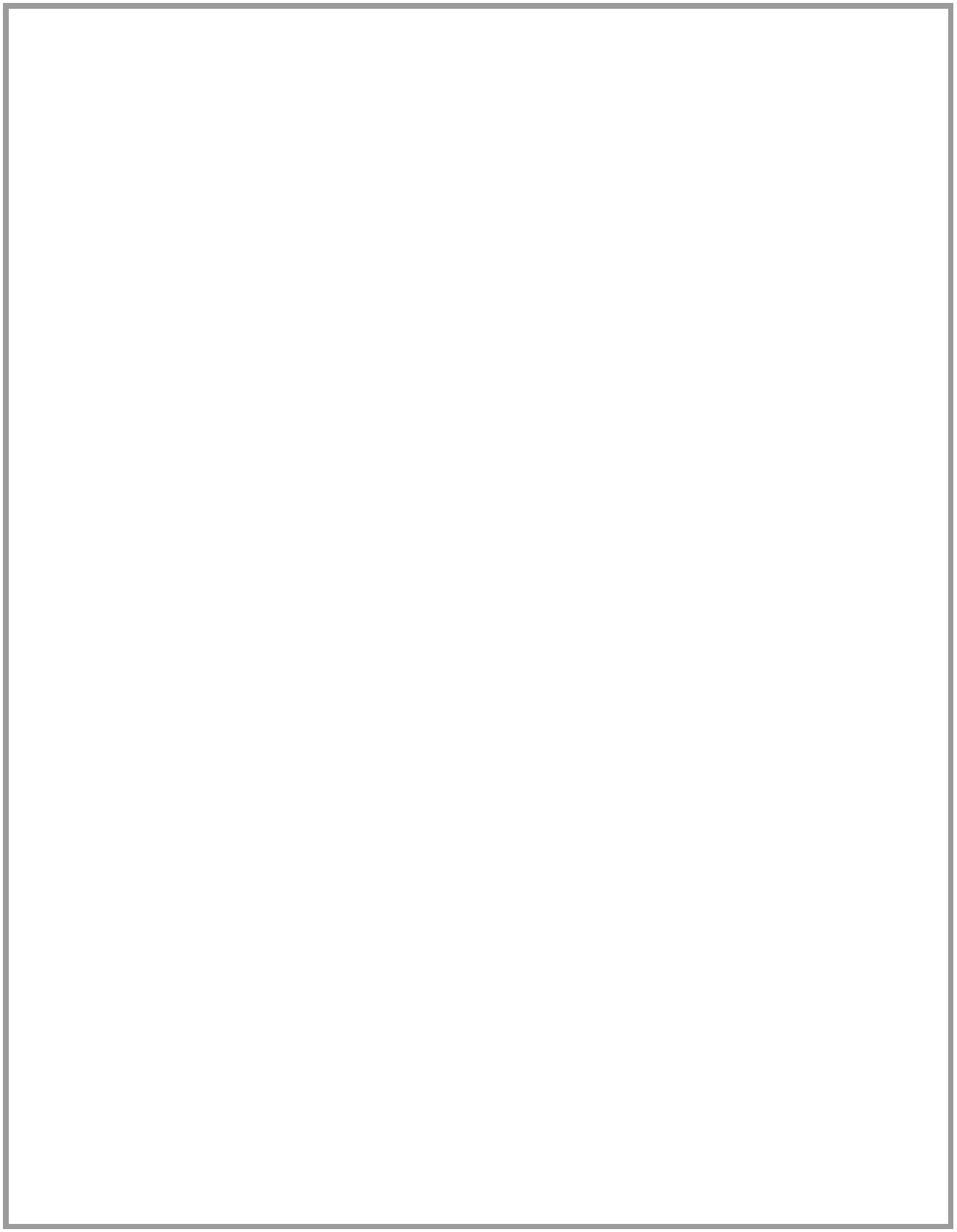
Drainage Report

Prepared for:
Svigals and Partners, an FCA Company
84 Orange Street
New Haven, CT 06510

SLR Project No.: 141.14847.00021

May 14, 2025

SLR



Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-10 - Undeveloped

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			1.06	58.08
D	Woods - Good Condition	77			0.12	9.20
	Totals =				1.18	67.28
					(0.00184	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{67.28}{1.18}$ Use CN = 57

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-11 - Undeveloped

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			5.65	311.02
D	Woods - Good Condition	77			0.17	12.88
				Totals =	5.82	323.90
					(0.00910	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{323.90}{5.82}$ Use CN = 56

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-12

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			28.98	1767.62
B	Woods - Fair Condition	60			1.80	108.27
N/A	Buildings	98			2.09	204.75
N/A	Paved / Impervious	98			6.61	647.37
D	Open Space - Good Condition	80			0.09	7.22
				Totals =	39.57	2735.24
					(0.06182	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{2735.24}{39.57}$ Use CN = 69

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-20 - Undeveloped

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			3.93	216.24
	Totals =				3.93	216.24
					(0.00614	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{216.24}{3.93}$ Use CN = 55

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-21 - Undeveloped

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			5.08	279.23
D	Woods - Good Condition	77			5.65	434.72
	Totals =				10.72	713.95
					(0.01675	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{713.95}{10.72}$ Use CN = 67

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-30 - Undeveloped

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			1.73	95.18
D	Woods - Good Condition	77			0.43	33.40
	Totals =				2.16	128.59
					(0.00338	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{128.59}{2.16}$ Use CN = 59

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-31

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			2.66	162.48
N/A	Paved / Impervious	98			0.99	97.15
N/A	Buildings	98			0.47	45.62
B	Woods - Fair Condition	60			0.08	4.62
D	Woods - Fair Condition	79			0.04	3.35
D	Open Space - Good Condition	80			0.00	0.10
	Totals =				4.24	313.31
					(0.00663	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{313.31}{4.24}$ Use CN = 74

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-40 - Undeveloped

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area (Acres) Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			1.29	70.91
D	Woods - Good Condition	77			0.01	0.96
				Totals =	1.30	71.87
					(0.00203 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{71.87}{1.30}$ Use CN = 55

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-50 - Undeveloped

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area (Acres) Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			2.47	135.89
	Totals =				2.47	135.89
					(0.00386	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{135.89}{2.47}$ Use CN = 55

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-51

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			0.00	0.00
B	Open Space - Good Condition	61			0.38	22.99
N/A	Building	98			0.02	1.74
N/A	Paved/Impervious	98			0.05	4.59
	Totals =				0.44	29.32
					(0.00069	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{29.32}{0.44}$ Use CN = 66

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-10

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B Soil	Woods - Good Condition	55			0.08	4.42
B Soil	Open Space - Good Condition	61			0.74	45.16
N/A	Paved/Impervious	98			0.02	1.77
	Totals =				0.84	51.35
					(0.00131	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{51.35}{0.84}$ Use CN = 61

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-11

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B Soil	Woods - Good Condition	55			0.20	10.89
B Soil	Open Space - Good Condition	61			3.21	195.52
N/A	Paved/Impervious	98			0.01	0.61
	Totals =				3.41	207.01
					(0.00533	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{207.01}{3.41}$ Use CN = 61

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-12

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B	Open Space - Good Condition	61			28.92	1764.21
B	Woods - Fair Condition	60			1.80	108.27
N/A	Buildings	98			2.09	204.75
N/A	Paved / Impervious	98			6.52	639.25
D	Open Space - Good Condition	80			0.19	14.93
				Totals =	39.52	2731.42
					(0.06176 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{2731.42}{39.52}$ Use CN = 69

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-20

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B Soil	Woods - Good Condition	55			2.66	146.34
B Soil	Open Space - Good Condition	61			0.59	35.92
N/A	Paved/Impervious	98			0.02	2.05
	Totals =				3.27	184.31
					(0.00511	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{184.31}{3.27}$ Use CN = 56

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 4/25/25 Checked: RJM Date: 4/25/25
Circle one: Present ***Developed*** Watershed: PRWS-21

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B Soil	Open Space - Good Condition	61			0.88	53.83
D Soil	Open Space - Good Condition	80			0.87	69.69
D Soil	Dirt	89			0.05	4.32
D Soil	Gravel	91			0.01	1.24
N/A	Paved/Impervious	98			0.20	19.27
				Totals =	2.01	148.34
					(0.00314	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{148.34}{2.01}$ Use CN = 74

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-22

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B Soil	Woods - Good Condition	55			0.04	1.97
B Soil	Open Space - Good Condition	61			0.55	33.50
B Soil	Gravel	85			0.01	1.00
D Soil	Woods - Good Condition	77			0.16	12.60
D Soil	Open Space - Good Condition	80			1.39	111.56
D Soil	Dirt	89			0.18	15.86
D Soil	Gravel	91			0.05	4.61
N/A	Paved/Impervious	98			1.08	105.40
				Totals =	3.46	286.51
					(0.00541 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{286.51}{3.46}$ Use CN = 83

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 4/25/25 Checked: RJM Date: 4/25/25
Circle one: Present ***Developed*** Watershed: PRWS-221

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B Soil	Open Space - Good Condition	61			0.02	1.47
D Soil	Open Space - Good Condition	80			0.23	18.13
N/A	Paved/Impervious	98			0.79	77.35
	Totals =				1.04	96.95
					(0.00163	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{96.95}{1.04}$ Use CN = 93

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 4/25/25 Checked: RJM Date: 4/25/25
Circle one: Present ***Developed*** Watershed: PRWS-222

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B Soil	Open Space - Good Condition	61			0.04	2.16
D Soil	Open Space - Good Condition	80			0.31	25.19
N/A	Paved/Impervious	98			0.83	81.32
					Totals = 1.18	108.67
					(0.00184 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{108.67}{1.18}$ Use CN = 92

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 4/25/25 Checked: RJM Date: 4/25/25
Circle one: Present ***Developed*** Watershed: PRWS-223

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B Soil	Open Space - Good Condition	61			0.07	4.23
D Soil	Open Space - Good Condition	80			0.10	8.10
N/A	Paved/Impervious	98			0.69	67.31
				Totals =	0.86	79.64
					(0.00134 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{79.64}{0.86}$ Use CN = 93

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 4/25/25 Checked: RJM Date: 4/25/25
Circle one: Present ***Developed*** Watershed: PRWS-224

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B Soil	Woods - Good Condition	55			0.60	33.18
B Soil	Open Space - Good Condition	61			2.71	165.21
N/A	Paved/Impervious	98			0.17	16.50
N/A	Existing Building	98			0.03	3.40
				Totals =	3.51	218.29
					(0.00549 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{218.29}{3.51}$ Use CN = 62

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 4/25/25 Checked: RJM Date: 4/25/25
Circle one: Present ***Developed*** Watershed: PRWS-225

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B Soil	Woods - Good Condition	55			0.23	12.38
B Soil	Open Space - Good Condition	61			1.38	84.22
				Totals =	1.61	96.60
					(0.00251 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{96.60}{1.61}$ Use CN = 60

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-23

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B Soil	Open Space - Good Condition	61			0.87	53.30
B Soil	Gravel	85			0.15	13.14
D Soil	Open Space - Good Condition	80			0.08	6.48
D Soil	Gravel	91			0.02	2.02
N/A	Paved/Impervious	98			0.92	90.31
N/A	Building	98			1.66	162.76
				Totals =	3.71	328.01
					(0.00580	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{328.01}{3.71}$ Use CN = 88

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-30

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B Soil	Woods - Good Condition	55			1.33	73.10
B Soil	Open Space - Good Condition	61			0.12	7.38
D Soil	Woods - Good Condition	77			0.04	3.24
D Soil	Open Space - Good Condition	80			0.01	0.80
Totals =					1.50	84.52
					(0.00235 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{84.52}{1.50}$ Use CN = 56

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-31

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			2.66	162.48
N/A	Paved / Impervious	98			0.99	97.15
N/A	Buildings	98			0.47	45.62
B	Woods - Fair Condition	60			0.08	4.62
D	Woods - Fair Condition	79			0.04	3.35
D	Open Space - Good Condition	80			0.00	0.10
	Totals =				4.24	313.31
					(0.00663	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{313.31}{4.24}$ Use CN = 74

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-40

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B Soil	Woods - Good Condition	55			0.20	11.24
B Soil	Open Space - Good Condition	61			0.06	3.53
				Totals =	0.26	14.77
					(0.00041 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{14.77}{0.26}$ Use CN = 56

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-50

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B Soil	Woods - Good Condition	55			0.38	20.92
B Soil	Open Space - Good Condition	61			0.50	30.31
				Totals =	0.88	51.23
					(0.00137	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{51.23}{0.88}$ Use CN = 58

SLR

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-51

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			0.00	0.00
B	Open Space - Good Condition	61			0.16	9.53
N/A	Building	98			0.02	1.74
N/A	Paved/Impervious	98			0.01	1.30
	Totals =				0.19	12.57
					(0.00029	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{12.57}{0.19}$ Use CN = 67

SLR

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: Present ***Developed*** Watershed: PRWS-52

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			0.00	0.00
B	Open Space - Good Condition	61			0.22	13.47
N/A	Building	98			0.00	0.00
N/A	Paved/Impervious	98			0.03	2.99
				Totals =	0.25	16.45
					(0.00039	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{16.45}{0.25}$ Use CN = 65

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 11/20/24
Circle one: ***Present*** Developed | Watershed: EX-WS10-Undeveloped
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			WOODS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		76.0		
4. Two-year 24-hr rainfall, P_2	in.		3.49		
5. Land slope, s	ft./ft.		0.060		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.177	=	0.177

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7. Surface description			WOOD				
8. Manning's roughness coeff., n			0.100				
9. Paved or unpaved			UNPVD				
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40				
11. Flow Length, L	ft.		197.0				
12. Watercourse slope, s	ft./ft.		0.150				
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		3.13				
14. $T_t = \frac{L}{3600 * V}$	hr.		0.017			=	0.017

Channel flow

		Segment ID					
15. Channel Bottom width, b	ft.						
16. Horizontal side slope component, z (z horiz:1 vert)	ft.						
17. Depth of flow, d	ft.						
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$						
19. Wetted perimeter, P_w	ft.						
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.						
21. Channel slope, s	ft./ft.						
22. Manning's roughness coeff., n							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.						
24. Flow length, L	ft.						
25. $T_t = \frac{L}{3600 * V}$	hr.			+			= 0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)						hr.	0.195

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 11/20/24
Circle one: ***Present*** Developed | Watershed: EX-WS11-Undeveloped
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		WOODS				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.400				
3.	Flow Length, L (< 300ft)	ft.	100.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.49				
5.	Land slope, s	ft./ft.	0.100				
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.180	=	0.180		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7.	Surface description		WOODS				
8.	Manning's roughness coeff., n		0.100				
9.	Paved or unpaved		UNPVD				
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40				
11.	Flow Length, L	ft.	595.0				
12.	Watercourse slope, s	ft./ft.	0.031				
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.42				
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.116				= 0.116

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	ft.^{2}					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.		+			= 0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)	hr.					0.296

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 11/20/24
Circle one: ***Present*** Developed | Watershed: EX-WS12
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			GRASS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.240		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.49		
5. Land slope, s	ft./ft.		0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.228	=	0.228

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D	D-E	E-F		
7. Surface description			GRASS	BIT	GRASS	BIT		
8. Manning's roughness coeff., n			0.080	0.010	0.080	0.010		
9. Paved or unpaved			UNPVD	PVD	UNPVD	PVD		
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.20	0.40	0.20		
11. Flow Length, L	ft.		64.0	36.0	334.0	120.0		
12. Watercourse slope, s	ft./ft.		0.027	0.020	0.022	0.020		
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.66	7.21	1.50	7.21		
14. $T_t = \frac{L}{3600 * V}$	hr.		0.011	+ 0.001	+ 0.062	+ 0.005	=	0.012

Channel flow

		Segment ID	F-G	G-H				
15. Channel Bottom width, b	ft.		12" RCP	18" RCP				
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		--	--				
17. Depth of flow, d	ft.		FULL	FULL				
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		0.79	1.77				
19. Wetted perimeter, P_w	ft.		3.14	4.71				
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.25	0.38				
21. Channel slope, s	ft./ft.		0.011	0.011				
22. Manning's roughness coeff., n			0.013	0.013				
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		4.79	6.26				
24. Flow length, L	ft.		270.0	538.0				
25. $T_t = \frac{L}{3600 * V}$	hr.		0.016	+ 0.024			=	0.040
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)						hr.		0.279

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 11/20/24
Circle one: ***Present*** Developed | Watershed: EX-WS20
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			WOODS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.49		
5. Land slope, s	ft./ft.		0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.343	=	0.343

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7. Surface description			WOOD				
8. Manning's roughness coeff., n			0.100				
9. Paved or unpaved			UNPVD				
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40				
11. Flow Length, L	ft.		439.0				
12. Watercourse slope, s	ft./ft.		0.057				
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.93				
14. $T_t = \frac{L}{3600 * V}$	hr.		0.063			=	0.063

Channel flow

		Segment ID					
15. Channel Bottom width, b	ft.						
16. Horizontal side slope component, z (z horiz:1 vert)	ft.						
17. Depth of flow, d	ft.						
18. Cross sectional flow area, A (assume trapazoidal)	ft.^{2}						
19. Wetted perimeter, P_w	ft.						
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.						
21. Channel slope, s	ft./ft.						
22. Manning's roughness coeff., n							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.						
24. Flow length, L	ft.						
25. $T_t = \frac{L}{3600 * V}$	hr.			+		=	0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)					hr.		0.406

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 11/20/24
Circle one: ***Present*** Developed | Watershed: EX-WS21
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			WOODS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.49		
5. Land slope, s	ft./ft.		0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.343	=	0.343

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7. Surface description			WOODS	WOODS			
8. Manning's roughness coeff., n			0.100	0.100			
9. Paved or unpaved			UNPVD	PVD			
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.20			
11. Flow Length, L	ft.		24.0	154.0			
12. Watercourse slope, s	ft./ft.		0.020	0.019			
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.14	0.70			
14. $T_t = \frac{L}{3600 * V}$	hr.		0.006	+ 0.061		=	0.067

Channel flow

		Segment ID					
15. Channel Bottom width, b	ft.						
16. Horizontal side slope component, z (z horiz:1 vert)	ft.						
17. Depth of flow, d	ft.						
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$						
19. Wetted perimeter, P_w	ft.						
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.						
21. Channel slope, s	ft./ft.						
22. Manning's roughness coeff., n							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.						
24. Flow length, L	ft.						
25. $T_t = \frac{L}{3600 * V}$	hr.					=	0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)						hr.	0.409

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 11/20/24
Circle one: ***Present*** Developed | Watershed: EX-WS30-Undeveloped
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B	
1. Surface description (Table 3-1)			WOODS	
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400	
3. Flow Length, L (< 300ft)	ft.		71.0	
4. Two-year 24-hr rainfall, P_2	in.		3.49	
5. Land slope, s	ft./ft.		0.014	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.301	= 0.301

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D	D-E		
7. Surface description			WOOD				
8. Manning's roughness coeff., n			0.100				
9. Paved or unpaved			UNPVD				
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40				
11. Flow Length, L	ft.		277.0				
12. Watercourse slope, s	ft./ft.		0.360				
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		4.85	#DIV/0!	#DIV/0!		
14. $T_t = \frac{L}{3600 * V}$	hr.		0.016	+ #DIV/0!	#DIV/0!		= 0.016

Channel flow

		Segment ID					
15. Channel Bottom width, b	ft.						
16. Horizontal side slope component, z (z horiz:1 vert)	ft.						
17. Depth of flow, d	ft.						
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$						
19. Wetted perimeter, P_w	ft.						
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.						
21. Channel slope, s	ft./ft.						
22. Manning's roughness coeff., n							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.						
24. Flow length, L	ft.						
25. $T_t = \frac{L}{3600 * V}$	hr.			+			= 0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)						hr.	0.316

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 11/20/24
Circle one: ***Present*** Developed | Watershed: EX-WS31
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1.	Surface description (Table 3-1)		GRASS		
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.240		
3.	Flow Length, L (< 300ft)	ft.	100.0		
4.	Two-year 24-hr rainfall, P_2	in.	3.49		
5.	Land slope, s	ft./ft.	0.025		
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.208	=	0.208

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7.	Surface description		GRASS	BIT			
8.	Manning's roughness coeff., n		0.080	0.010			
9.	Paved or unpaved		UNPVD	PVD			
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40	0.20			
11.	Flow Length, L	ft.	54.0	211.0			
12.	Watercourse slope, s	ft./ft.	0.028	0.026			
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.69	8.22			
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.009	+ 0.007			= 0.016

Channel flow

		Segment ID	D-E				
15.	Channel Bottom width, b	ft.	12" RCP				
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.	--				
17.	Depth of flow, d	ft.	FULL				
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$	0.79				
19.	Wetted perimeter, P_w	ft.	3.14				
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.	0.25				
21.	Channel slope, s	ft./ft.	0.004				
22.	Manning's roughness coeff., n		0.013				
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.	2.89				
24.	Flow length, L	ft.	47.0				
25.	$T_t = \frac{L}{3600 * V}$	hr.	0.005	+			= 0.005

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.229

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 11/20/24
Circle one: ***Present*** Developed | Watershed: EX-WS40-Undeveloped
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1.	Surface description (Table 3-1)		WOODS		
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.400		
3.	Flow Length, L (< 300ft)	ft.	100.0		
4.	Two-year 24-hr rainfall, P_2	in.	3.49		
5.	Land slope, s	ft./ft.	0.070		
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.208	=	0.208

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7.	Surface description		WOODS	WOOD			
8.	Manning's roughness coeff., n		0.100	0.100			
9.	Paved or unpaved		UNPVD	UNPVD			
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40	0.40			
11.	Flow Length, L	ft.	80.0	110.0			
12.	Watercourse slope, s	ft./ft.	0.051	0.160			
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.83	3.24			
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.012	+ 0.009			= 0.022

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.		+			= 0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)					hr.	0.229

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: MCB | Date: 02/24/25
Location: 13 Hyde Ln | Checked: RJM | Date: 02/24/25
Circle one: ***Present*** Developed | Watershed: EX-WS50-Undeveloped
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		WOODS				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.400				
3.	Flow Length, L (< 300ft)	ft.	100.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.49				
5.	Land slope, s	ft./ft.	0.020				
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.343	=	0.343		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7.	Surface description		WOODS				
8.	Manning's roughness coeff., n		0.100				
9.	Paved or unpaved		UNPVD				
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40				
11.	Flow Length, L	ft.	331.0				
12.	Watercourse slope, s	ft./ft.	0.018				
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.09				
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.085			=	0.085

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	ft.^{2}					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.		+		=	0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)	hr.					0.427

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: MCB | Date: 02/24/25
Location: 13 Hyde Ln | Checked: RJM | Date: 02/24/25
Circle one: ***Present*** Developed | Watershed: EX-WS51
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		GRASS				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.240				
3.	Flow Length, L (< 300ft)	ft.	100.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.49				
5.	Land slope, s	ft./ft.	0.020				
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.228	=	0.228		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7.	Surface description		GRASS				
8.	Manning's roughness coeff., n		0.080				
9.	Paved or unpaved		UNPVD				
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40				
11.	Flow Length, L	ft.	32.0				
12.	Watercourse slope, s	ft./ft.	0.020				
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.43				
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.006				= 0.006

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	ft.^{2}					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.		+			= 0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)					hr.	0.234

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary School | By: MCB | Date: 03/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 05/05/25
Circle one: Present ***Developed*** | Watershed: PRWS-10
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B	
1.	Surface description (Table 3-1)		GRASS	
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.240	
3.	Flow Length, L (< 300ft)	ft.	78.0	
4.	Two-year 24-hr rainfall, P_2	in.	3.49	
5.	Land slope, s	ft./ft.	0.179	
6.	$T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.078	= 0.078

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID					
7.	Surface description						
8.	Manning's roughness coeff., n						
9.	Paved or unpaved						
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.					
11.	Flow Length, L	ft.					
12.	Watercourse slope, s	ft./ft.					
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.					
14.	$T_t = \frac{L}{3600 * V}$	hr.					= 0.000

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.					= 0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)						hr. 0.078

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary School | By: MCB | Date: 03/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 05/05/25
Circle one: Present ***Developed*** | Watershed: PRWS-11
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		GRASS				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.240				
3.	Flow Length, L (< 300ft)	ft.	100.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.49				
5.	Land slope, s	ft./ft.	0.040				
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.173	=	0.173		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7.	Surface description		GRASS				
8.	Manning's roughness coeff., n		0.080				
9.	Paved or unpaved		UNPVD				
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40				
11.	Flow Length, L	ft.	193.0				
12.	Watercourse slope, s	ft./ft.	0.021				
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.47				
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.037				= 0.037

Channel flow

		Segment ID	C-D				
15.	Channel Bottom width, b	ft.	12" HDPE				
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.	--				
17.	Depth of flow, d	ft.	FULL				
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$	0.79				
19.	Wetted perimeter, P_w	ft.	3.14				
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.	0.25				
21.	Channel slope, s	ft./ft.	0.020				
22.	Manning's roughness coeff., n		0.012				
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.	7.00				
24.	Flow length, L	ft.	578.0				
25.	$T_t = \frac{L}{3600 * V}$	hr.	0.023				= 0.023
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)	hr.					0.232

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary School | By: MCB | Date: 03/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 05/05/25
Circle one: Present ***Developed*** | Watershed: PRWS-20
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		WOODS				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.400				
3.	Flow Length, L (< 300ft)	ft.	100.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.49				
5.	Land slope, s	ft./ft.	0.025				
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.313	=	0.313		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7.	Surface description		WOODS				
8.	Manning's roughness coeff., n		0.100				
9.	Paved or unpaved		UNPVD				
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40				
11.	Flow Length, L	ft.	288.0				
12.	Watercourse slope, s	ft./ft.	0.061				
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	2.00				
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.040				= 0.040

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	ft.^{2}					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.					= 0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)					hr.	0.353

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary School | By: MCB | Date: 03/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 05/05/25
Circle one: Present ***Developed*** | Watershed: PRWS-21
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B	
1. Surface description (Table 3-1)			GRASS	
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.240	
3. Flow Length, L (< 300ft)	ft.		82.0	
4. Two-year 24-hr rainfall, P_2	in.		3.49	
5. Land slope, s	ft./ft.		0.183	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.080	= 0.080

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID				
7. Surface description						
8. Manning's roughness coeff., n						
9. Paved or unpaved						
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.					
11. Flow Length, L	ft.					
12. Watercourse slope, s	ft./ft.					
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.					
14. $T_t = \frac{L}{3600 * V}$	hr.					= 0.000

Channel flow

		Segment ID				
15. Channel Bottom width, b	ft.					
16. Horizontal side slope component, z (z horiz:1 vert)	ft.					
17. Depth of flow, d	ft.					
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$					
19. Wetted perimeter, P_w	ft.					
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21. Channel slope, s	ft./ft.					
22. Manning's roughness coeff., n						
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24. Flow length, L	ft.					
25. $T_t = \frac{L}{3600 * V}$	hr.					= 0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)	hr.					0.080

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary School | By: MCB | Date: 03/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 05/05/25
Circle one: Present ***Developed*** | Watershed: PRWS-22
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			GRASS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.240		
3. Flow Length, L (< 300ft)	ft.		107.0		
4. Two-year 24-hr rainfall, P_2	in.		3.49		
5. Land slope, s	ft./ft.		0.033		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.197	=	0.197

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID				
7. Surface description						
8. Manning's roughness coeff., n						
9. Paved or unpaved						
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.					
11. Flow Length, L	ft.					
12. Watercourse slope, s	ft./ft.					
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.					
14. $T_t = \frac{L}{3600 * V}$	hr.					= 0.000

Channel flow

		Segment ID	B-C			
15. Channel Bottom width, b	ft.		18" HDPE			
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		--			
17. Depth of flow, d	ft.		FULL			
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		1.77			
19. Wetted perimeter, P_w	ft.		4.71			
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.38			
21. Channel slope, s	ft./ft.		0.032			
22. Manning's roughness coeff., n			0.012			
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		11.57			
24. Flow length, L	ft.		557.0			
25. $T_t = \frac{L}{3600 * V}$	hr.		0.013			= 0.013
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)					hr.	0.211

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary School | By: MCB | Date: 03/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 05/05/25
Circle one: Present ***Developed*** | Watershed: PRWS-23
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		GRASS				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.240				
3.	Flow Length, L (< 300ft)	ft.	100.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.49				
5.	Land slope, s	ft./ft.	0.020				
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.228	=	0.228		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7.	Surface description		GRASS				
8.	Manning's roughness coeff., n		0.080				
9.	Paved or unpaved		UNPVD				
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40				
11.	Flow Length, L	ft.	58.0				
12.	Watercourse slope, s	ft./ft.	0.028				
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.69				
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.010				= 0.010

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.					= 0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)	hr.					0.237

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary School | By: MCB | Date: 03/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 05/05/25
Circle one: Present ***Developed*** | Watershed: PRWS-30
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			WOODS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		76.0		
4. Two-year 24-hr rainfall, P_2	in.		3.49		
5. Land slope, s	ft./ft.		0.033		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.225	=	0.225

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID					
7. Surface description							
8. Manning's roughness coeff., n							
9. Paved or unpaved							
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.						
11. Flow Length, L	ft.						
12. Watercourse slope, s	ft./ft.						
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.						
14. $T_t = \frac{L}{3600 * V}$	hr.					=	0.000

Channel flow

		Segment ID					
15. Channel Bottom width, b	ft.						
16. Horizontal side slope component, z (z horiz:1 vert)	ft.						
17. Depth of flow, d	ft.						
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$						
19. Wetted perimeter, P_w	ft.						
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.						
21. Channel slope, s	ft./ft.						
22. Manning's roughness coeff., n							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.						
24. Flow length, L	ft.						
25. $T_t = \frac{L}{3600 * V}$	hr.					=	0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)	hr.						0.225

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary School | By: MCB | Date: 03/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 05/05/25
Circle one: Present ***Developed*** | Watershed: PRWS-40
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B	
1. Surface description (Table 3-1)			GRASS	
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.240	
3. Flow Length, L (< 300ft)	ft.		42.0	
4. Two-year 24-hr rainfall, P_2	in.		3.49	
5. Land slope, s	ft./ft.		0.048	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.080	= 0.080

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID				
7. Surface description						
8. Manning's roughness coeff., n						
9. Paved or unpaved						
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.					
11. Flow Length, L	ft.					
12. Watercourse slope, s	ft./ft.					
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.					
14. $T_t = \frac{L}{3600 * V}$	hr.					= 0.000

Channel flow

		Segment ID				
15. Channel Bottom width, b	ft.					
16. Horizontal side slope component, z (z horiz:1 vert)	ft.					
17. Depth of flow, d	ft.					
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$					
19. Wetted perimeter, P_w	ft.					
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21. Channel slope, s	ft./ft.					
22. Manning's roughness coeff., n						
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24. Flow length, L	ft.					
25. $T_t = \frac{L}{3600 * V}$	hr.					= 0.000

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. ~~0.080~~

Min Tc = 0.1 hr

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary School | By: MCB | Date: 03/28/25
Location: 13 Hyde Lane, Westport, CT | Checked: RJM | Date: 05/05/25
Circle one: Present ***Developed*** | Watershed: PRWS-50
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		GRASS				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.240				
3.	Flow Length, L (< 300ft)	ft.	100.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.49				
5.	Land slope, s	ft./ft.	0.015				
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.256	=	0.256		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7.	Surface description		GRASS				
8.	Manning's roughness coeff., n		0.080				
9.	Paved or unpaved		UNPVD				
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40				
11.	Flow Length, L	ft.	200.0				
12.	Watercourse slope, s	ft./ft.	0.005				
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	0.71				
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.078				= 0.078

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	ft.^{2}					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.					= 0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)	hr.					0.333

SLR

Curve Number Calculations

Project: Long Lots Elementary
Location: 13 Hyde Ln
Westport, CT
By: RH Date: 11/20/24 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-10

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			0.55	33.60
B	Woods - Fair Condition	60			0.51	30.49
D	Open Space - Poor (Dirt)	89			0.01	1.18
D	Open Space - Good Condition	80			0.10	8.26
Totals =					1.18	73.53
					(0.00184	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{73.53}{1.18}$ Use CN = 63

Curve Number Calculations

Project: Long Lots Elementary
Location: 13 Hyde Ln
Westport,CT
By: RH Date: 11/20/24 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-11

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			5.10	310.81
B	Woods - Fair Condition	60			0.11	6.77
B	Open Space - Poor Condition (Dirt)	79			0.38	30.02
D	Open Space - Good Condition	80			0.13	10.10
N/A	Paved / Impervious	98			0.11	10.57
				Totals =	5.82	368.27
					(0.00910 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{368.27}{5.82}$ Use CN = 63

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-12

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			28.98	1767.62
B	Woods - Fair Condition	60			1.80	108.27
N/A	Buildings	98			2.09	204.75
N/A	Paved / Impervious	98			6.61	647.37
D	Open Space - Good Condition	80			0.09	7.22
				Totals =	39.57	2735.24
					(0.06182	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{2735.24}{39.57}$ Use CN = 69

Curve Number Calculations

Project: Long Lots Elementary
Location: 13 Hyde Ln
Westport, CT
By: RH Date: 11/20/24 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-20

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			0.09	5.41
N/A	Paved / Impervious	98			0.02	2.05
B	Woods - Fair Condition	60			3.67	220.44
D	Open Space - Poor Condition (Dirt)	89			0.07	5.96
D	Woods - Fair Condition	79			0.05	4.18
D	Open Space - Good Condition	80			0.03	2.25
					0.00	0.00
				Totals =	3.93	240.29
					(0.00614 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{240.29}{3.93}$ Use CN = 61

Curve Number Calculations

Project: Long Lots Elelmentary
Location: 13 Hyde Ln
Westport, CT
By: RH Date: 11/20/24 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-21

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area (Acres) Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			1.77	108.16
N/A	Paved / Impervious	98			3.48	340.68
N/A	Buildings	98			2.06	201.94
B	Woods - Fair Condition	60			1.45	87.20
D	Woods - Fair Condition	79			0.53	41.85
D	Open Space - Poor Condition (Dirt)	89			0.22	19.79
D	Open Space - Good Condition	80			2.98	238.41
				Totals =	12.50	1038.04
					(0.01952	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1038.04}{12.50}$ Use CN = 83

Curve Number Calculations

Project: Long Lots Elelementary
Location: 13 Hyde Ln
Westport, CT
By: RH Date: 11/20/24 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-30

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			0.68	41.24
N/A	Paved / Impervious	98			0.01	0.81
B	Woods - Fair Condition	60			1.32	79.43
D	Open Space - Poor Condition (Dirt)	89			0.02	2.08
N/A	Buildings	98			0.01	0.99
D	Woods - Fair Condition	79			0.12	9.70
D	Open Space - Good Condition	80			0.28	22.20
				Totals =	2.44	156.45
					(0.00382 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{156.45}{2.44}$ Use CN = 64

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-31

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			2.66	162.48
N/A	Paved / Impervious	98			0.99	97.15
N/A	Buildings	98			0.47	45.62
B	Woods - Fair Condition	60			0.08	4.62
D	Woods - Fair Condition	79			0.04	3.35
D	Open Space - Good Condition	80			0.00	0.10
	Totals =				4.24	313.31
					(0.00663	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{313.31}{4.24}$ Use CN = 74

Curve Number Calculations

Project: Long Lots Elelementary
Location: 13 Hyde Ln
Westport, CT
By: RH Date: 11/20/24 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-40

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Open Space - Good Condition	61			0.82	49.91
N/A	Paved / Impervious	98			0.01	1.23
B	Woods - Fair Condition	60			0.46	27.47
B	Open Space - Poor Condition (Dirt)	79			0.00	0.23
D	Open Space - Good Condition	80			0.01	0.81
				Totals =	1.30	79.66
					(0.00203 sq mi)	

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{79.66}{1.30}$ Use CN = 61

Curve Number Calculations

Project: Long Lots Elementary
Location: 13 Hyde Ln
Westport, CT
By: MCB Date: 2/24/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-50

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			0.69	38.09
B	Open Space - Good Condition	61			1.10	67.16
B	Gravel	85			0.68	57.56
	Totals =				2.47	162.81
					(0.00386	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{162.81}{2.47}$ Use CN = 66

Curve Number Calculations

Project: Long Lots Elementary School
Location: 13 Hyde Lane
Westport, CT
By: MCB Date: 3/28/25 Checked: RJM Date: 3/28/25
Circle one: ***Present*** Developed Watershed: EXWS-51

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	Woods - Good Condition	55			0.00	0.00
B	Open Space - Good Condition	61			0.38	22.99
N/A	Building	98			0.02	1.74
N/A	Paved/Impervious	98			0.05	4.59
	Totals =				0.44	29.32
					(0.00069	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{29.32}{0.44}$ Use CN = 66

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 05/05/25
Circle one: ***Present*** Developed | Watershed: EX-WS10
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		GRASS				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.240				
3.	Flow Length, L (< 300ft)	ft.	76.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.49				
5.	Land slope, s	ft./ft.	0.060				
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.118	=	0.118		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7.	Surface description		WOOD				
8.	Manning's roughness coeff., n		0.100				
9.	Paved or unpaved		UNPVD				
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40				
11.	Flow Length, L	ft.	197.0				
12.	Watercourse slope, s	ft./ft.	0.150				
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	3.13				
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.017				= 0.017

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	ft.^{2}					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.		+			= 0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)					hr.	0.135

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary
Location: 13 Hyde Ln
Circle one: ***Present*** Developed
Circle one: ***T_c*** T_t

By: RH
Checked: MCB
Watershed: EX-WS11
Subwatershed:

Date: 11/20/24
Date: 05/05/25

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1.	Surface description (Table 3-1)		GRASS		
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.240		
3.	Flow Length, L (< 300ft)	ft.	100.0		
4.	Two-year 24-hr rainfall, P_2	in.	3.49		
5.	Land slope, s	ft./ft.	0.100		
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.120	=	0.120

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D	D-E		
7.	Surface description		GRASS				
8.	Manning's roughness coeff., n		0.080				
9.	Paved or unpaved		UNPVD				
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40				
11.	Flow Length, L	ft.	595.0				
12.	Watercourse slope, s	ft./ft.	0.031				
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.78	#DIV/0!	#DIV/0!		
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.093	+ #DIV/0!	#DIV/0!	=	0.093

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.		+		=	0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)					hr.	0.212

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 05/05/25
Circle one: ***Present*** Developed | Watershed: EX-WS21
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1.	Surface description (Table 3-1)		GRASS		
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.240		
3.	Flow Length, L (< 300ft)	ft.	100.0		
4.	Two-year 24-hr rainfall, P_2	in.	3.49		
5.	Land slope, s	ft./ft.	0.020		
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.228	=	0.228

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7.	Surface description		GRASS	BIT			
8.	Manning's roughness coeff., n		0.080	0.010			
9.	Paved or unpaved		UNPVD	PVD			
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40	0.20			
11.	Flow Length, L	ft.	24.0	154.0			
12.	Watercourse slope, s	ft./ft.	0.020	0.019			
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.43	7.02			
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.005	+ 0.006		=	0.011

Channel flow

		Segment ID	D-E	E-F	F-G	G-H	
15.	Channel Bottom width, b	ft.	12" HDPE	18" HDPE	24" HDPE	30" RCP	
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.	--	--	--	--	
17.	Depth of flow, d	ft.	FULL	FULL	FULL	FULL	
18.	Cross sectional flow area, A (assume trapazoidal)	ft.^{2}	0.79	1.77	3.14	4.91	
19.	Wetted perimeter, P_w	ft.	3.14	4.71	6.28	7.85	
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.	0.25	0.38	0.50	0.63	
21.	Channel slope, s	ft./ft.	0.026	0.014	0.014	0.002	
22.	Manning's roughness coeff., n		0.012	0.012	0.012	0.013	
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.	7.98	7.65	9.26	3.75	
24.	Flow length, L	ft.	195.0	22.0	499.0	64	
25.	$T_t = \frac{L}{3600 * V}$	hr.	0.007	+ 0.001	0.015	0.005	= 0.027
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)	hr.					0.266

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 05/05/25
Circle one: ***Present*** Developed | Watershed: EX-WS30
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			GRASS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.240		
3. Flow Length, L (< 300ft)	ft.		71.0		
4. Two-year 24-hr rainfall, P_2	in.		3.49		
5. Land slope, s	ft./ft.		0.014		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.200	=	0.200

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D	D-E		
7. Surface description			WOOD				
8. Manning's roughness coeff., n			0.100				
9. Paved or unpaved			UNPVD				
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40				
11. Flow Length, L	ft.		277.0				
12. Watercourse slope, s	ft./ft.		0.360				
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		4.85	#DIV/0!	#DIV/0!		
14. $T_t = \frac{L}{3600 * V}$	hr.		0.016	+ #DIV/0!	#DIV/0!	=	0.016

Channel flow

		Segment ID					
15. Channel Bottom width, b	ft.						
16. Horizontal side slope component, z (z horiz:1 vert)	ft.						
17. Depth of flow, d	ft.						
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$						
19. Wetted perimeter, P_w	ft.						
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.						
21. Channel slope, s	ft./ft.						
22. Manning's roughness coeff., n							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.						
24. Flow length, L	ft.						
25. $T_t = \frac{L}{3600 * V}$	hr.			+		=	0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)						hr.	0.216

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: RH | Date: 11/20/24
Location: 13 Hyde Ln | Checked: MCB | Date: 05/05/25
Circle one: ***Present*** Developed | Watershed: EX-WS40
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			GRASS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.240		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.49		
5. Land slope, s	ft./ft.		0.070		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.138	=	0.138

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7. Surface description			GRASS	WOOD			
8. Manning's roughness coeff., n			0.080	0.100			
9. Paved or unpaved			UNPVD	UNPVD			
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40			
11. Flow Length, L	ft.		80.0	110.0			
12. Watercourse slope, s	ft./ft.		0.051	0.160			
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		2.28	3.24			
14. $T_t = \frac{L}{3600 * V}$	hr.		0.010	+ 0.009			= 0.019

Channel flow

		Segment ID					
15. Channel Bottom width, b	ft.						
16. Horizontal side slope component, z (z horiz:1 vert)	ft.						
17. Depth of flow, d	ft.						
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$						
19. Wetted perimeter, P_w	ft.						
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.						
21. Channel slope, s	ft./ft.						
22. Manning's roughness coeff., n							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.						
24. Flow length, L	ft.						
25. $T_t = \frac{L}{3600 * V}$	hr.			+			= 0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)	hr.						0.157

SLR

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Project: Long Lots Elementary | By: MCB | Date: 02/24/25
Location: 13 Hyde Ln | Checked: RJM | Date: 05/05/25
Circle one: ***Present*** Developed | Watershed: EX-WS50
Circle one: ***T_c*** T_t | Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			GRASS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.240		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.49		
5. Land slope, s	ft./ft.		0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.228	=	0.228

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C				
7. Surface description			GRASS				
8. Manning's roughness coeff., n			0.100				
9. Paved or unpaved			UNPVD				
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40				
11. Flow Length, L	ft.		331.0				
12. Watercourse slope, s	ft./ft.		0.018				
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.09				
14. $T_t = \frac{L}{3600 * V}$	hr.		0.085			=	0.085

Channel flow

		Segment ID					
15. Channel Bottom width, b	ft.						
16. Horizontal side slope component, z (z horiz:1 vert)	ft.						
17. Depth of flow, d	ft.						
18. Cross sectional flow area, A (assume trapazoidal)	ft.^{2}						
19. Wetted perimeter, P_w	ft.						
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.						
21. Channel slope, s	ft./ft.						
22. Manning's roughness coeff., n							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.						
24. Flow length, L	ft.						
25. $T_t = \frac{L}{3600 * V}$	hr.			+			= 0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)						hr.	0.312

SLR

NOAA Atlas 14, Volume 10, Version 3
Location name: Westport, Connecticut, USA*
Latitude: 41.1434°, Longitude: -73.3168°
Elevation: 93 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.360** (0.285-0.450)	**0.423** (0.335-0.529)	**0.526** (0.416-0.661)	**0.611** (0.479-0.772)	**0.728** (0.551-0.957)	**0.817** (0.604-1.10)	**0.909** (0.650-1.26)	**1.01** (0.684-1.44)	**1.15** (0.746-1.69)	**1.26** (0.797-1.89)
10-min	**0.510** (0.404-0.637)	**0.599** (0.474-0.750)	**0.745** (0.589-0.936)	**0.866** (0.680-1.09)	**1.03** (0.781-1.36)	**1.16** (0.857-1.55)	**1.29** (0.920-1.79)	**1.43** (0.968-2.03)	**1.63** (1.06-2.40)	**1.78** (1.13-2.68)
15-min	**0.599** (0.476-0.750)	**0.704** (0.558-0.882)	**0.876** (0.691-1.10)	**1.02** (0.799-1.29)	**1.21** (0.918-1.60)	**1.36** (1.01-1.83)	**1.52** (1.08-2.10)	**1.68** (1.14-2.40)	**1.92** (1.24-2.82)	**2.10** (1.33-3.15)
30-min	**0.836** (0.663-1.04)	**0.982** (0.778-1.23)	**1.22** (0.964-1.53)	**1.42** (1.11-1.79)	**1.69** (1.28-2.22)	**1.90** (1.40-2.54)	**2.11** (1.51-2.92)	**2.34** (1.58-3.33)	**2.65** (1.72-3.90)	**2.89** (1.83-4.34)
60-min	**1.07** (0.850-1.34)	**1.26** (0.998-1.58)	**1.57** (1.24-1.97)	**1.82** (1.43-2.30)	**2.17** (1.64-2.85)	**2.44** (1.80-3.26)	**2.71** (1.93-3.74)	**3.00** (2.03-4.26)	**3.38** (2.20-4.98)	**3.68** (2.33-5.53)
2-hr	**1.38** (1.10-1.71)	**1.64** (1.31-2.04)	**2.07** (1.64-2.58)	**2.42** (1.92-3.04)	**2.91** (2.22-3.81)	**3.28** (2.44-4.38)	**3.67** (2.64-5.07)	**4.09** (2.78-5.79)	**4.69** (3.06-6.86)	**5.17** (3.28-7.72)
3-hr	**1.58** (1.27-1.96)	**1.90** (1.52-2.35)	**2.41** (1.92-2.99)	**2.83** (2.24-3.54)	**3.42** (2.61-4.45)	**3.85** (2.88-5.13)	**4.32** (3.12-5.95)	**4.83** (3.29-6.81)	**5.58** (3.64-8.13)	**6.19** (3.94-9.20)
6-hr	**1.99** (1.61-2.45)	**2.40** (1.93-2.95)	**3.06** (2.46-3.78)	**3.61** (2.88-4.48)	**4.37** (3.36-5.67)	**4.94** (3.72-6.54)	**5.54** (4.04-7.62)	**6.23** (4.26-8.72)	**7.25** (4.75-10.5)	**8.09** (5.16-11.9)
12-hr	**2.46** (2.00-3.00)	**2.96** (2.40-3.62)	**3.79** (3.07-4.64)	**4.48** (3.60-5.52)	**5.42** (4.20-6.99)	**6.13** (4.64-8.07)	**6.88** (5.05-9.41)	**7.76** (5.33-10.8)	**9.05** (5.95-13.0)	**10.1** (6.49-14.9)
24-hr	**2.86** (2.34-3.47)	**3.49** (2.85-4.23)	**4.51** (3.67-5.49)	**5.36** (4.34-6.56)	**6.53** (5.09-8.37)	**7.40** (5.64-9.69)	**8.33** (6.16-11.4)	**9.44** (6.51-13.0)	**11.1** (7.33-15.9)	**12.6** (8.06-18.3)
2-day	**3.16** (2.61-3.80)	**3.93** (3.24-4.73)	**5.18** (4.25-6.26)	**6.22** (5.07-7.55)	**7.65** (6.02-9.76)	**8.71** (6.70-11.4)	**9.86** (7.36-13.4)	**11.3** (7.80-15.5)	**13.5** (8.90-19.1)	**15.4** (9.89-22.2)
3-day	**3.40** (2.82-4.07)	**4.24** (3.51-5.08)	**5.62** (4.63-6.76)	**6.76** (5.53-8.17)	**8.33** (6.58-10.6)	**9.49** (7.32-12.4)	**10.8** (8.06-14.6)	**12.3** (8.54-16.8)	**14.8** (9.77-20.8)	**16.9** (10.9-24.3)
4-day	**3.64** (3.02-4.34)	**4.52** (3.75-5.40)	**5.98** (4.93-7.16)	**7.18** (5.89-8.65)	**8.84** (6.99-11.2)	**10.1** (7.78-13.0)	**11.4** (8.55-15.4)	**13.0** (9.05-17.8)	**15.6** (10.3-21.9)	**17.8** (11.5-25.5)
7-day	**4.33** (3.62-5.14)	**5.29** (4.41-6.28)	**6.86** (5.70-8.17)	**8.16** (6.73-9.78)	**9.95** (7.90-12.5)	**11.3** (8.75-14.5)	**12.7** (9.54-17.0)	**14.4** (10.1-19.5)	**17.1** (11.4-23.9)	**19.3** (12.5-27.5)
10-day	**5.01** (4.20-5.92)	**6.02** (5.04-7.12)	**7.66** (6.38-9.10)	**9.02** (7.47-10.8)	**10.9** (8.68-13.6)	**12.3** (9.55-15.7)	**13.8** (10.3-18.3)	**15.5** (10.9-20.9)	**18.1** (12.1-25.3)	**20.3** (13.2-28.9)
20-day	**7.07** (5.97-8.30)	**8.19** (6.90-9.62)	**10.0** (8.41-11.8)	**11.5** (9.61-13.7)	**13.6** (10.9-16.8)	**15.2** (11.8-19.1)	**16.8** (12.6-21.9)	**18.6** (13.1-24.8)	**21.1** (14.1-29.1)	**23.1** (15.0-32.5)
30-day	**8.79** (7.45-10.3)	**9.99** (8.45-11.7)	**11.9** (10.1-14.0)	**13.6** (11.4-16.0)	**15.8** (12.7-19.3)	**17.5** (13.6-21.8)	**19.2** (14.4-24.8)	**21.0** (14.9-28.0)	**23.5** (15.8-32.2)	**25.3** (16.5-35.5)
45-day	**10.9** (9.30-12.7)	**12.2** (10.4-14.2)	**14.3** (12.1-16.7)	**16.1** (13.5-18.9)	**18.5** (14.8-22.5)	**20.3** (15.9-25.2)	**22.2** (16.6-28.3)	**24.0** (17.0-31.7)	**26.4** (17.8-36.1)	**28.1** (18.3-39.3)
60-day	**12.7** (10.8-14.7)	**14.1** (12.0-16.3)	**16.3** (13.8-19.0)	**18.1** (15.3-21.2)	**20.7** (16.7-25.0)	**22.7** (17.7-27.9)	**24.6** (18.4-31.2)	**26.4** (18.8-34.8)	**28.8** (19.4-39.2)	**30.4** (19.9-42.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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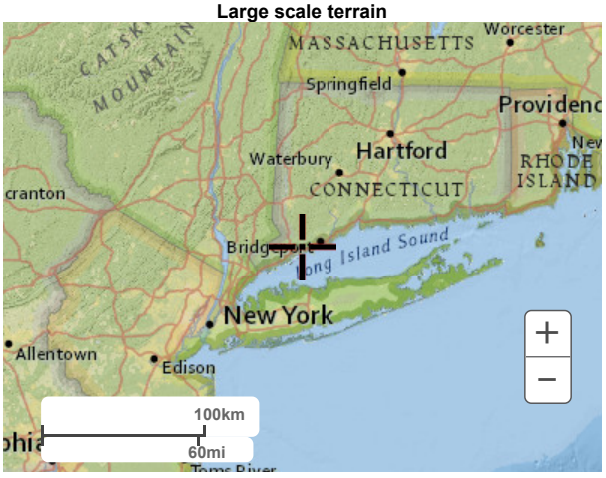
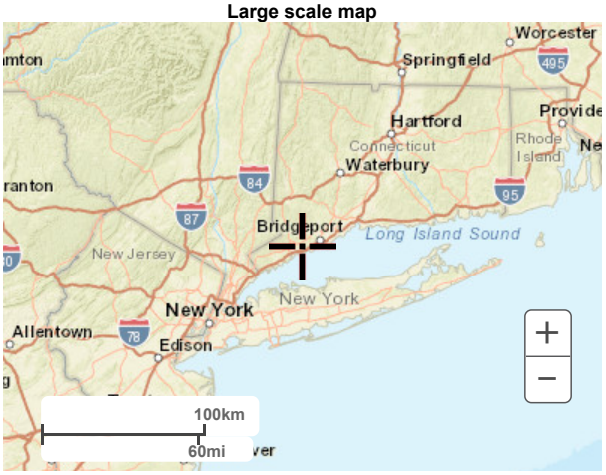
PF graphical

Large scale terrain



Large scale map



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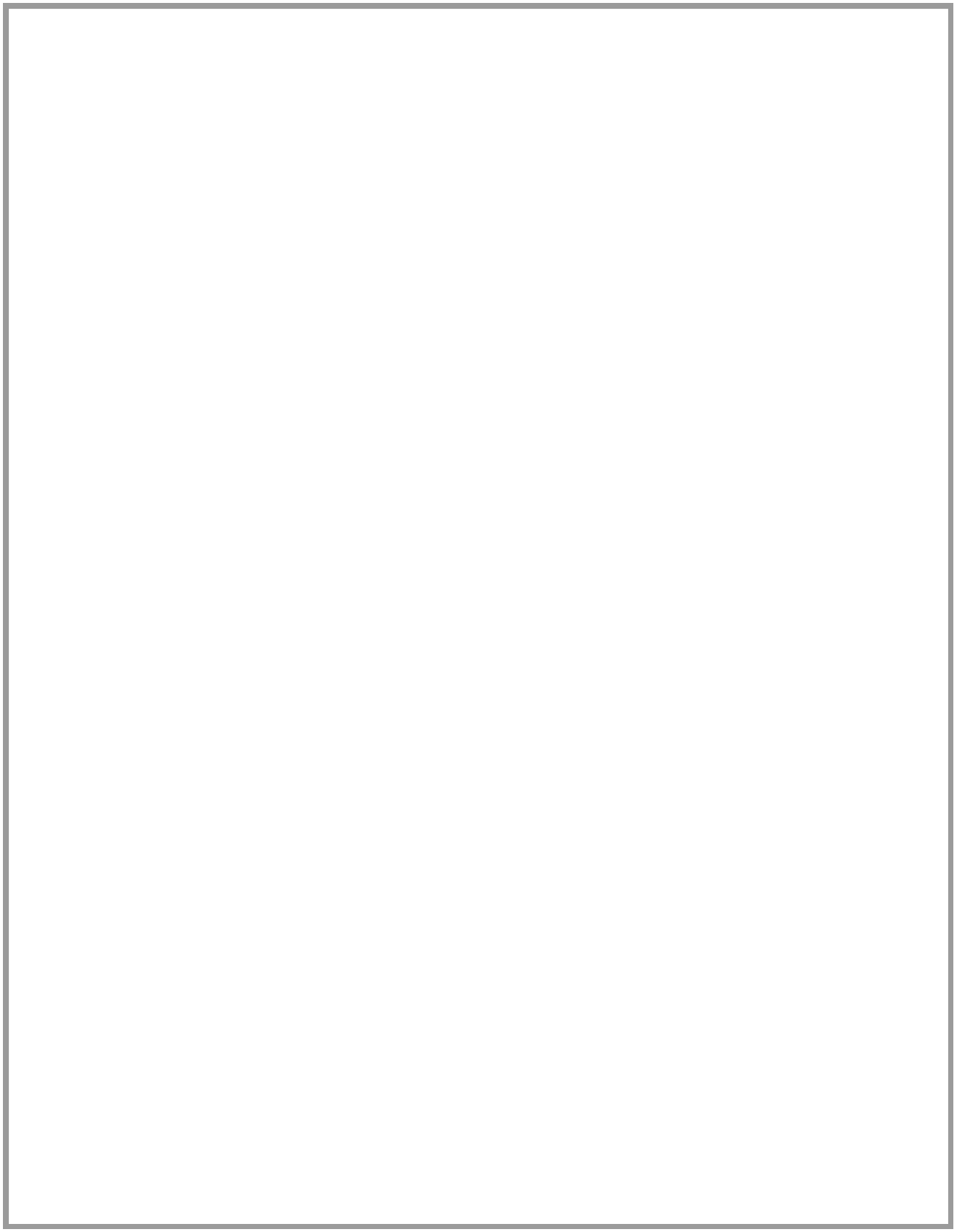


Appendix H
Hydrologic Analysis - Computer Model Results

Long Lots Elementary School

13 Hyde Lane, Westport, Connecticut

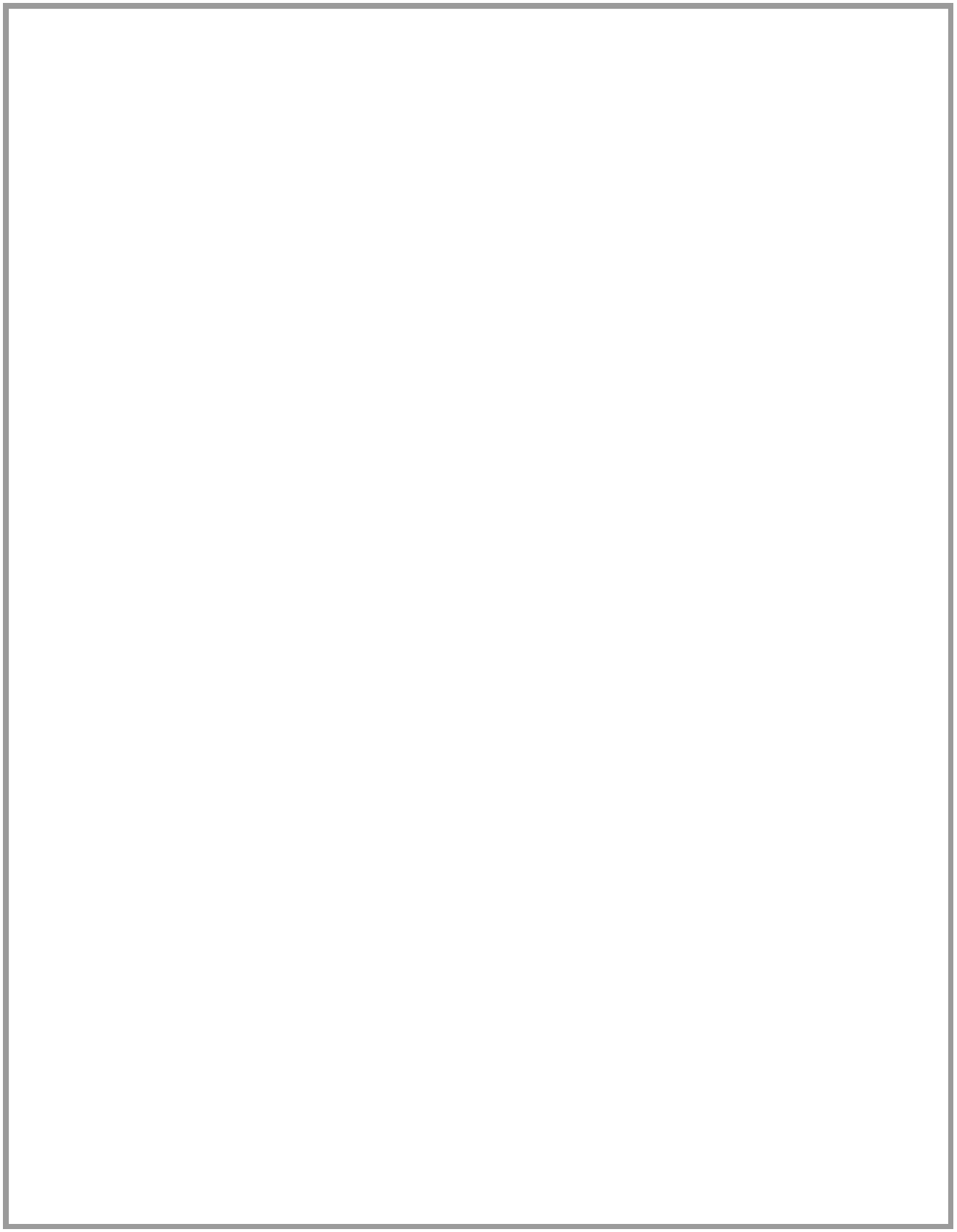
Drainage Report

Prepared for:
Svigals and Partners, an FCA Company
84 Orange Street
New Haven, CT 06510

SLR Project No.: 141.14847.00021

May 14, 2025

SLR



Hydrographs Peak Flowrate Summary (cfs)
Existing vs. Proposed

Storm Event	2yr				10yr				25yr				50yr				100yr			
	Exist	Exist (UND.	Prop	% Red	Exist	Exist (UND.	Prop	% Red	Exist	Exist (UND.	Prop	% Red	Exist	Exist (UND.	Prop	% Red	Exist	Exist (UND.	Prop	% Red
Point of Analysis A	31.3	29.2	29.1	7%	81.1	77.7	73.9	9%	116.3	112.2	106.2	9%	143.6	139.1	130.8	9%	173.5	168.6	161.3	7%
UG 110 W.S. Elev. (ft.) Top of Chamber Elev. = 64.7	-	-	61.8	-	-	-	62.9	-	-	-	63.6	-	-	-	64.2	-	-	-	64.5	-
Point of Analysis B	5.3	5.6	3.7	30%	9.6	16.9	9.2	4%	16.4	25.2	15.3	7%	28.7	31.8	21.8	24%	42.2	39.1	26.1	38%
DET 210 W.S. Elev. (ft.) Top of Berm Elev. = 77.6	-	-	72.7	-	-	-	74.0	-	-	-	75.0	-	-	-	75.7	-	-	-	76.2	-
DET 220 W.S. Elev. (ft.) Top of Berm Elev. = 78.0	-	-	75.8	-	-	-	76.3	-	-	-	76.5	-	-	-	76.7	-	-	-	76.8	-
DET 230 W.S. Elev. (ft.) Top of Berm Elev. = 76.0	-	-	73.1	-	-	-	73.8	-	-	-	74.2	-	-	-	74.3	-	-	-	74.4	-
UG 221 W.S. Elev. (ft.) Top of Chamber Elev. = 93.0	-	-	90.8	-	-	-	91.8	-	-	-	92.2	-	-	-	92.4	-	-	-	92.5	-
UG 222 W.S. Elev. (ft.) Top of Chamber Elev. = 92.5	-	-	90.4	-	-	-	91.1	-	-	-	91.5	-	-	-	91.8	-	-	-	92.0	-
UG 223 W.S. Elev. (ft.) Top of Chamber Elev. = 92.5	-	-	90.1	-	-	-	91.0	-	-	-	91.2	-	-	-	91.3	-	-	-	91.6	-
UG 224 W.S. Elev. (ft.) Top of Chamber Elev. = 93.5	-	-	90.5	-	-	-	91.7	-	-	-	92.4	-	-	-	92.9	-	-	-	93.3	-
UG 225 W.S. Elev. (ft.) Top of Chamber Elev. = 96.0	-	-	92.3	-	-	-	93.4	-	-	-	94.2	-	-	-	94.8	-	-	-	95.2	-
Point of Analysis C	5.7	5.0	4.8	16%	13.6	12.1	11.7	14%	19.1	17.1	16.5	14%	23.3	20.9	20.2	13%	27.9	25.1	24.2	13%
Point of Analysis D	0.6	0.2	0.1	83%	2.1	1.2	0.4	81%	3.2	2.0	0.6	81%	4.0	2.6	0.8	80%	5.0	3.4	1.0	80%
Point of Analysis E	1.5	0.4	0.4	73%	4.4	2.0	1.5	66%	6.4	3.4	2.3	64%	8.0	4.5	3.0	63%	9.7	5.8	3.7	62%

Study Area	Description
A	18" RCP in Meadow Brook Lane
B	15" RCP in Meadow Brook Lane
C	Southwestern Low Area that Overflows to Meadow Brook Lane
D	Northwestern Property Boundary
E	Southern Property Corner towards Bauer Place

Long Lots Elementary School
Westport, CT
LL-Smmry01.xls

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SLR

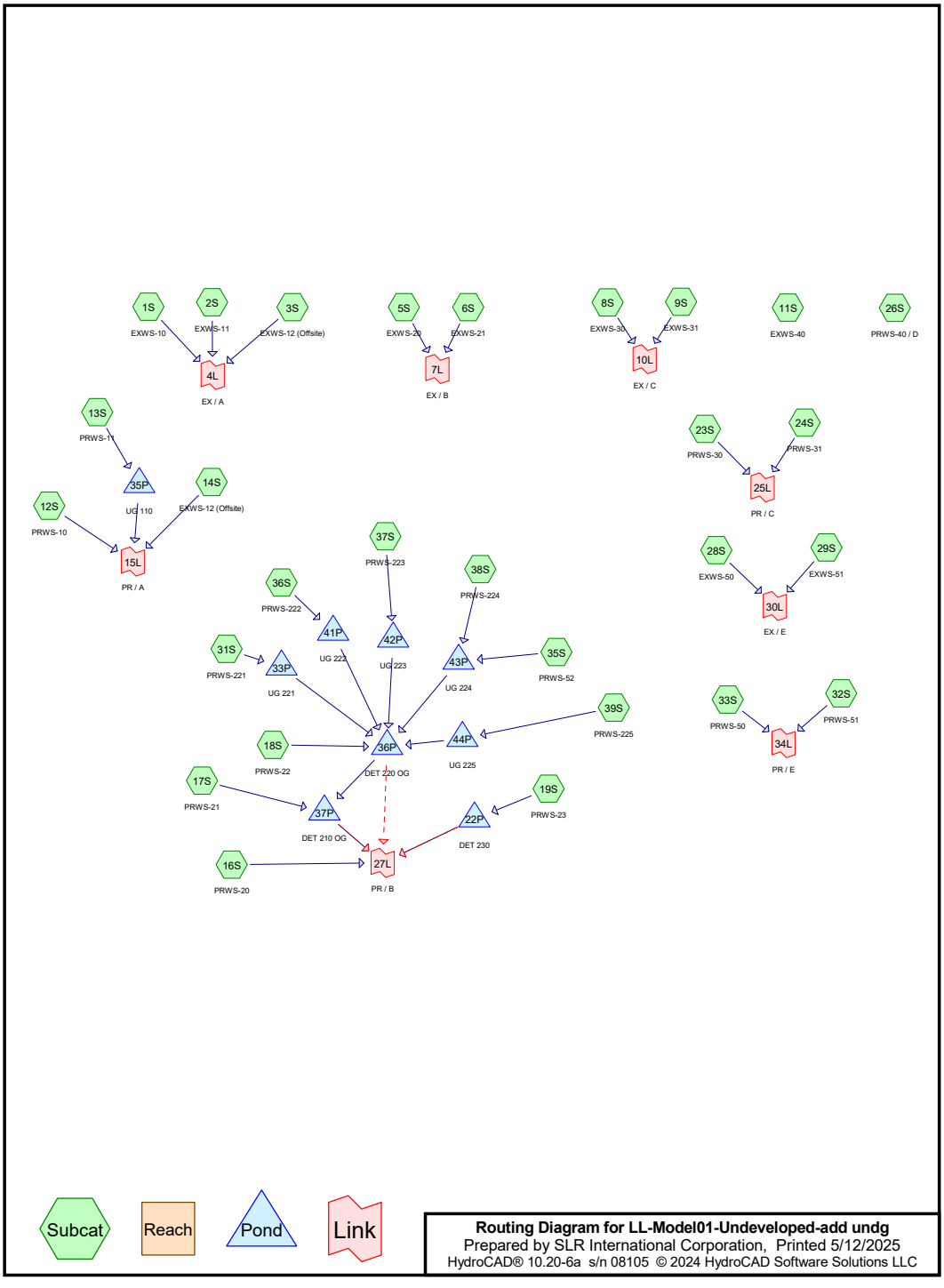

1S
EXWS-10
2S
EXWS-11
3S
EXWS-12 (Offsite)
4L
EX / A
5S
EXWS-20
6S
EXWS-21
7L
EX / B
8S
EXWS-30
9S
EXWS-31
10L
EX / C
11S
EXWS-40
26S
PRWS-40 / D
13S
PRWS-11
35P
UG 110
14S
EXWS-12 (Offsite)
12S
PRWS-10
15L
PR / A
23S
PRWS-30
24S
PRWS-31
25L
PR / C
28S
EXWS-50
29S
EXWS-51
30L
EX / E
37S
PRWS-223
36S
PRWS-222
41P
UG 222
38S
PRWS-224
42P
UG 223
31S
PRWS-221
33P
UG 221
43P
UG 224
35S
PRWS-52
39S
PRWS-225
18S
PRWS-22
36P
44P
UG 225
DET 220 OG
17S
PRWS-21
37P
DET 210 OG
19S
PRWS-23
22P
DET 230
16S
PRWS-20
27L
PR / B
33S
PRWS-50
32S
PRWS-51
34L
PR / E
Subcat
Reach
Pond
Link
Routing Diagram for LL-Model01-Undeveloped-add undg
Prepared by SLR International Corporation, Printed 5/12/2025
HydroCAD® 10.20-6a s/n 08105 © 2024 HydroCAD Software Solutions LLC

TABLE OF CONTENTS

50-Year Event

100-Year Event

Summary for Subcatchment 1S: EXWS-10

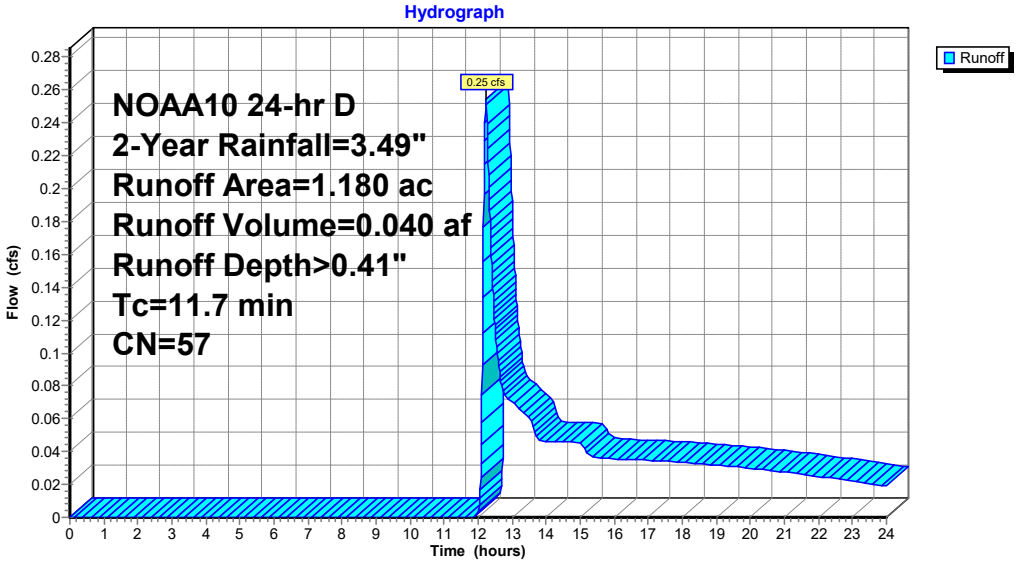
Runoff = 0.25 cfs @ 12.23 hrs, Volume= 0.040 af, Depth> 0.41"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	1.180	57	
	1.180		100.00% Pervious Area

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

Subcatchment 1S: EXWS-10



Summary for Subcatchment 2S: EXWS-11

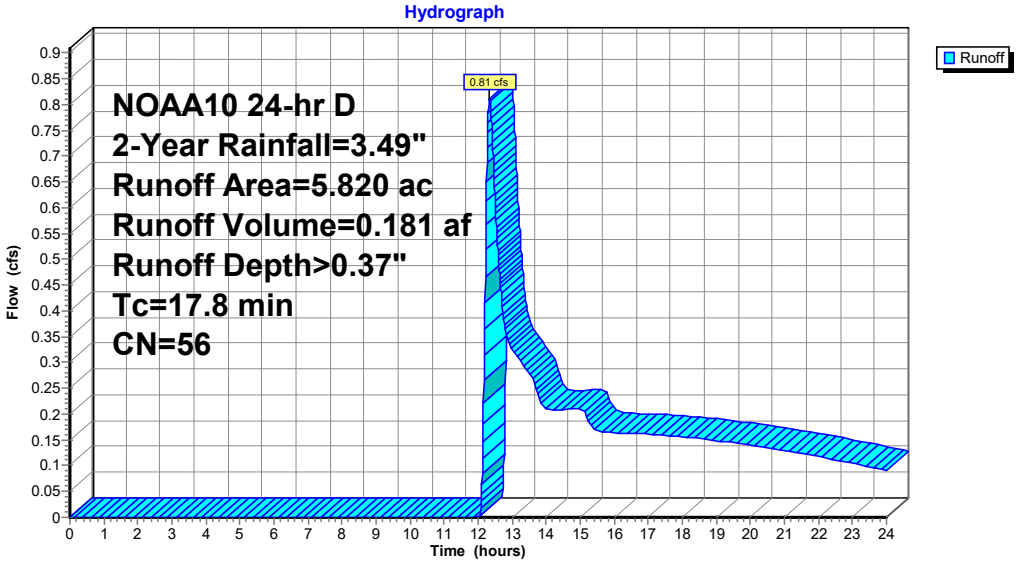
Runoff = 0.81 cfs @ 12.34 hrs, Volume= 0.181 af, Depth> 0.37"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	5.820	56	
	5.820		100.00% Pervious Area

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

Subcatchment 2S: EXWS-11



Summary for Subcatchment 3S: EXWS-12 (Offsite)

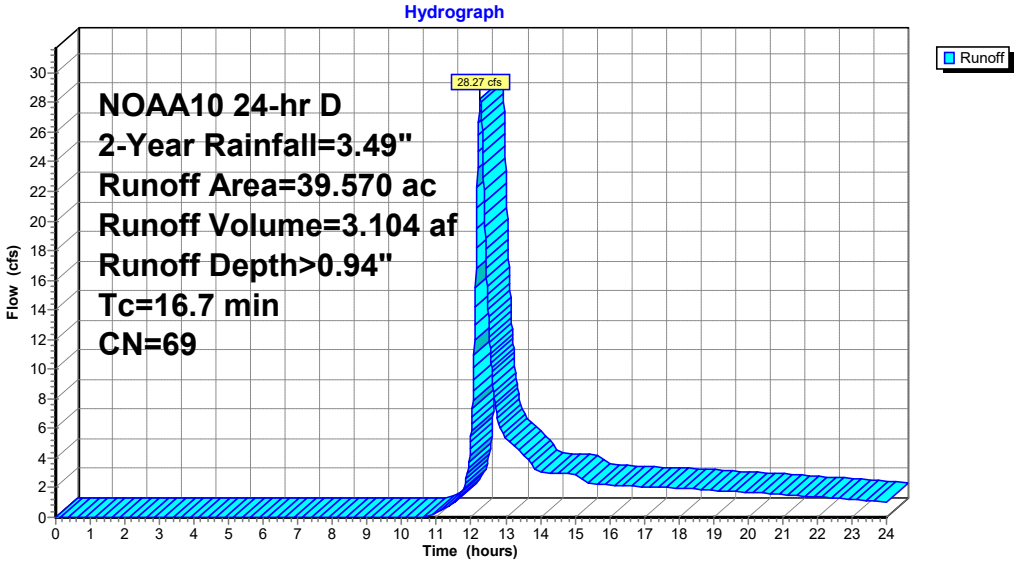
Runoff = 28.27 cfs @ 12.26 hrs, Volume= 3.104 af, Depth> 0.94"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: EXWS-12 (Offsite)



Summary for Subcatchment 5S: EXWS-20

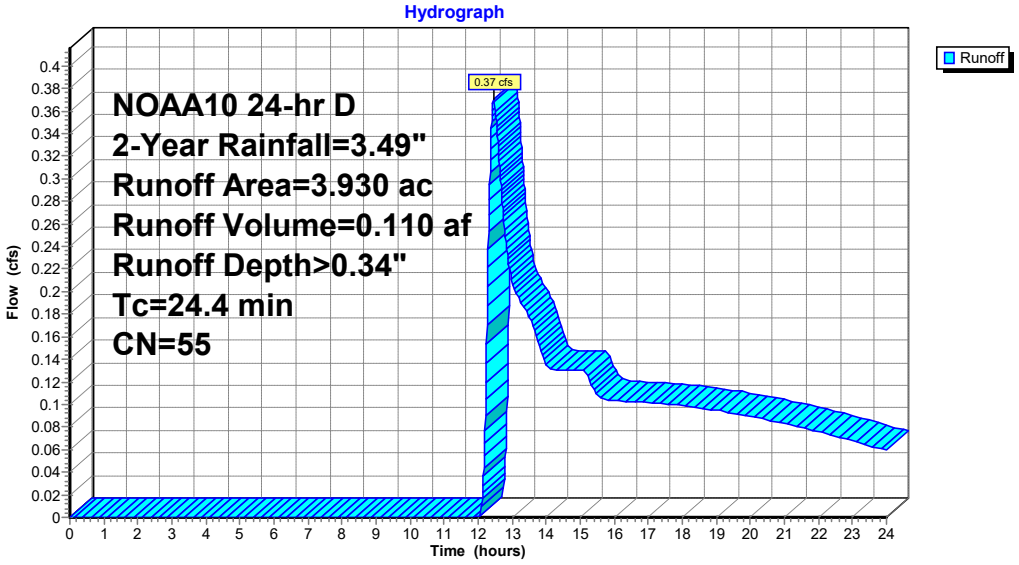
Runoff = 0.37 cfs @ 12.47 hrs, Volume= 0.110 af, Depth> 0.34"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	3.930	55	
	3.930		100.00% Pervious Area

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

Subcatchment 5S: EXWS-20



Summary for Subcatchment 6S: EXWS-21

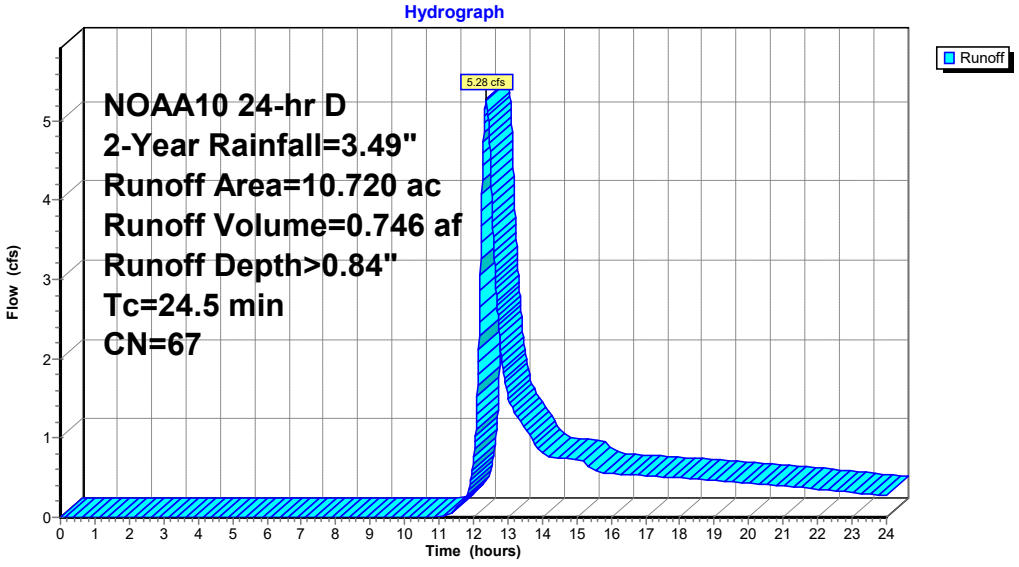
Runoff = 5.28 cfs @ 12.38 hrs, Volume= 0.746 af, Depth> 0.84"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	10.720	67	
	10.720		100.00% Pervious Area

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

Subcatchment 6S: EXWS-21



Summary for Subcatchment 8S: EXWS-30

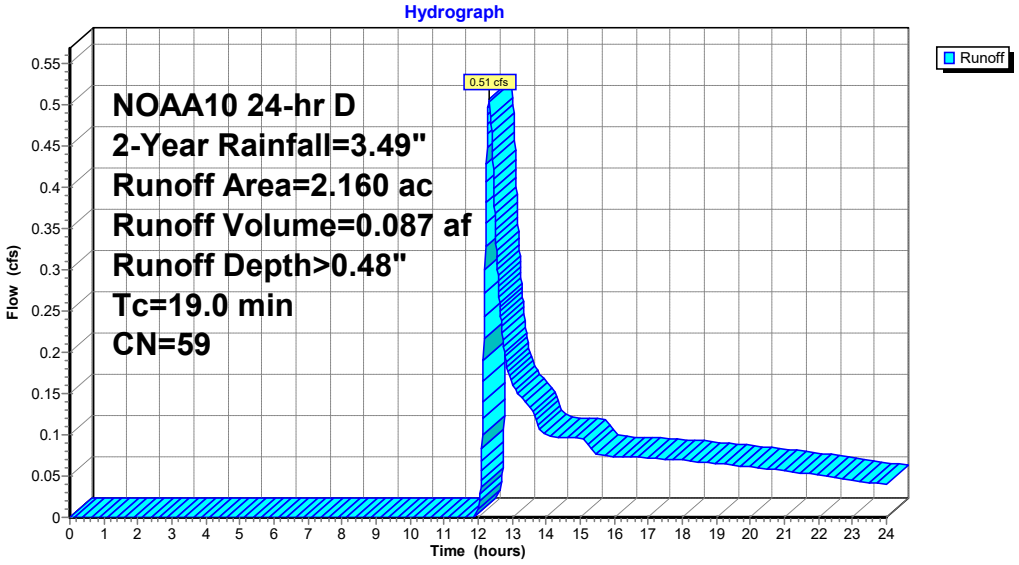
Runoff = 0.51 cfs @ 12.33 hrs, Volume= 0.087 af, Depth> 0.48"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	2.160	59	
	2.160		100.00% Pervious Area

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

Subcatchment 8S: EXWS-30



Summary for Subcatchment 9S: EXWS-31

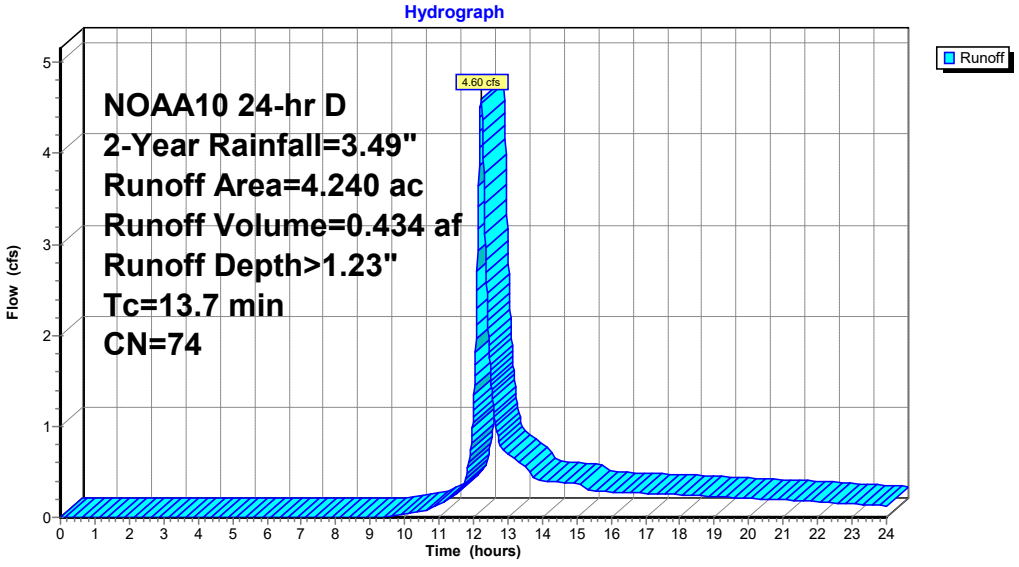
Runoff = 4.60 cfs @ 12.22 hrs, Volume= 0.434 af, Depth> 1.23"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 9S: EXWS-31



Summary for Subcatchment 11S: EXWS-40

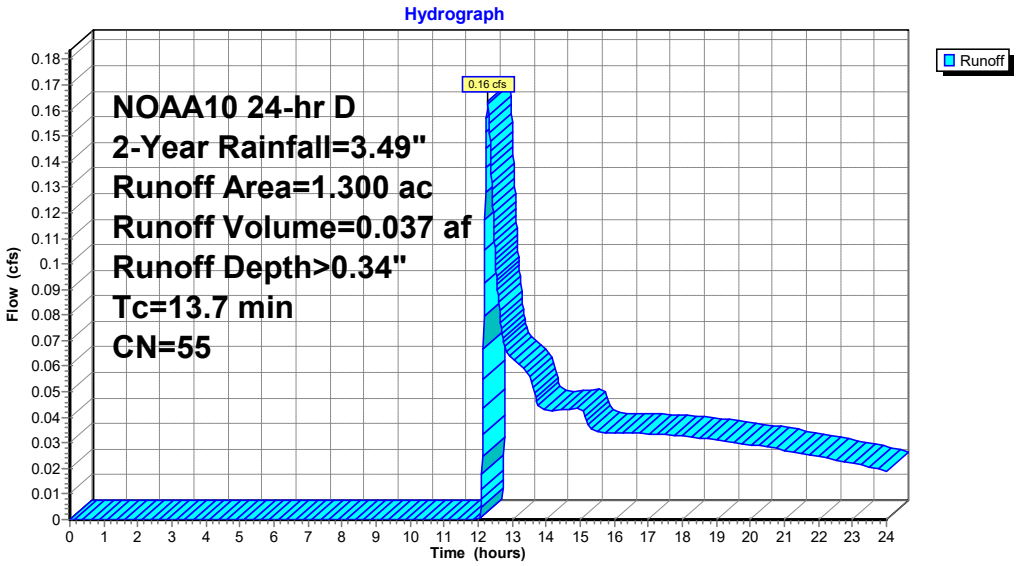
Runoff = 0.16 cfs @ 12.28 hrs, Volume= 0.037 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	1.300	55	
	1.300		100.00% Pervious Area

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

Subcatchment 11S: EXWS-40



Summary for Subcatchment 12S: PRWS-10

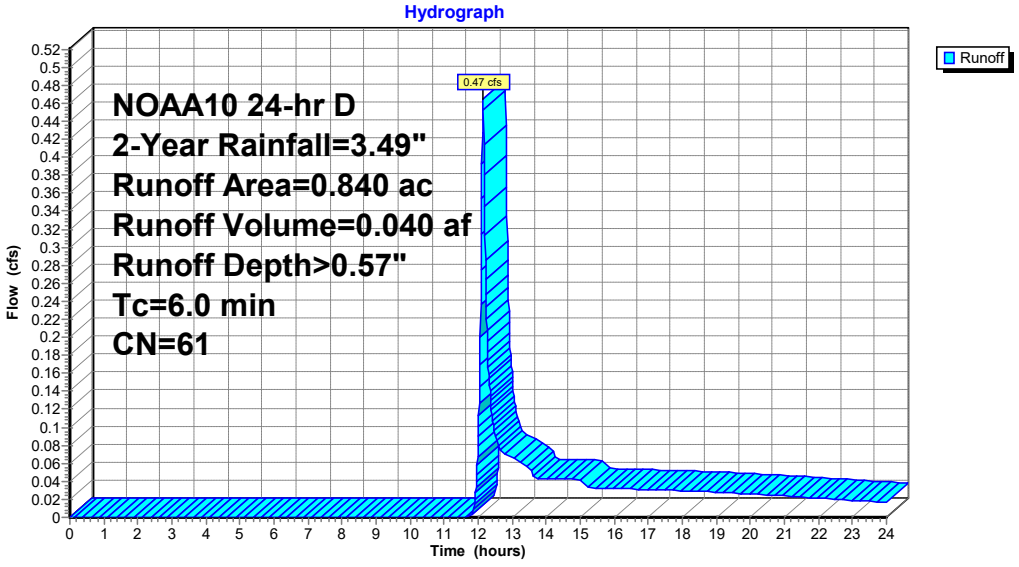
Runoff = 0.47 cfs @ 12.14 hrs, Volume= 0.040 af, Depth> 0.57"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	0.840	61	
	0.840		100.00% Pervious Area

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

Subcatchment 12S: PRWS-10



Summary for Subcatchment 13S: PRWS-11

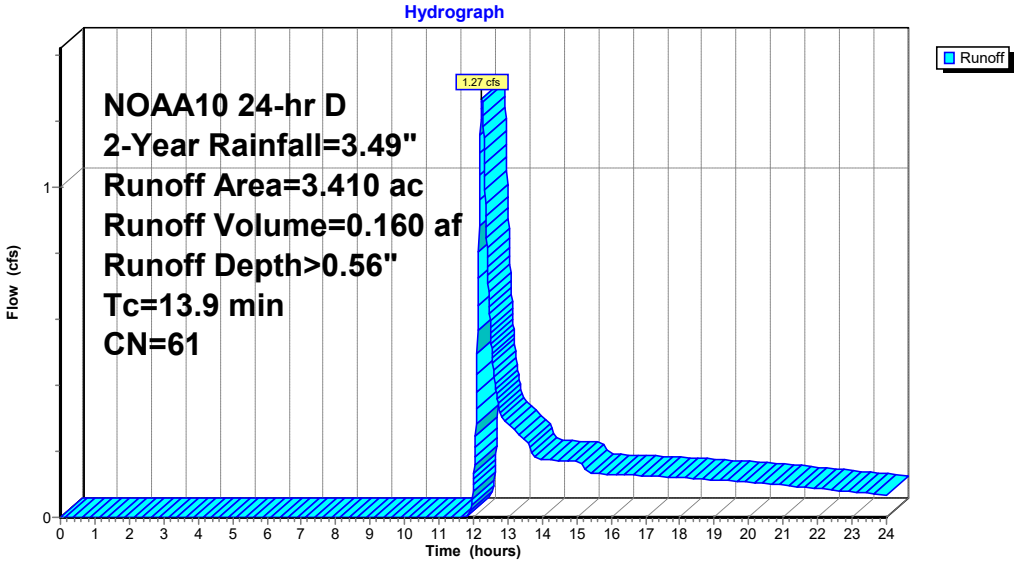
Runoff = 1.27 cfs @ 12.25 hrs, Volume= 0.160 af, Depth> 0.56"
Routed to Pond 35P : UG 110

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	3.410	61	
	3.410		100.00% Pervious Area

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

Subcatchment 13S: PRWS-11



Summary for Subcatchment 14S: EXWS-12 (Offsite)

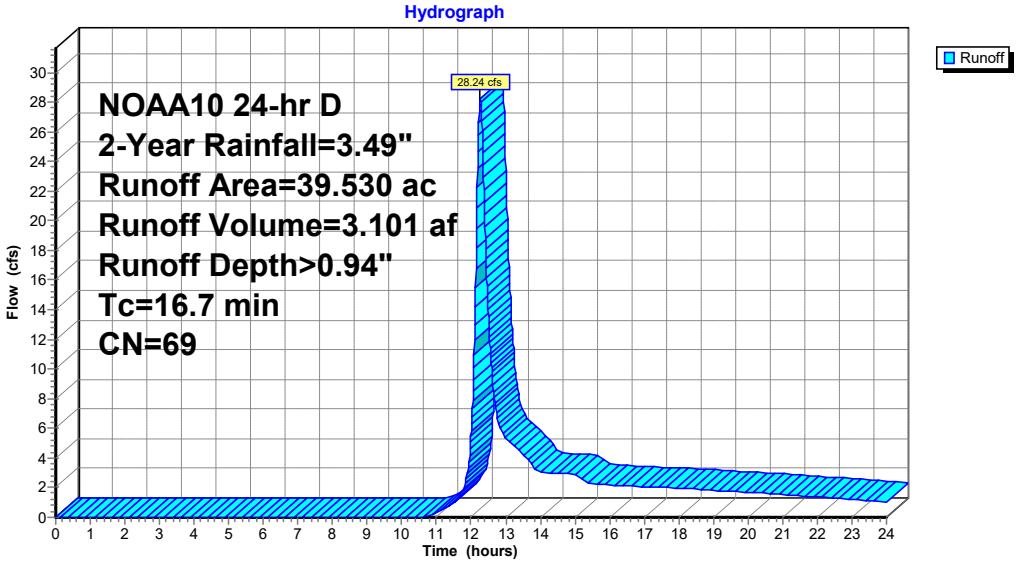
Runoff = 28.24 cfs @ 12.26 hrs, Volume= 3.101 af, Depth> 0.94"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	39.530	69	
	39.530		100.00% Pervious Area

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

Subcatchment 14S: EXWS-12 (Offsite)



Summary for Subcatchment 16S: PRWS-20

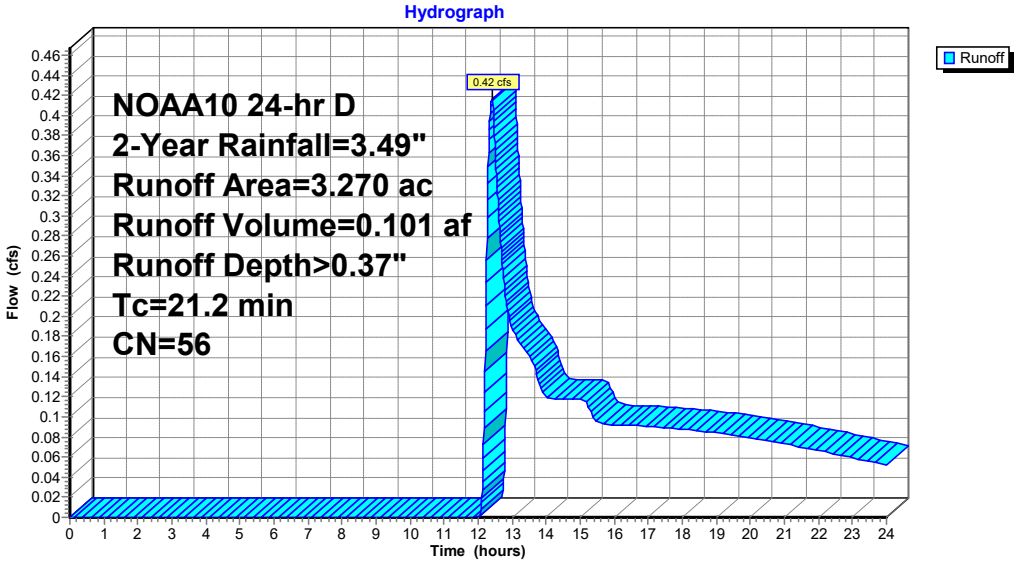
Runoff = 0.42 cfs @ 12.39 hrs, Volume= 0.101 af, Depth> 0.37"
Routed to Link 27L : PR / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	3.270	56	
	3.270		100.00% Pervious Area

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

Subcatchment 16S: PRWS-20



Summary for Subcatchment 17S: PRWS-21

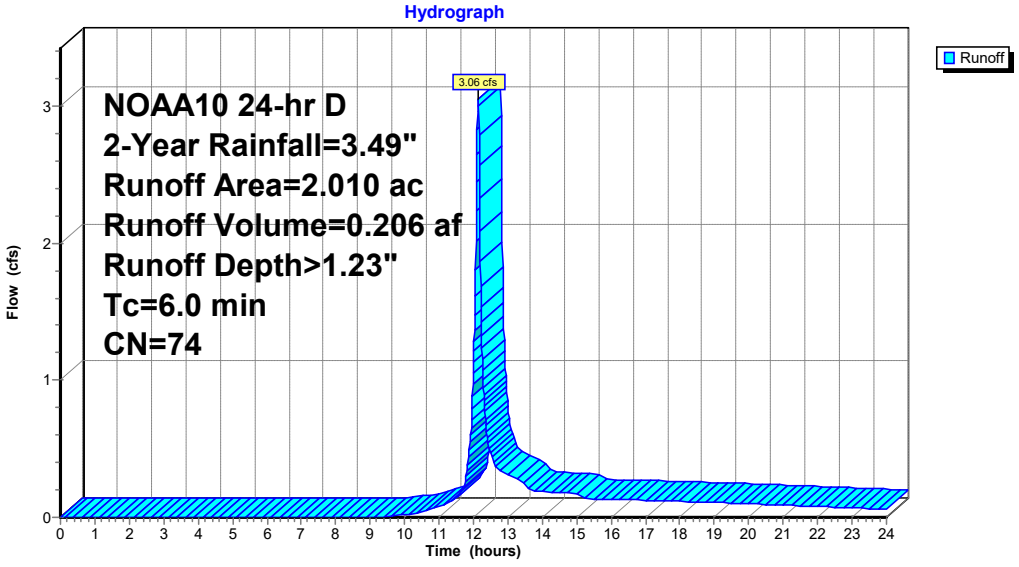
Runoff = 3.06 cfs @ 12.14 hrs, Volume= 0.206 af, Depth> 1.23"
Routed to Pond 37P : DET 210 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	2.010	74	
	2.010		100.00% Pervious Area

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

Subcatchment 17S: PRWS-21



Summary for Subcatchment 18S: PRWS-22

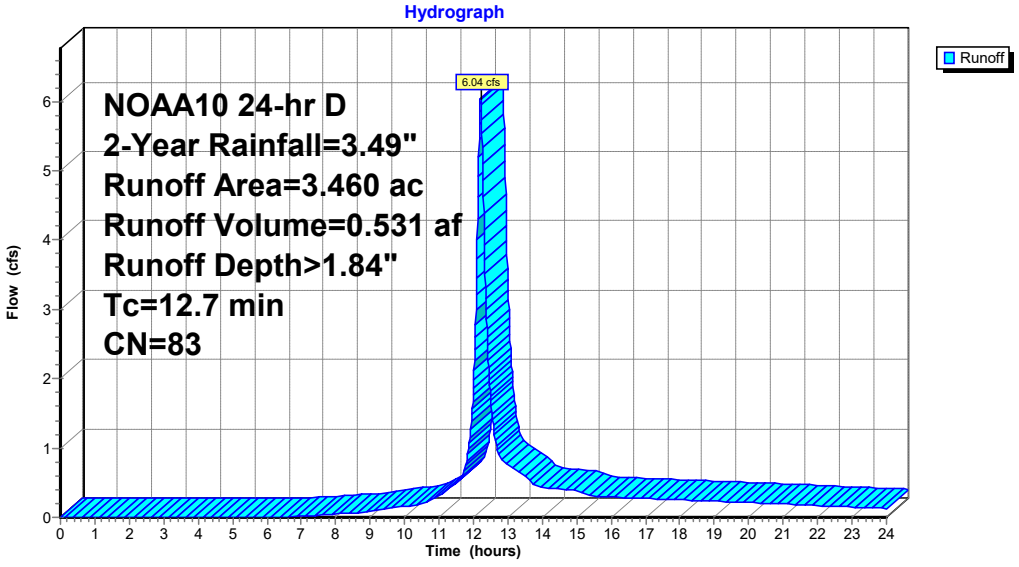
Runoff = 6.04 cfs @ 12.21 hrs, Volume= 0.531 af, Depth> 1.84"
Routed to Pond 36P : DET 220 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	3.460	83	
	3.460		100.00% Pervious Area

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

Subcatchment 18S: PRWS-22



Summary for Subcatchment 19S: PRWS-23

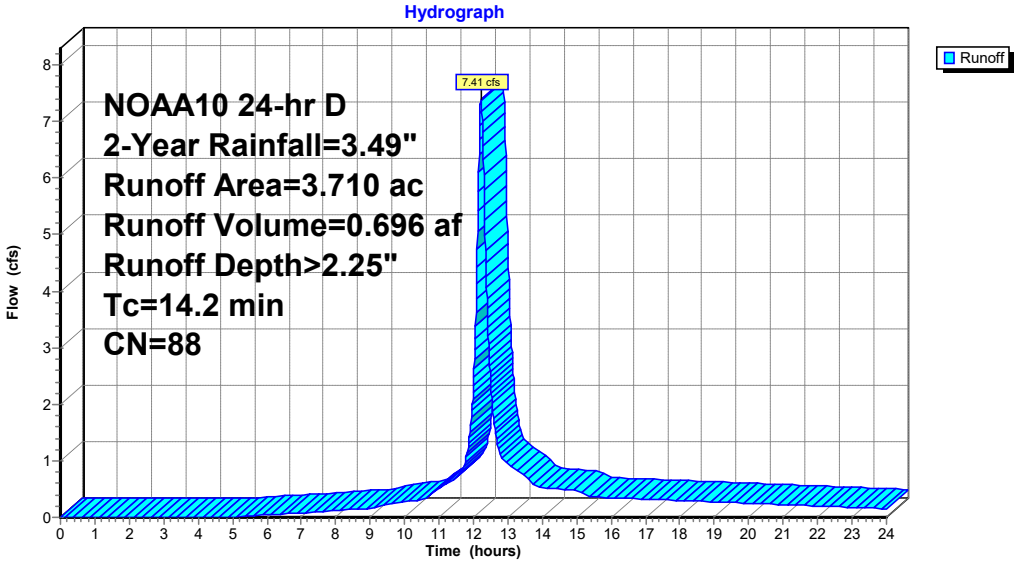
Runoff = 7.41 cfs @ 12.22 hrs, Volume= 0.696 af, Depth> 2.25"
Routed to Pond 22P : DET 230

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	3.710	88	
	3.710		100.00% Pervious Area

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

Subcatchment 19S: PRWS-23



Summary for Subcatchment 23S: PRWS-30

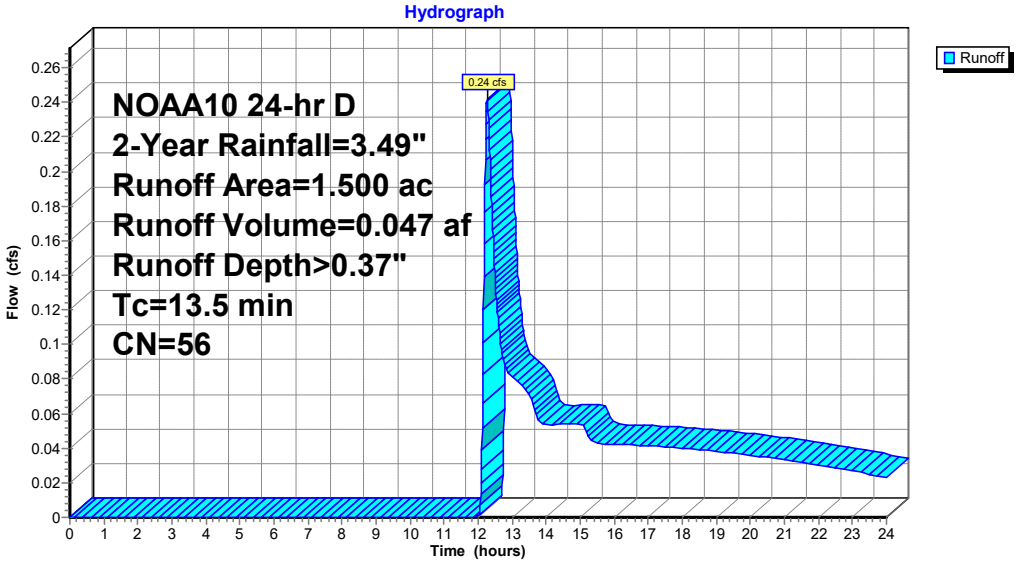
Runoff = 0.24 cfs @ 12.27 hrs, Volume= 0.047 af, Depth> 0.37"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	1.500	56	
	1.500		100.00% Pervious Area

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

Subcatchment 23S: PRWS-30



Summary for Subcatchment 24S: PRWS-31

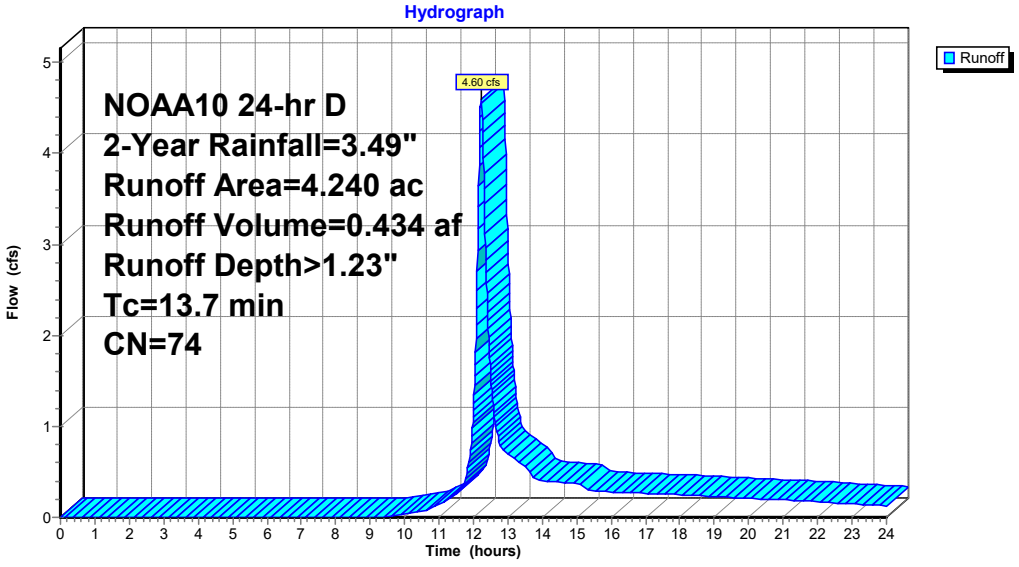
Runoff = 4.60 cfs @ 12.22 hrs, Volume= 0.434 af, Depth> 1.23"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 24S: PRWS-31



Summary for Subcatchment 26S: PRWS-40 / D

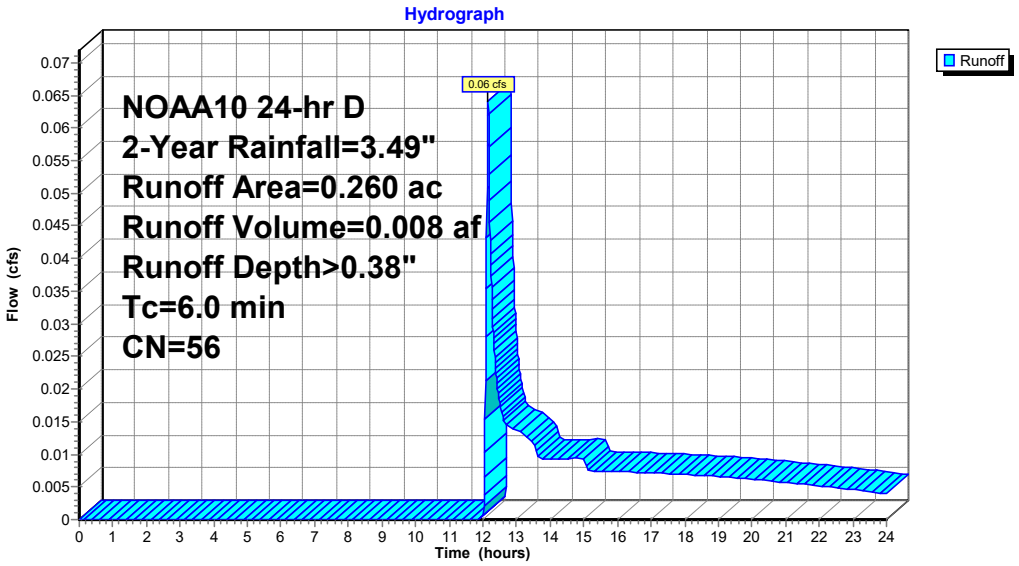
Runoff = 0.06 cfs @ 12.15 hrs, Volume= 0.008 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	0.260	56	
	0.260		100.00% Pervious Area

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

Subcatchment 26S: PRWS-40 / D



Summary for Subcatchment 28S: EXWS-50

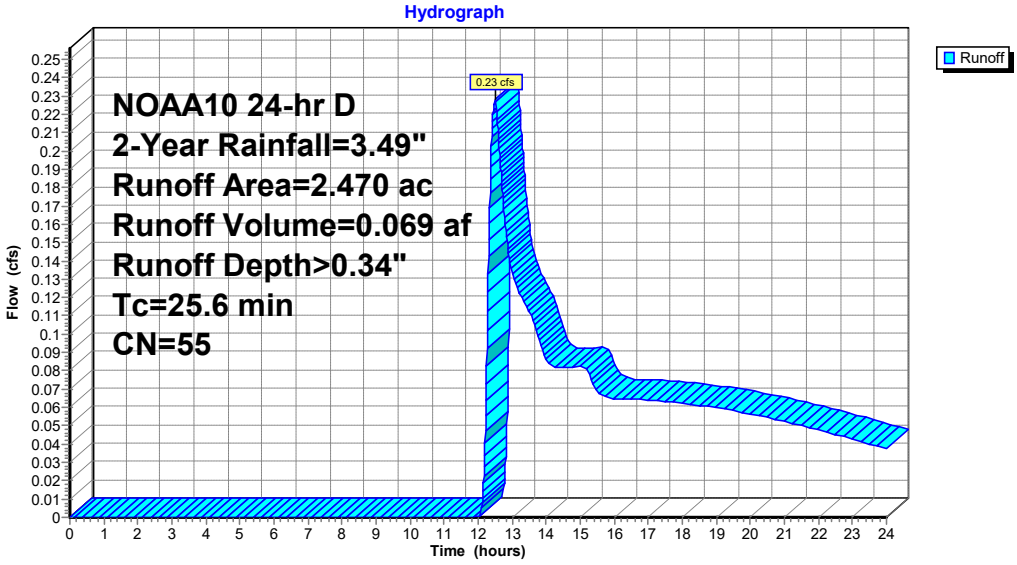
Runoff = 0.23 cfs @ 12.49 hrs, Volume= 0.069 af, Depth> 0.34"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	2.470	55	
	2.470		100.00% Pervious Area

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

Subcatchment 28S: EXWS-50



Summary for Subcatchment 29S: EXWS-51

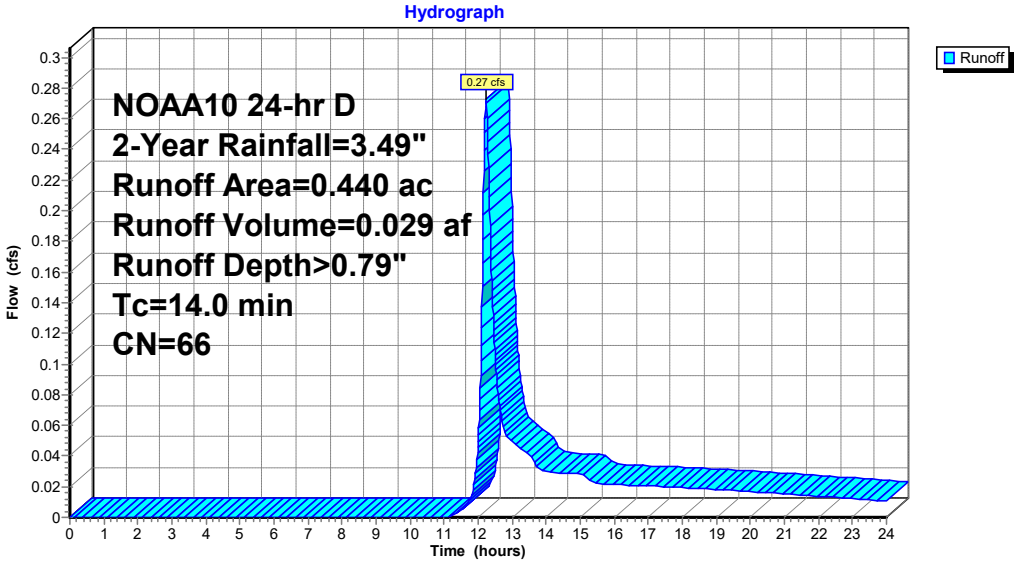
Runoff = 0.27 cfs @ 12.23 hrs, Volume= 0.029 af, Depth> 0.79"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 29S: EXWS-51



Summary for Subcatchment 31S: PRWS-221

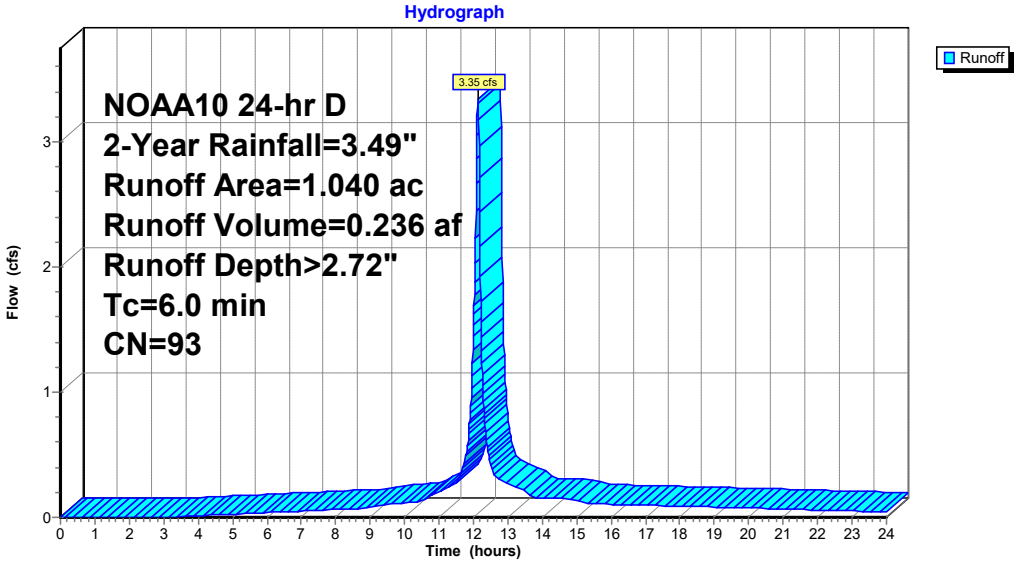
Runoff = 3.35 cfs @ 12.13 hrs, Volume= 0.236 af, Depth> 2.72"
Routed to Pond 33P : UG 221

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	1.040	93	
	1.040		100.00% Pervious Area

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

Subcatchment 31S: PRWS-221



Summary for Subcatchment 32S: PRWS-51

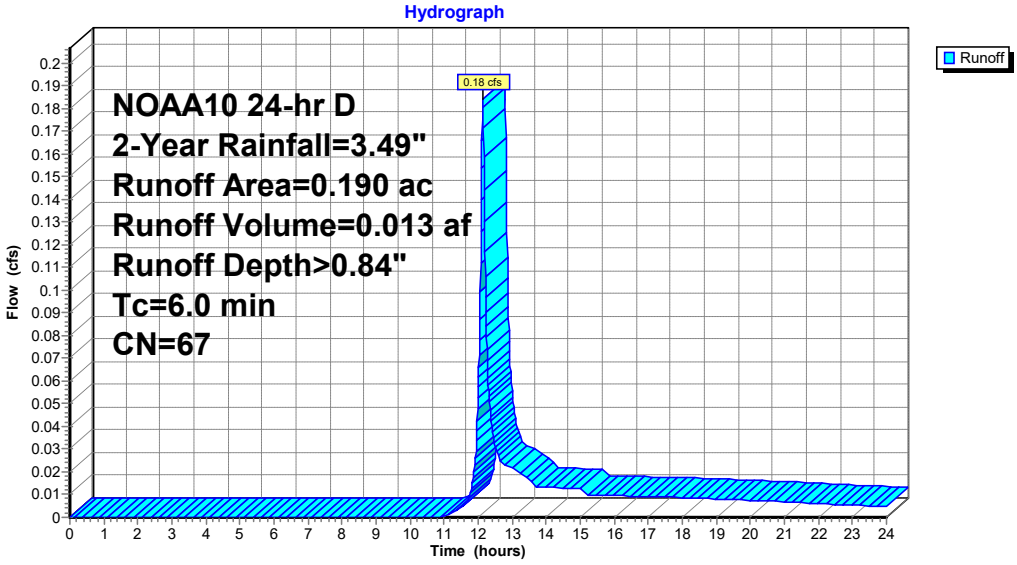
Runoff = 0.18 cfs @ 12.14 hrs, Volume= 0.013 af, Depth> 0.84"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	0.190	67	
	0.190		100.00% Pervious Area

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

Subcatchment 32S: PRWS-51



Summary for Subcatchment 33S: PRWS-50

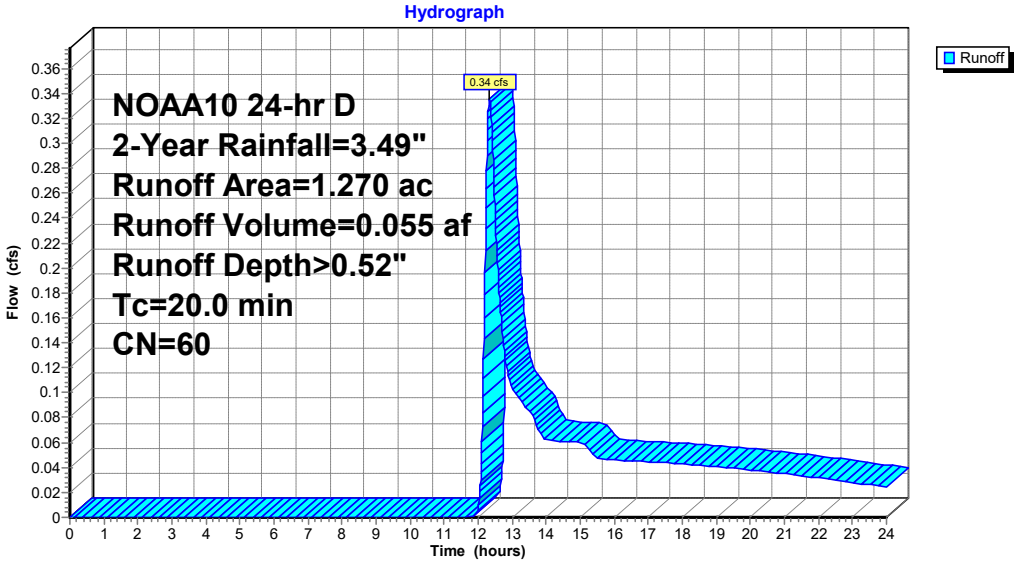
Runoff = 0.34 cfs @ 12.34 hrs, Volume= 0.055 af, Depth> 0.52"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	1.270	60	
	1.270		100.00% Pervious Area

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

Subcatchment 33S: PRWS-50



Summary for Subcatchment 35S: PRWS-52

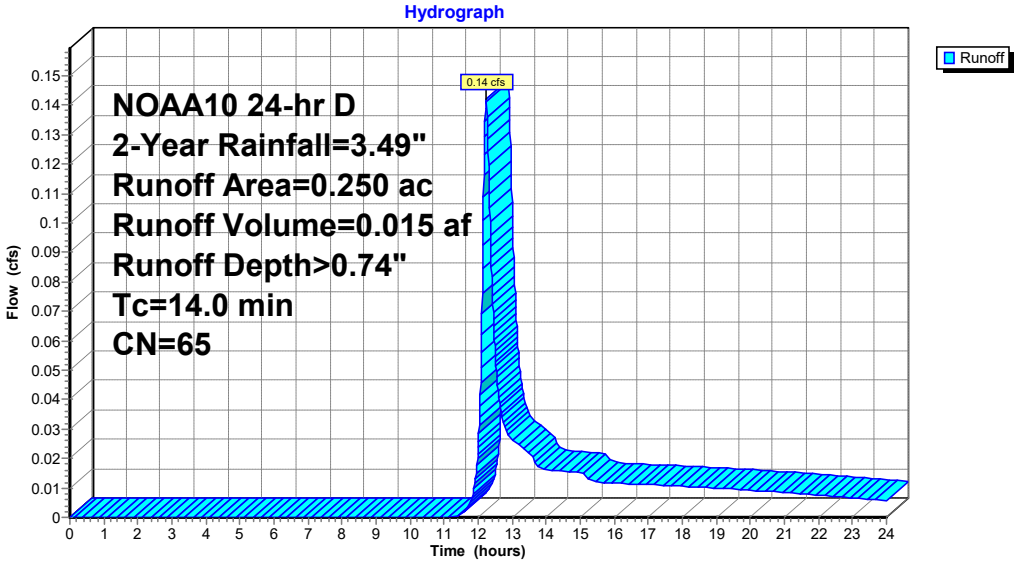
Runoff = 0.14 cfs @ 12.24 hrs, Volume= 0.015 af, Depth> 0.74"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	0.250	65	
	0.250		100.00% Pervious Area

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

Subcatchment 35S: PRWS-52



Summary for Subcatchment 36S: PRWS-222

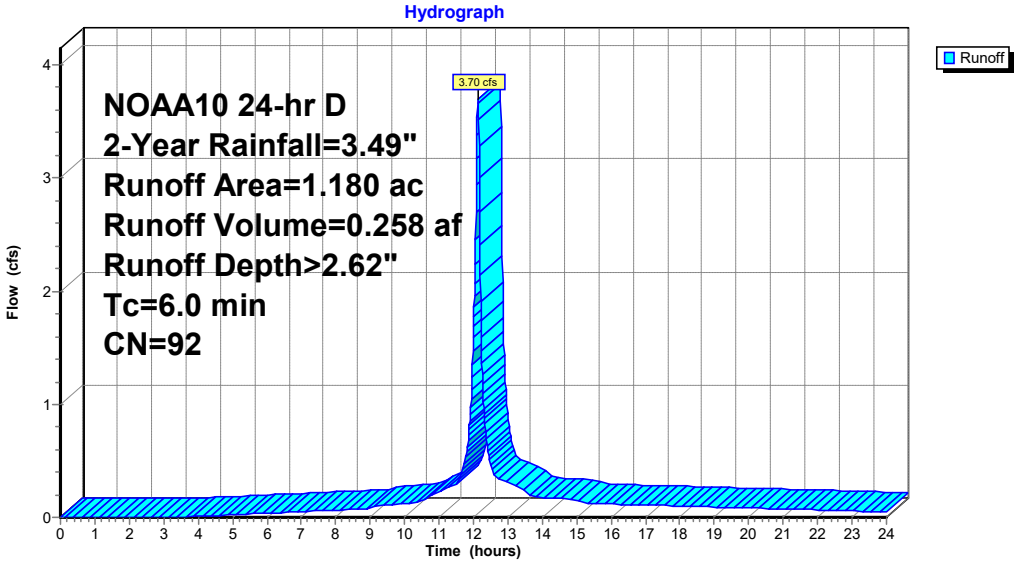
Runoff = 3.70 cfs @ 12.13 hrs, Volume= 0.258 af, Depth> 2.62"
Routed to Pond 41P : UG 222

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	1.180	92	
	1.180		100.00% Pervious Area

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

Subcatchment 36S: PRWS-222



Summary for Subcatchment 37S: PRWS-223

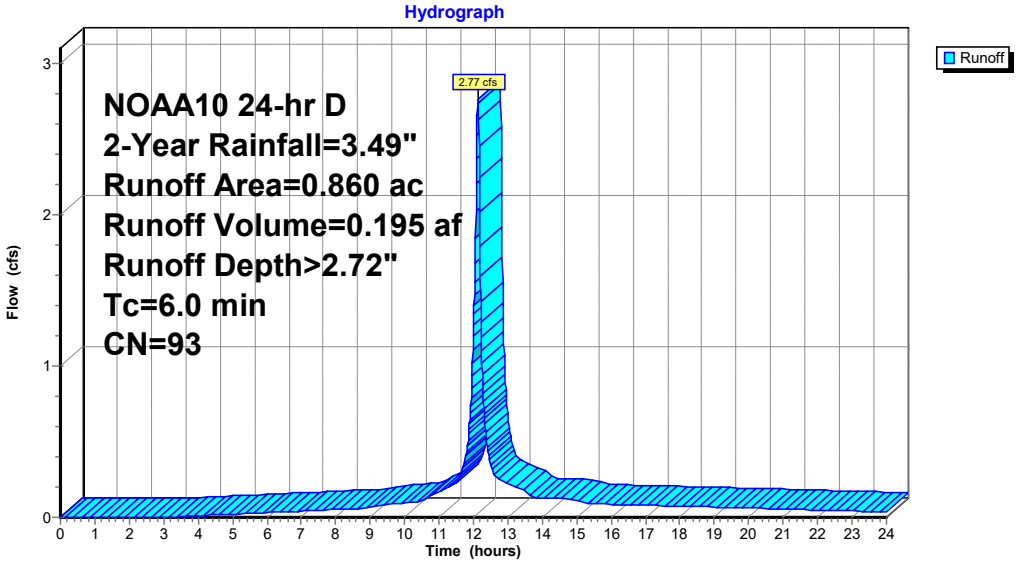
Runoff = 2.77 cfs @ 12.13 hrs, Volume= 0.195 af, Depth> 2.72"
Routed to Pond 42P : UG 223

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	0.860	93	
	0.860		100.00% Pervious Area

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

Subcatchment 37S: PRWS-223



Summary for Subcatchment 38S: PRWS-224

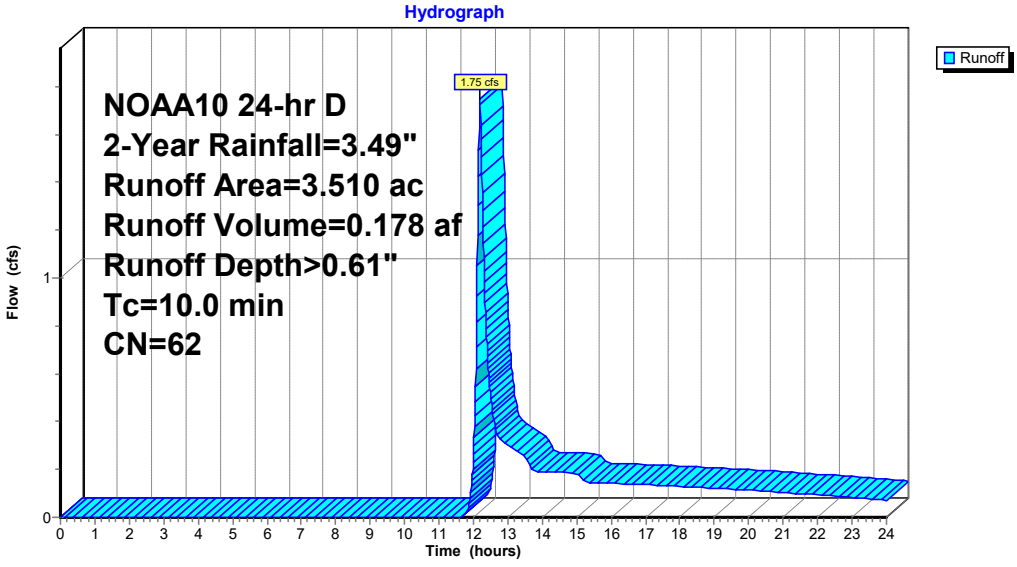
Runoff = 1.75 cfs @ 12.19 hrs, Volume= 0.178 af, Depth> 0.61"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	3.510	62	
	3.510		100.00% Pervious Area

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

Subcatchment 38S: PRWS-224



Summary for Subcatchment 39S: PRWS-225

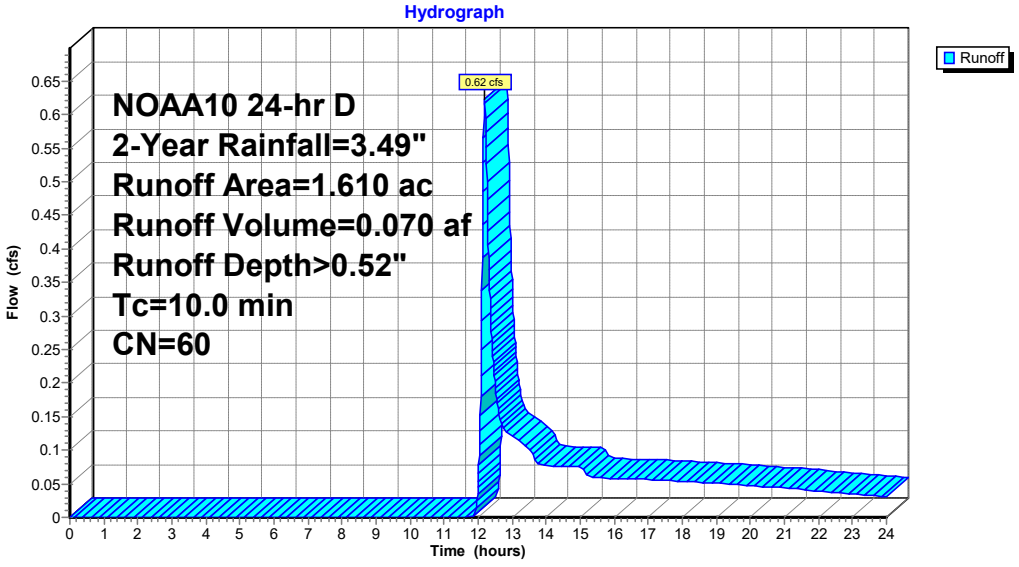
Runoff = 0.62 cfs @ 12.19 hrs, Volume= 0.070 af, Depth> 0.52"
Routed to Pond 44P : UG 225

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	1.610	60	
	1.610		100.00% Pervious Area

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

Subcatchment 39S: PRWS-225



Summary for Pond 22P: DET 230

Inflow Area = 3.710 ac, 0.00% Impervious, Inflow Depth > 2.25" for 2-Year event
Inflow = 7.41 cfs @ 12.22 hrs, Volume= 0.696 af
Outflow = 1.81 cfs @ 12.58 hrs, Volume= 0.665 af, Atten= 76%, Lag= 21.3 min
Primary = 1.81 cfs @ 12.58 hrs, Volume= 0.665 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 71.90' Surf.Area= 7,535 sf Storage= 12,410 cf
Peak Elev= 73.06' @ 12.58 hrs Surf.Area= 8,836 sf Storage= 21,868 cf (9,459 cf above start)

Plug-Flow detention time= 326.9 min calculated for 0.380 af (55% of inflow)
Center-of-Mass det. time= 61.0 min (900.3 - 839.2)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	53,127 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

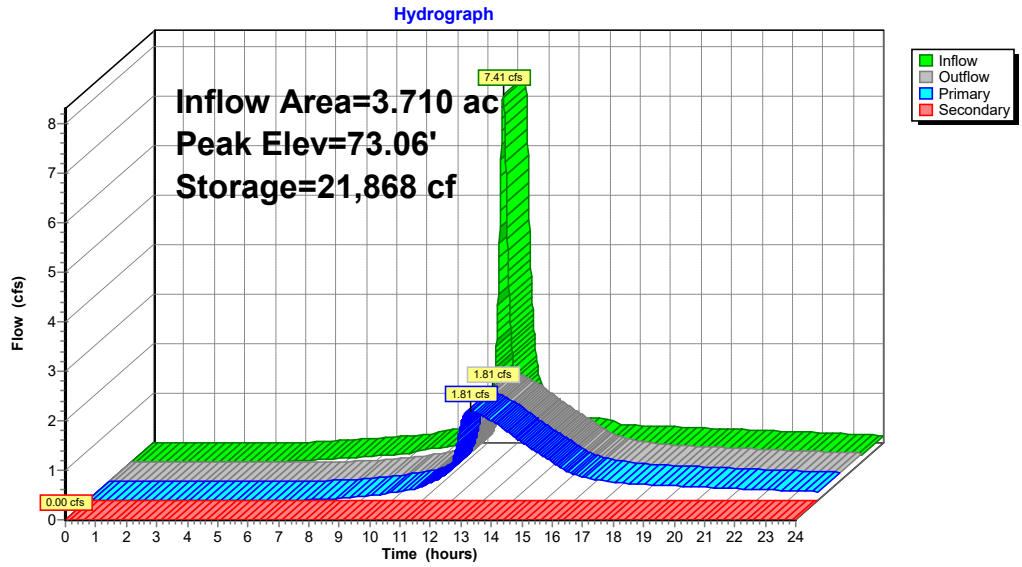
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
70.00	5,565	0	0	5,565
71.00	6,577	6,064	6,064	6,614
72.00	7,646	7,105	13,169	7,724
73.00	8,771	8,202	21,371	8,894
74.00	9,953	9,356	30,727	10,125
75.00	11,192	10,566	41,293	11,416
76.00	12,487	11,834	53,127	12,767

Device	Routing	Invert	Outlet Devices
#1	Primary	66.50'	**15.0" Round Culvert** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.50' / 59.00' S= 0.1042 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	71.90'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	73.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	74.00'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	75.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.81 cfs @ 12.58 hrs HW=73.06' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.81 cfs of 11.36 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.80 cfs @ 4.58 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.81 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=71.90' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 22P: DET 230



Summary for Pond 33P: UG 221

Inflow Area = 1.040 ac, 0.00% Impervious, Inflow Depth > 2.72" for 2-Year event
Inflow = 3.35 cfs @ 12.13 hrs, Volume= 0.236 af
Outflow = 1.17 cfs @ 12.26 hrs, Volume= 0.233 af, Atten= 65%, Lag= 7.6 min
Primary = 1.17 cfs @ 12.26 hrs, Volume= 0.233 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 90.77' @ 12.26 hrs Surf.Area= 0.032 ac Storage= 0.046 af

Plug-Flow detention time= 29.8 min calculated for 0.233 af (99% of inflow)
Center-of-Mass det. time= 21.6 min (824.6 - 803.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	0.007 af	**8.80'W x 160.00'L x 4.00'H Field A** 0.129 af Overall - 0.112 af Embedded = 0.018 af x 40.0% Voids
#2A	89.00'	0.086 af	**Concrete Galley 4x8x4** x 40 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 40 Chambers in 2 Rows
		0.093 af	Total Available Storage

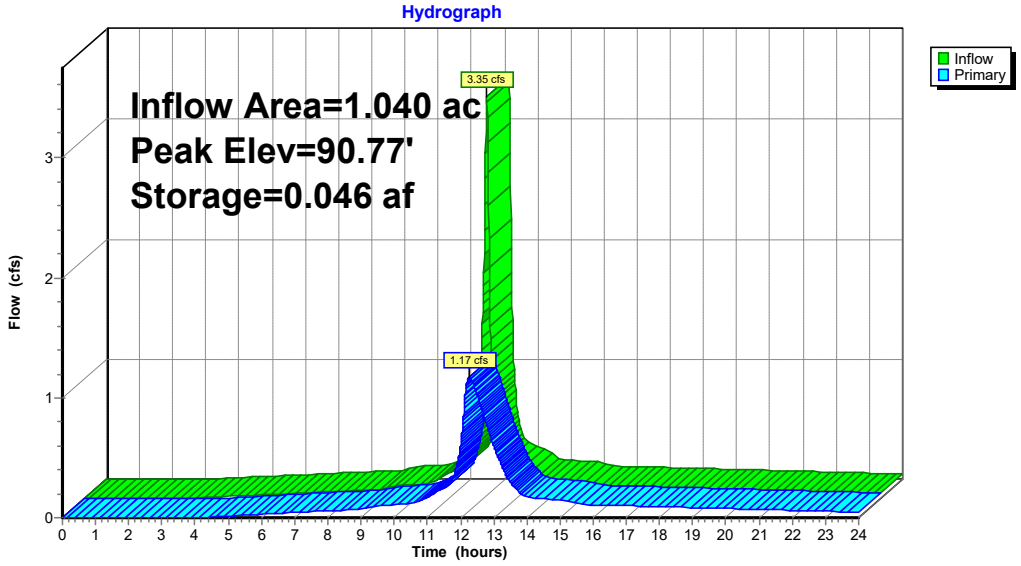
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.00'	**24.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.00' / 85.60' S= 0.0069 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	89.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.17 cfs @ 12.26 hrs HW=90.77' TW=74.68' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.17 cfs of 29.37 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.17 cfs @ 5.94 fps)
├─**3=Orifice/Grate** (Controls 0.00 cfs)
└─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33P: UG 221

Hydrograph



Summary for Pond 35P: UG 110

Inflow Area = 3.410 ac, 0.00% Impervious, Inflow Depth > 0.56" for 2-Year event
Inflow = 1.27 cfs @ 12.25 hrs, Volume= 0.160 af
Outflow = 0.80 cfs @ 12.39 hrs, Volume= 0.157 af, Atten= 37%, Lag= 8.9 min
Discarded = 0.02 cfs @ 12.28 hrs, Volume= 0.013 af
Primary = 0.78 cfs @ 12.39 hrs, Volume= 0.145 af
Routed to Link 15L : PR / A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 61.75' @ 12.39 hrs Surf.Area= 2,016 sf Storage= 630 cf

Plug-Flow detention time= 21.9 min calculated for 0.157 af (98% of inflow)
Center-of-Mass det. time= 12.6 min (972.8 - 960.2)

Volume	Invert	Avail.Storage	Storage Description
#1	61.20'	3,168 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	61.70'	2,880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		6,048 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.20	1,056	0	0
64.20	1,056	3,168	3,168

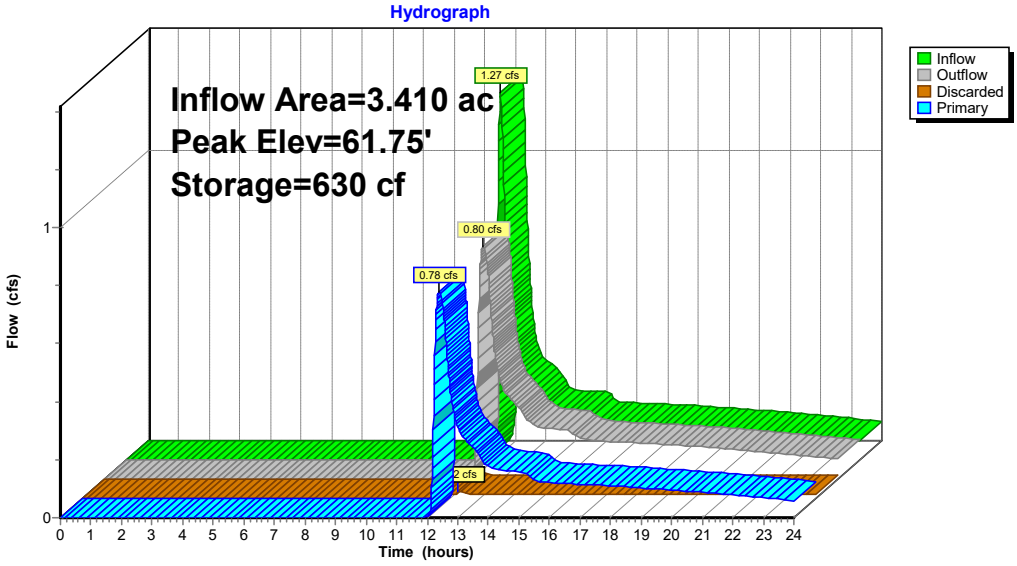
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.70	960	0	0
64.70	960	2,880	2,880

Device	Routing	Invert	Outlet Devices
#1	Discarded	61.20'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	61.10'	**18.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 61.10' / 60.90' S= 0.0077 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#3	Device 2	61.20'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	62.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	64.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.02 cfs @ 12.28 hrs HW=61.70' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.78 cfs @ 12.39 hrs HW=61.75' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.78 cfs of 1.66 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.78 cfs @ 2.53 fps)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 35P: UG 110



Summary for Pond 36P: DET 220 OG

Inflow Area = 11.910 ac, 0.00% Impervious, Inflow Depth > 1.48" for 2-Year event
Inflow = 12.08 cfs @ 12.20 hrs, Volume= 1.473 af
Outflow = 3.06 cfs @ 12.94 hrs, Volume= 1.073 af, Atten= 75%, Lag= 44.3 min
Discarded = 0.64 cfs @ 12.94 hrs, Volume= 0.775 af
Primary = 2.42 cfs @ 12.94 hrs, Volume= 0.298 af
Routed to Pond 37P : DET 210 OG
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 75.81' @ 12.94 hrs Surf.Area= 8,900 sf Storage= 20,981 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 79.2 min (941.0 - 861.8)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	43,165 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	6,115	0	0
74.00	7,054	6,585	6,585
75.00	8,050	7,552	14,137
76.00	9,103	8,577	22,713
77.00	10,212	9,658	32,371
78.00	11,377	10,795	43,165

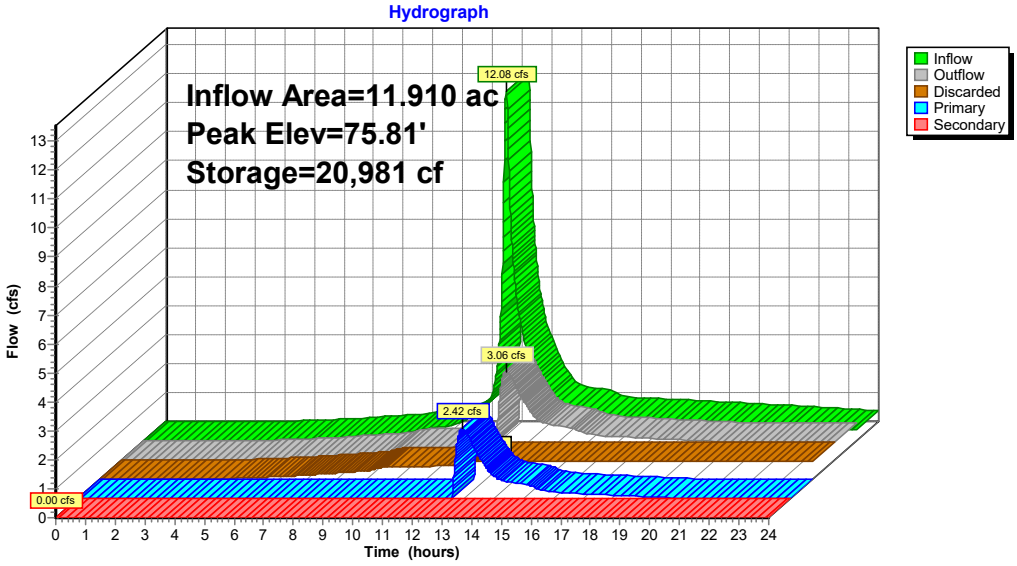
Device	Routing	Invert	Outlet Devices
#1	Discarded	73.00'	**3.100 in/hr Exfiltration over Surface area**
#2	Primary	75.60'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Secondary	77.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.64 cfs @ 12.94 hrs HW=75.81' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.64 cfs)

Primary OutFlow Max=2.42 cfs @ 12.94 hrs HW=75.81' TW=72.54' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 2.42 cfs @ 1.10 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 36P: DET 220 OG



Summary for Pond 37P: DET 210 OG

Inflow Area = 13.920 ac, 0.00% Impervious, Inflow Depth > 0.43" for 2-Year event
Inflow = 3.06 cfs @ 12.14 hrs, Volume= 0.504 af
Outflow = 1.92 cfs @ 13.39 hrs, Volume= 0.498 af, Atten= 37%, Lag= 75.2 min
Primary = 1.92 cfs @ 13.39 hrs, Volume= 0.498 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 72.66' @ 13.39 hrs Surf.Area= 8,720 sf Storage= 3,488 cf

Plug-Flow detention time= 33.1 min calculated for 0.497 af (99% of inflow)
Center-of-Mass det. time= 26.4 min (894.8 - 868.4)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	92,201 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

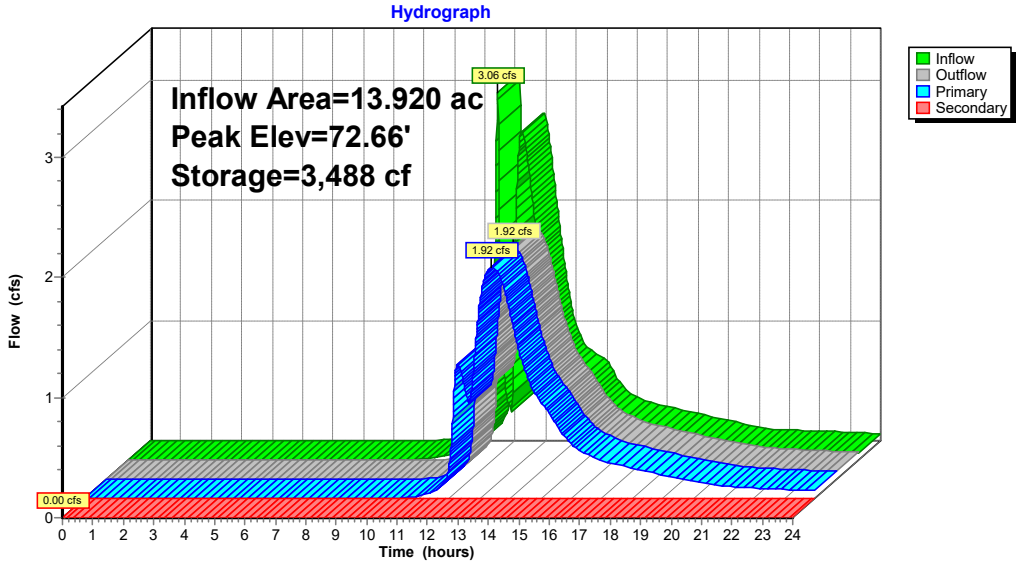
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
72.00	2,507	0	0	2,507
73.00	13,430	7,247	7,247	13,434
74.00	14,957	14,187	21,433	15,018
75.00	16,541	15,742	37,176	16,663
76.00	21,175	18,810	55,986	21,323
77.00	23,044	22,103	78,089	23,265
77.60	24,000	14,112	92,201	24,275

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	72.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	76.30'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Secondary	76.70'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.92 cfs @ 13.39 hrs HW=72.66' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.92 cfs of 3.40 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 1.92 cfs @ 2.76 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=72.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 37P: DET 210 OG



Summary for Pond 41P: UG 222

Inflow Area = 1.180 ac, 0.00% Impervious, Inflow Depth > 2.62" for 2-Year event
Inflow = 3.70 cfs @ 12.13 hrs, Volume= 0.258 af
Outflow = 2.17 cfs @ 12.20 hrs, Volume= 0.254 af, Atten= 42%, Lag= 4.2 min
Primary = 2.17 cfs @ 12.20 hrs, Volume= 0.254 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 90.43' @ 12.20 hrs Surf.Area= 0.036 ac Storage= 0.046 af

Plug-Flow detention time= 29.9 min calculated for 0.254 af (99% of inflow)
Center-of-Mass det. time= 21.2 min (831.0 - 809.8)

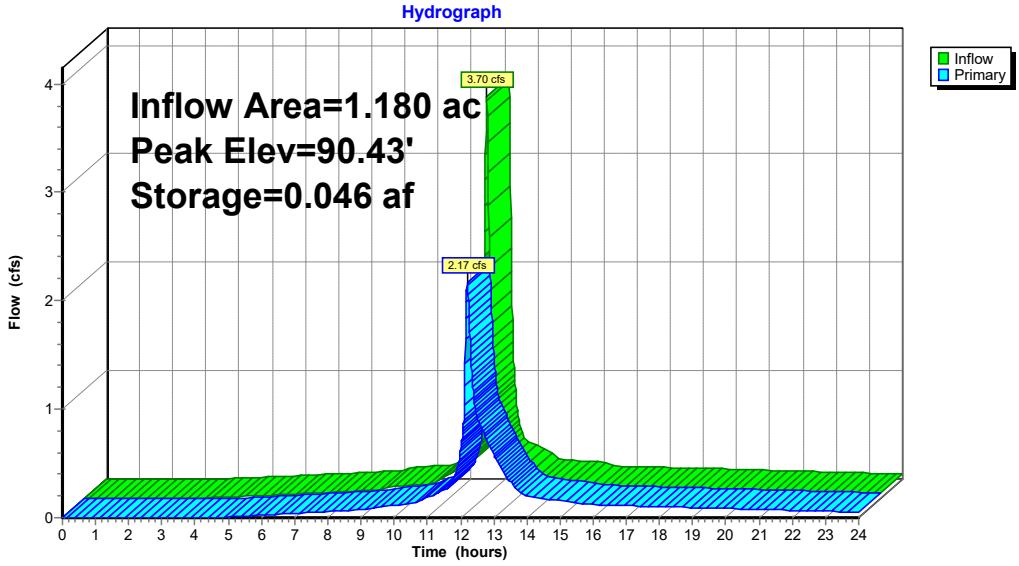
Volume	Invert	Avail.Storage	Storage Description
#1A	88.80'	0.008 af	**8.80'W x 176.00'L x 4.00'H Field A** 0.142 af Overall - 0.123 af Embedded = 0.019 af x 40.0% Voids
#2A	88.80'	0.095 af	**Concrete Galley 4x8x4** x 44 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 44 Chambers in 2 Rows
		0.102 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**18.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 88.30' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	88.80'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.80'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.17 cfs @ 12.20 hrs HW=90.43' TW=74.38' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.17 cfs of 7.30 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.11 cfs @ 5.65 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 1.06 cfs @ 2.23 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 41P: UG 222



Summary for Pond 42P: UG 223

Inflow Area = 0.860 ac, 0.00% Impervious, Inflow Depth > 2.72" for 2-Year event
Inflow = 2.77 cfs @ 12.13 hrs, Volume= 0.195 af
Outflow = 2.04 cfs @ 12.18 hrs, Volume= 0.195 af, Atten= 26%, Lag= 3.0 min
Primary = 2.04 cfs @ 12.18 hrs, Volume= 0.195 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 90.09' @ 12.18 hrs Surf.Area= 0.016 ac Storage= 0.021 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.6 min (806.7 - 803.1)

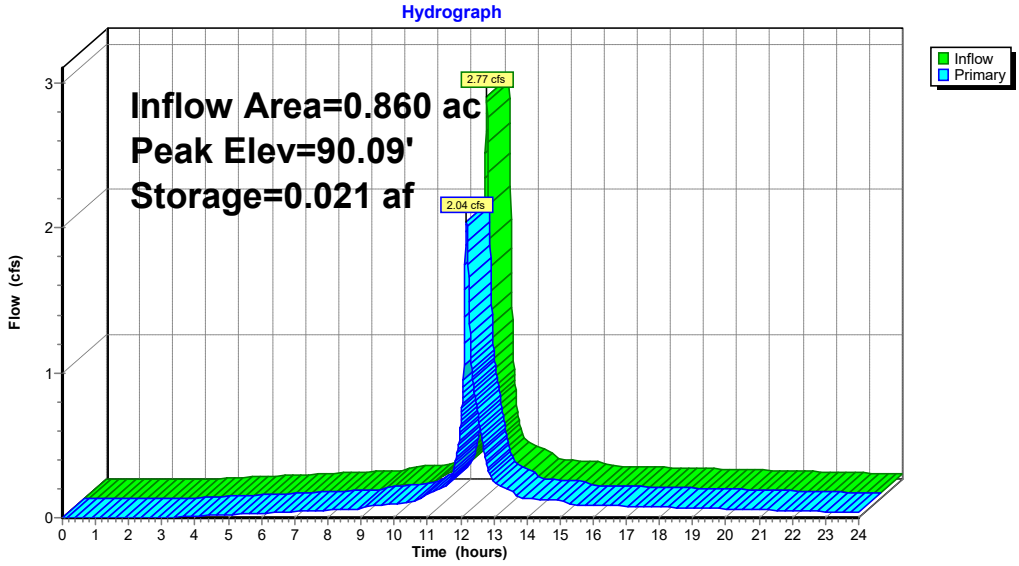
Volume	Invert	Avail.Storage	Storage Description
#1A	88.50'	0.004 af	**8.80'W x 80.00'L x 4.00'H Field A** 0.065 af Overall - 0.056 af Embedded = 0.009 af x 40.0% Voids
#2A	88.50'	0.043 af	**Concrete Galley 4x8x4** x 20 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 20 Chambers in 2 Rows
		0.046 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.00'	**12.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.00' / 86.50' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	88.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.04 cfs @ 12.18 hrs HW=90.09' TW=74.26' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.04 cfs of 5.07 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.17 cfs @ 5.98 fps)
├─**3=Orifice/Grate** (Orifice Controls 0.86 cfs @ 2.62 fps)
└─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 42P: UG 223



Summary for Pond 43P: UG 224

Inflow Area = 3.760 ac, 0.00% Impervious, Inflow Depth > 0.62" for 2-Year event
Inflow = 1.88 cfs @ 12.19 hrs, Volume= 0.193 af
Outflow = 0.83 cfs @ 12.38 hrs, Volume= 0.192 af, Atten= 56%, Lag= 11.5 min
Primary = 0.83 cfs @ 12.38 hrs, Volume= 0.192 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 90.53' @ 12.38 hrs Surf.Area= 0.065 ac Storage= 0.020 af

Plug-Flow detention time= 9.9 min calculated for 0.192 af (99% of inflow)
Center-of-Mass det. time= 6.8 min (957.7 - 950.9)

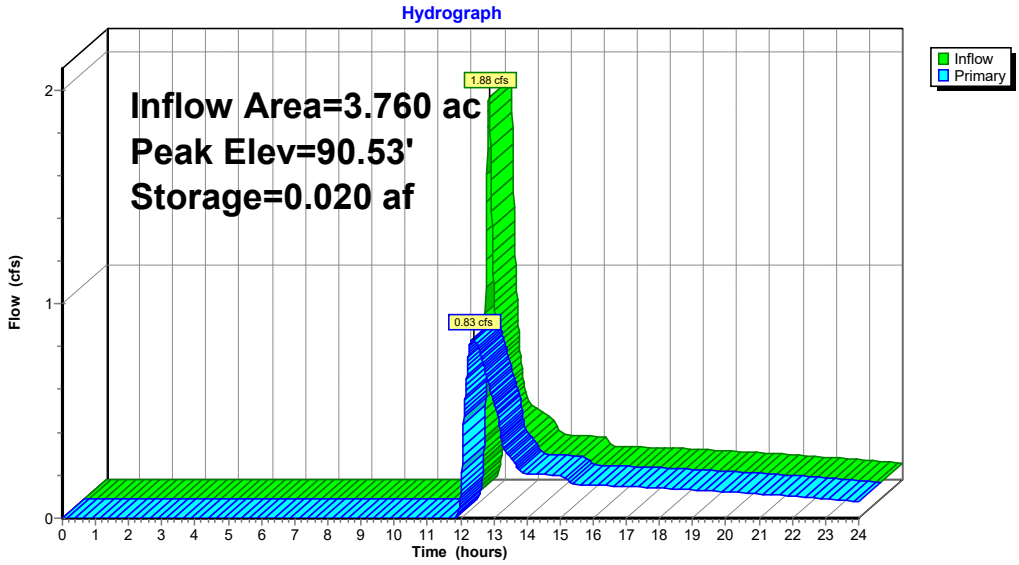
Volume	Invert	Avail.Storage	Storage Description
#1A	89.50'	0.002 af	**13.20'W x 32.00'L x 4.00'H Field A** 0.039 af Overall - 0.034 af Embedded = 0.005 af x 40.0% Voids
#2A	89.50'	0.026 af	**Concrete Galley 4x8x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 12 Chambers in 3 Rows
#3B	90.00'	0.006 af	**13.20'W x 88.00'L x 4.00'H Field B** 0.107 af Overall - 0.092 af Embedded = 0.015 af x 40.0% Voids
#4B	90.00'	0.071 af	**Concrete Galley 4x8x4** x 33 Inside #3 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 33 Chambers in 3 Rows
#5C	90.50'	0.006 af	**13.20'W x 96.00'L x 4.00'H Field C** 0.116 af Overall - 0.101 af Embedded = 0.016 af x 40.0% Voids
#6C	90.50'	0.077 af	**Concrete Galley 4x8x4** x 36 Inside #5 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 36 Chambers in 3 Rows
		0.188 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.50'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.50' / 89.18' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	89.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.83 cfs @ 12.38 hrs HW=90.53' TW=75.14' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.83 cfs of 3.19 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 0.83 cfs @ 4.25 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 43P: UG 224



Summary for Pond 44P: UG 225

Inflow Area = 1.610 ac, 0.00% Impervious, Inflow Depth > 0.52" for 2-Year event
Inflow = 0.62 cfs @ 12.19 hrs, Volume= 0.070 af
Outflow = 0.22 cfs @ 12.46 hrs, Volume= 0.067 af, Atten= 65%, Lag= 16.3 min
Primary = 0.22 cfs @ 12.46 hrs, Volume= 0.067 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 92.32' @ 12.46 hrs Surf.Area= 0.039 ac Storage= 0.010 af

Plug-Flow detention time= 49.2 min calculated for 0.067 af (95% of inflow)
Center-of-Mass det. time= 27.4 min (991.0 - 963.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	92.00'	0.008 af	**17.60'W x 96.00'L x 4.00'H Field A** 0.155 af Overall - 0.134 af Embedded = 0.021 af x 40.0% Voids
#2A	92.00'	0.103 af	**Concrete Galley 4x8x4** x 48 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 48 Chambers in 4 Rows
		0.112 af	Total Available Storage

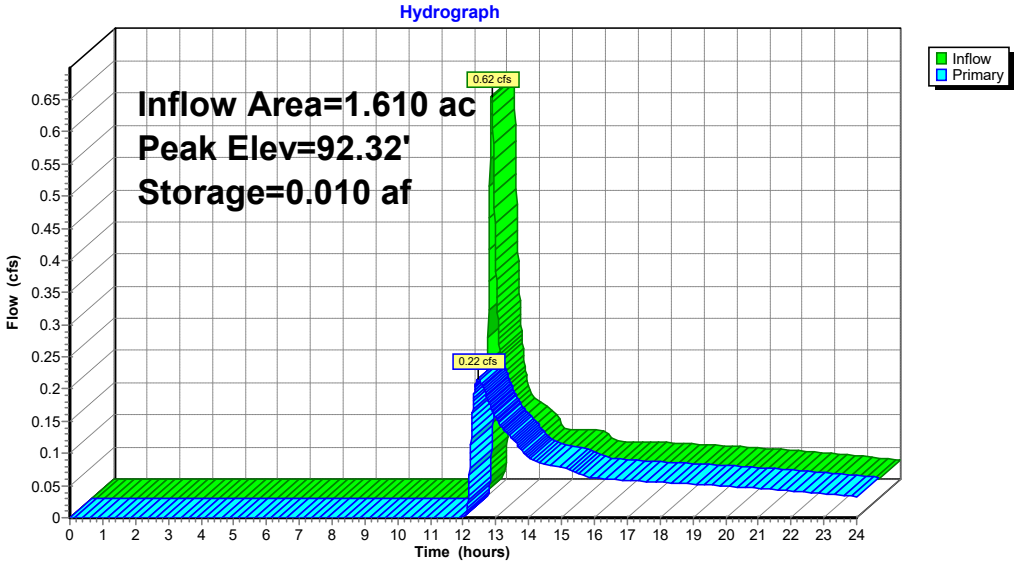
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	92.00'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.00' / 90.53' S= 0.0432 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	92.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	94.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.22 cfs @ 12.46 hrs HW=92.32' TW=75.35' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.22 cfs of 0.47 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 1.92 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 44P: UG 225

Hydrograph

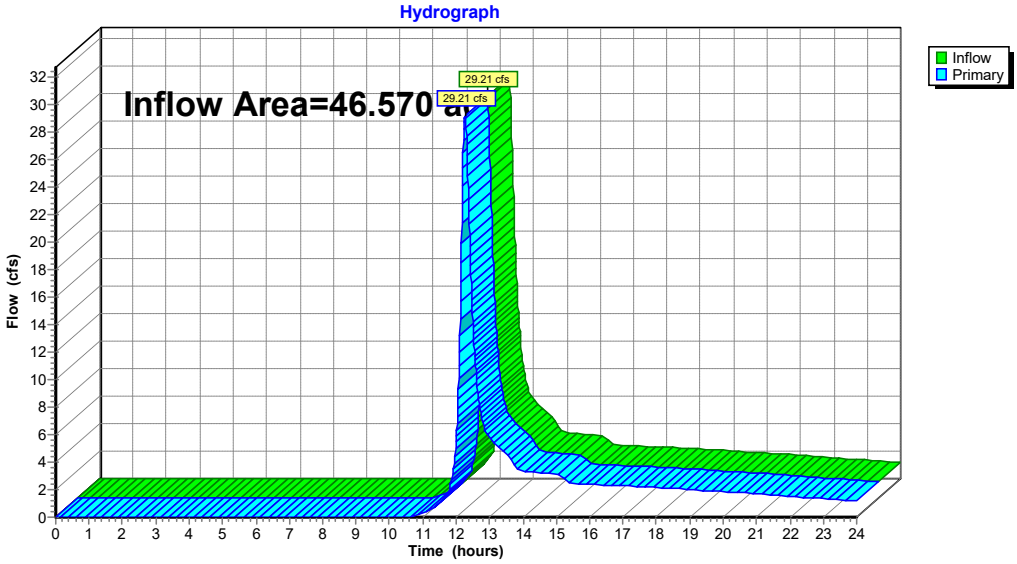


Summary for Link 4L: EX / A

Inflow Area = 46.570 ac, 0.00% Impervious, Inflow Depth > 0.86" for 2-Year event
Inflow = 29.21 cfs @ 12.26 hrs, Volume= 3.325 af
Primary = 29.21 cfs @ 12.26 hrs, Volume= 3.325 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: EX / A

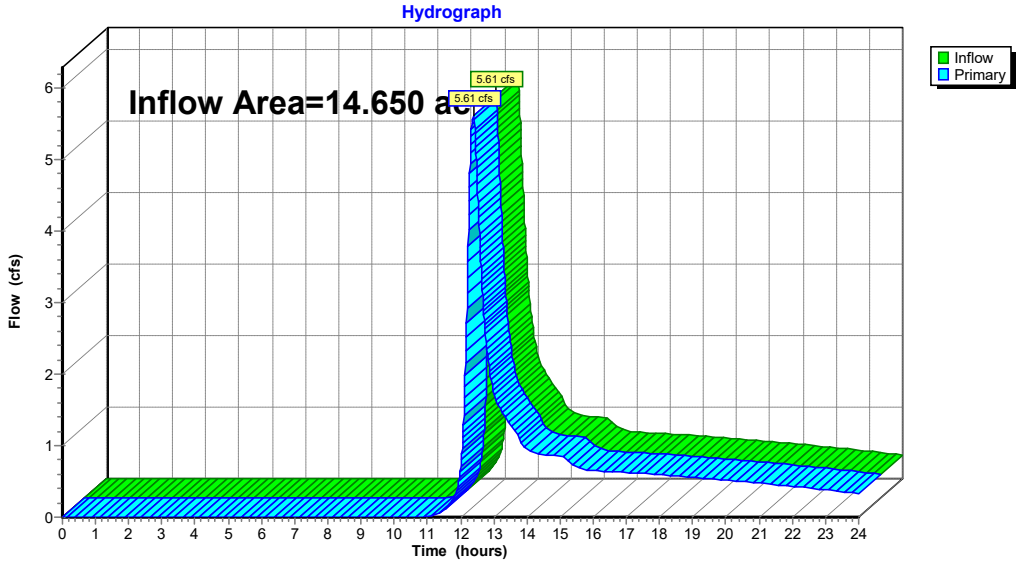


Summary for Link 7L: EX / B

Inflow Area = 14.650 ac, 0.00% Impervious, Inflow Depth > 0.70" for 2-Year event
Inflow = 5.61 cfs @ 12.38 hrs, Volume= 0.857 af
Primary = 5.61 cfs @ 12.38 hrs, Volume= 0.857 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: EX / B

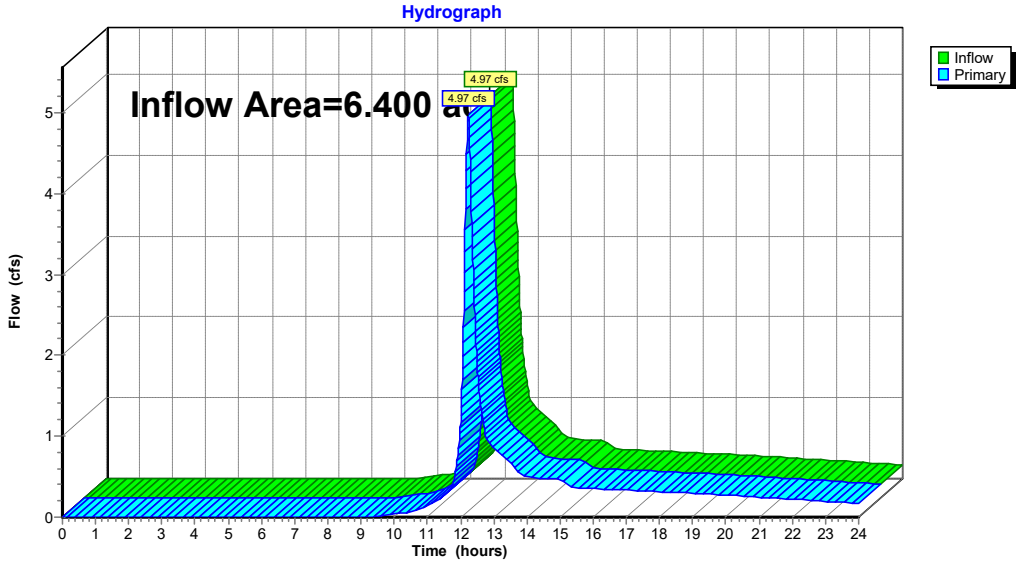


Summary for Link 10L: EX / C

Inflow Area = 6.400 ac, 0.00% Impervious, Inflow Depth > 0.98" for 2-Year event
Inflow = 4.97 cfs @ 12.23 hrs, Volume= 0.520 af
Primary = 4.97 cfs @ 12.23 hrs, Volume= 0.520 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 10L: EX / C

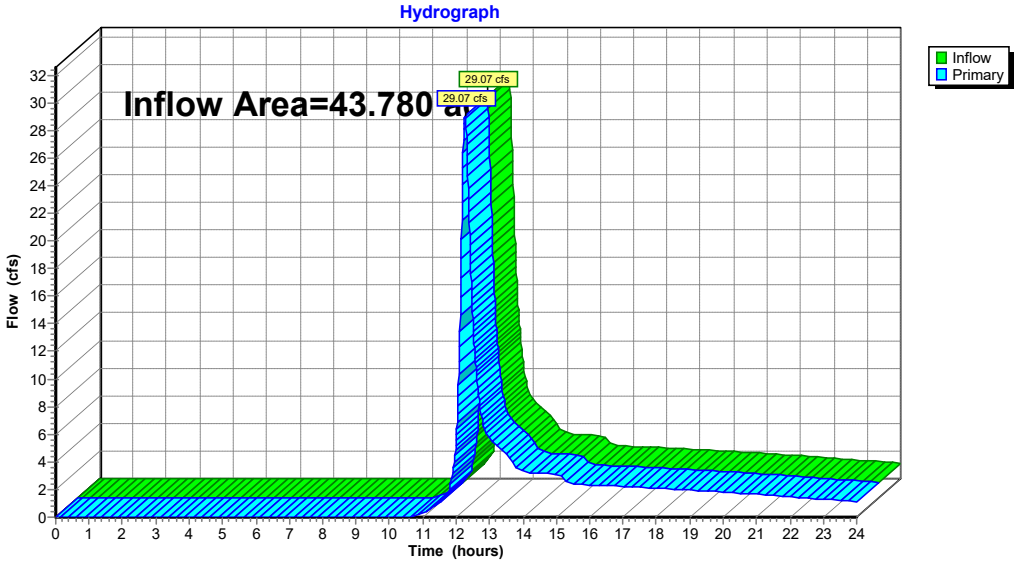


Summary for Link 15L: PR / A

Inflow Area = 43.780 ac, 0.00% Impervious, Inflow Depth > 0.90" for 2-Year event
Inflow = 29.07 cfs @ 12.26 hrs, Volume= 3.286 af
Primary = 29.07 cfs @ 12.26 hrs, Volume= 3.286 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 15L: PR / A

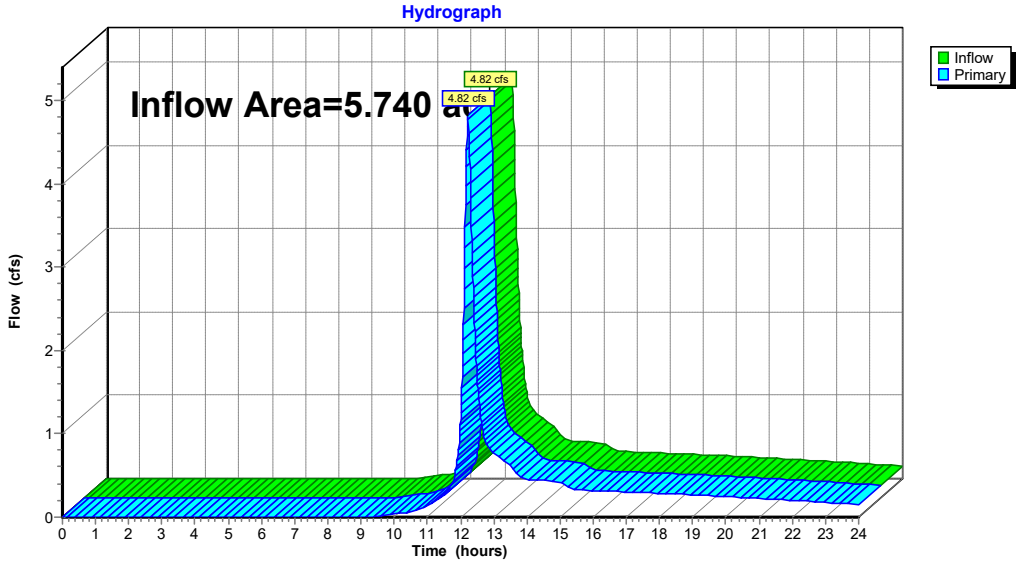


Summary for Link 25L: PR / C

Inflow Area = 5.740 ac, 0.00% Impervious, Inflow Depth > 1.00" for 2-Year event
Inflow = 4.82 cfs @ 12.22 hrs, Volume= 0.480 af
Primary = 4.82 cfs @ 12.22 hrs, Volume= 0.480 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 25L: PR / C

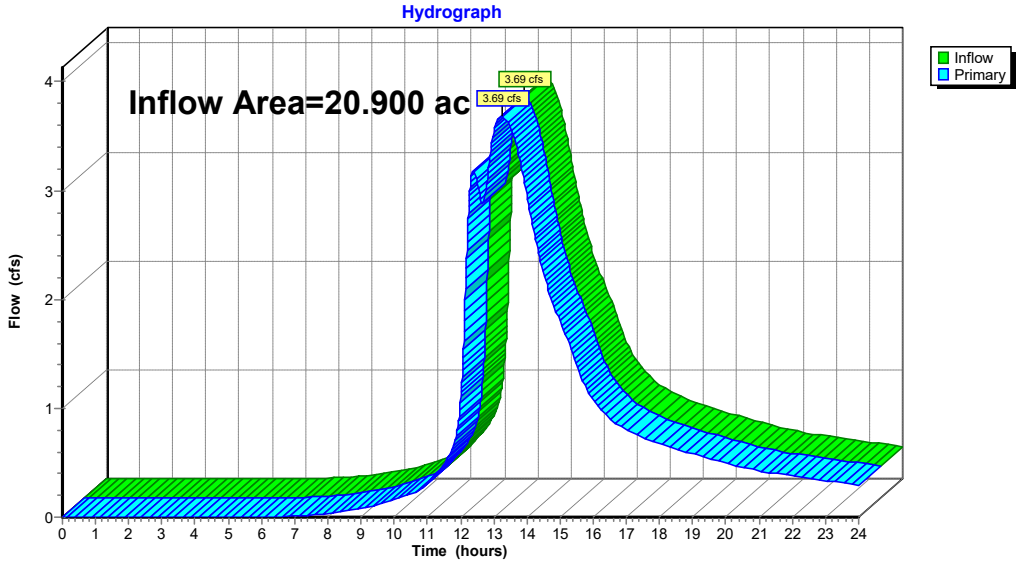


Summary for Link 27L: PR / B

Inflow Area = 20.900 ac, 0.00% Impervious, Inflow Depth > 0.73" for 2-Year event
Inflow = 3.69 cfs @ 13.24 hrs, Volume= 1.264 af
Primary = 3.69 cfs @ 13.24 hrs, Volume= 1.264 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 27L: PR / B

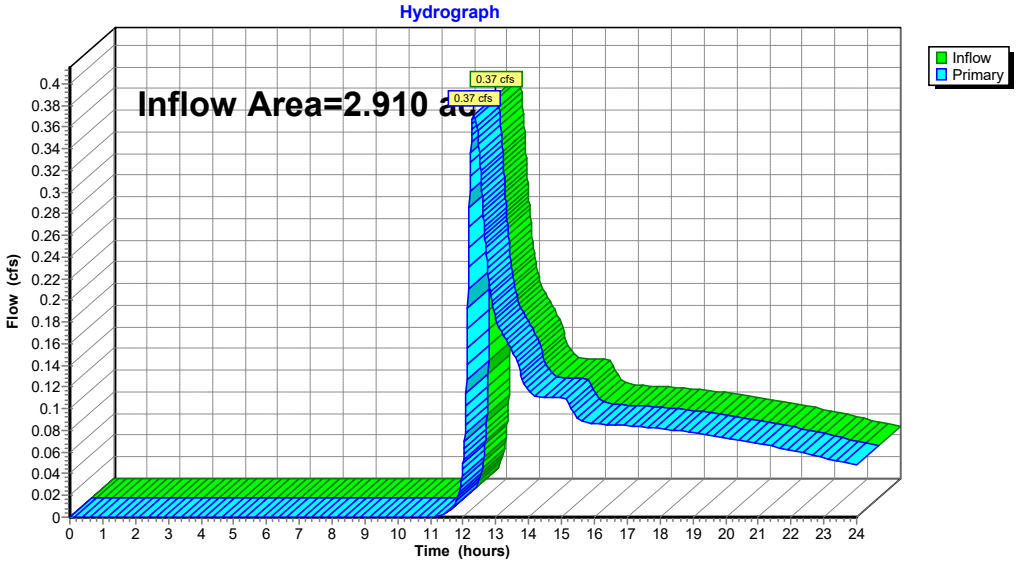


Summary for Link 30L: EX / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 0.41" for 2-Year event
Inflow = 0.37 cfs @ 12.31 hrs, Volume= 0.098 af
Primary = 0.37 cfs @ 12.31 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 30L: EX / E

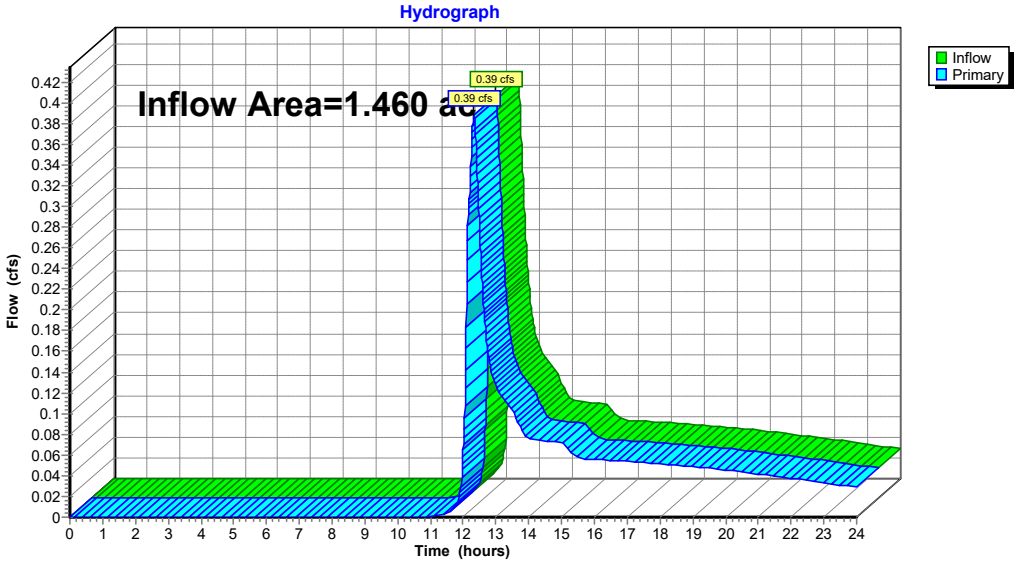


Summary for Link 34L: PR / E

Inflow Area = 1.460 ac, 0.00% Impervious, Inflow Depth > 0.56" for 2-Year event
Inflow = 0.39 cfs @ 12.33 hrs, Volume= 0.069 af
Primary = 0.39 cfs @ 12.33 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 34L: PR / E



Summary for Subcatchment 1S: EXWS-10

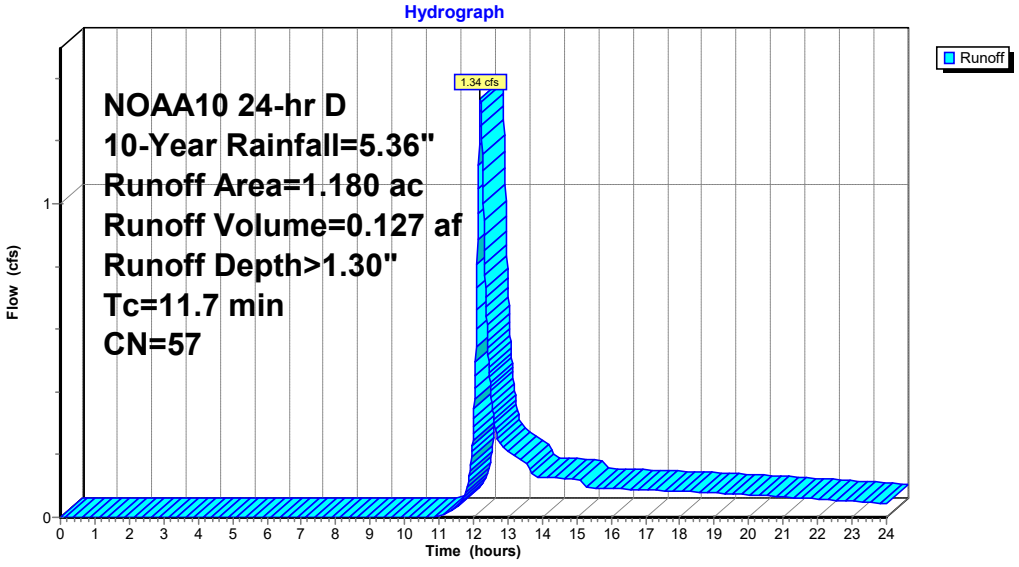
Runoff = 1.34 cfs @ 12.20 hrs, Volume= 0.127 af, Depth> 1.30"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	1.180	57	
	1.180		100.00% Pervious Area

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

Subcatchment 1S: EXWS-10



Summary for Subcatchment 2S: EXWS-11

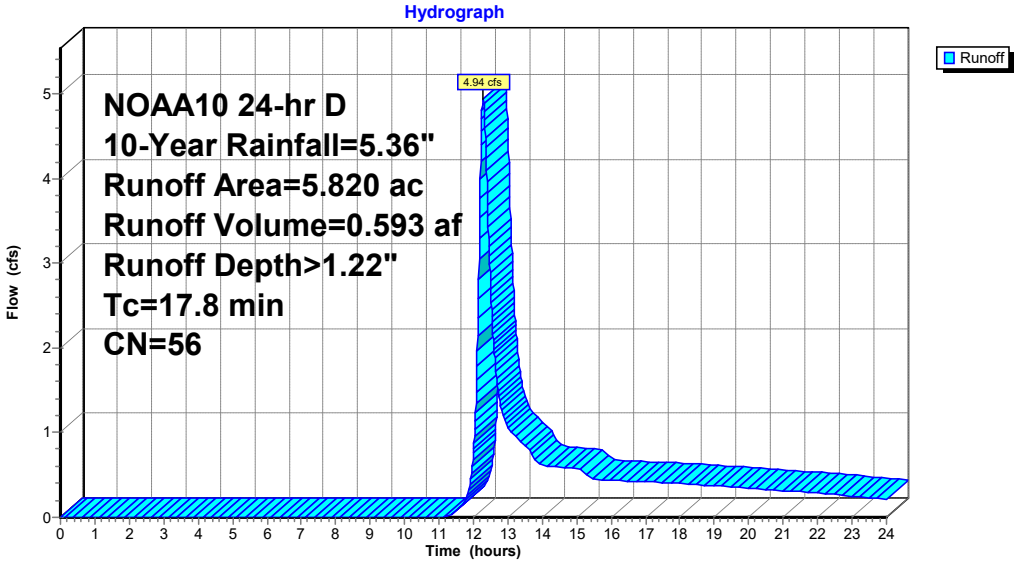
Runoff = 4.94 cfs @ 12.28 hrs, Volume= 0.593 af, Depth> 1.22"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	5.820	56	
	5.820		100.00% Pervious Area

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

Subcatchment 2S: EXWS-11



Summary for Subcatchment 3S: EXWS-12 (Offsite)

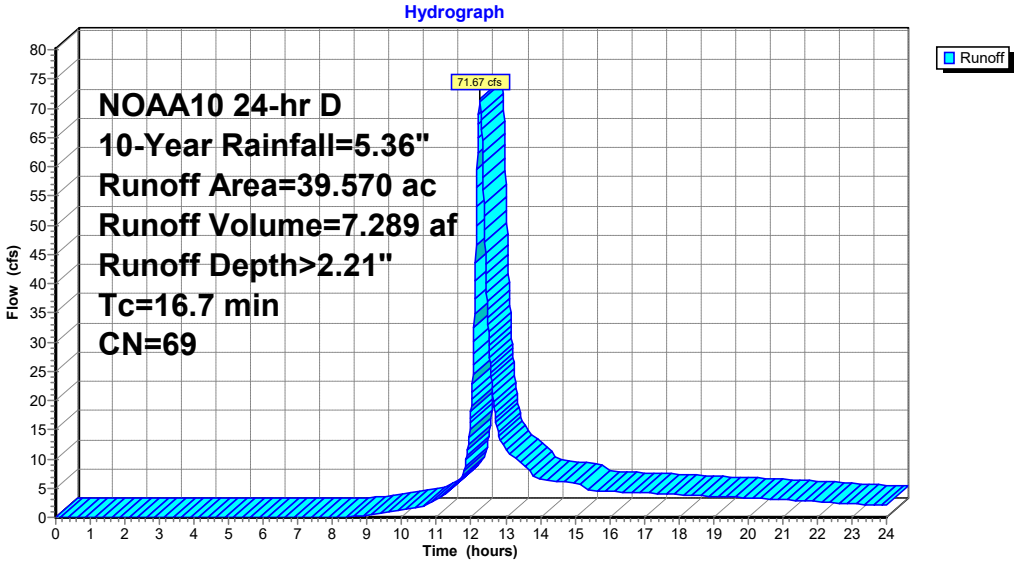
Runoff = 71.67 cfs @ 12.26 hrs, Volume= 7.289 af, Depth> 2.21"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: EXWS-12 (Offsite)



Summary for Subcatchment 5S: EXWS-20

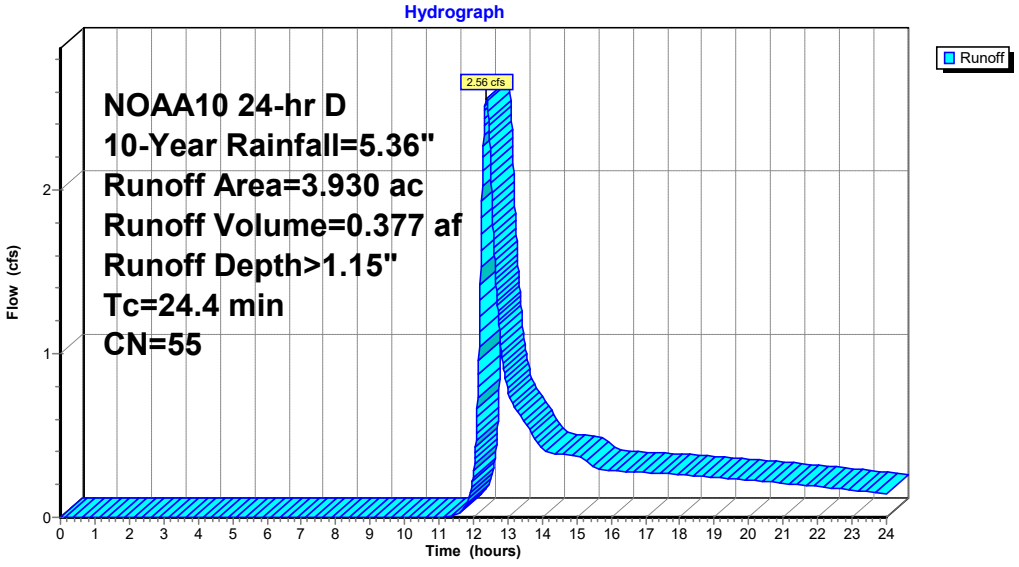
Runoff = 2.56 cfs @ 12.38 hrs, Volume= 0.377 af, Depth> 1.15"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	3.930	55	
	3.930		100.00% Pervious Area

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

Subcatchment 5S: EXWS-20



Summary for Subcatchment 6S: EXWS-21

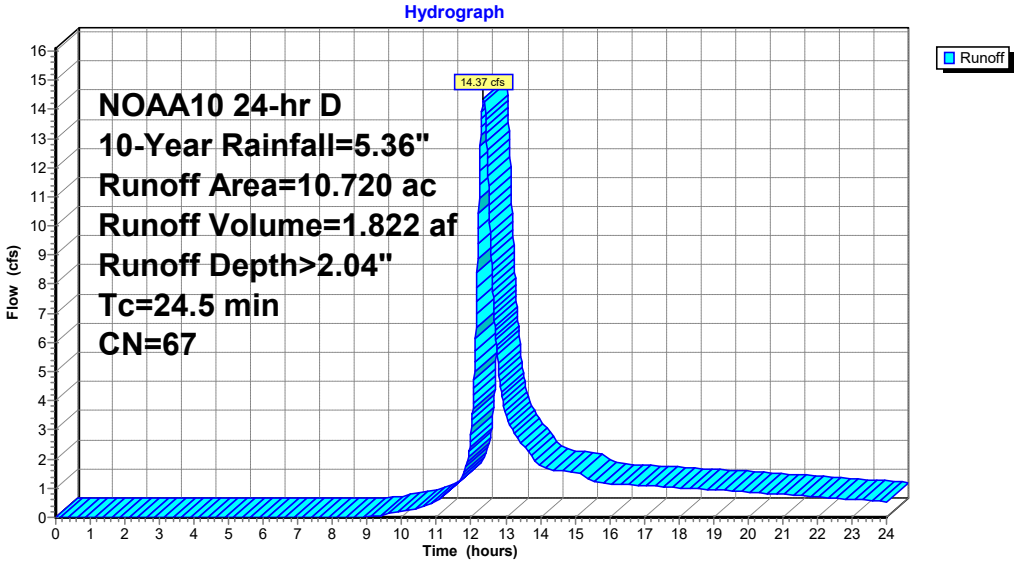
Runoff = 14.37 cfs @ 12.36 hrs, Volume= 1.822 af, Depth> 2.04"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	10.720	67	
	10.720		100.00% Pervious Area

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

Subcatchment 6S: EXWS-21



Summary for Subcatchment 8S: EXWS-30

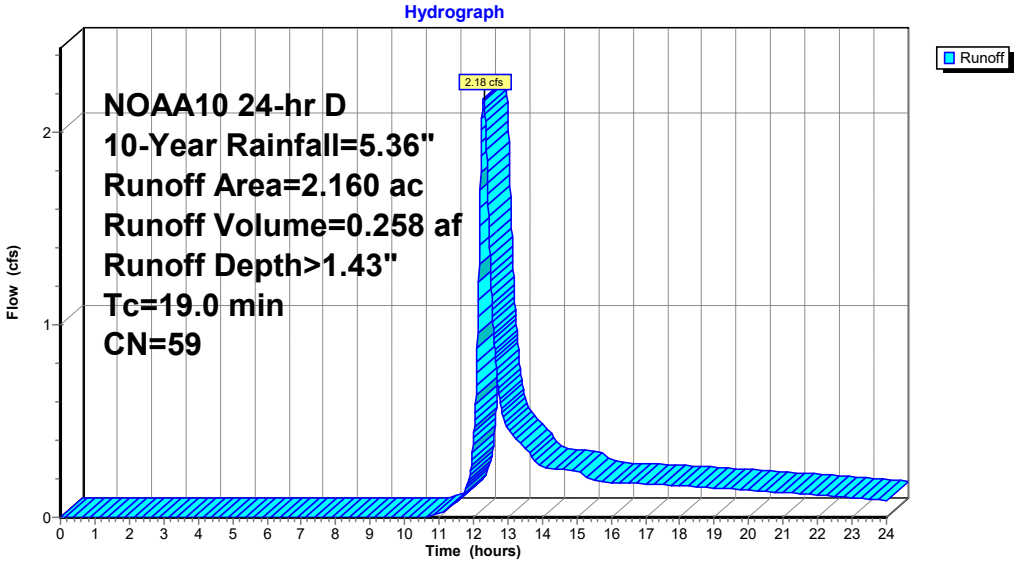
Runoff = 2.18 cfs @ 12.30 hrs, Volume= 0.258 af, Depth> 1.43"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	2.160	59	
	2.160		100.00% Pervious Area

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

Subcatchment 8S: EXWS-30



Summary for Subcatchment 9S: EXWS-31

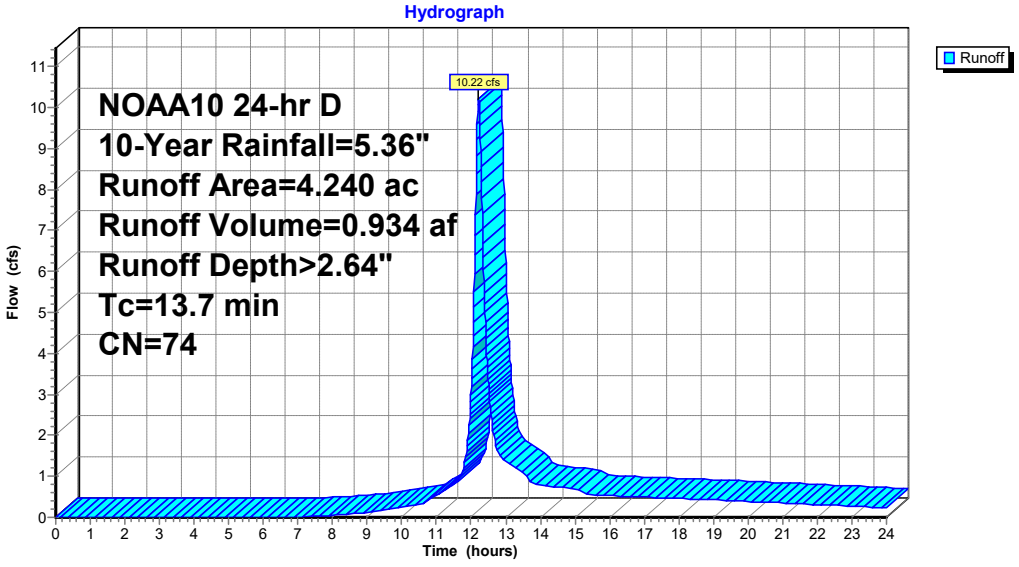
Runoff = 10.22 cfs @ 12.22 hrs, Volume= 0.934 af, Depth> 2.64"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 9S: EXWS-31



Summary for Subcatchment 11S: EXWS-40

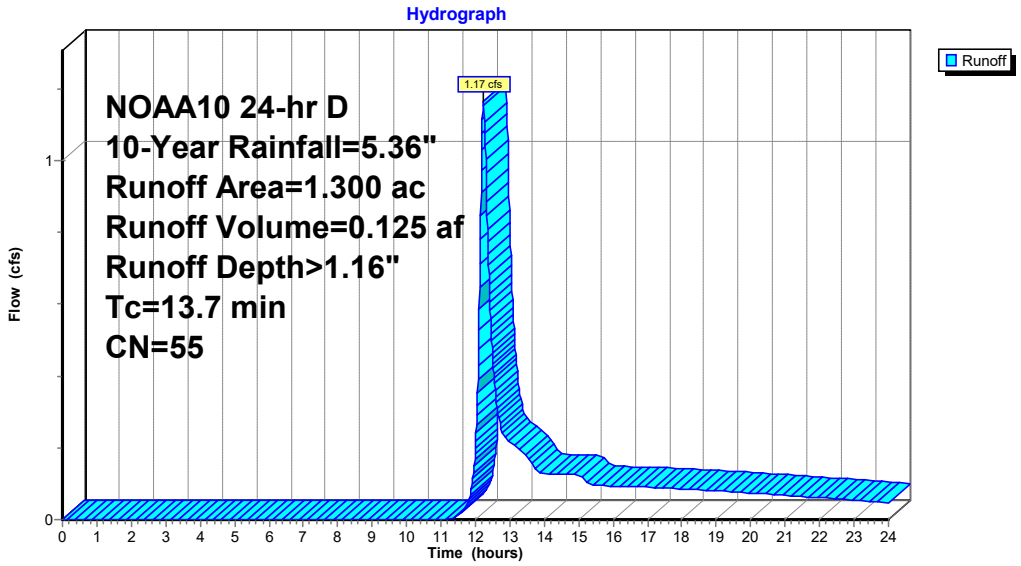
Runoff = 1.17 cfs @ 12.23 hrs, Volume= 0.125 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	1.300	55	
	1.300		100.00% Pervious Area

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

Subcatchment 11S: EXWS-40



Summary for Subcatchment 12S: PRWS-10

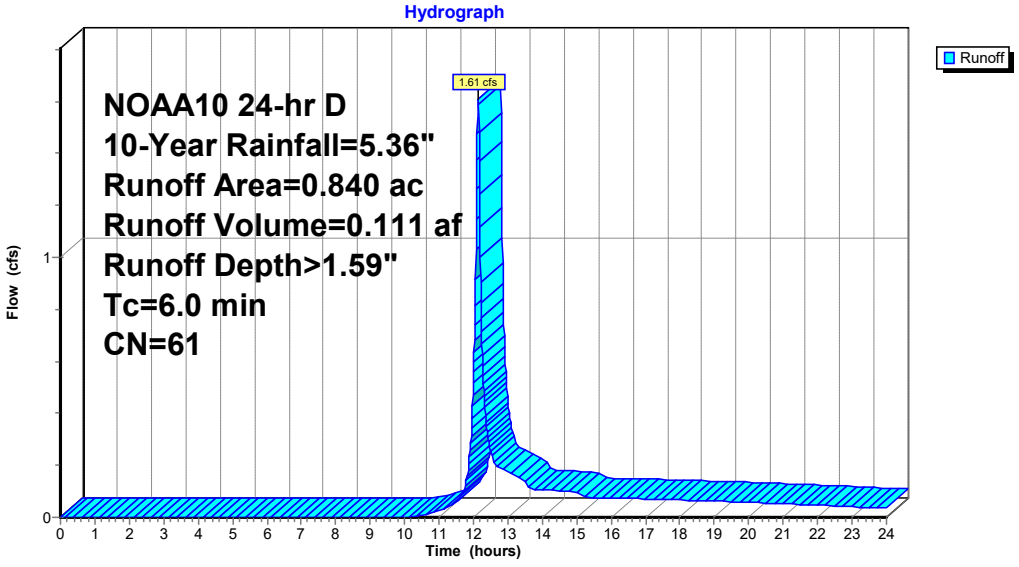
Runoff = 1.61 cfs @ 12.14 hrs, Volume= 0.111 af, Depth> 1.59"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	0.840	61	
	0.840		100.00% Pervious Area

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

Subcatchment 12S: PRWS-10



Summary for Subcatchment 13S: PRWS-11

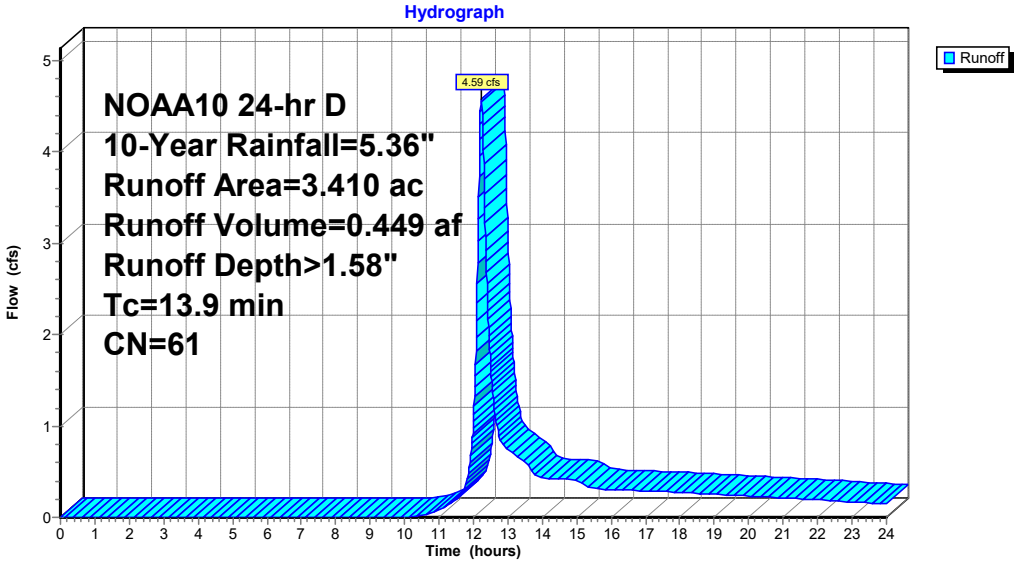
Runoff = 4.59 cfs @ 12.23 hrs, Volume= 0.449 af, Depth> 1.58"
Routed to Pond 35P : UG 110

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	3.410	61	
	3.410		100.00% Pervious Area

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

Subcatchment 13S: PRWS-11



Summary for Subcatchment 14S: EXWS-12 (Offsite)

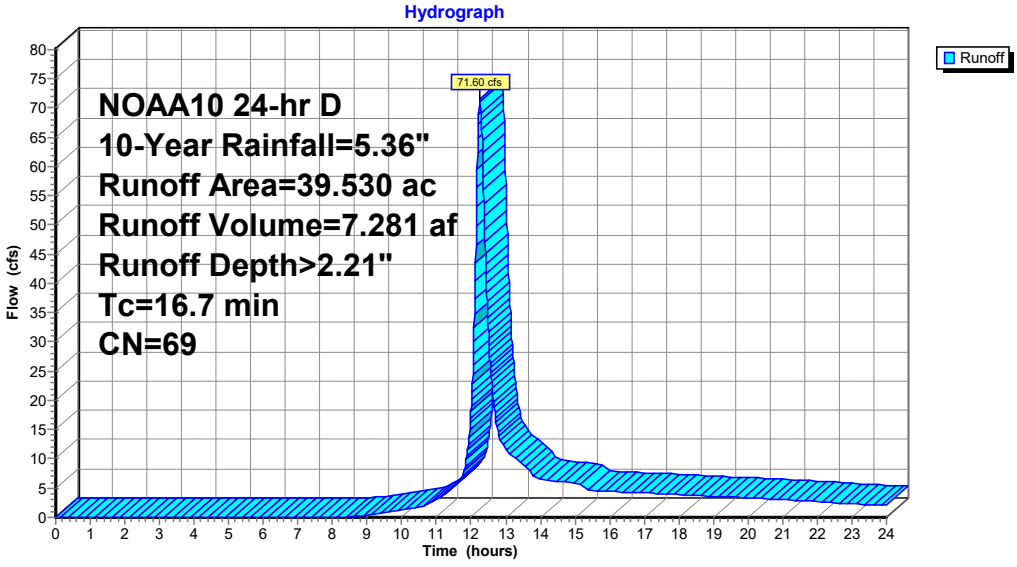
Runoff = 71.60 cfs @ 12.26 hrs, Volume= 7.281 af, Depth> 2.21"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	39.530	69	
	39.530		100.00% Pervious Area

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

Subcatchment 14S: EXWS-12 (Offsite)



Summary for Subcatchment 16S: PRWS-20

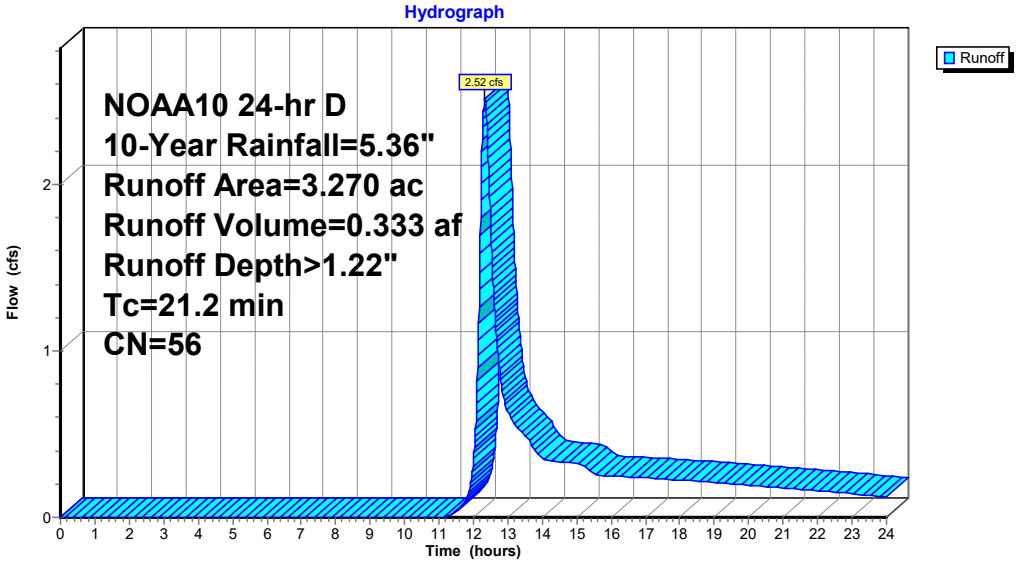
Runoff = 2.52 cfs @ 12.32 hrs, Volume= 0.333 af, Depth> 1.22"
Routed to Link 27L : PR / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	3.270	56	
	3.270		100.00% Pervious Area

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

Subcatchment 16S: PRWS-20



Summary for Subcatchment 17S: PRWS-21

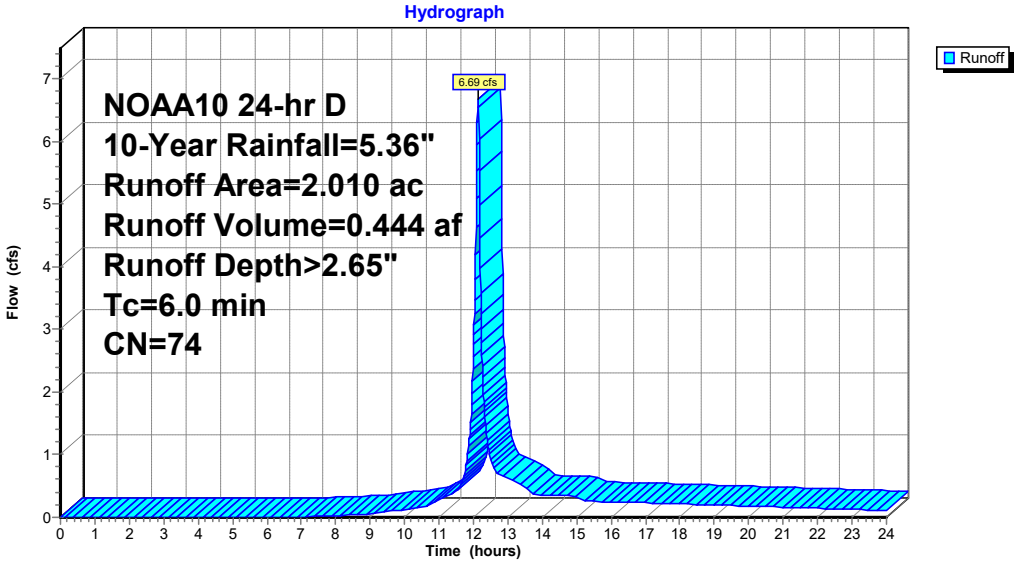
Runoff = 6.69 cfs @ 12.13 hrs, Volume= 0.444 af, Depth> 2.65"
Routed to Pond 37P : DET 210 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	2.010	74	
	2.010		100.00% Pervious Area

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

Subcatchment 17S: PRWS-21



Summary for Subcatchment 18S: PRWS-22

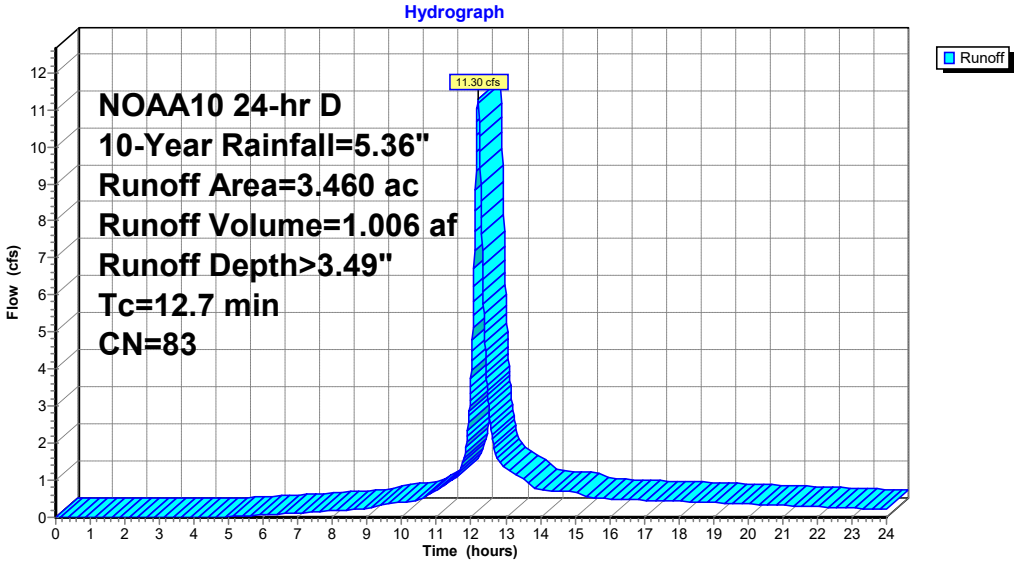
Runoff = 11.30 cfs @ 12.20 hrs, Volume= 1.006 af, Depth> 3.49"
Routed to Pond 36P : DET 220 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	3.460	83	
	3.460		100.00% Pervious Area

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

Subcatchment 18S: PRWS-22



Summary for Subcatchment 19S: PRWS-23

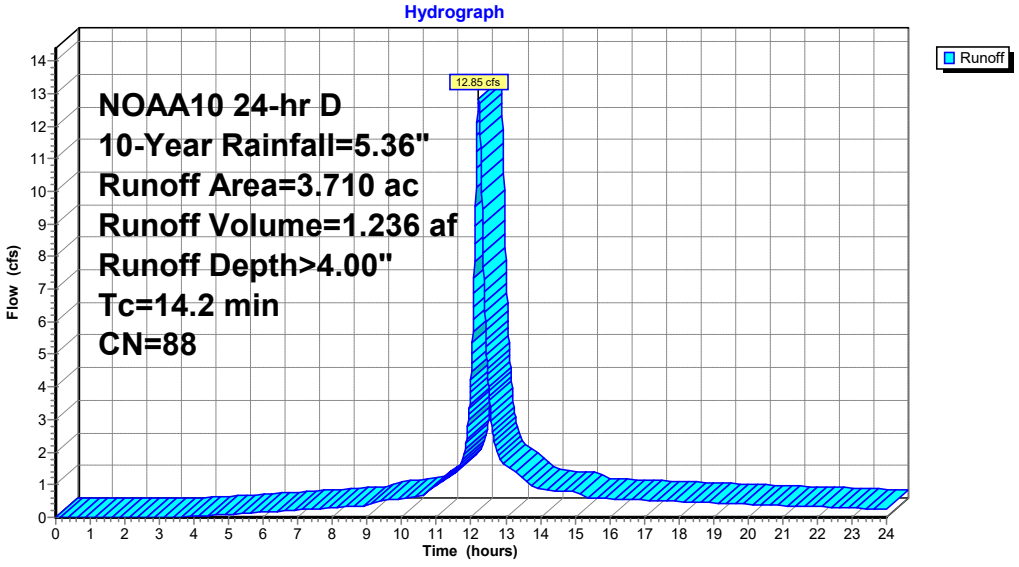
Runoff = 12.85 cfs @ 12.22 hrs, Volume= 1.236 af, Depth> 4.00"
Routed to Pond 22P : DET 230

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	3.710	88	
	3.710		100.00% Pervious Area

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

Subcatchment 19S: PRWS-23



Summary for Subcatchment 23S: PRWS-30

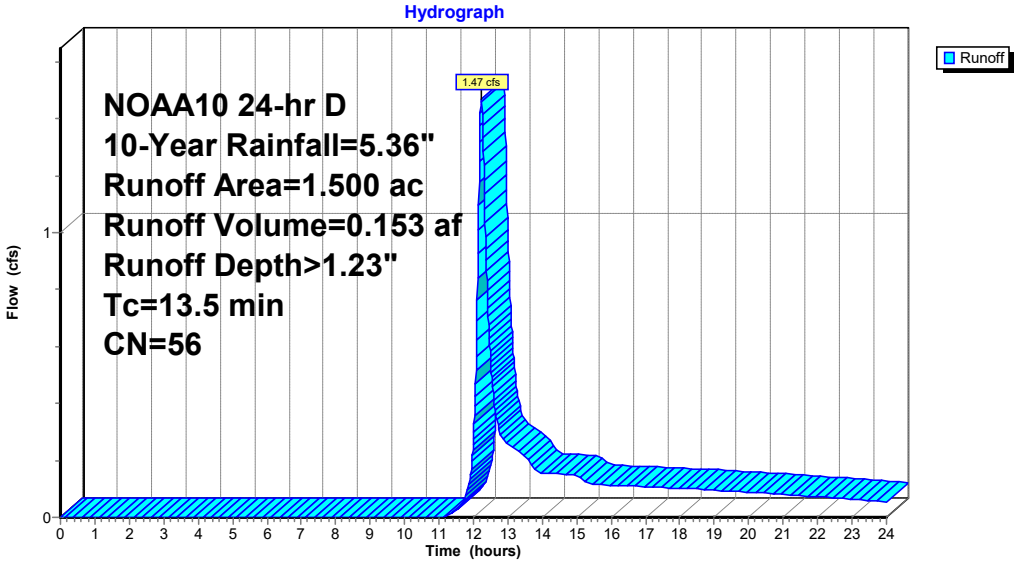
Runoff = 1.47 cfs @ 12.23 hrs, Volume= 0.153 af, Depth> 1.23"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	1.500	56	
	1.500		100.00% Pervious Area

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

Subcatchment 23S: PRWS-30



Summary for Subcatchment 24S: PRWS-31

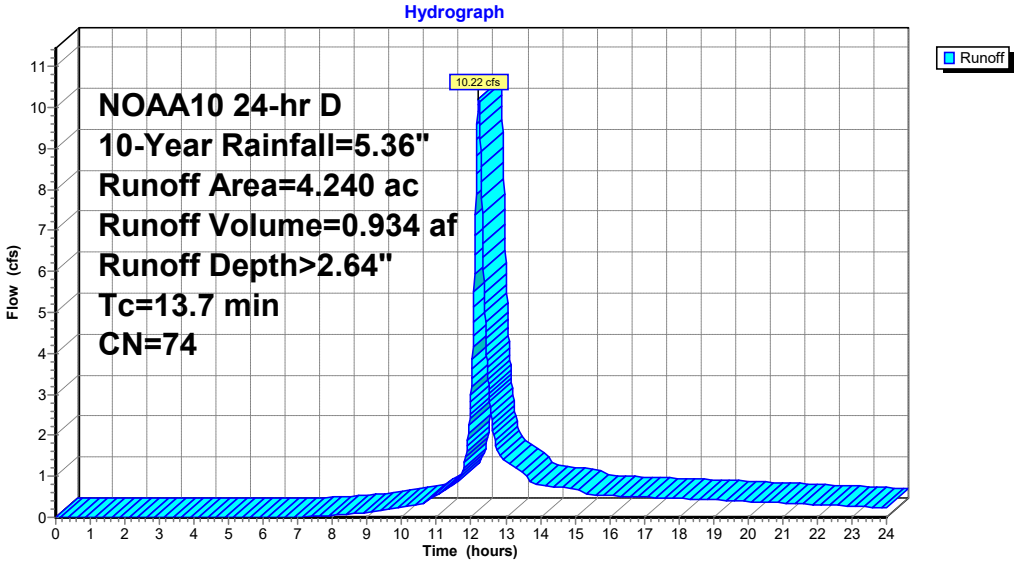
Runoff = 10.22 cfs @ 12.22 hrs, Volume= 0.934 af, Depth> 2.64"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 24S: PRWS-31



Summary for Subcatchment 26S: PRWS-40 / D

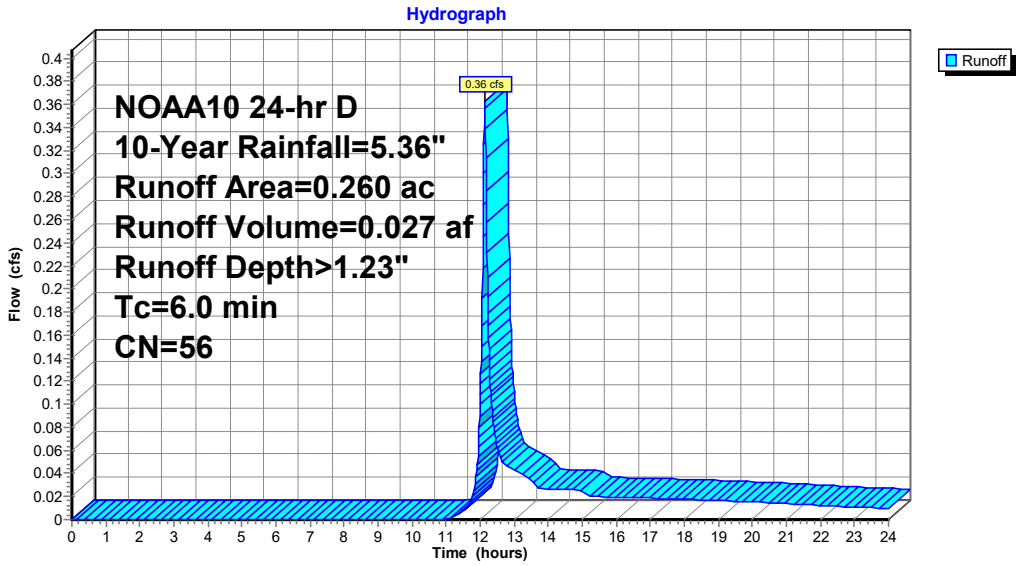
Runoff = 0.36 cfs @ 12.14 hrs, Volume= 0.027 af, Depth> 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	0.260	56	
	0.260		100.00% Pervious Area

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

Subcatchment 26S: PRWS-40 / D



Summary for Subcatchment 28S: EXWS-50

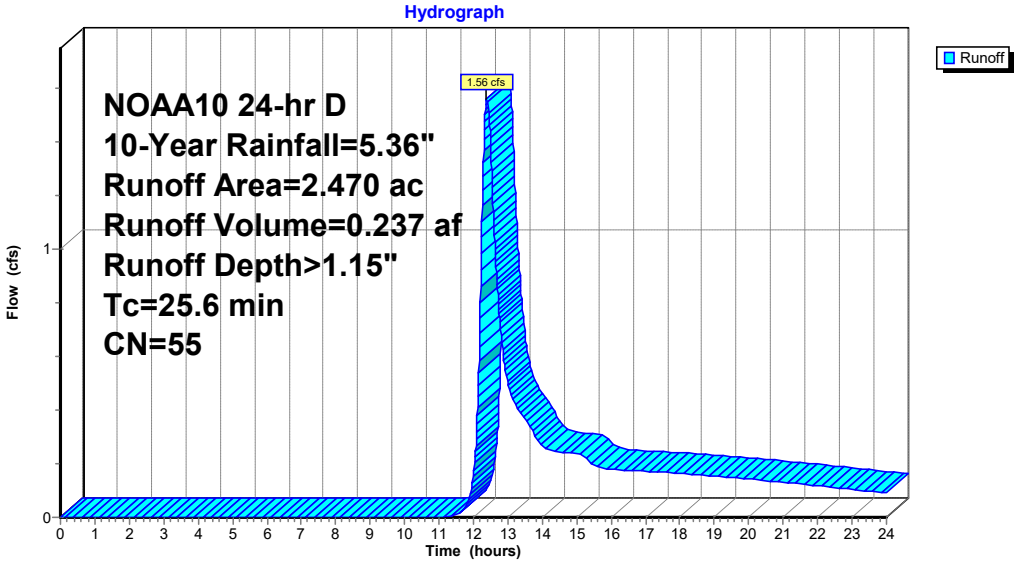
Runoff = 1.56 cfs @ 12.38 hrs, Volume= 0.237 af, Depth> 1.15"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	2.470	55	
	2.470		100.00% Pervious Area

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

Subcatchment 28S: EXWS-50



Summary for Subcatchment 29S: EXWS-51

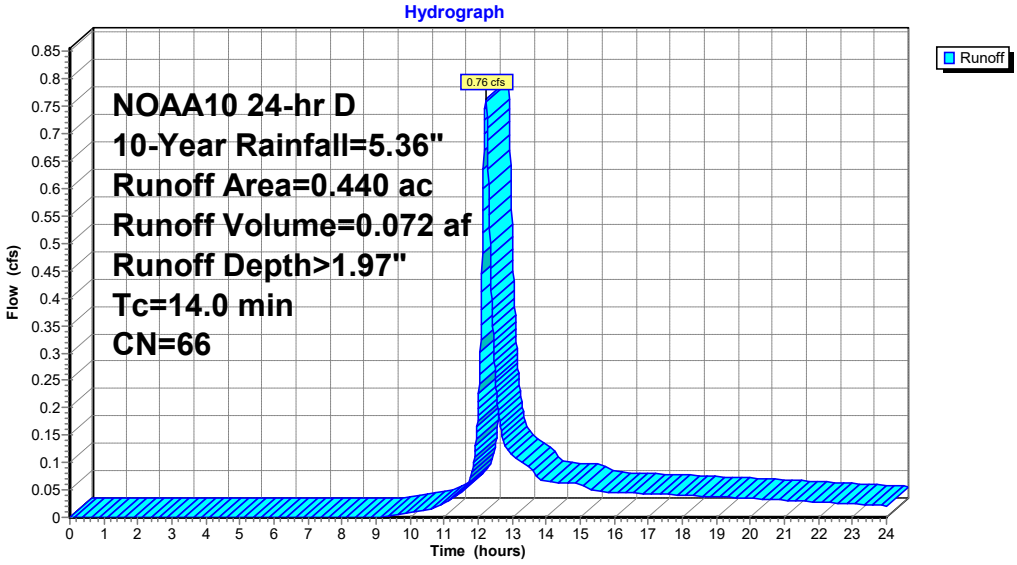
Runoff = 0.76 cfs @ 12.22 hrs, Volume= 0.072 af, Depth> 1.97"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 29S: EXWS-51



Summary for Subcatchment 31S: PRWS-221

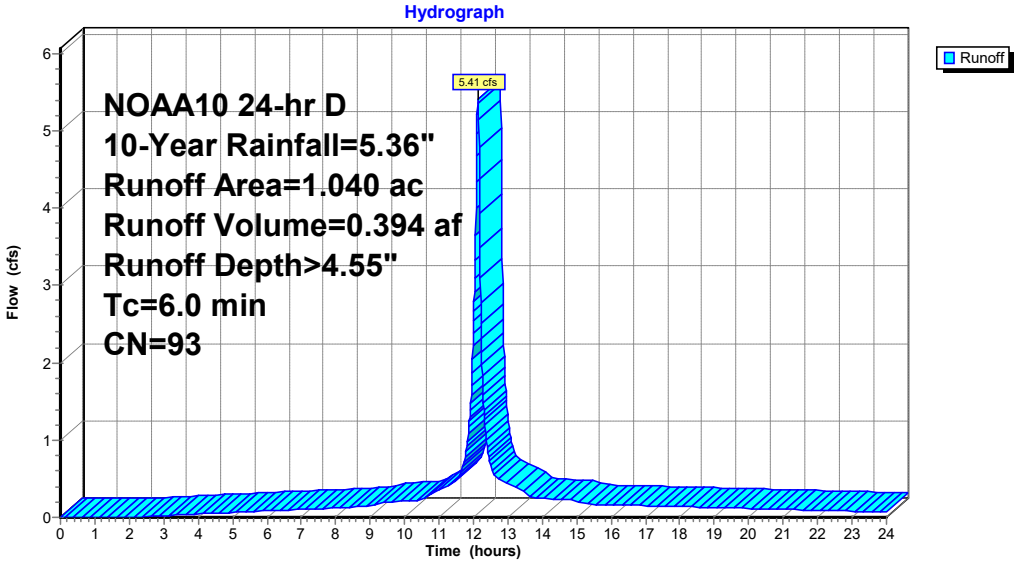
Runoff = 5.41 cfs @ 12.13 hrs, Volume= 0.394 af, Depth> 4.55"
Routed to Pond 33P : UG 221

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	1.040	93	
	1.040		100.00% Pervious Area

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

Subcatchment 31S: PRWS-221



Summary for Subcatchment 32S: PRWS-51

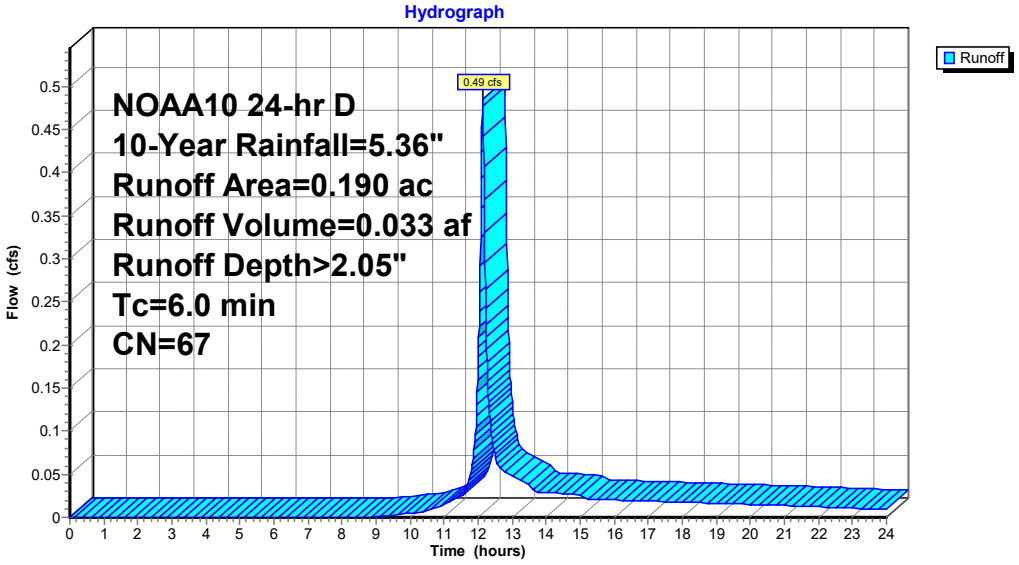
Runoff = 0.49 cfs @ 12.13 hrs, Volume= 0.033 af, Depth> 2.05"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	0.190	67	
	0.190		100.00% Pervious Area

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

Subcatchment 32S: PRWS-51



Summary for Subcatchment 33S: PRWS-50

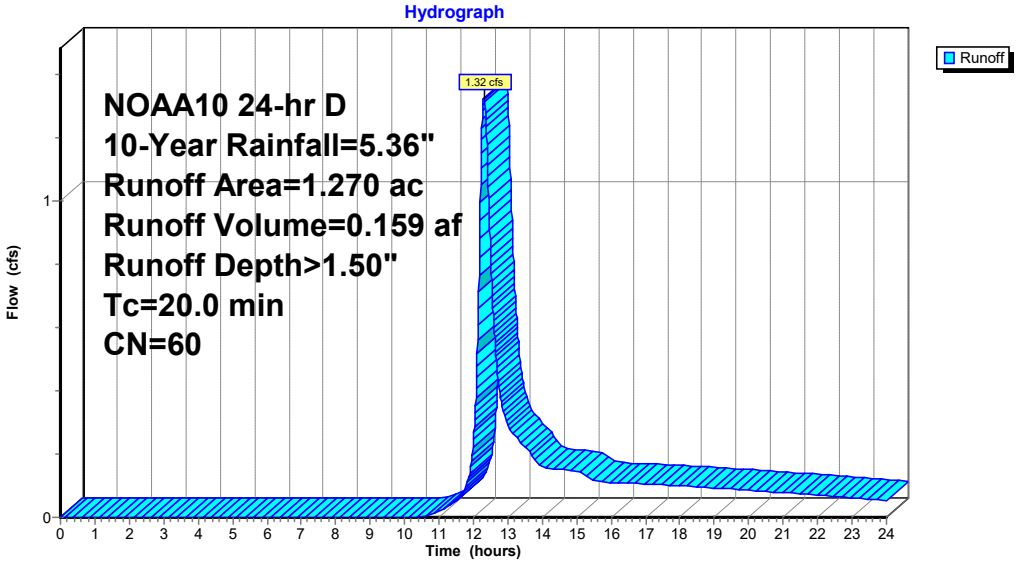
Runoff = 1.32 cfs @ 12.31 hrs, Volume= 0.159 af, Depth> 1.50"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	1.270	60	
	1.270		100.00% Pervious Area

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

Subcatchment 33S: PRWS-50



Summary for Subcatchment 35S: PRWS-52

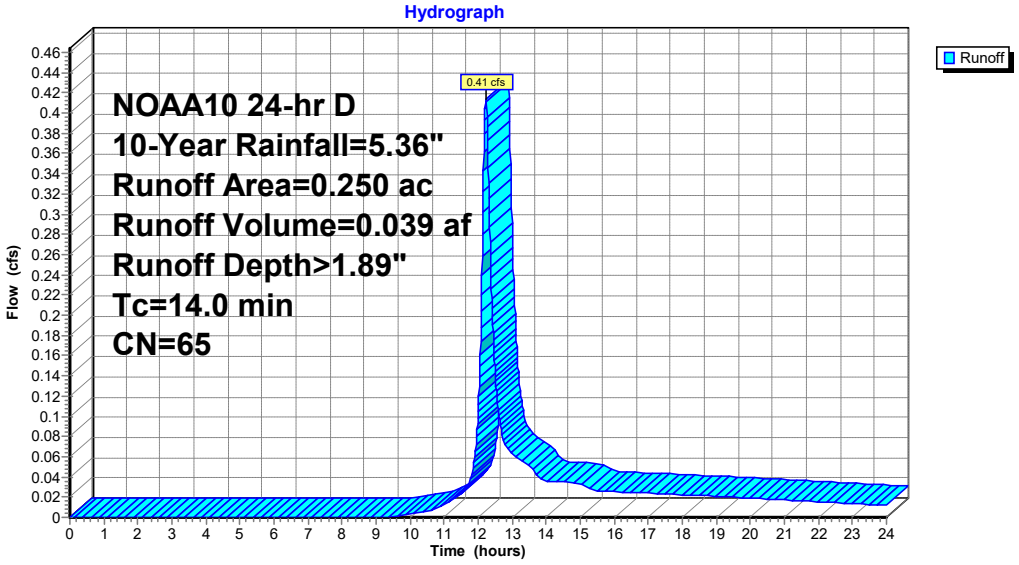
Runoff = 0.41 cfs @ 12.22 hrs, Volume= 0.039 af, Depth> 1.89"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	0.250	65	
	0.250		100.00% Pervious Area

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

Subcatchment 35S: PRWS-52



Summary for Subcatchment 36S: PRWS-222

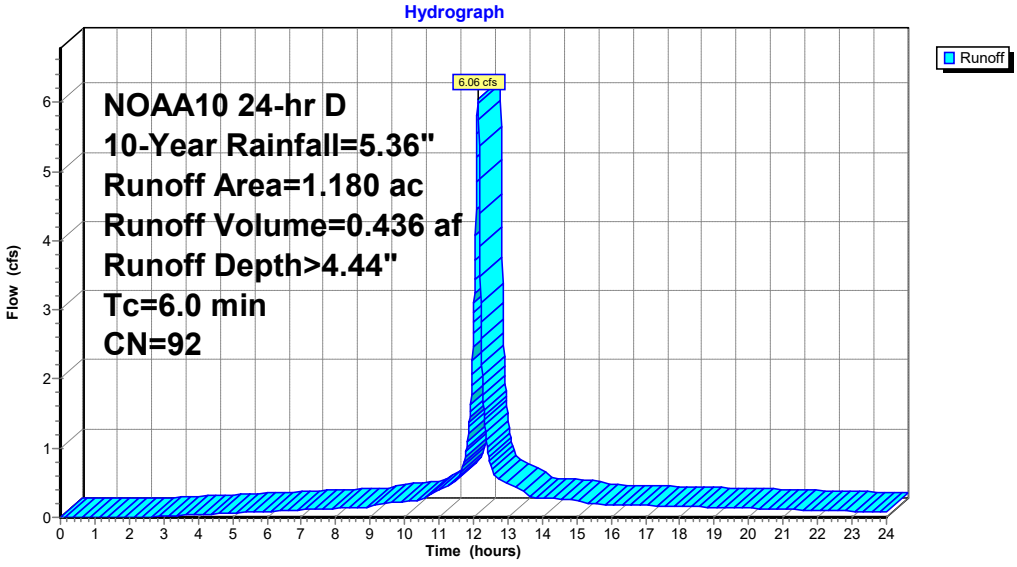
Runoff = 6.06 cfs @ 12.13 hrs, Volume= 0.436 af, Depth> 4.44"
Routed to Pond 41P : UG 222

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	1.180	92	
	1.180		100.00% Pervious Area

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

Subcatchment 36S: PRWS-222



Summary for Subcatchment 37S: PRWS-223

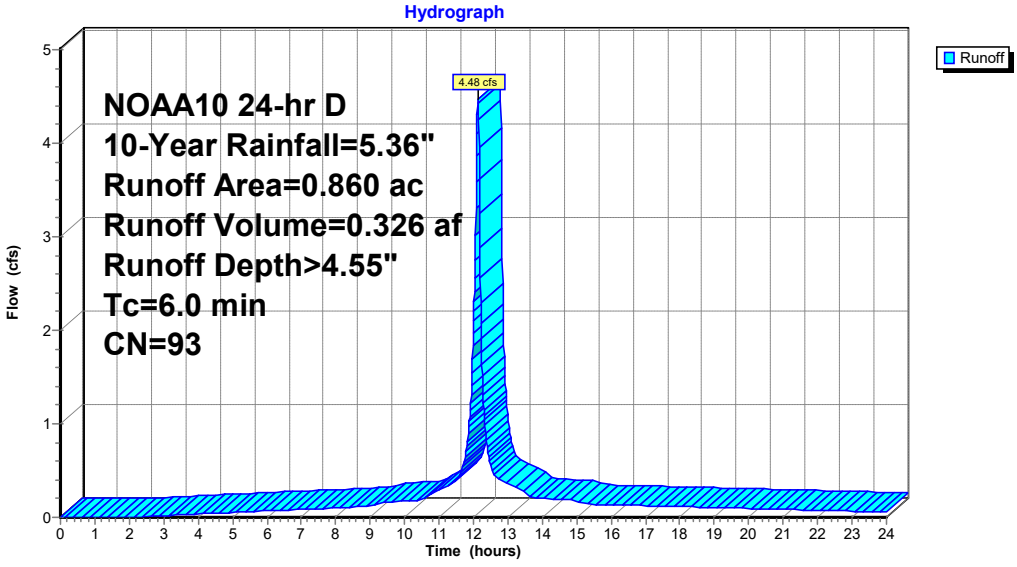
Runoff = 4.48 cfs @ 12.13 hrs, Volume= 0.326 af, Depth> 4.55"
Routed to Pond 42P : UG 223

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	0.860	93	
	0.860		100.00% Pervious Area

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

Subcatchment 37S: PRWS-223



Summary for Subcatchment 38S: PRWS-224

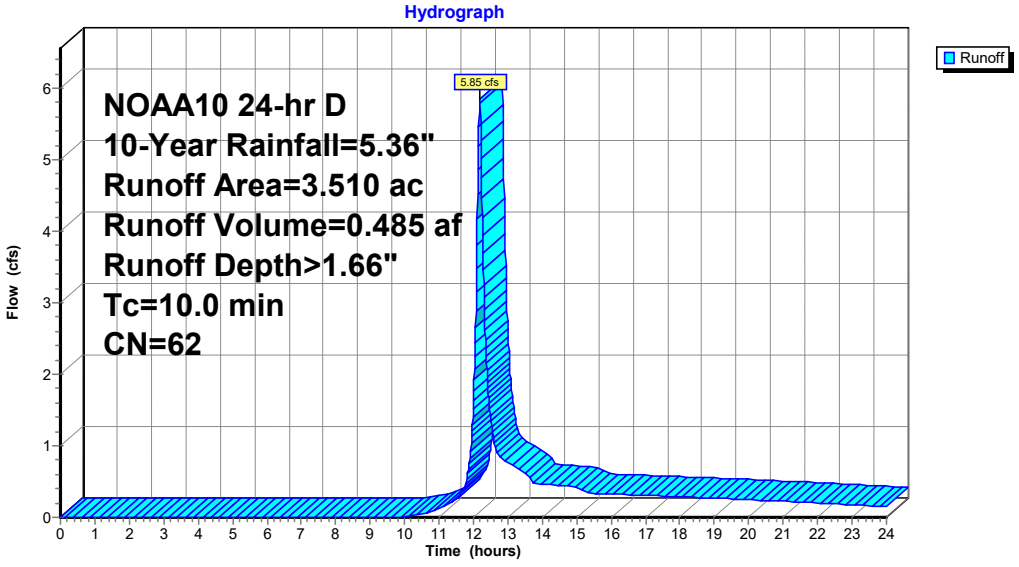
Runoff = 5.85 cfs @ 12.18 hrs, Volume= 0.485 af, Depth> 1.66"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	3.510	62	
	3.510		100.00% Pervious Area

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

Subcatchment 38S: PRWS-224



Summary for Subcatchment 39S: PRWS-225

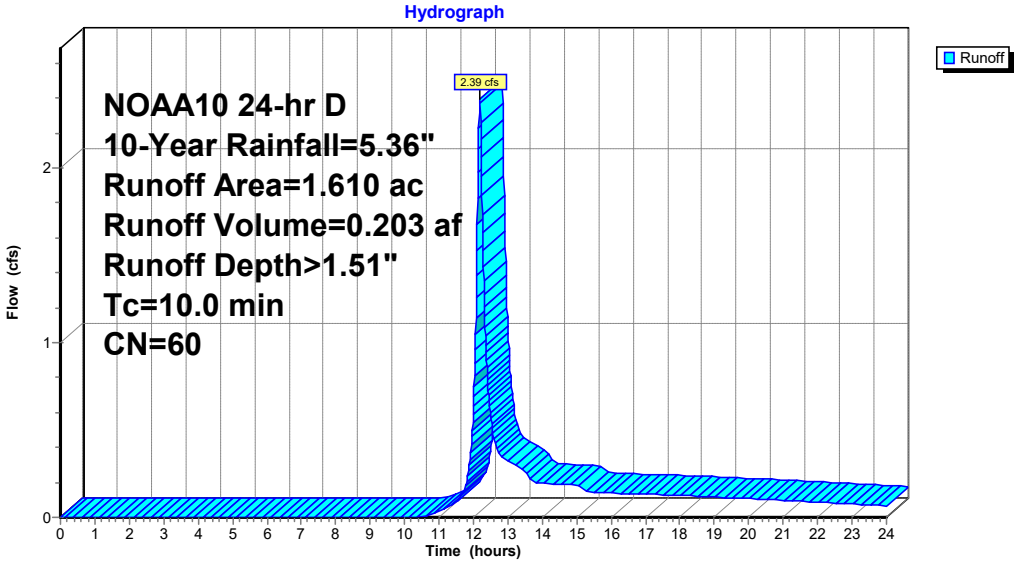
Runoff = 2.39 cfs @ 12.18 hrs, Volume= 0.203 af, Depth> 1.51"
Routed to Pond 44P : UG 225

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	1.610	60	
	1.610		100.00% Pervious Area

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

Subcatchment 39S: PRWS-225



Summary for Pond 22P: DET 230

Inflow Area = 3.710 ac, 0.00% Impervious, Inflow Depth > 4.00" for 10-Year event
Inflow = 12.85 cfs @ 12.22 hrs, Volume= 1.236 af
Outflow = 3.15 cfs @ 12.57 hrs, Volume= 1.197 af, Atten= 75%, Lag= 20.8 min
Primary = 3.15 cfs @ 12.57 hrs, Volume= 1.197 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 71.90' Surf.Area= 7,535 sf Storage= 12,410 cf
Peak Elev= 73.82' @ 12.57 hrs Surf.Area= 9,730 sf Storage= 28,915 cf (16,505 cf above start)

Plug-Flow detention time= 243.8 min calculated for 0.912 af (74% of inflow)
Center-of-Mass det. time= 63.4 min (880.5 - 817.2)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	53,127 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

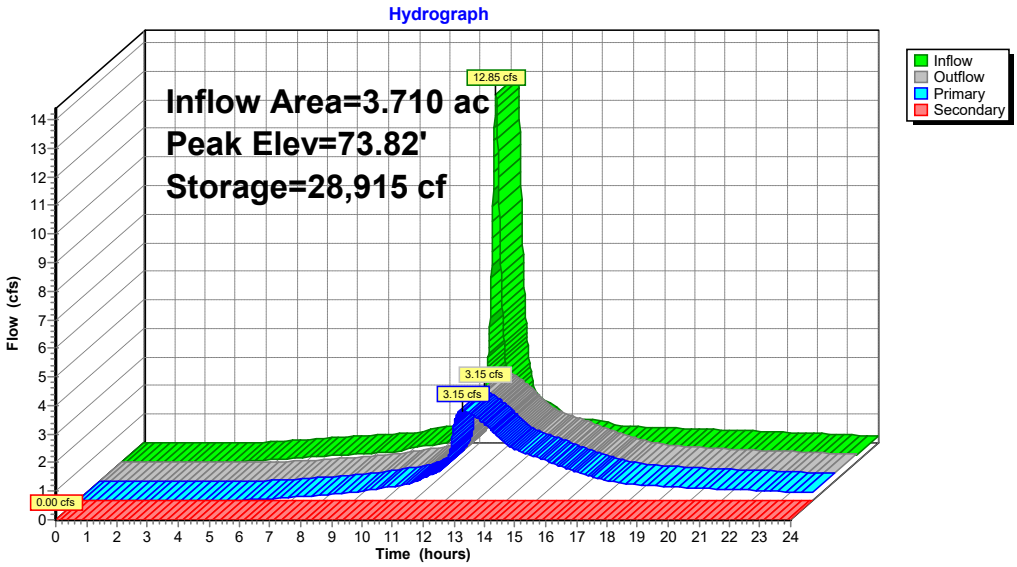
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
70.00	5,565	0	0	5,565
71.00	6,577	6,064	6,064	6,614
72.00	7,646	7,105	13,169	7,724
73.00	8,771	8,202	21,371	8,894
74.00	9,953	9,356	30,727	10,125
75.00	11,192	10,566	41,293	11,416
76.00	12,487	11,834	53,127	12,767

Device	Routing	Invert	Outlet Devices
#1	Primary	66.50'	**15.0" Round Culvert** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.50' / 59.00' S= 0.1042 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	71.90'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	73.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	74.00'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	75.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=3.15 cfs @ 12.57 hrs HW=73.82' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.15 cfs of 12.07 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 2.44 cfs @ 6.21 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.71 cfs @ 3.62 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=71.90' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 22P: DET 230



Summary for Pond 33P: UG 221

Inflow Area = 1.040 ac, 0.00% Impervious, Inflow Depth > 4.55" for 10-Year event
Inflow = 5.41 cfs @ 12.13 hrs, Volume= 0.394 af
Outflow = 2.61 cfs @ 12.22 hrs, Volume= 0.390 af, Atten= 52%, Lag= 5.2 min
Primary = 2.61 cfs @ 12.22 hrs, Volume= 0.390 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 91.77' @ 12.22 hrs Surf.Area= 0.032 ac Storage= 0.071 af

Plug-Flow detention time= 26.4 min calculated for 0.390 af (99% of inflow)
Center-of-Mass det. time= 19.9 min (805.1 - 785.1)

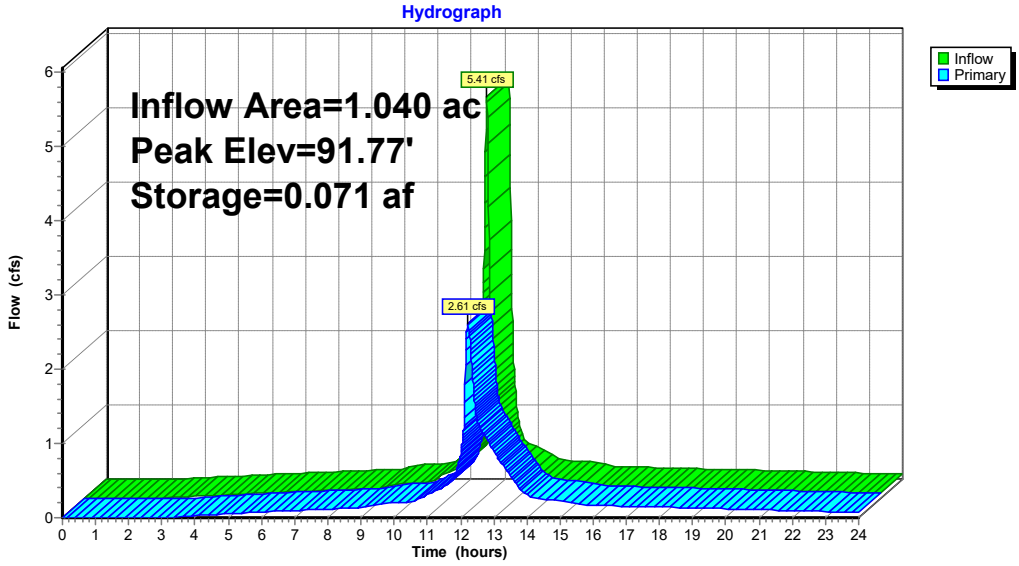
Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	0.007 af	**8.80'W x 160.00'L x 4.00'H Field A** 0.129 af Overall - 0.112 af Embedded = 0.018 af x 40.0% Voids
#2A	89.00'	0.086 af	**Concrete Galley 4x8x4** x 40 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 40 Chambers in 2 Rows
		0.093 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.00'	**24.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.00' / 85.60' S= 0.0069 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	89.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.61 cfs @ 12.22 hrs HW=91.77' TW=76.15' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.61 cfs of 33.04 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.50 cfs @ 7.65 fps)
├─**3=Orifice/Grate** (Orifice Controls 1.11 cfs @ 3.19 fps)
└─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33P: UG 221



Summary for Pond 35P: UG 110

Inflow Area = 3.410 ac, 0.00% Impervious, Inflow Depth > 1.58" for 10-Year event
Inflow = 4.59 cfs @ 12.23 hrs, Volume= 0.449 af
Outflow = 2.37 cfs @ 12.41 hrs, Volume= 0.445 af, Atten= 48%, Lag= 10.9 min
Discarded = 0.02 cfs @ 12.03 hrs, Volume= 0.015 af
Primary = 2.35 cfs @ 12.41 hrs, Volume= 0.429 af
Routed to Link 15L : PR / A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 62.87' @ 12.41 hrs Surf.Area= 2,016 sf Storage= 2,883 cf

Plug-Flow detention time= 18.3 min calculated for 0.444 af (99% of inflow)
Center-of-Mass det. time= 12.6 min (926.7 - 914.1)

Volume	Invert	Avail.Storage	Storage Description
#1	61.20'	3,168 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	61.70'	2,880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		6,048 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.20	1,056	0	0
64.20	1,056	3,168	3,168

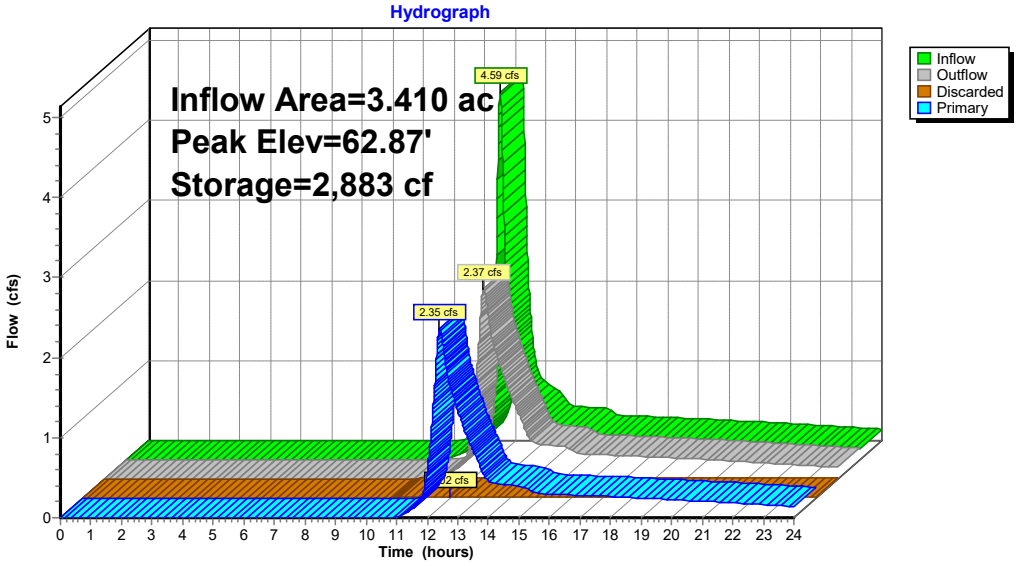
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.70	960	0	0
64.70	960	2,880	2,880

Device	Routing	Invert	Outlet Devices
#1	Discarded	61.20'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	61.10'	**18.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 61.10' / 60.90' S= 0.0077 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#3	Device 2	61.20'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	62.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	64.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.02 cfs @ 12.03 hrs HW=61.70' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=2.35 cfs @ 12.41 hrs HW=62.87' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 2.35 cfs of 7.88 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 1.94 cfs @ 5.56 fps)
  ├**4=Orifice/Grate** (Orifice Controls 0.41 cfs @ 2.07 fps)
  └**5=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 35P: UG 110



Summary for Pond 36P: DET 220 OG

Inflow Area = 11.910 ac, 0.00% Impervious, Inflow Depth > 2.90" for 10-Year event
Inflow = 23.91 cfs @ 12.21 hrs, Volume= 2.874 af
Outflow = 19.46 cfs @ 12.30 hrs, Volume= 2.430 af, Atten= 19%, Lag= 5.3 min
Discarded = 0.68 cfs @ 12.30 hrs, Volume= 0.881 af
Primary = 18.78 cfs @ 12.30 hrs, Volume= 1.549 af
Routed to Pond 37P : DET 210 OG
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 76.31' @ 12.30 hrs Surf.Area= 9,445 sf Storage= 25,570 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 36.3 min (881.6 - 845.3)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	43,165 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	6,115	0	0
74.00	7,054	6,585	6,585
75.00	8,050	7,552	14,137
76.00	9,103	8,577	22,713
77.00	10,212	9,658	32,371
78.00	11,377	10,795	43,165

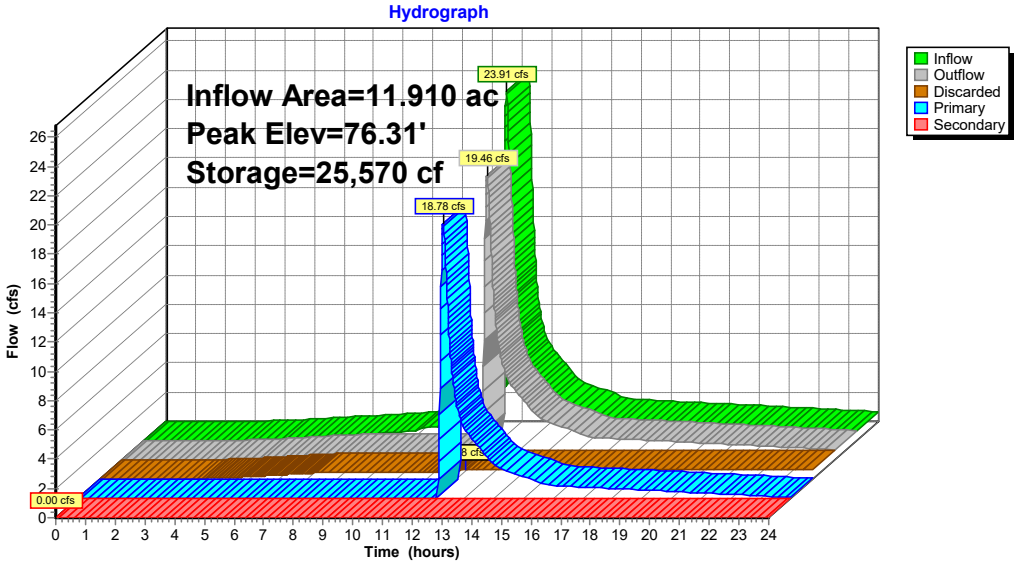
Device	Routing	Invert	Outlet Devices
#1	Discarded	73.00'	**3.100 in/hr Exfiltration over Surface area**
#2	Primary	75.60'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Secondary	77.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.68 cfs @ 12.30 hrs HW=76.31' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.68 cfs)

Primary OutFlow Max=18.77 cfs @ 12.30 hrs HW=76.31' TW=73.26' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 18.77 cfs @ 2.19 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 36P: DET 220 OG



Summary for Pond 37P: DET 210 OG

Inflow Area = 13.920 ac, 0.00% Impervious, Inflow Depth > 1.72" for 10-Year event
Inflow = 20.65 cfs @ 12.29 hrs, Volume= 1.993 af
Outflow = 4.70 cfs @ 13.24 hrs, Volume= 1.980 af, Atten= 77%, Lag= 56.6 min
Primary = 4.70 cfs @ 13.24 hrs, Volume= 1.980 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 74.29' @ 13.24 hrs Surf.Area= 15,406 sf Storage= 25,816 cf

Plug-Flow detention time= 62.6 min calculated for 1.980 af (99% of inflow)
Center-of-Mass det. time= 58.8 min (920.7 - 861.9)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	92,201 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

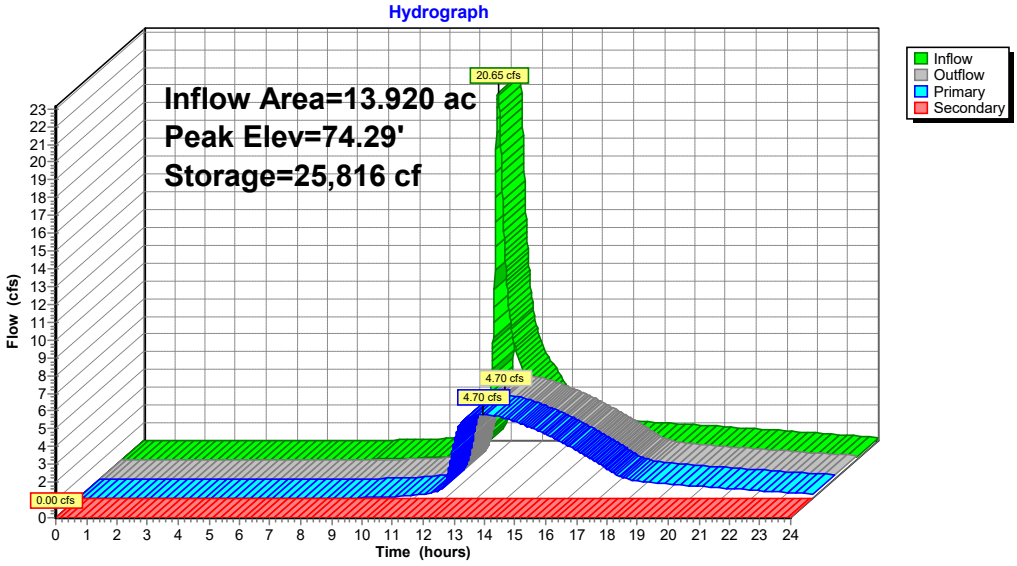
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
72.00	2,507	0	0	2,507
73.00	13,430	7,247	7,247	13,434
74.00	14,957	14,187	21,433	15,018
75.00	16,541	15,742	37,176	16,663
76.00	21,175	18,810	55,986	21,323
77.00	23,044	22,103	78,089	23,265
77.60	24,000	14,112	92,201	24,275

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	72.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	76.30'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Secondary	76.70'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=4.70 cfs @ 13.24 hrs HW=74.29' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 4.70 cfs of 5.79 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 4.70 cfs @ 6.73 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=72.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 37P: DET 210 OG



Summary for Pond 41P: UG 222

Inflow Area = 1.180 ac, 0.00% Impervious, Inflow Depth > 4.44" for 10-Year event
Inflow = 6.06 cfs @ 12.13 hrs, Volume= 0.436 af
Outflow = 4.18 cfs @ 12.18 hrs, Volume= 0.432 af, Atten= 31%, Lag= 3.3 min
Primary = 4.18 cfs @ 12.18 hrs, Volume= 0.432 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 91.05' @ 12.18 hrs Surf.Area= 0.036 ac Storage= 0.064 af

Plug-Flow detention time= 24.8 min calculated for 0.432 af (99% of inflow)
Center-of-Mass det. time= 18.0 min (808.9 - 790.8)

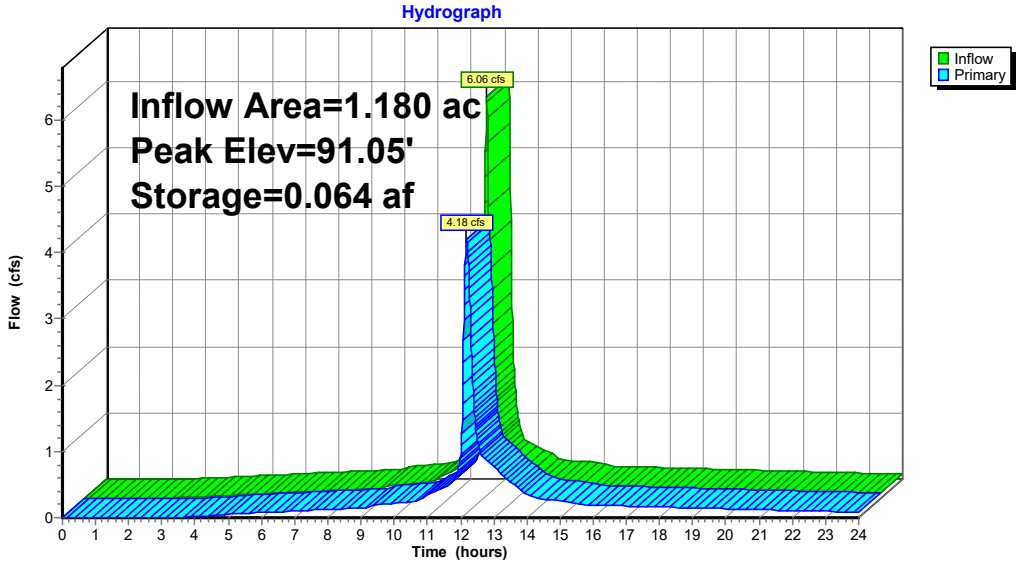
Volume	Invert	Avail.Storage	Storage Description
#1A	88.80'	0.008 af	**8.80'W x 176.00'L x 4.00'H Field A** 0.142 af Overall - 0.123 af Embedded = 0.019 af x 40.0% Voids
#2A	88.80'	0.095 af	**Concrete Galley 4x8x4** x 44 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 44 Chambers in 2 Rows
		0.102 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**18.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 88.30' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	88.80'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.80'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=4.18 cfs @ 12.18 hrs HW=91.05' TW=75.98' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.18 cfs of 9.25 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.34 cfs @ 6.81 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 2.84 cfs @ 4.07 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 41P: UG 222



Summary for Pond 42P: UG 223

Inflow Area = 0.860 ac, 0.00% Impervious, Inflow Depth > 4.55" for 10-Year event
Inflow = 4.48 cfs @ 12.13 hrs, Volume= 0.326 af
Outflow = 3.24 cfs @ 12.18 hrs, Volume= 0.326 af, Atten= 28%, Lag= 3.1 min
Primary = 3.24 cfs @ 12.18 hrs, Volume= 0.326 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 90.95' @ 12.18 hrs Surf.Area= 0.016 ac Storage= 0.032 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.2 min (789.3 - 785.1)

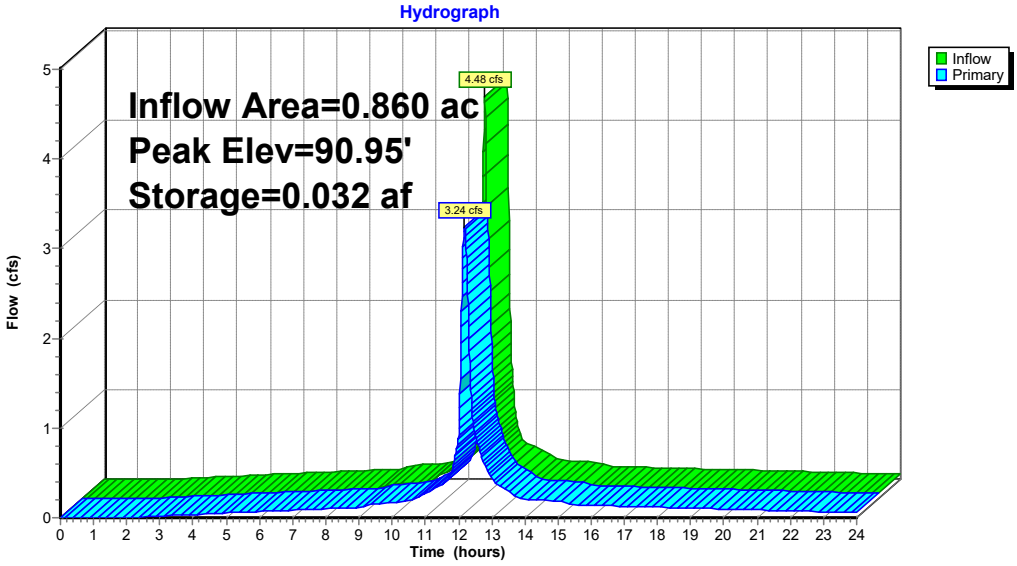
Volume	Invert	Avail.Storage	Storage Description
#1A	88.50'	0.004 af	**8.80'W x 80.00'L x 4.00'H Field A** 0.065 af Overall - 0.056 af Embedded = 0.009 af x 40.0% Voids
#2A	88.50'	0.043 af	**Concrete Galley 4x8x4** x 20 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 20 Chambers in 2 Rows
		0.046 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.00'	**12.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.00' / 86.50' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	88.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.24 cfs @ 12.18 hrs HW=90.95' TW=75.96' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.24 cfs of 5.84 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.46 cfs @ 7.46 fps)
├─**3=Orifice/Grate** (Orifice Controls 1.78 cfs @ 5.09 fps)
└─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 42P: UG 223



Summary for Pond 43P: UG 224

Inflow Area = 3.760 ac, 0.00% Impervious, Inflow Depth > 1.67" for 10-Year event
Inflow = 6.23 cfs @ 12.18 hrs, Volume= 0.525 af
Outflow = 3.27 cfs @ 12.32 hrs, Volume= 0.523 af, Atten= 48%, Lag= 8.1 min
Primary = 3.27 cfs @ 12.32 hrs, Volume= 0.523 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 91.67' @ 12.32 hrs Surf.Area= 0.065 ac Storage= 0.080 af

Plug-Flow detention time= 14.9 min calculated for 0.523 af (100% of inflow)
Center-of-Mass det. time= 13.0 min (920.2 - 907.1)

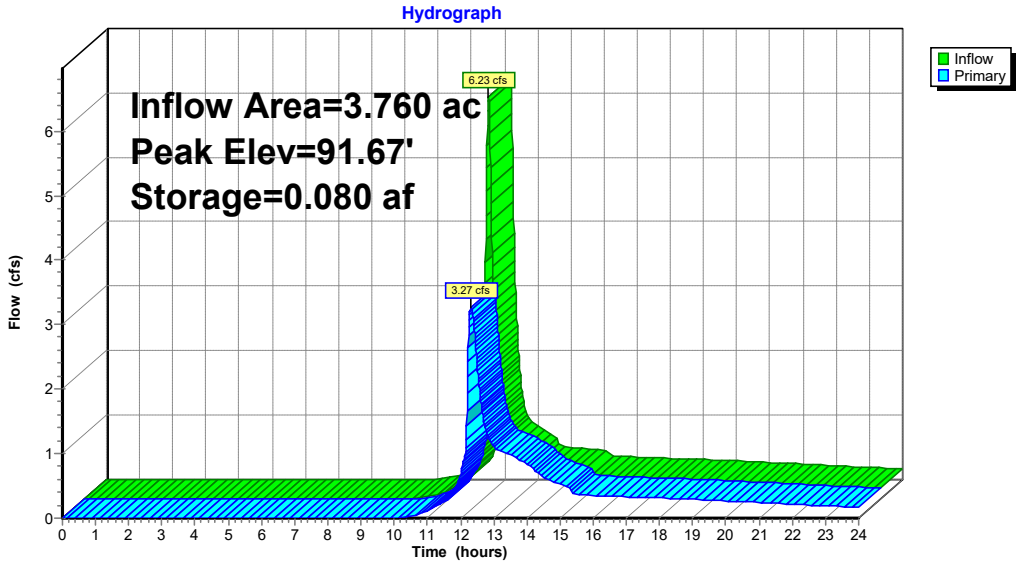
Volume	Invert	Avail.Storage	Storage Description
#1A	89.50'	0.002 af	**13.20'W x 32.00'L x 4.00'H Field A** 0.039 af Overall - 0.034 af Embedded = 0.005 af x 40.0% Voids
#2A	89.50'	0.026 af	**Concrete Galley 4x8x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 12 Chambers in 3 Rows
#3B	90.00'	0.006 af	**13.20'W x 88.00'L x 4.00'H Field B** 0.107 af Overall - 0.092 af Embedded = 0.015 af x 40.0% Voids
#4B	90.00'	0.071 af	**Concrete Galley 4x8x4** x 33 Inside #3 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 33 Chambers in 3 Rows
#5C	90.50'	0.006 af	**13.20'W x 96.00'L x 4.00'H Field C** 0.116 af Overall - 0.101 af Embedded = 0.016 af x 40.0% Voids
#6C	90.50'	0.077 af	**Concrete Galley 4x8x4** x 36 Inside #5 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 36 Chambers in 3 Rows
		0.188 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.50'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.50' / 89.18' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	89.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.26 cfs @ 12.32 hrs HW=91.67' TW=76.30' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.26 cfs of 7.03 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.31 cfs @ 6.67 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 1.95 cfs @ 2.80 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 43P: UG 224



Summary for Pond 44P: UG 225

Inflow Area = 1.610 ac, 0.00% Impervious, Inflow Depth > 1.51" for 10-Year event
Inflow = 2.39 cfs @ 12.18 hrs, Volume= 0.203 af
Outflow = 0.70 cfs @ 12.44 hrs, Volume= 0.198 af, Atten= 71%, Lag= 15.4 min
Primary = 0.70 cfs @ 12.44 hrs, Volume= 0.198 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 93.35' @ 12.44 hrs Surf.Area= 0.039 ac Storage= 0.042 af

Plug-Flow detention time= 38.4 min calculated for 0.198 af (98% of inflow)
Center-of-Mass det. time= 25.8 min (940.9 - 915.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	92.00'	0.008 af	**17.60'W x 96.00'L x 4.00'H Field A** 0.155 af Overall - 0.134 af Embedded = 0.021 af x 40.0% Voids
#2A	92.00'	0.103 af	**Concrete Galley 4x8x4** x 48 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 48 Chambers in 4 Rows
		0.112 af	Total Available Storage

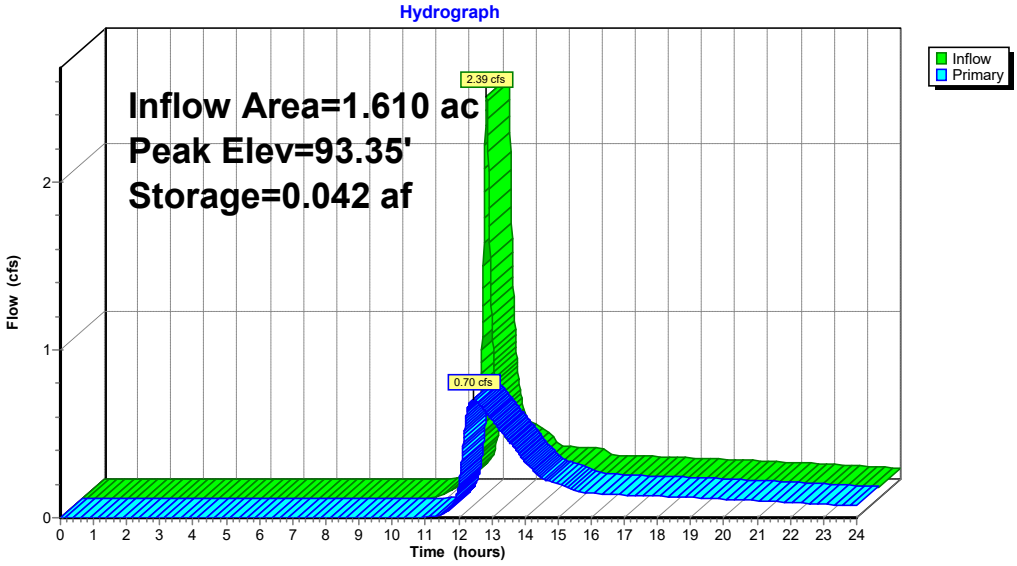
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	92.00'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.00' / 90.53' S= 0.0432 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	92.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	94.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.70 cfs @ 12.44 hrs HW=93.35' TW=76.18' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.70 cfs of 5.04 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.70 cfs @ 5.15 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 44P: UG 225

Hydrograph

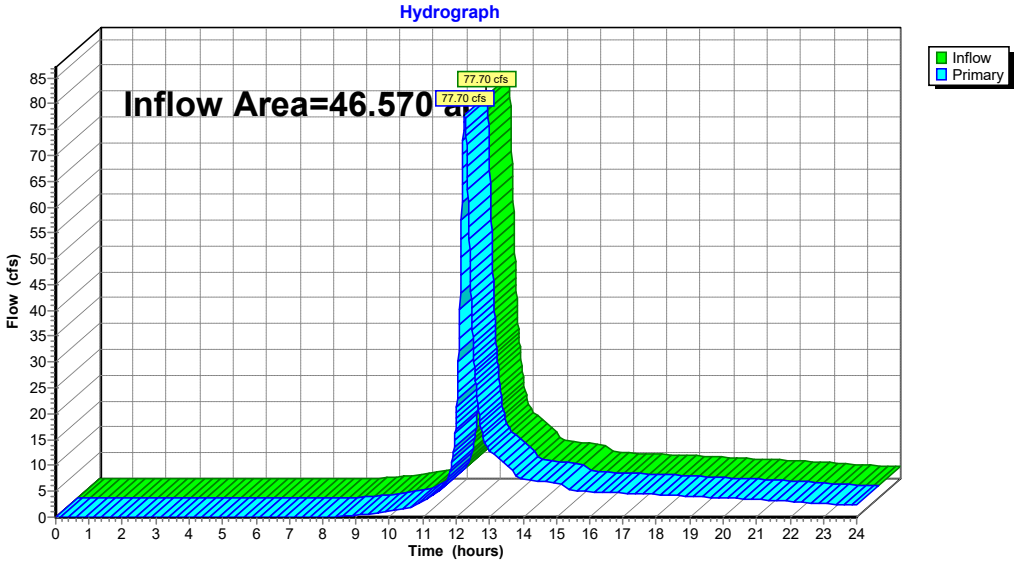


Summary for Link 4L: EX / A

Inflow Area = 46.570 ac, 0.00% Impervious, Inflow Depth > 2.06" for 10-Year event
Inflow = 77.70 cfs @ 12.26 hrs, Volume= 8.009 af
Primary = 77.70 cfs @ 12.26 hrs, Volume= 8.009 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: EX / A

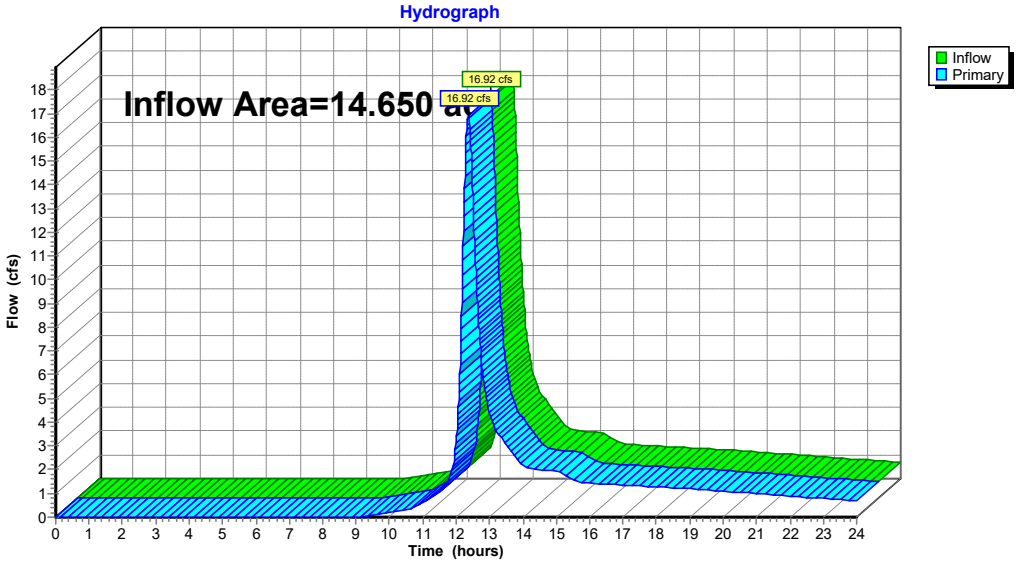


Summary for Link 7L: EX / B

Inflow Area = 14.650 ac, 0.00% Impervious, Inflow Depth > 1.80" for 10-Year event
Inflow = 16.92 cfs @ 12.36 hrs, Volume= 2.200 af
Primary = 16.92 cfs @ 12.36 hrs, Volume= 2.200 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: EX / B

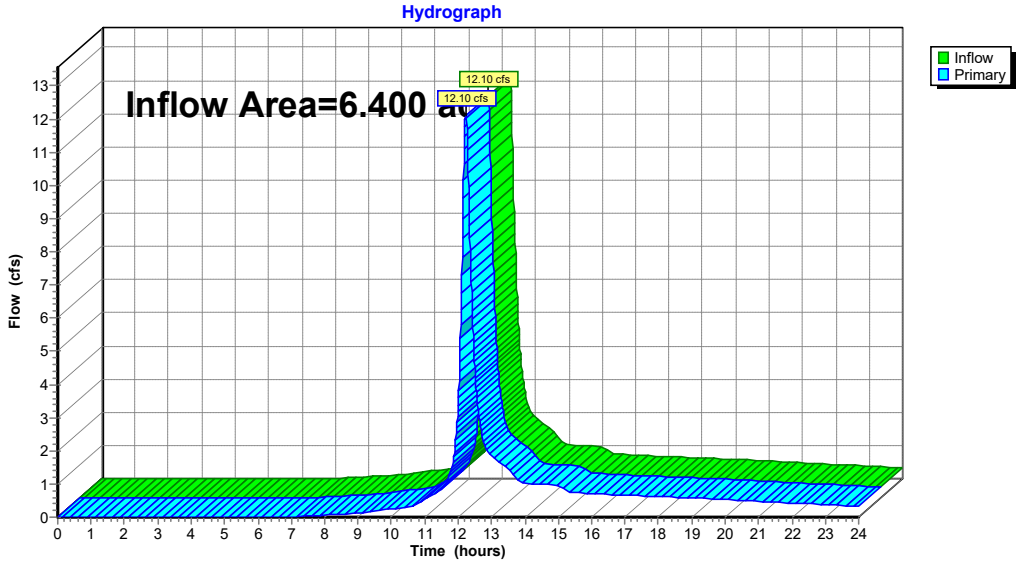


Summary for Link 10L: EX / C

Inflow Area = 6.400 ac, 0.00% Impervious, Inflow Depth > 2.23" for 10-Year event
Inflow = 12.10 cfs @ 12.23 hrs, Volume= 1.192 af
Primary = 12.10 cfs @ 12.23 hrs, Volume= 1.192 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 10L: EX / C

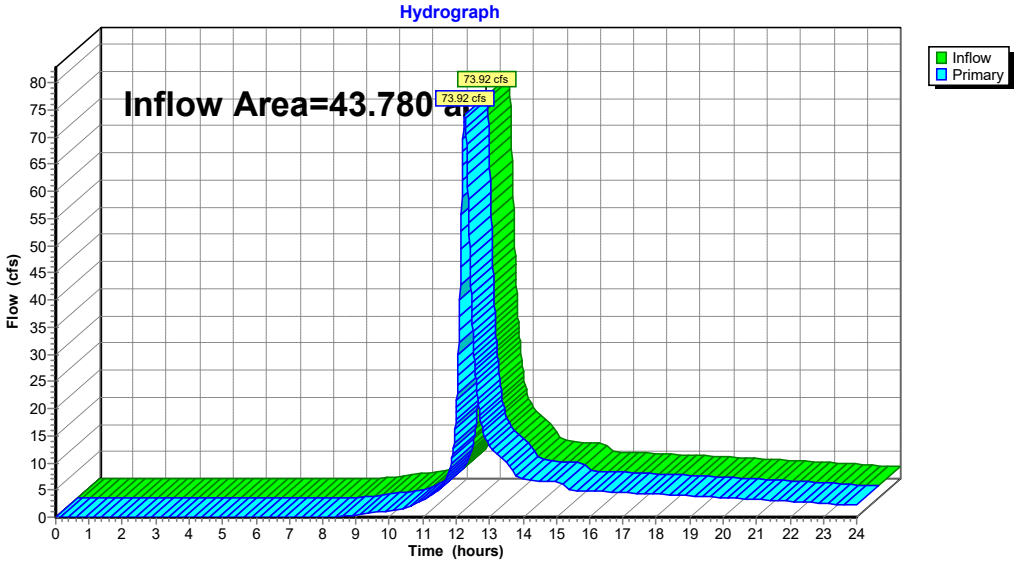


Summary for Link 15L: PR / A

Inflow Area = 43.780 ac, 0.00% Impervious, Inflow Depth > 2.14" for 10-Year event
Inflow = 73.92 cfs @ 12.26 hrs, Volume= 7.822 af
Primary = 73.92 cfs @ 12.26 hrs, Volume= 7.822 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 15L: PR / A

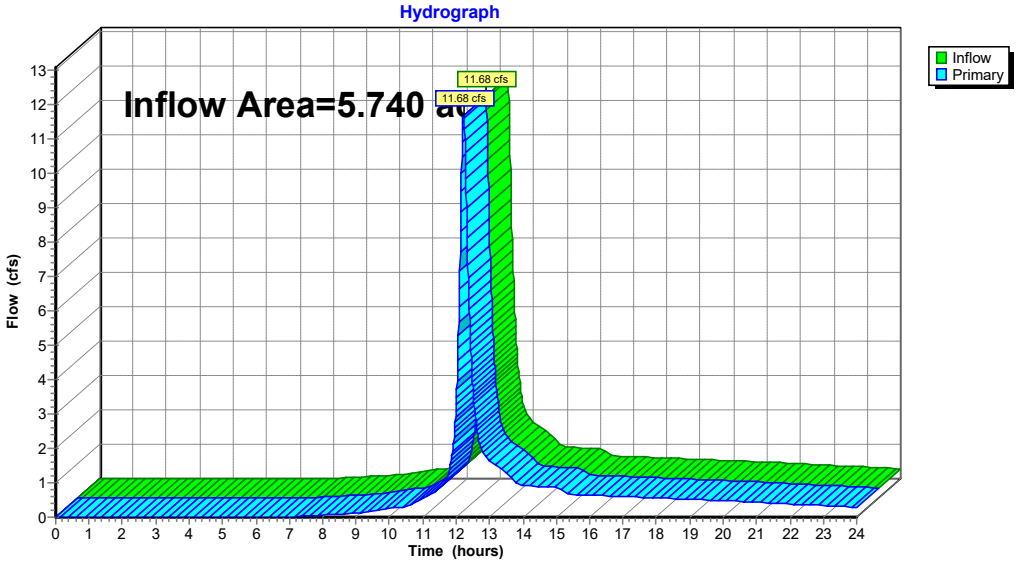


Summary for Link 25L: PR / C

Inflow Area = 5.740 ac, 0.00% Impervious, Inflow Depth > 2.27" for 10-Year event
Inflow = 11.68 cfs @ 12.22 hrs, Volume= 1.087 af
Primary = 11.68 cfs @ 12.22 hrs, Volume= 1.087 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 25L: PR / C

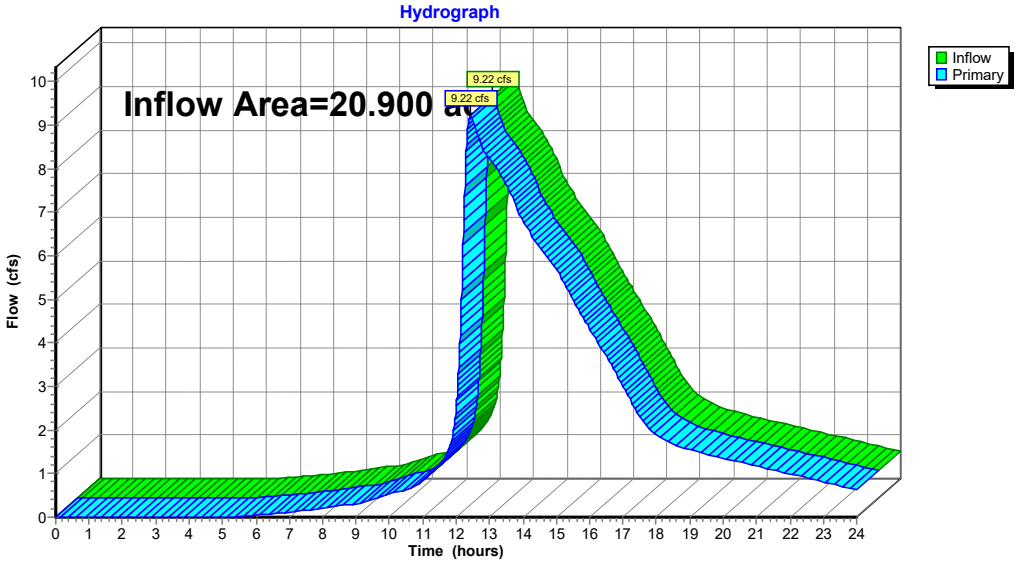


Summary for Link 27L: PR / B

Inflow Area = 20.900 ac, 0.00% Impervious, Inflow Depth > 2.01" for 10-Year event
Inflow = 9.22 cfs @ 12.42 hrs, Volume= 3.509 af
Primary = 9.22 cfs @ 12.42 hrs, Volume= 3.509 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 27L: PR / B

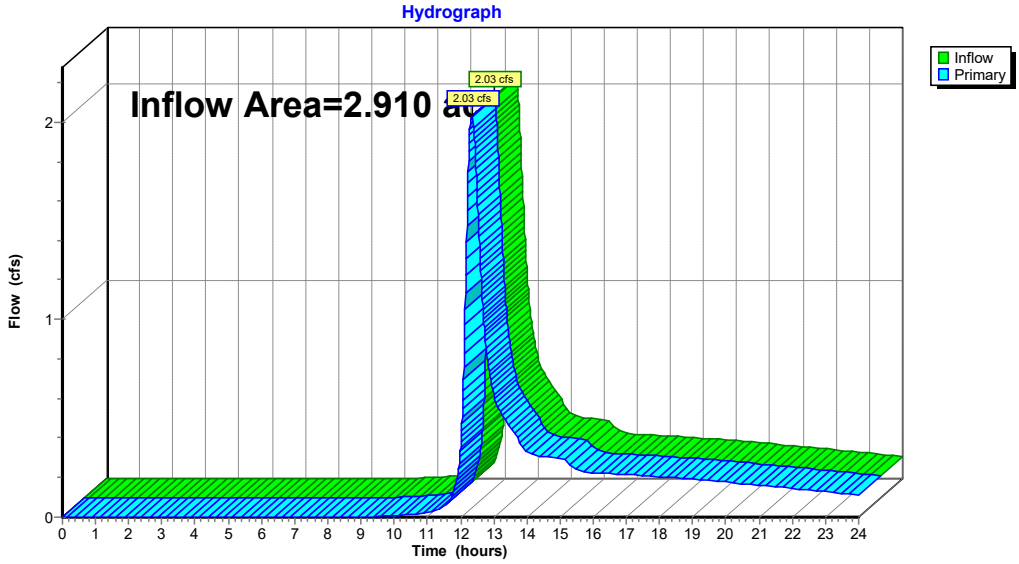


Summary for Link 30L: EX / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 1.27" for 10-Year event
Inflow = 2.03 cfs @ 12.34 hrs, Volume= 0.309 af
Primary = 2.03 cfs @ 12.34 hrs, Volume= 0.309 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 30L: EX / E

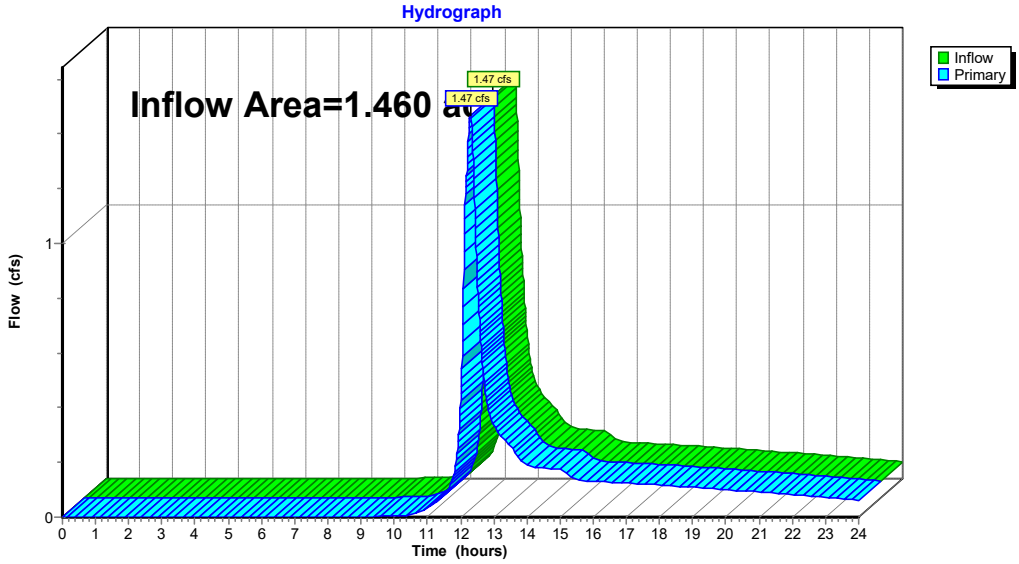


Summary for Link 34L: PR / E

Inflow Area = 1.460 ac, 0.00% Impervious, Inflow Depth > 1.58" for 10-Year event
Inflow = 1.47 cfs @ 12.29 hrs, Volume= 0.192 af
Primary = 1.47 cfs @ 12.29 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 34L: PR / E



Summary for Subcatchment 1S: EXWS-10

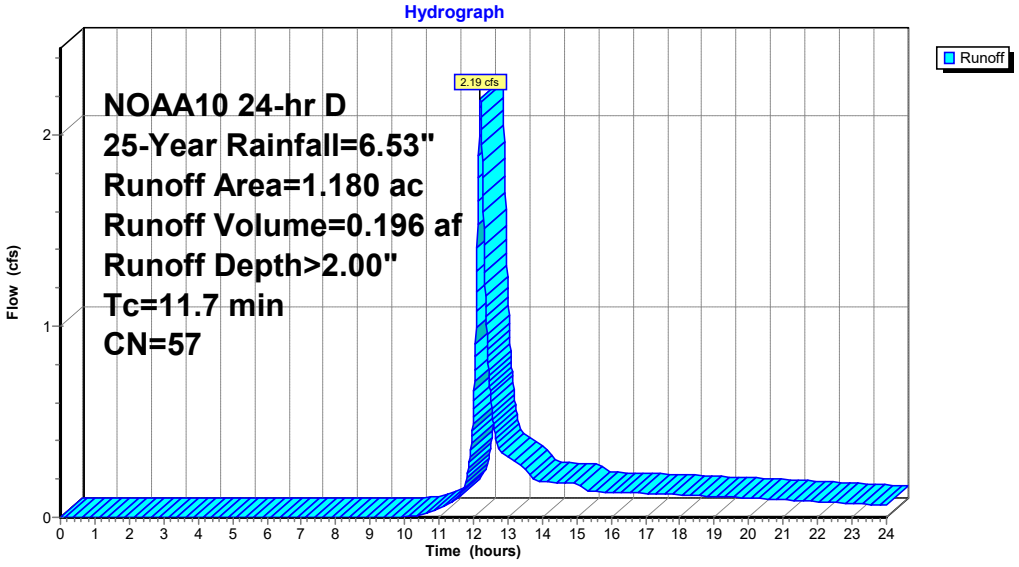
Runoff = 2.19 cfs @ 12.20 hrs, Volume= 0.196 af, Depth> 2.00"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	1.180	57	
	1.180		100.00% Pervious Area

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

Subcatchment 1S: EXWS-10



Summary for Subcatchment 2S: EXWS-11

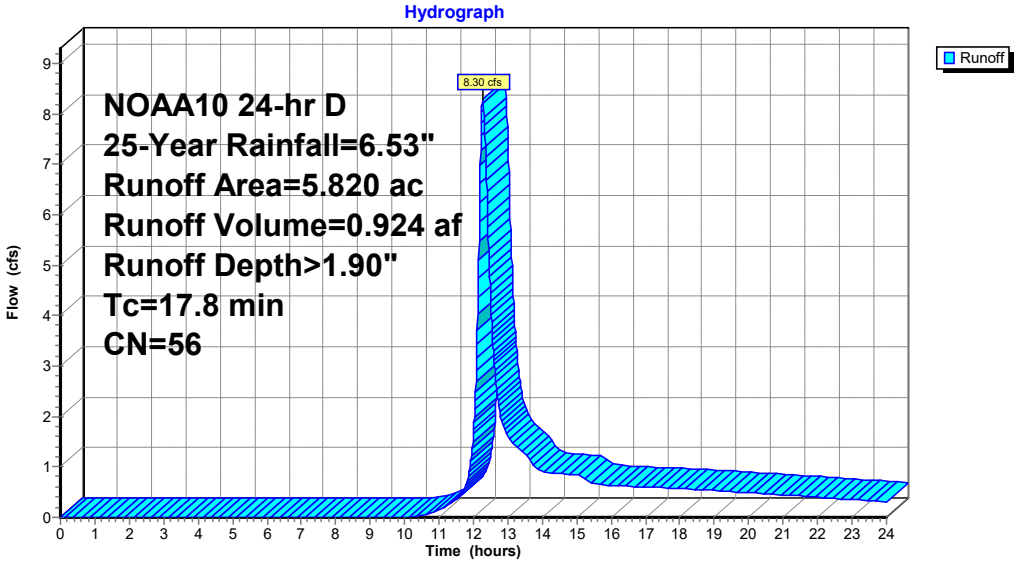
Runoff = 8.30 cfs @ 12.28 hrs, Volume= 0.924 af, Depth> 1.90"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	5.820	56	
	5.820		100.00% Pervious Area

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

Subcatchment 2S: EXWS-11



Summary for Subcatchment 3S: EXWS-12 (Offsite)

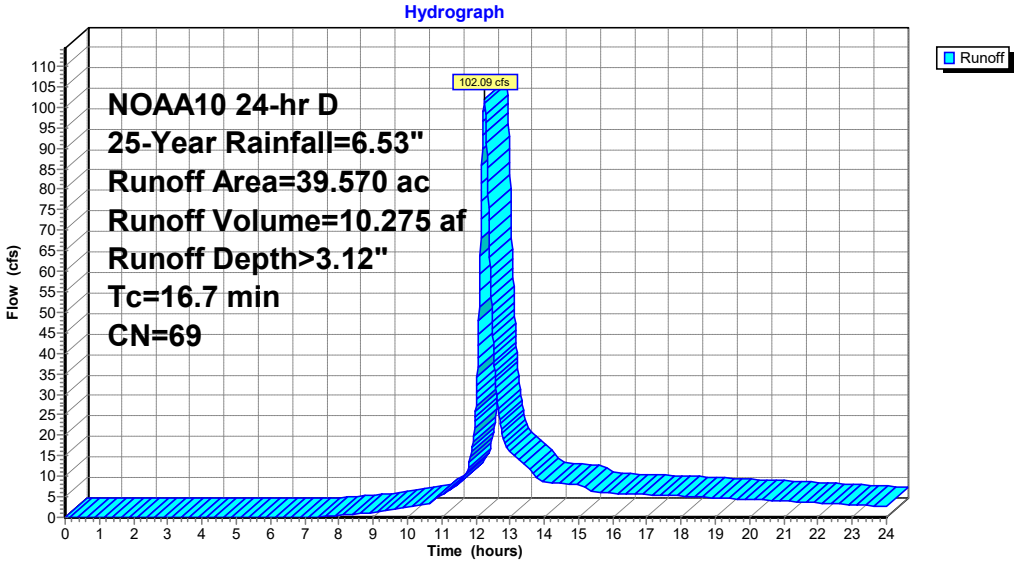
Runoff = 102.09 cfs @ 12.25 hrs, Volume= 10.275 af, Depth> 3.12"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: EXWS-12 (Offsite)



Summary for Subcatchment 5S: EXWS-20

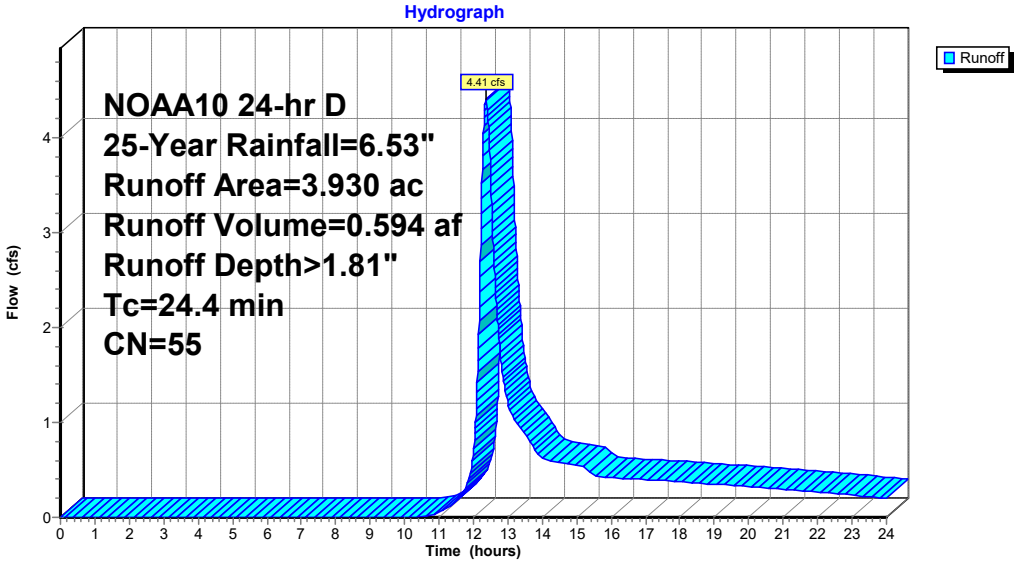
Runoff = 4.41 cfs @ 12.36 hrs, Volume= 0.594 af, Depth> 1.81"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	3.930	55	
	3.930		100.00% Pervious Area

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

Subcatchment 5S: EXWS-20



Summary for Subcatchment 6S: EXWS-21

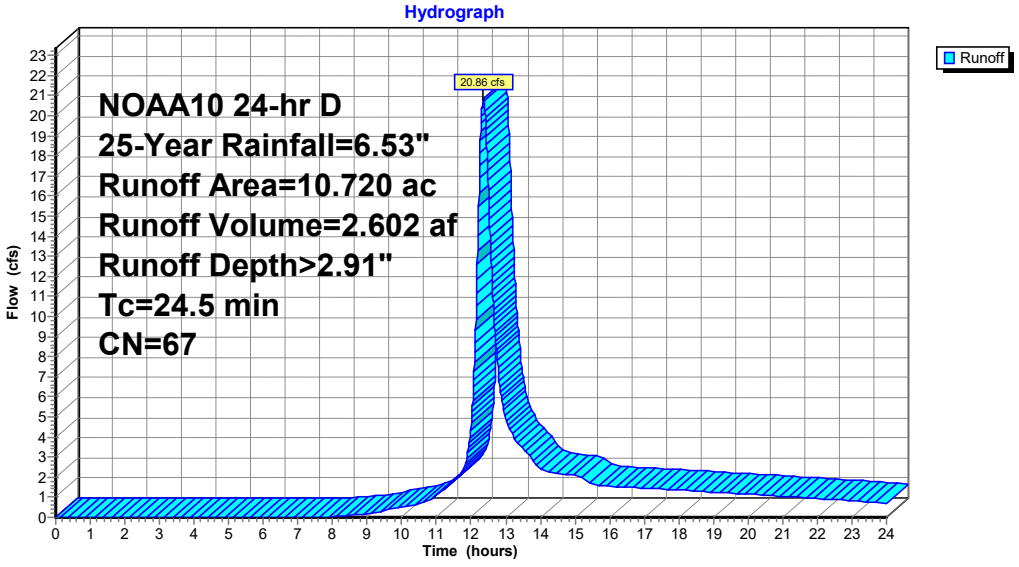
Runoff = 20.86 cfs @ 12.35 hrs, Volume= 2.602 af, Depth> 2.91"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	10.720	67	
	10.720		100.00% Pervious Area

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

Subcatchment 6S: EXWS-21



Summary for Subcatchment 8S: EXWS-30

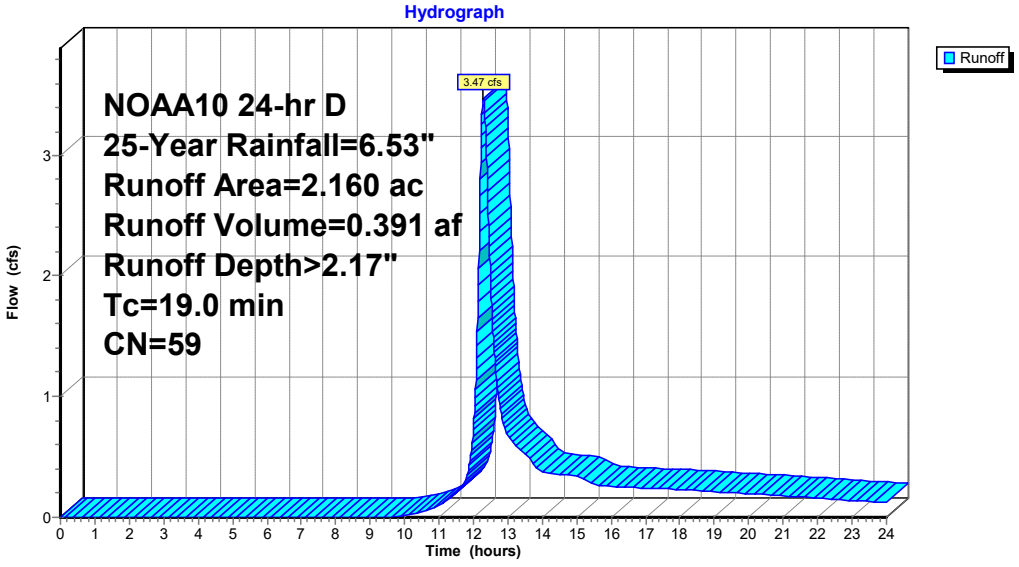
Runoff = 3.47 cfs @ 12.29 hrs, Volume= 0.391 af, Depth> 2.17"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	2.160	59	
	2.160		100.00% Pervious Area

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

Subcatchment 8S: EXWS-30



Summary for Subcatchment 9S: EXWS-31

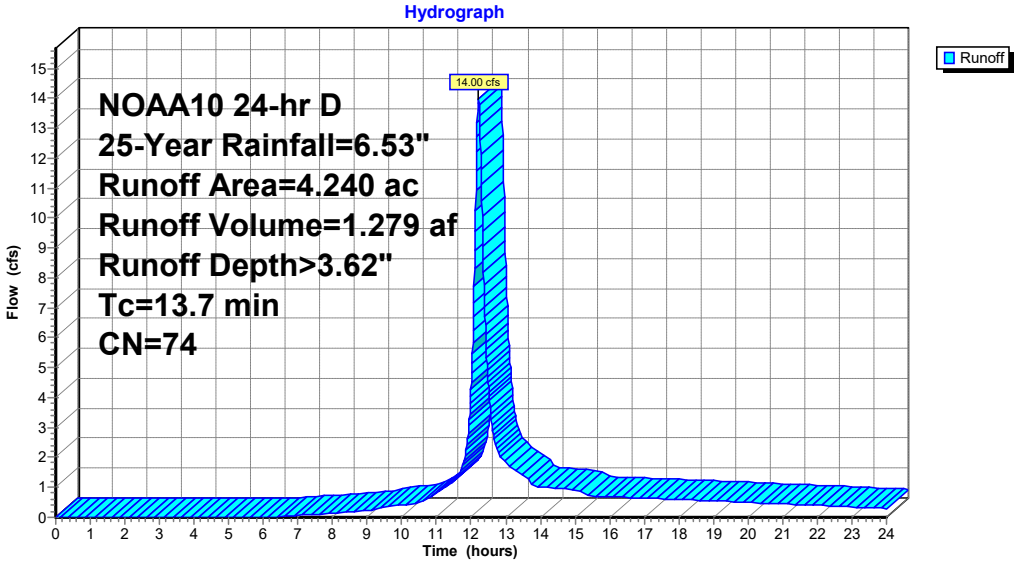
Runoff = 14.00 cfs @ 12.22 hrs, Volume= 1.279 af, Depth> 3.62"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 9S: EXWS-31



Summary for Subcatchment 11S: EXWS-40

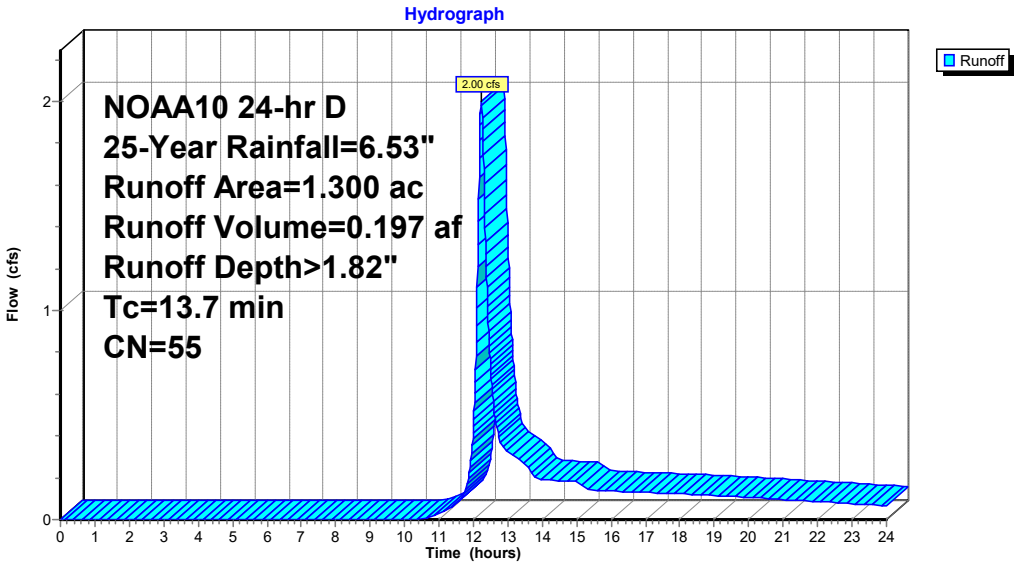
Runoff = 2.00 cfs @ 12.22 hrs, Volume= 0.197 af, Depth> 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	1.300	55	
	1.300		100.00% Pervious Area

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

Subcatchment 11S: EXWS-40



Summary for Subcatchment 12S: PRWS-10

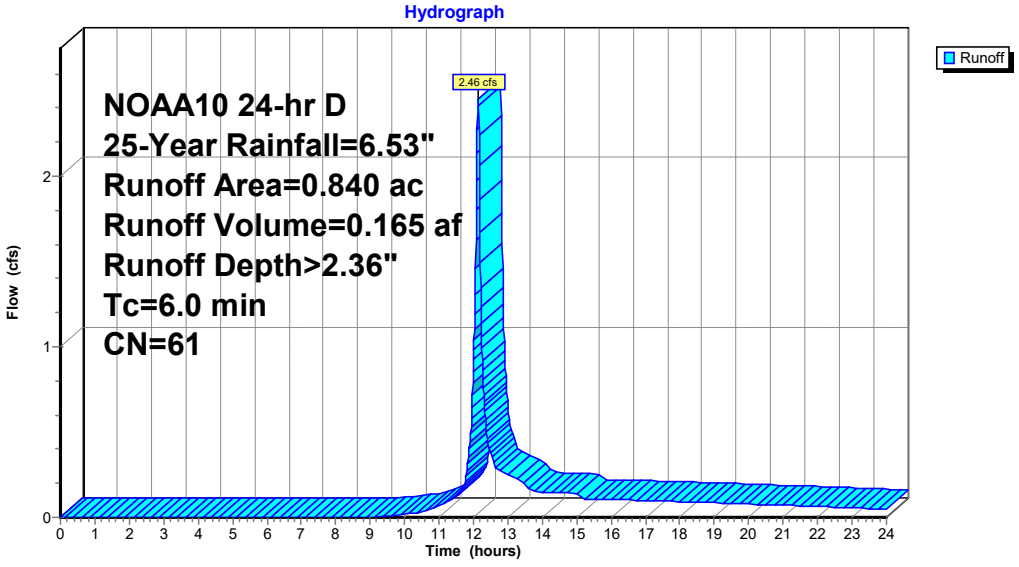
Runoff = 2.46 cfs @ 12.14 hrs, Volume= 0.165 af, Depth> 2.36"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	0.840	61	
	0.840		100.00% Pervious Area

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

Subcatchment 12S: PRWS-10



Summary for Subcatchment 13S: PRWS-11

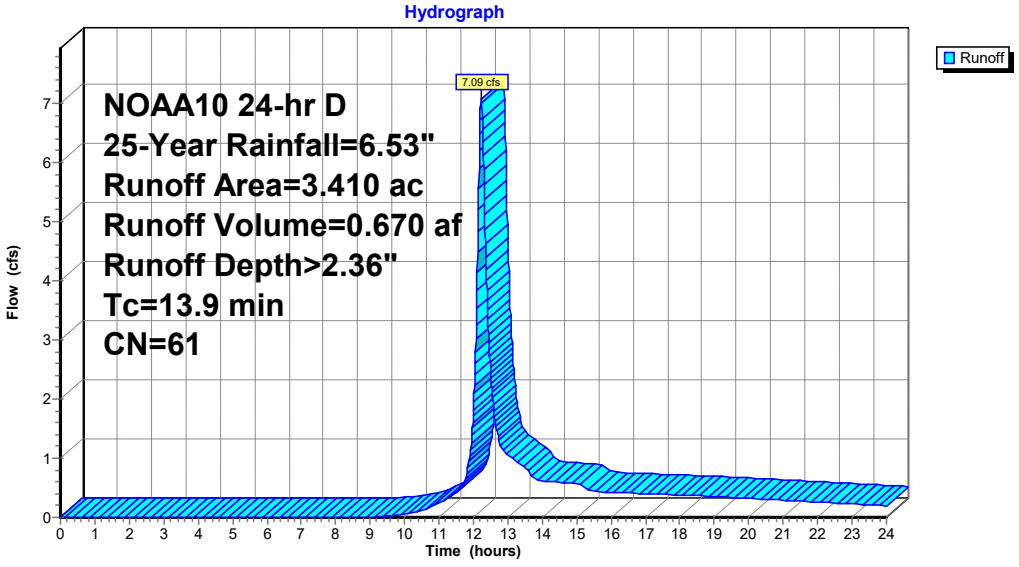
Runoff = 7.09 cfs @ 12.22 hrs, Volume= 0.670 af, Depth> 2.36"
Routed to Pond 35P : UG 110

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	3.410	61	
	3.410		100.00% Pervious Area

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

Subcatchment 13S: PRWS-11



Summary for Subcatchment 14S: EXWS-12 (Offsite)

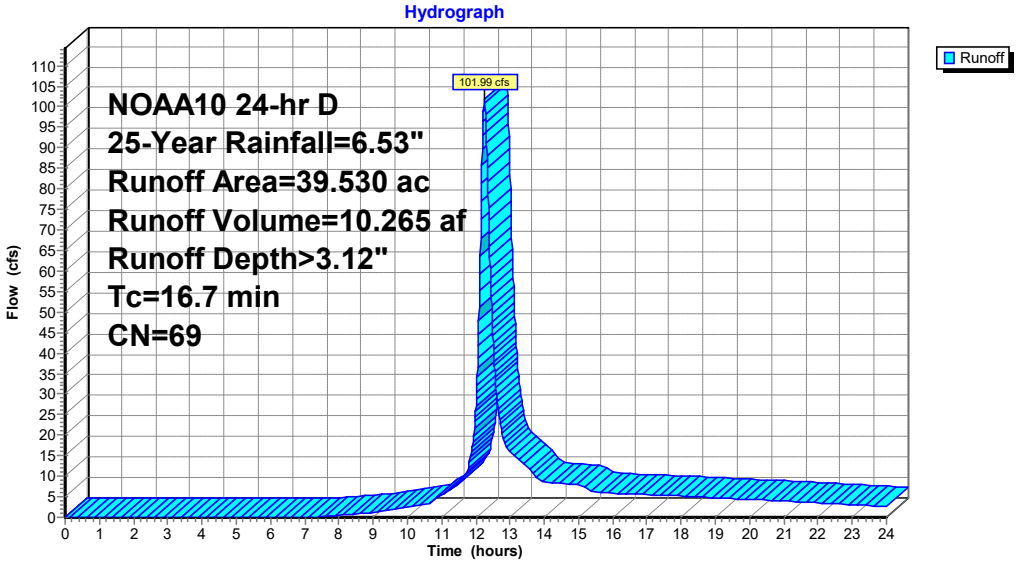
Runoff = 101.99 cfs @ 12.25 hrs, Volume= 10.265 af, Depth> 3.12"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	39.530	69	
	39.530		100.00% Pervious Area

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

Subcatchment 14S: EXWS-12 (Offsite)



Summary for Subcatchment 16S: PRWS-20

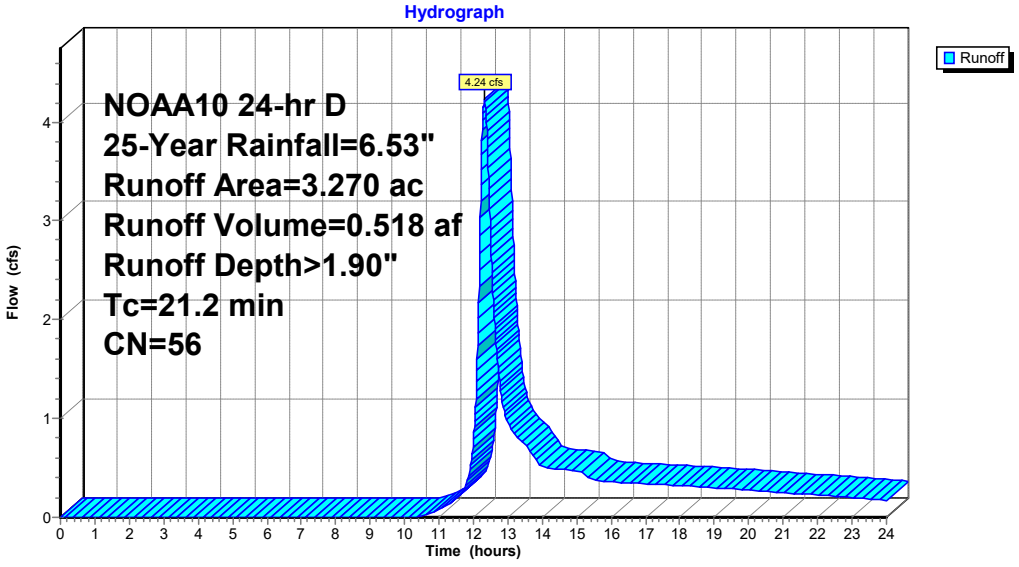
Runoff = 4.24 cfs @ 12.32 hrs, Volume= 0.518 af, Depth> 1.90"
Routed to Link 27L : PR / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	3.270	56	
	3.270		100.00% Pervious Area

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

Subcatchment 16S: PRWS-20



Summary for Subcatchment 17S: PRWS-21

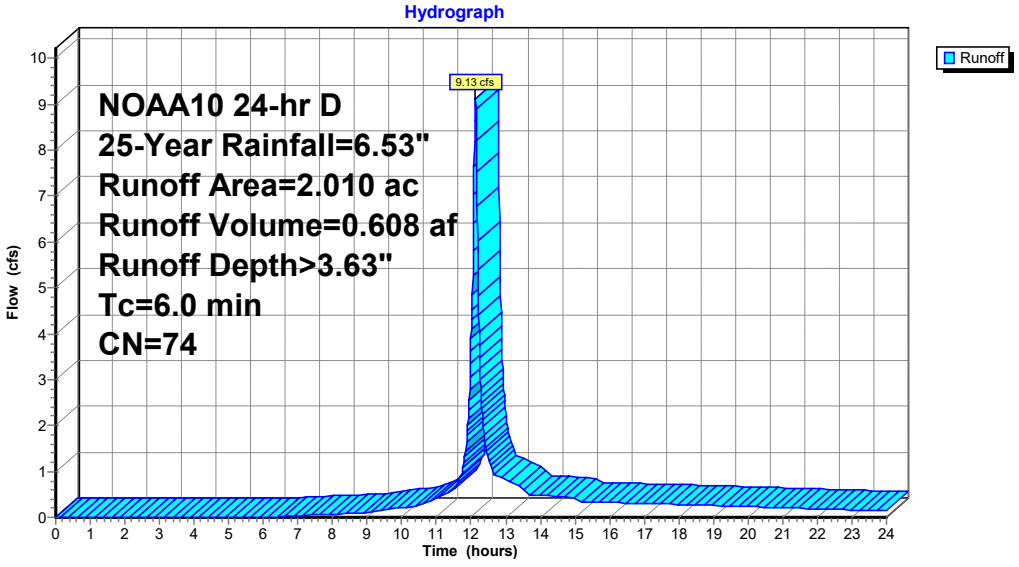
Runoff = 9.13 cfs @ 12.13 hrs, Volume= 0.608 af, Depth> 3.63"
Routed to Pond 37P : DET 210 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	2.010	74	
	2.010		100.00% Pervious Area

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

Subcatchment 17S: PRWS-21



Summary for Subcatchment 18S: PRWS-22

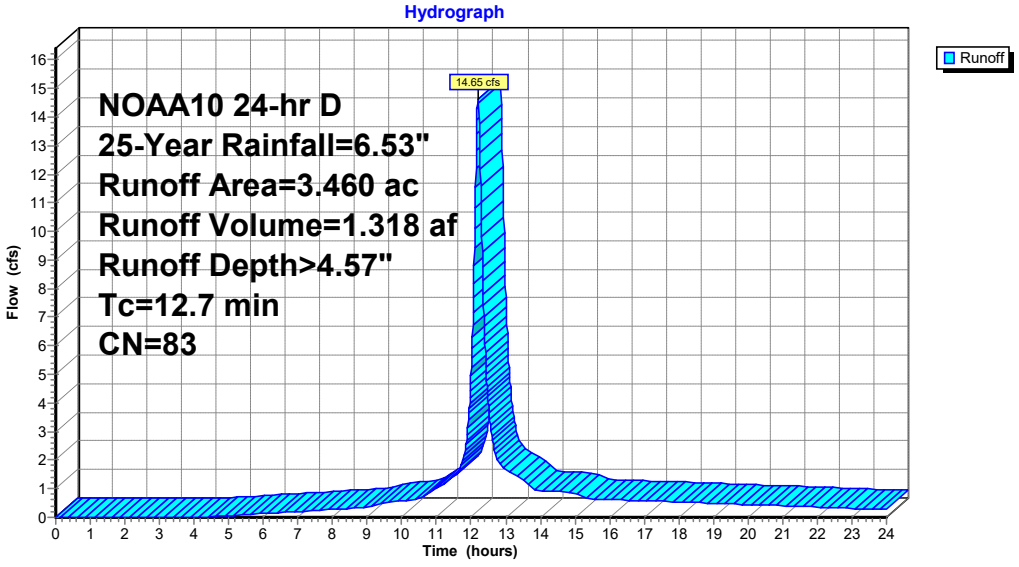
Runoff = 14.65 cfs @ 12.20 hrs, Volume= 1.318 af, Depth> 4.57"
Routed to Pond 36P : DET 220 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	3.460	83	
	3.460		100.00% Pervious Area

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

Subcatchment 18S: PRWS-22



Summary for Subcatchment 19S: PRWS-23

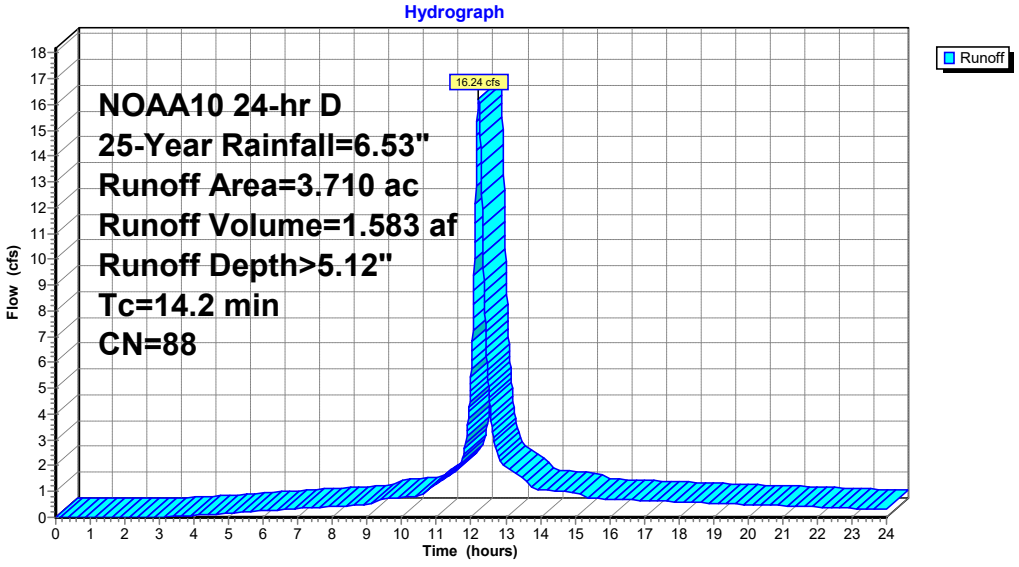
Runoff = 16.24 cfs @ 12.22 hrs, Volume= 1.583 af, Depth> 5.12"
Routed to Pond 22P : DET 230

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	3.710	88	
	3.710		100.00% Pervious Area

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

Subcatchment 19S: PRWS-23



Summary for Subcatchment 23S: PRWS-30

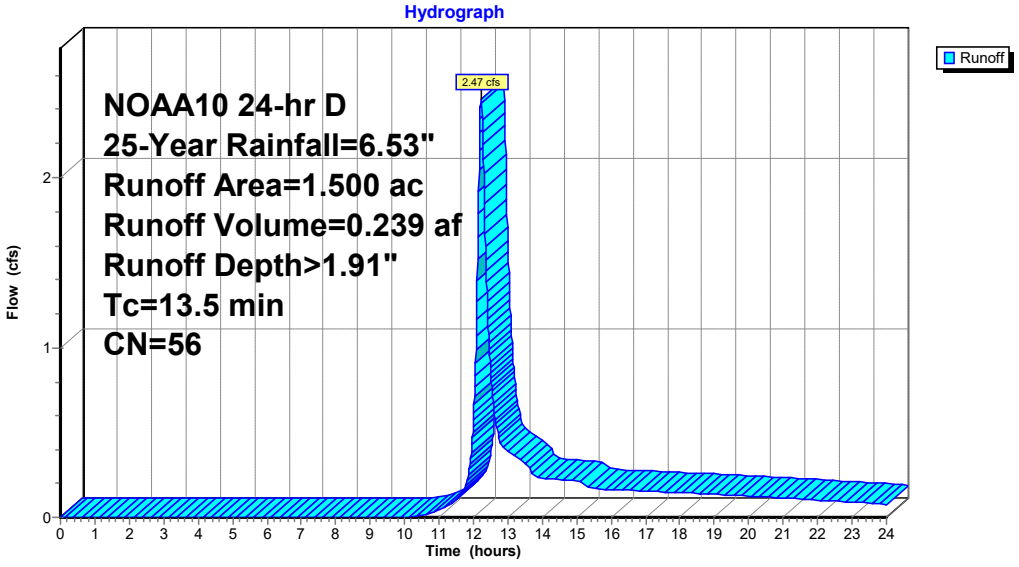
Runoff = 2.47 cfs @ 12.22 hrs, Volume= 0.239 af, Depth> 1.91"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	1.500	56	
	1.500		100.00% Pervious Area

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

Subcatchment 23S: PRWS-30



Summary for Subcatchment 24S: PRWS-31

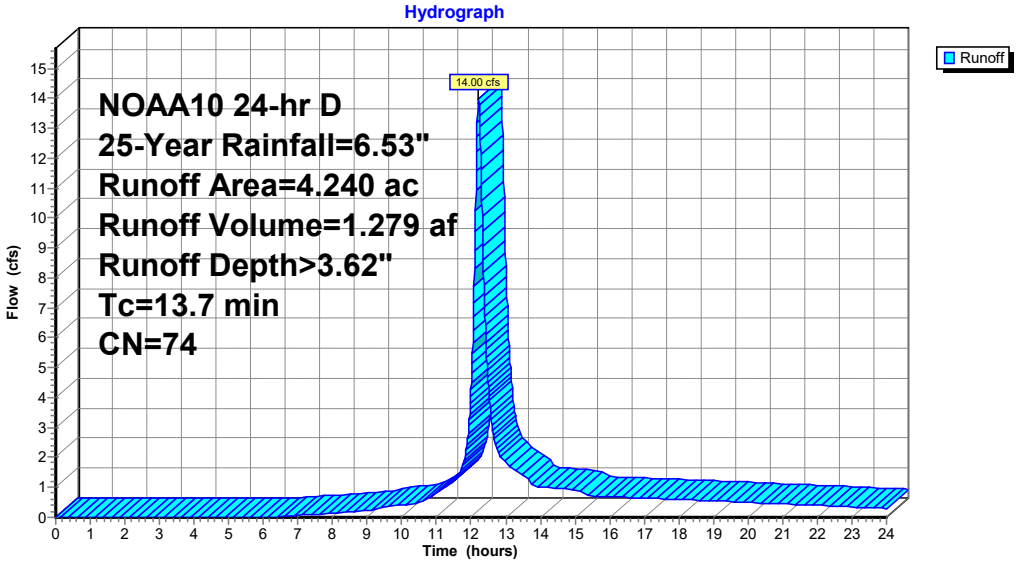
Runoff = 14.00 cfs @ 12.22 hrs, Volume= 1.279 af, Depth> 3.62"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 24S: PRWS-31



Summary for Subcatchment 26S: PRWS-40 / D

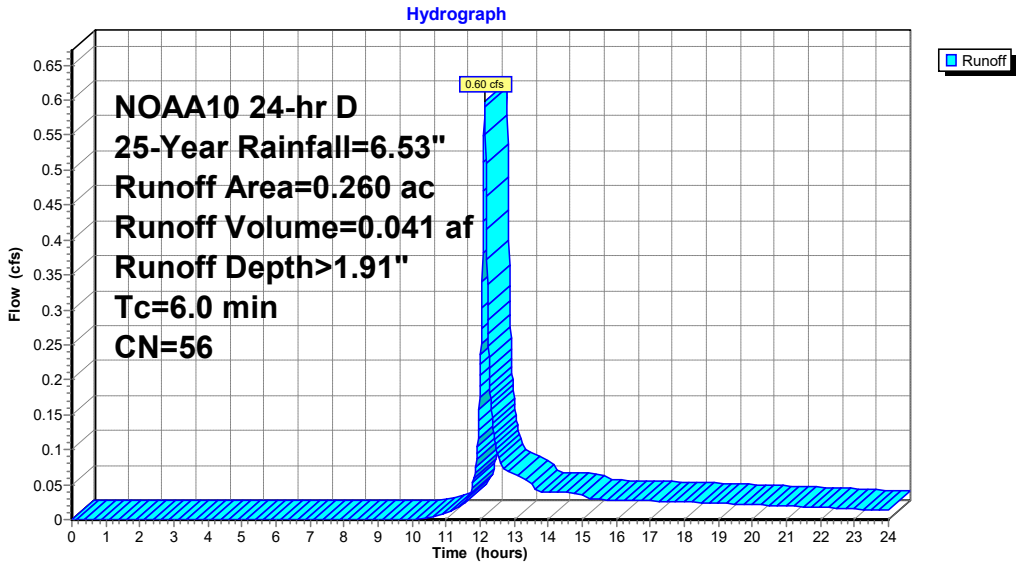
Runoff = 0.60 cfs @ 12.14 hrs, Volume= 0.041 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	0.260	56	
	0.260		100.00% Pervious Area

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

Subcatchment 26S: PRWS-40 / D



Summary for Subcatchment 28S: EXWS-50

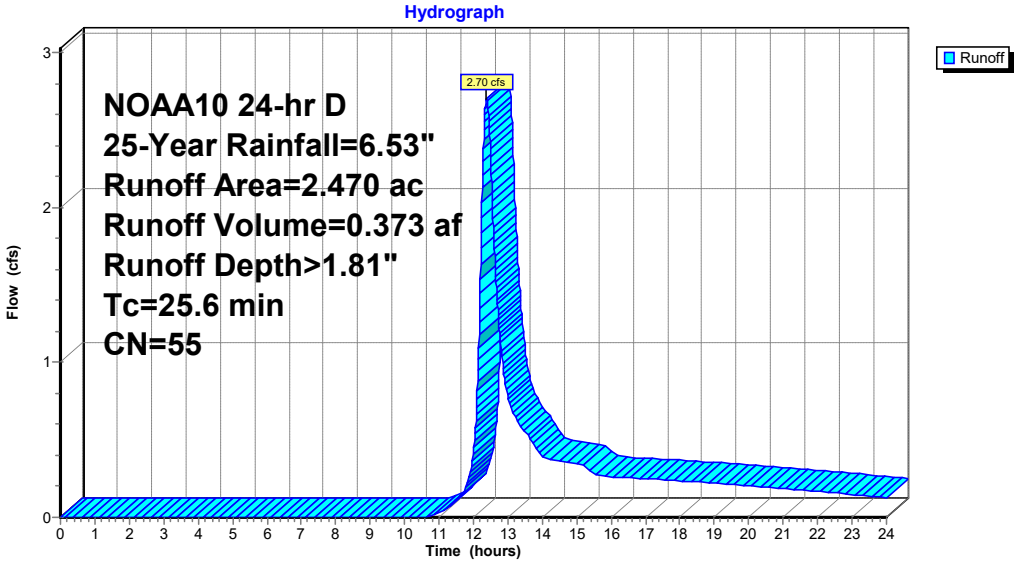
Runoff = 2.70 cfs @ 12.38 hrs, Volume= 0.373 af, Depth> 1.81"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	2.470	55	
	2.470		100.00% Pervious Area

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

Subcatchment 28S: EXWS-50



Summary for Subcatchment 29S: EXWS-51

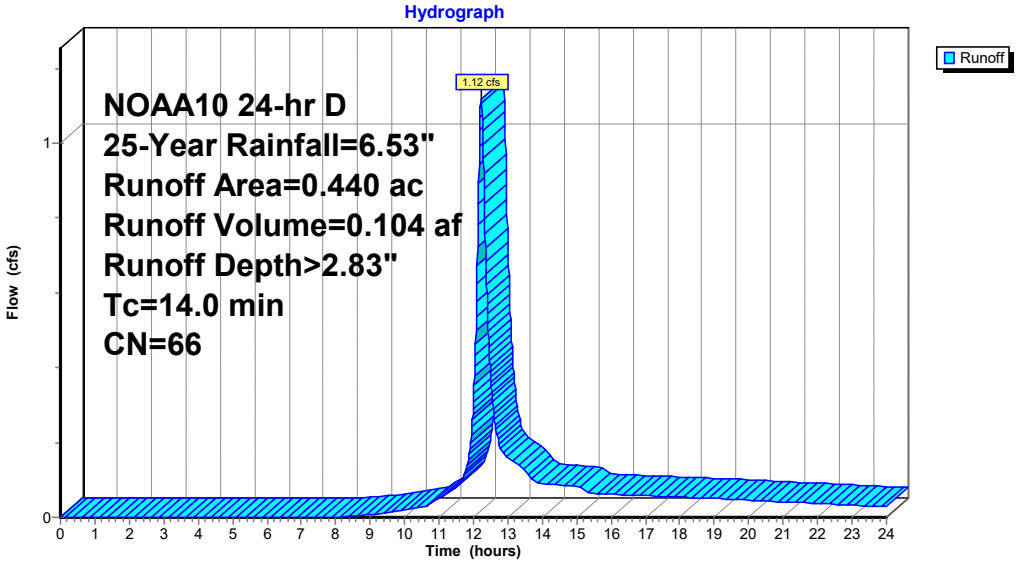
Runoff = 1.12 cfs @ 12.22 hrs, Volume= 0.104 af, Depth> 2.83"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 29S: EXWS-51



Summary for Subcatchment 31S: PRWS-221

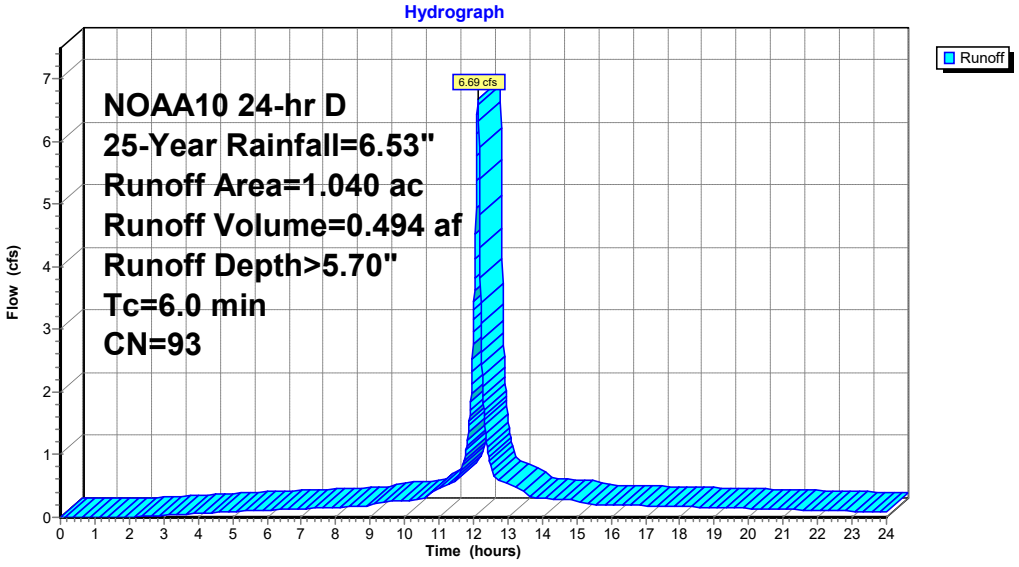
Runoff = 6.69 cfs @ 12.13 hrs, Volume= 0.494 af, Depth> 5.70"
Routed to Pond 33P : UG 221

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	1.040	93	
	1.040		100.00% Pervious Area

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

Subcatchment 31S: PRWS-221



Summary for Subcatchment 32S: PRWS-51

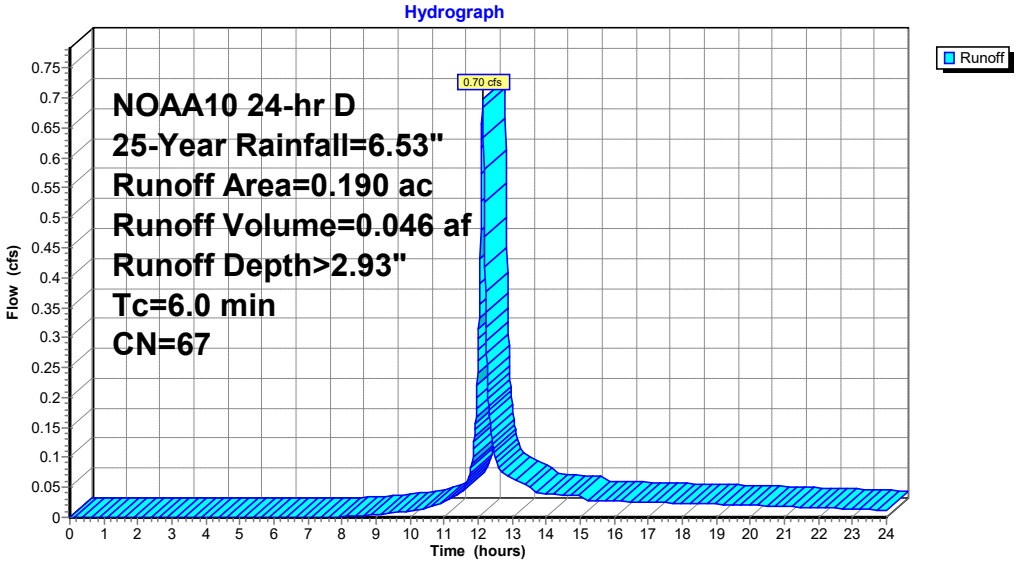
Runoff = 0.70 cfs @ 12.13 hrs, Volume= 0.046 af, Depth> 2.93"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	0.190	67	
	0.190		100.00% Pervious Area

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

Subcatchment 32S: PRWS-51



Summary for Subcatchment 33S: PRWS-50

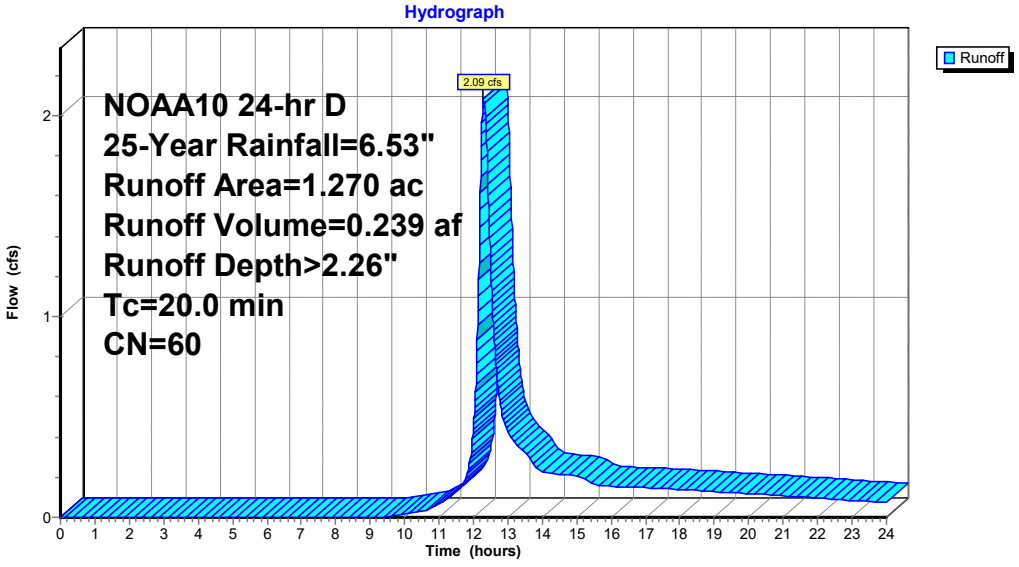
Runoff = 2.09 cfs @ 12.29 hrs, Volume= 0.239 af, Depth> 2.26"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	1.270	60	
	1.270		100.00% Pervious Area

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

Subcatchment 33S: PRWS-50



Summary for Subcatchment 35S: PRWS-52

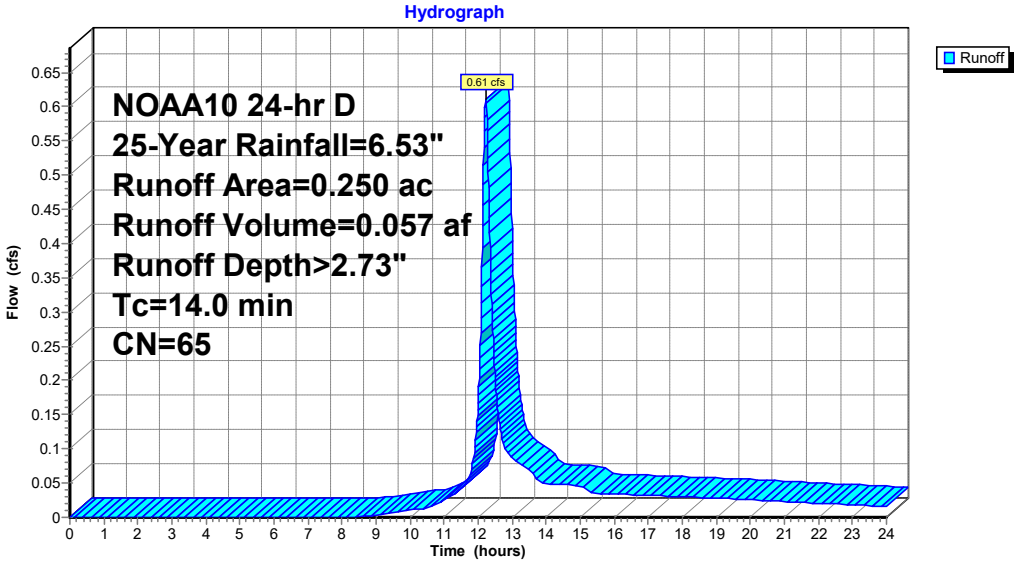
Runoff = 0.61 cfs @ 12.22 hrs, Volume= 0.057 af, Depth> 2.73"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	0.250	65	
	0.250		100.00% Pervious Area

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

Subcatchment 35S: PRWS-52



Summary for Subcatchment 36S: PRWS-222

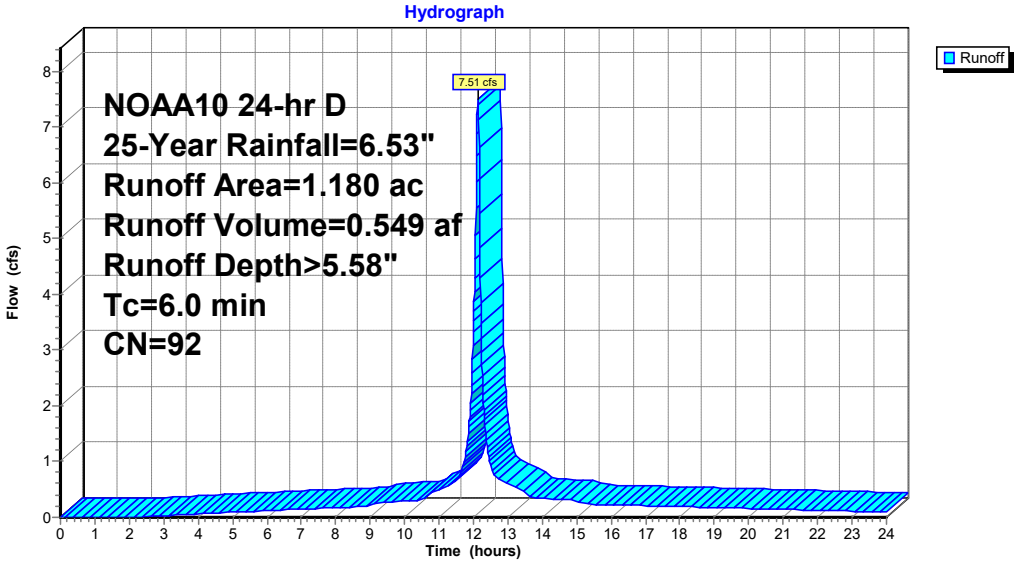
Runoff = 7.51 cfs @ 12.13 hrs, Volume= 0.549 af, Depth> 5.58"
Routed to Pond 41P : UG 222

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	1.180	92	
	1.180		100.00% Pervious Area

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

Subcatchment 36S: PRWS-222



Summary for Subcatchment 37S: PRWS-223

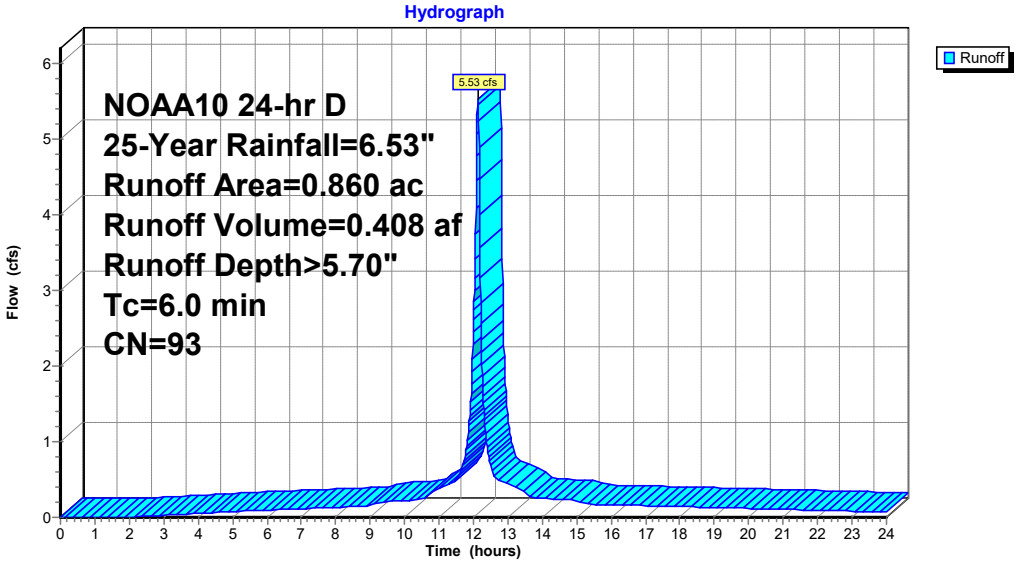
Runoff = 5.53 cfs @ 12.13 hrs, Volume= 0.408 af, Depth> 5.70"
Routed to Pond 42P : UG 223

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	0.860	93	
	0.860		100.00% Pervious Area

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

Subcatchment 37S: PRWS-223



Summary for Subcatchment 38S: PRWS-224

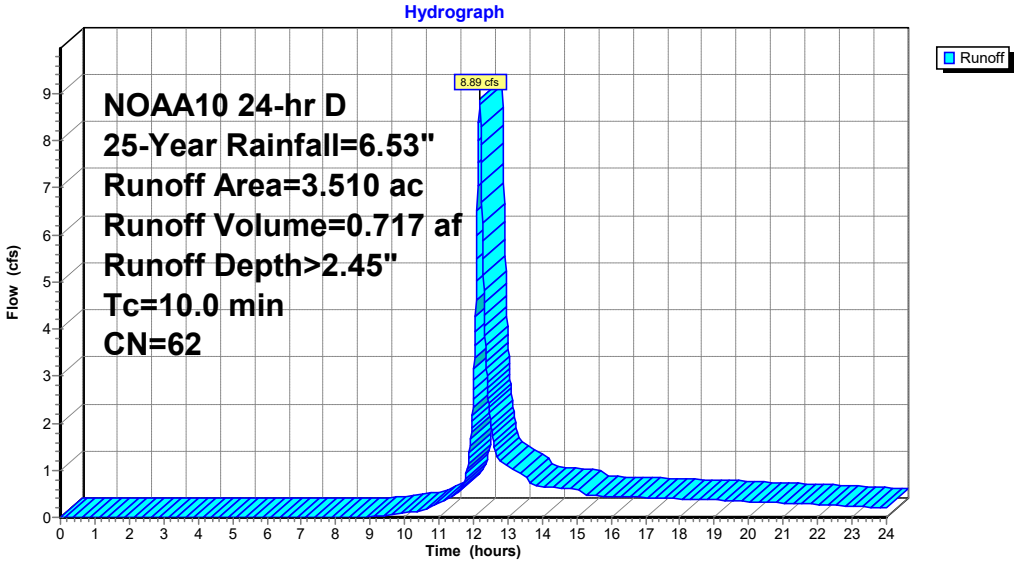
Runoff = 8.89 cfs @ 12.18 hrs, Volume= 0.717 af, Depth> 2.45"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	3.510	62	
	3.510		100.00% Pervious Area

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

Subcatchment 38S: PRWS-224



Summary for Subcatchment 39S: PRWS-225

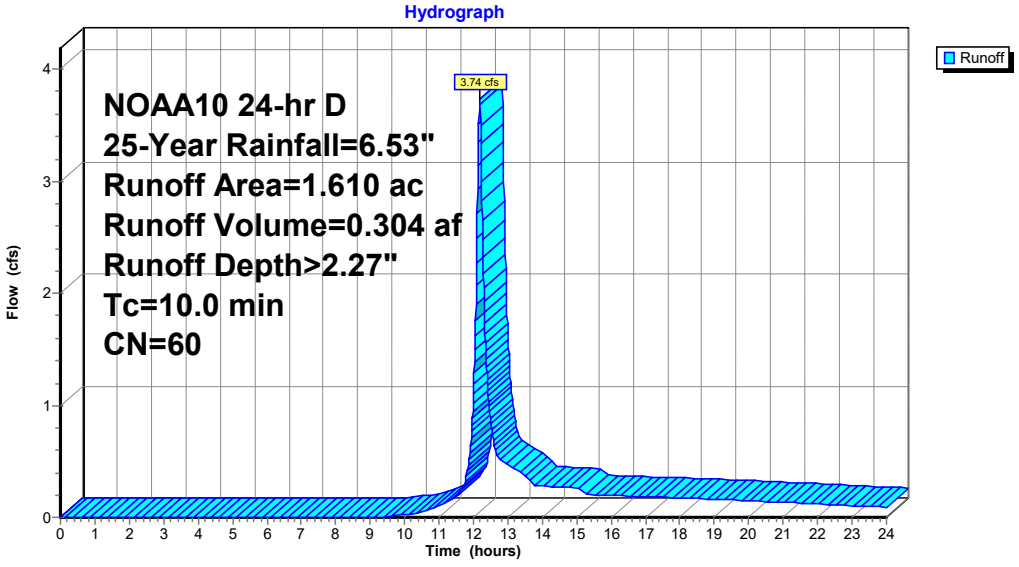
Runoff = 3.74 cfs @ 12.18 hrs, Volume= 0.304 af, Depth> 2.27"
Routed to Pond 44P : UG 225

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	1.610	60	
	1.610		100.00% Pervious Area

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

Subcatchment 39S: PRWS-225



Summary for Pond 22P: DET 230

Inflow Area = 3.710 ac, 0.00% Impervious, Inflow Depth > 5.12" for 25-Year event
Inflow = 16.24 cfs @ 12.22 hrs, Volume= 1.583 af
Outflow = 6.43 cfs @ 12.44 hrs, Volume= 1.539 af, Atten= 60%, Lag= 13.5 min
Primary = 6.43 cfs @ 12.44 hrs, Volume= 1.539 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 71.90' Surf.Area= 7,535 sf Storage= 12,410 cf
Peak Elev= 74.16' @ 12.44 hrs Surf.Area= 10,143 sf Storage= 32,308 cf (19,899 cf above start)

Plug-Flow detention time= 217.2 min calculated for 1.253 af (79% of inflow)
Center-of-Mass det. time= 61.8 min (869.8 - 808.0)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	53,127 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

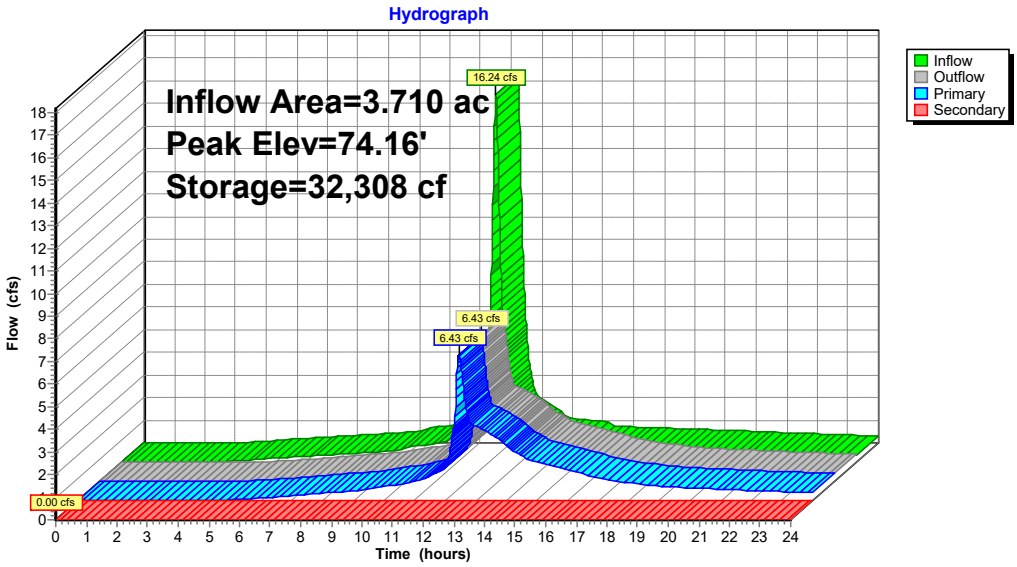
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
70.00	5,565	0	0	5,565
71.00	6,577	6,064	6,064	6,614
72.00	7,646	7,105	13,169	7,724
73.00	8,771	8,202	21,371	8,894
74.00	9,953	9,356	30,727	10,125
75.00	11,192	10,566	41,293	11,416
76.00	12,487	11,834	53,127	12,767

Device	Routing	Invert	Outlet Devices
#1	Primary	66.50'	**15.0" Round Culvert** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.50' / 59.00' S= 0.1042 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	71.90'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	73.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	74.00'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	75.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=6.43 cfs @ 12.44 hrs HW=74.16' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 6.43 cfs of 12.37 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 2.68 cfs @ 6.82 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.90 cfs @ 4.59 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Weir Controls 2.85 cfs @ 1.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=71.90' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 22P: DET 230



Summary for Pond 33P: UG 221

Inflow Area = 1.040 ac, 0.00% Impervious, Inflow Depth > 5.70" for 25-Year event
Inflow = 6.69 cfs @ 12.13 hrs, Volume= 0.494 af
Outflow = 4.46 cfs @ 12.19 hrs, Volume= 0.490 af, Atten= 33%, Lag= 3.5 min
Primary = 4.46 cfs @ 12.19 hrs, Volume= 0.490 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 92.21' @ 12.19 hrs Surf.Area= 0.032 ac Storage= 0.083 af

Plug-Flow detention time= 24.5 min calculated for 0.489 af (99% of inflow)
Center-of-Mass det. time= 18.8 min (796.7 - 777.9)

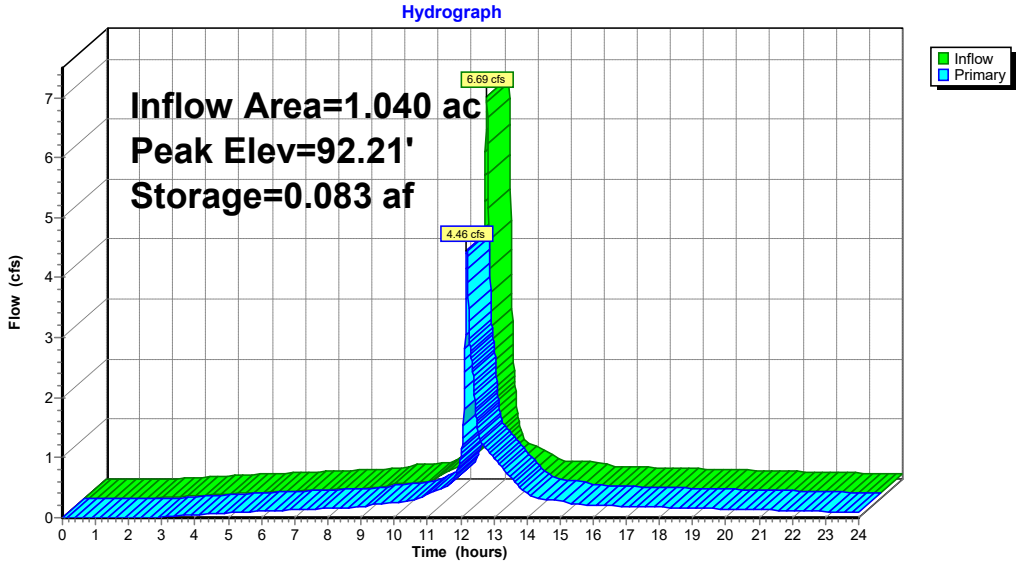
Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	0.007 af	**8.80'W x 160.00'L x 4.00'H Field A** 0.129 af Overall - 0.112 af Embedded = 0.018 af x 40.0% Voids
#2A	89.00'	0.086 af	**Concrete Galley 4x8x4** x 40 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 40 Chambers in 2 Rows
		0.093 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.00'	**24.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.00' / 85.60' S= 0.0069 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	89.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=4.44 cfs @ 12.19 hrs HW=92.21' TW=76.44' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.44 cfs of 34.53 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.63 cfs @ 8.28 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 1.57 cfs @ 4.51 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Weir Controls 1.24 cfs @ 1.50 fps)

Pond 33P: UG 221



Summary for Pond 35P: UG 110

Inflow Area = 3.410 ac, 0.00% Impervious, Inflow Depth > 2.36" for 25-Year event
Inflow = 7.09 cfs @ 12.22 hrs, Volume= 0.670 af
Outflow = 3.91 cfs @ 12.39 hrs, Volume= 0.664 af, Atten= 45%, Lag= 9.8 min
Discarded = 0.02 cfs @ 11.89 hrs, Volume= 0.017 af
Primary = 3.89 cfs @ 12.39 hrs, Volume= 0.647 af
Routed to Link 15L : PR / A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 63.60' @ 12.39 hrs Surf.Area= 2,016 sf Storage= 4,357 cf

Plug-Flow detention time= 17.3 min calculated for 0.663 af (99% of inflow)
Center-of-Mass det. time= 12.6 min (910.7 - 898.0)

Volume	Invert	Avail.Storage	Storage Description
#1	61.20'	3,168 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	61.70'	2,880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		6,048 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.20	1,056	0	0
64.20	1,056	3,168	3,168

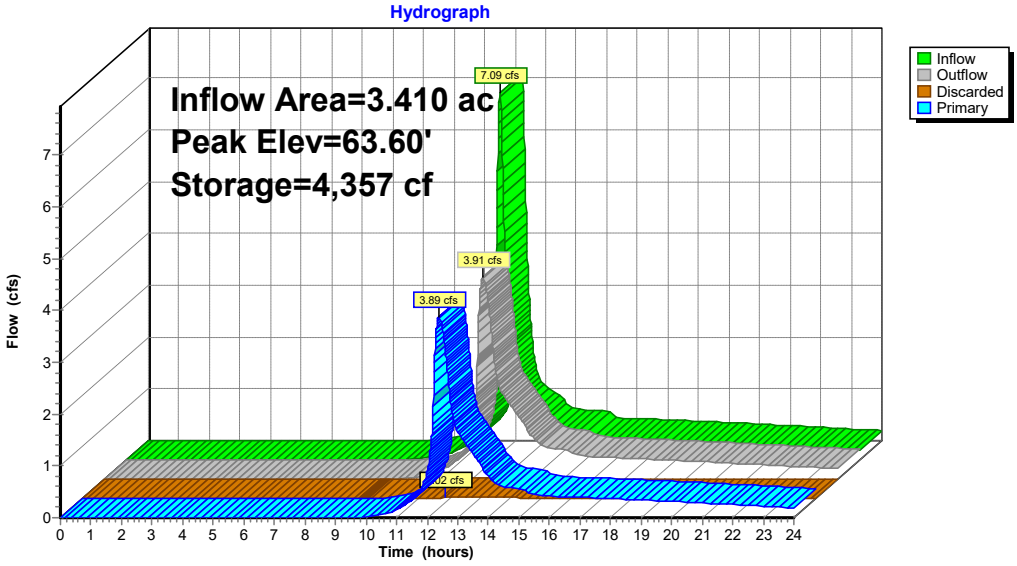
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.70	960	0	0
64.70	960	2,880	2,880

Device	Routing	Invert	Outlet Devices
#1	Discarded	61.20'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	61.10'	**18.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 61.10' / 60.90' S= 0.0077 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#3	Device 2	61.20'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	62.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	64.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.02 cfs @ 11.89 hrs HW=61.71' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=3.89 cfs @ 12.39 hrs HW=63.60' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 3.89 cfs of 11.25 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 2.42 cfs @ 6.92 fps)
  ├**4=Orifice/Grate** (Orifice Controls 1.47 cfs @ 4.21 fps)
  └**5=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 35P: UG 110



Summary for Pond 36P: DET 220 OG

Inflow Area = 11.910 ac, 0.00% Impervious, Inflow Depth > 3.86" for 25-Year event
Inflow = 33.01 cfs @ 12.19 hrs, Volume= 3.830 af
Outflow = 29.67 cfs @ 12.25 hrs, Volume= 3.381 af, Atten= 10%, Lag= 3.8 min
Discarded = 0.69 cfs @ 12.25 hrs, Volume= 0.929 af
Primary = 28.98 cfs @ 12.25 hrs, Volume= 2.452 af
Routed to Pond 37P : DET 210 OG
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 76.52' @ 12.25 hrs Surf.Area= 9,681 sf Storage= 27,608 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 32.0 min (870.0 - 838.0)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	43,165 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	6,115	0	0
74.00	7,054	6,585	6,585
75.00	8,050	7,552	14,137
76.00	9,103	8,577	22,713
77.00	10,212	9,658	32,371
78.00	11,377	10,795	43,165

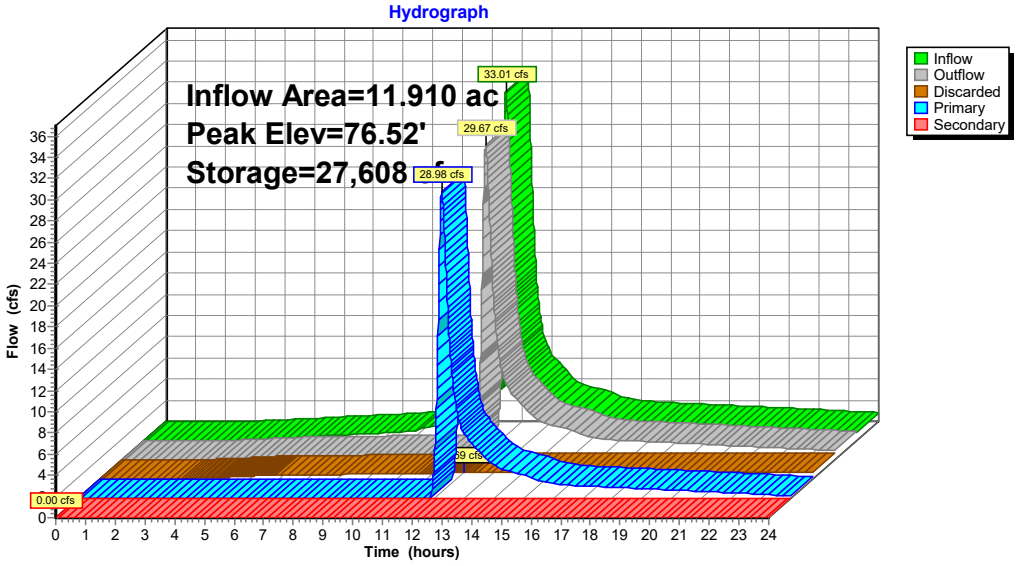
Device	Routing	Invert	Outlet Devices
#1	Discarded	73.00'	**3.100 in/hr Exfiltration over Surface area**
#2	Primary	75.60'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Secondary	77.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.69 cfs @ 12.25 hrs HW=76.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.69 cfs)

Primary OutFlow Max=28.96 cfs @ 12.25 hrs HW=76.52' TW=73.93' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 28.96 cfs @ 2.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 36P: DET 220 OG



Summary for Pond 37P: DET 210 OG

Inflow Area = 13.920 ac, 0.00% Impervious, Inflow Depth > 2.64" for 25-Year event
Inflow = 32.57 cfs @ 12.24 hrs, Volume= 3.060 af
Outflow = 5.98 cfs @ 13.24 hrs, Volume= 3.039 af, Atten= 82%, Lag= 60.0 min
Primary = 5.98 cfs @ 13.24 hrs, Volume= 3.039 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 75.50' @ 13.24 hrs Surf.Area= 18,765 sf Storage= 45,914 cf

Plug-Flow detention time= 85.9 min calculated for 3.038 af (99% of inflow)
Center-of-Mass det. time= 82.0 min (941.7 - 859.7)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	92,201 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

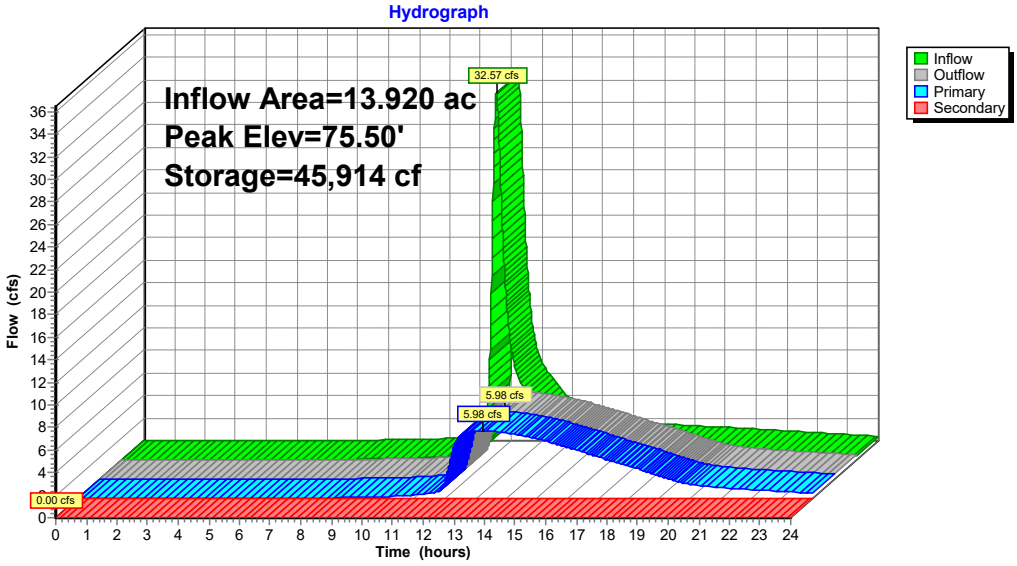
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
72.00	2,507	0	0	2,507
73.00	13,430	7,247	7,247	13,434
74.00	14,957	14,187	21,433	15,018
75.00	16,541	15,742	37,176	16,663
76.00	21,175	18,810	55,986	21,323
77.00	23,044	22,103	78,089	23,265
77.60	24,000	14,112	92,201	24,275

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	72.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	76.30'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Secondary	76.70'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=5.98 cfs @ 13.24 hrs HW=75.50' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 5.98 cfs of 7.06 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 5.98 cfs @ 8.56 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=72.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 37P: DET 210 OG



Summary for Pond 41P: UG 222

Inflow Area = 1.180 ac, 0.00% Impervious, Inflow Depth > 5.58" for 25-Year event
Inflow = 7.51 cfs @ 12.13 hrs, Volume= 0.549 af
Outflow = 5.05 cfs @ 12.19 hrs, Volume= 0.544 af, Atten= 33%, Lag= 3.4 min
Primary = 5.05 cfs @ 12.19 hrs, Volume= 0.544 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 91.47' @ 12.19 hrs Surf.Area= 0.036 ac Storage= 0.076 af

Plug-Flow detention time= 23.1 min calculated for 0.544 af (99% of inflow)
Center-of-Mass det. time= 17.0 min (800.2 - 783.1)

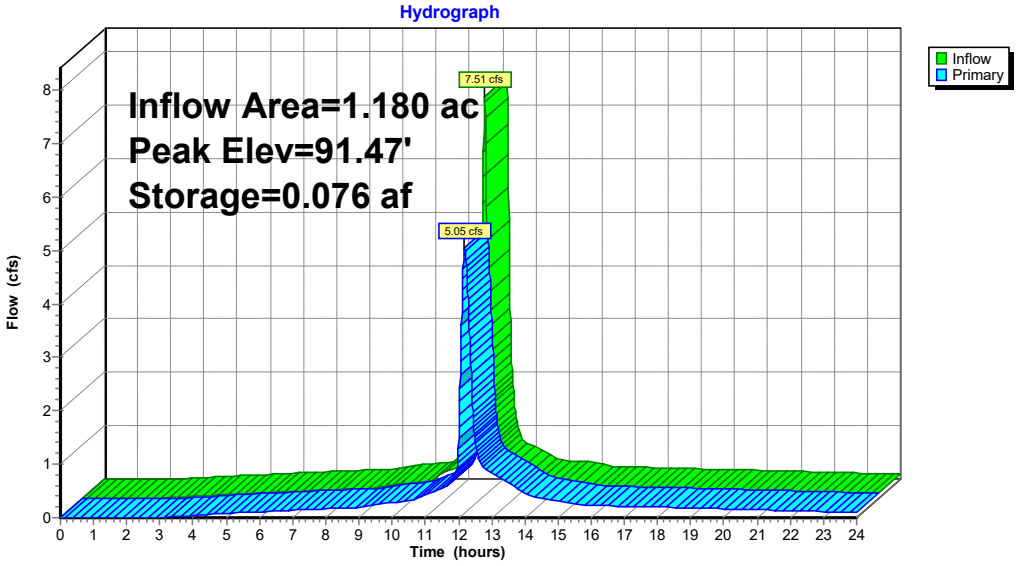
Volume	Invert	Avail.Storage	Storage Description
#1A	88.80'	0.008 af	**8.80'W x 176.00'L x 4.00'H Field A** 0.142 af Overall - 0.123 af Embedded = 0.019 af x 40.0% Voids
#2A	88.80'	0.095 af	**Concrete Galley 4x8x4** x 44 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 44 Chambers in 2 Rows
		0.102 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**18.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 88.30' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	88.80'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.80'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=5.05 cfs @ 12.19 hrs HW=91.47' TW=76.43' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.05 cfs of 10.68 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.47 cfs @ 7.48 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 3.58 cfs @ 5.12 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 41P: UG 222



Summary for Pond 42P: UG 223

Inflow Area = 0.860 ac, 0.00% Impervious, Inflow Depth > 5.70" for 25-Year event
Inflow = 5.53 cfs @ 12.13 hrs, Volume= 0.408 af
Outflow = 5.04 cfs @ 12.16 hrs, Volume= 0.408 af, Atten= 9%, Lag= 1.6 min
Primary = 5.04 cfs @ 12.16 hrs, Volume= 0.408 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 91.24' @ 12.16 hrs Surf.Area= 0.016 ac Storage= 0.035 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.5 min (782.4 - 777.9)

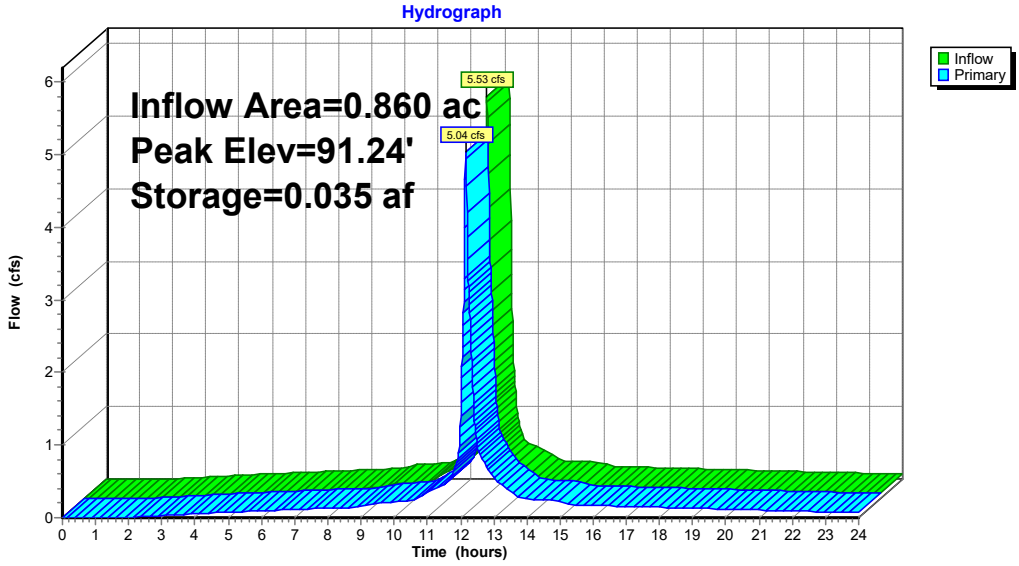
Volume	Invert	Avail.Storage	Storage Description
#1A	88.50'	0.004 af	**8.80'W x 80.00'L x 4.00'H Field A** 0.065 af Overall - 0.056 af Embedded = 0.009 af x 40.0% Voids
#2A	88.50'	0.043 af	**Concrete Galley 4x8x4** x 20 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 20 Chambers in 2 Rows
		0.046 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.00'	**12.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.00' / 86.50' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	88.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=5.02 cfs @ 12.16 hrs HW=91.24' TW=76.33' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.02 cfs of 6.08 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.55 cfs @ 7.89 fps)
├─**3=Orifice/Grate** (Orifice Controls 1.99 cfs @ 5.70 fps)
└─**4=Sharp-Crested Rectangular Weir** (Weir Controls 1.48 cfs @ 1.59 fps)

Pond 42P: UG 223



Summary for Pond 43P: UG 224

Inflow Area = 3.760 ac, 0.00% Impervious, Inflow Depth > 2.47" for 25-Year event
Inflow = 9.46 cfs @ 12.18 hrs, Volume= 0.774 af
Outflow = 5.06 cfs @ 12.31 hrs, Volume= 0.772 af, Atten= 46%, Lag= 7.8 min
Primary = 5.06 cfs @ 12.31 hrs, Volume= 0.772 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 92.43' @ 12.31 hrs Surf.Area= 0.065 ac Storage= 0.119 af

Plug-Flow detention time= 15.3 min calculated for 0.772 af (100% of inflow)
Center-of-Mass det. time= 13.8 min (905.3 - 891.5)

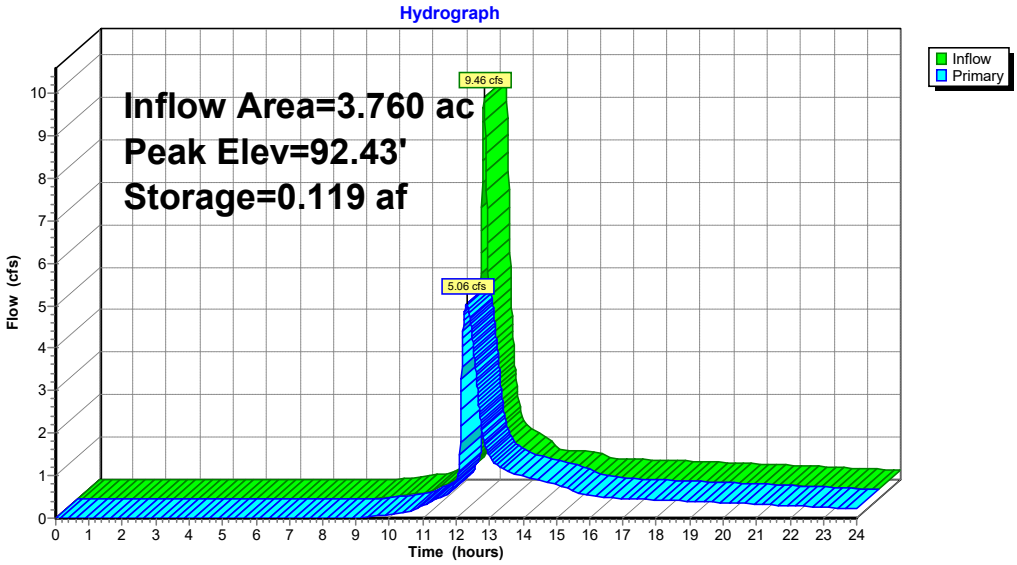
Volume	Invert	Avail.Storage	Storage Description
#1A	89.50'	0.002 af	**13.20'W x 32.00'L x 4.00'H Field A** 0.039 af Overall - 0.034 af Embedded = 0.005 af x 40.0% Voids
#2A	89.50'	0.026 af	**Concrete Galley 4x8x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 12 Chambers in 3 Rows
#3B	90.00'	0.006 af	**13.20'W x 88.00'L x 4.00'H Field B** 0.107 af Overall - 0.092 af Embedded = 0.015 af x 40.0% Voids
#4B	90.00'	0.071 af	**Concrete Galley 4x8x4** x 33 Inside #3 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 33 Chambers in 3 Rows
#5C	90.50'	0.006 af	**13.20'W x 96.00'L x 4.00'H Field C** 0.116 af Overall - 0.101 af Embedded = 0.016 af x 40.0% Voids
#6C	90.50'	0.077 af	**Concrete Galley 4x8x4** x 36 Inside #5 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 36 Chambers in 3 Rows
		0.188 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.50'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.50' / 89.18' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	89.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=5.06 cfs @ 12.31 hrs HW=92.43' TW=76.49' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.06 cfs of 8.92 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 1.55 cfs @ 7.88 fps)
  └─**3=Orifice/Grate** (Orifice Controls 3.51 cfs @ 5.03 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 43P: UG 224



Summary for Pond 44P: UG 225

Inflow Area = 1.610 ac, 0.00% Impervious, Inflow Depth > 2.27" for 25-Year event
Inflow = 3.74 cfs @ 12.18 hrs, Volume= 0.304 af
Outflow = 1.09 cfs @ 12.43 hrs, Volume= 0.298 af, Atten= 71%, Lag= 15.0 min
Primary = 1.09 cfs @ 12.43 hrs, Volume= 0.298 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 94.24' @ 12.43 hrs Surf.Area= 0.039 ac Storage= 0.069 af

Plug-Flow detention time= 39.8 min calculated for 0.298 af (98% of inflow)
Center-of-Mass det. time= 29.5 min (928.0 - 898.5)

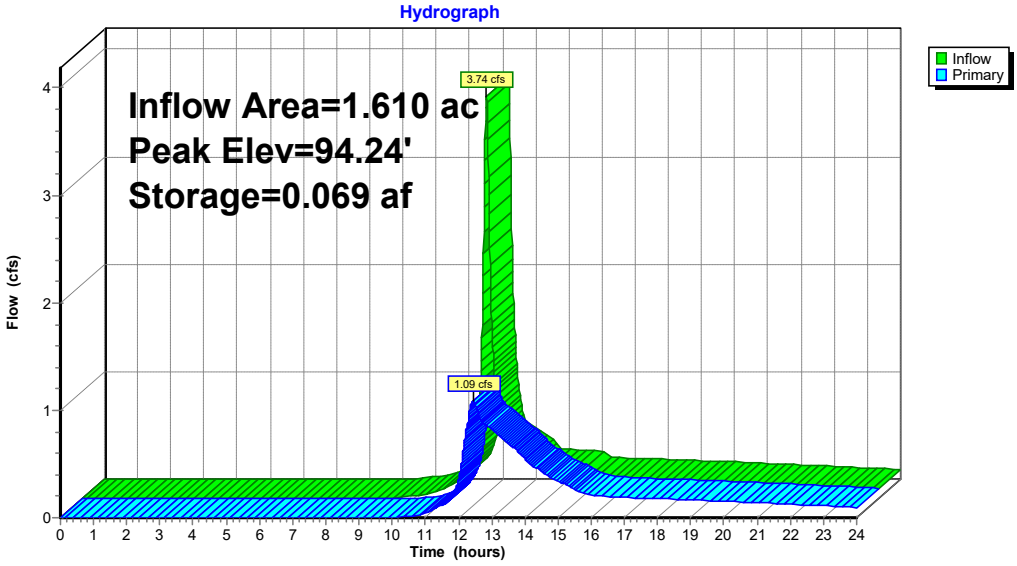
Volume	Invert	Avail.Storage	Storage Description
#1A	92.00'	0.008 af	**17.60'W x 96.00'L x 4.00'H Field A** 0.155 af Overall - 0.134 af Embedded = 0.021 af x 40.0% Voids
#2A	92.00'	0.103 af	**Concrete Galley 4x8x4** x 48 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 48 Chambers in 4 Rows
		0.112 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	92.00'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.00' / 90.53' S= 0.0432 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	92.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	94.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.09 cfs @ 12.43 hrs HW=94.24' TW=76.32' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.09 cfs of 7.50 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.94 cfs @ 6.86 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.15 cfs @ 1.66 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 44P: UG 225

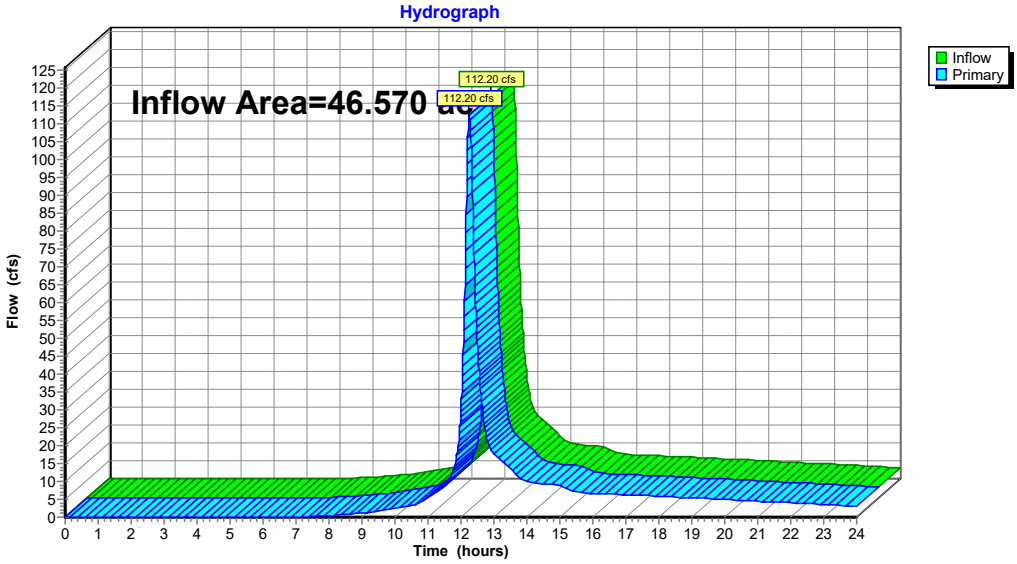


Summary for Link 4L: EX / A

Inflow Area = 46.570 ac, 0.00% Impervious, Inflow Depth > 2.94" for 25-Year event
Inflow = 112.20 cfs @ 12.25 hrs, Volume= 11.395 af
Primary = 112.20 cfs @ 12.25 hrs, Volume= 11.395 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: EX / A

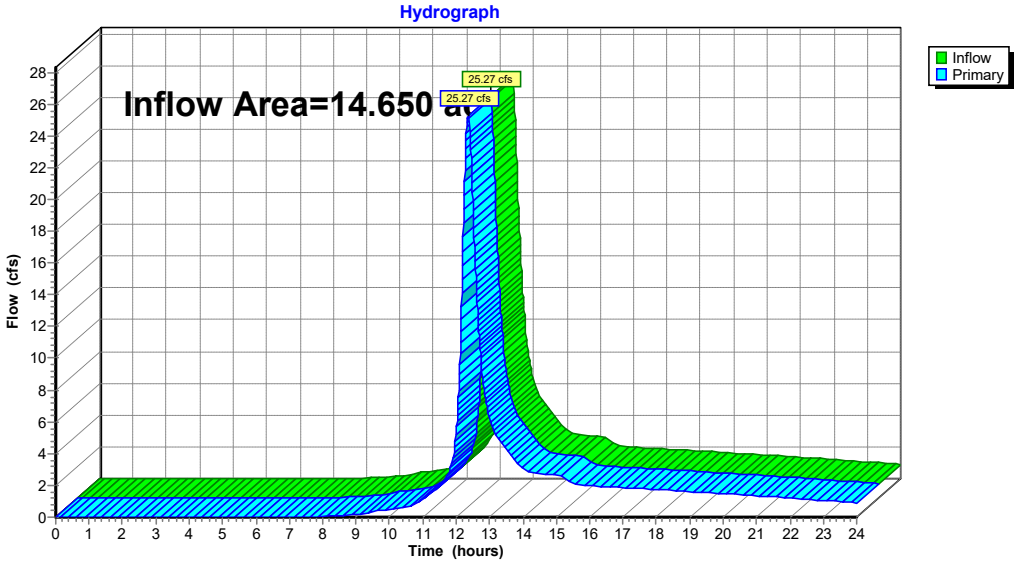


Summary for Link 7L: EX / B

Inflow Area = 14.650 ac, 0.00% Impervious, Inflow Depth > 2.62" for 25-Year event
Inflow = 25.27 cfs @ 12.36 hrs, Volume= 3.196 af
Primary = 25.27 cfs @ 12.36 hrs, Volume= 3.196 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: EX / B

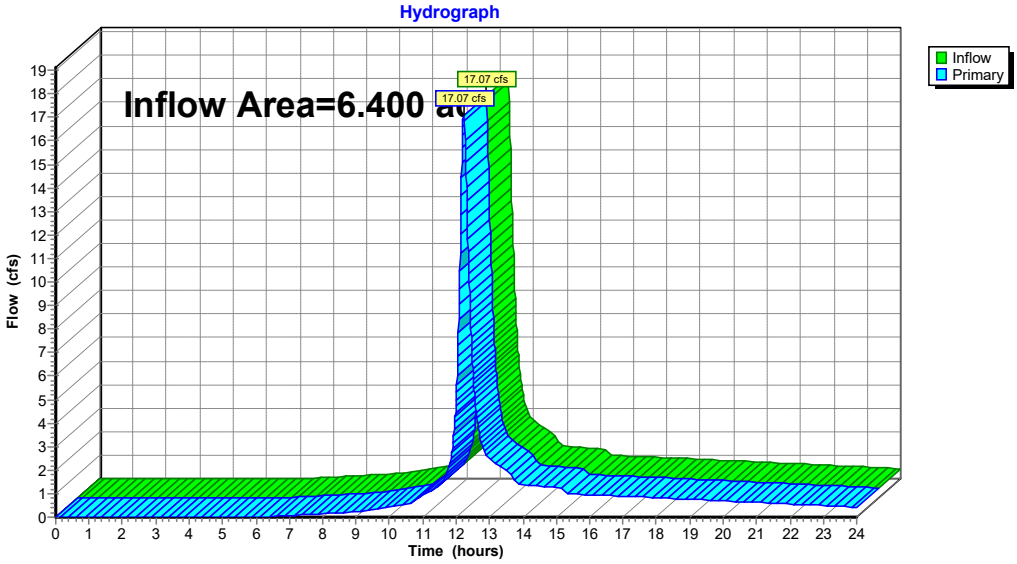


Summary for Link 10L: EX / C

Inflow Area = 6.400 ac, 0.00% Impervious, Inflow Depth > 3.13" for 25-Year event
Inflow = 17.07 cfs @ 12.22 hrs, Volume= 1.670 af
Primary = 17.07 cfs @ 12.22 hrs, Volume= 1.670 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 10L: EX / C

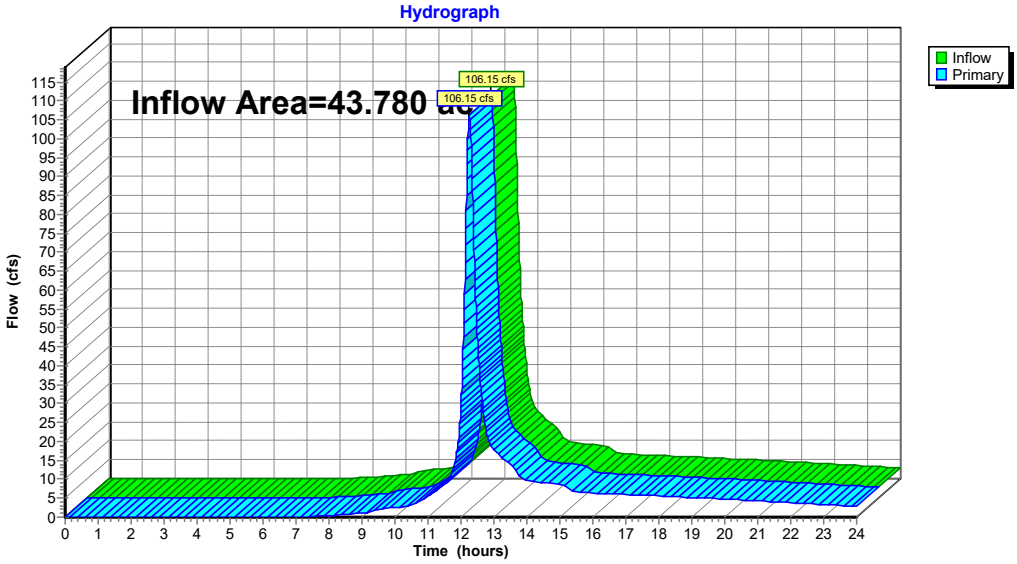


Summary for Link 15L: PR / A

Inflow Area = 43.780 ac, 0.00% Impervious, Inflow Depth > 3.04" for 25-Year event
Inflow = 106.15 cfs @ 12.25 hrs, Volume= 11.077 af
Primary = 106.15 cfs @ 12.25 hrs, Volume= 11.077 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 15L: PR / A

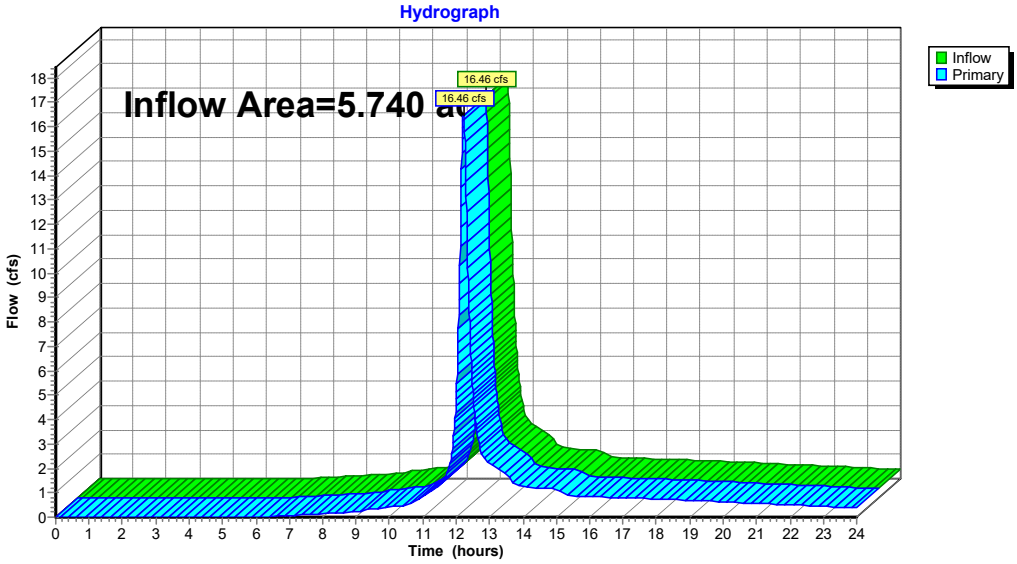


Summary for Link 25L: PR / C

Inflow Area = 5.740 ac, 0.00% Impervious, Inflow Depth > 3.17" for 25-Year event
Inflow = 16.46 cfs @ 12.22 hrs, Volume= 1.518 af
Primary = 16.46 cfs @ 12.22 hrs, Volume= 1.518 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 25L: PR / C

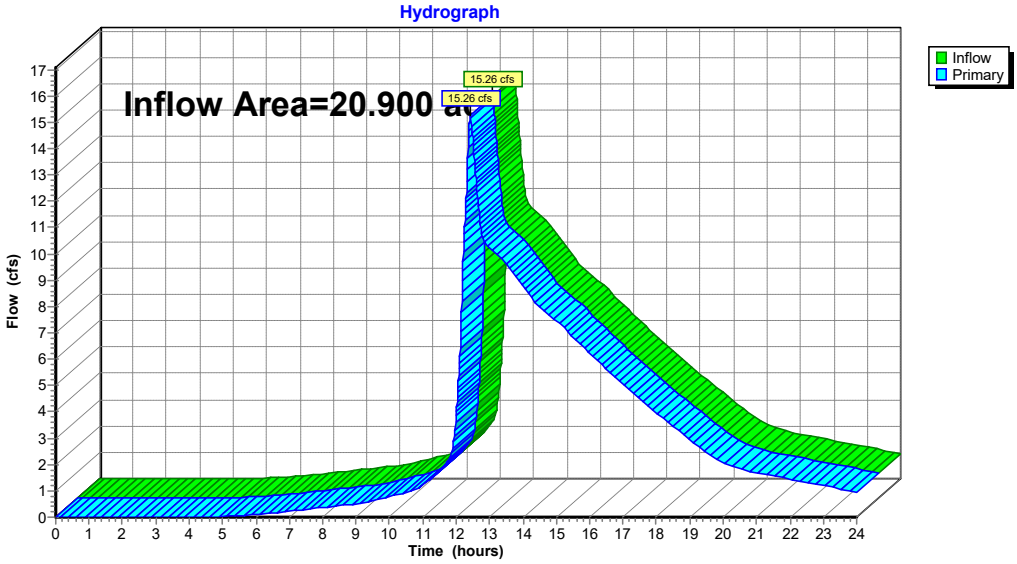


Summary for Link 27L: PR / B

Inflow Area = 20.900 ac, 0.00% Impervious, Inflow Depth > 2.93" for 25-Year event
Inflow = 15.26 cfs @ 12.42 hrs, Volume= 5.096 af
Primary = 15.26 cfs @ 12.42 hrs, Volume= 5.096 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 27L: PR / B

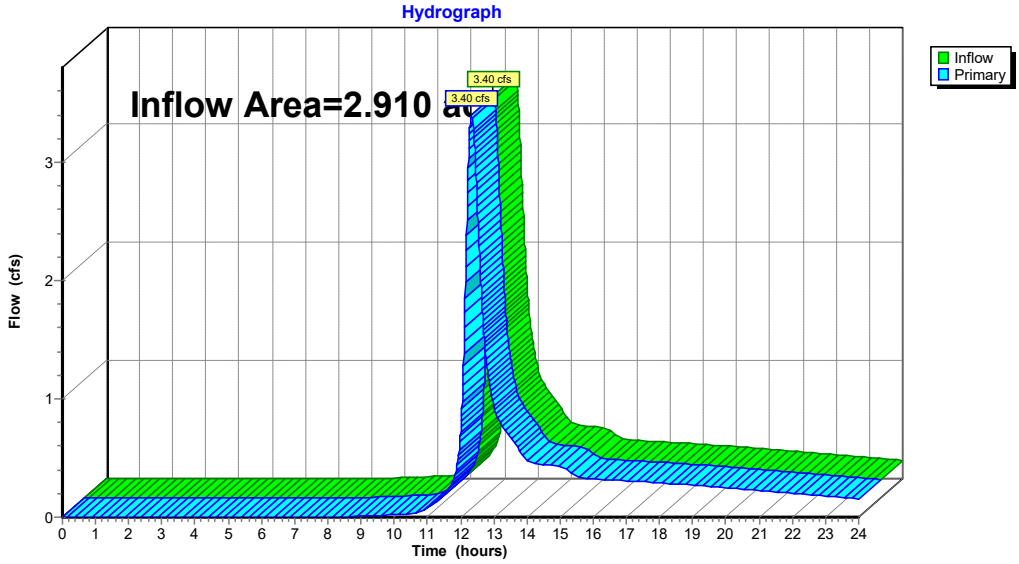


Summary for Link 30L: EX / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 1.97" for 25-Year event
Inflow = 3.40 cfs @ 12.32 hrs, Volume= 0.477 af
Primary = 3.40 cfs @ 12.32 hrs, Volume= 0.477 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 30L: EX / E

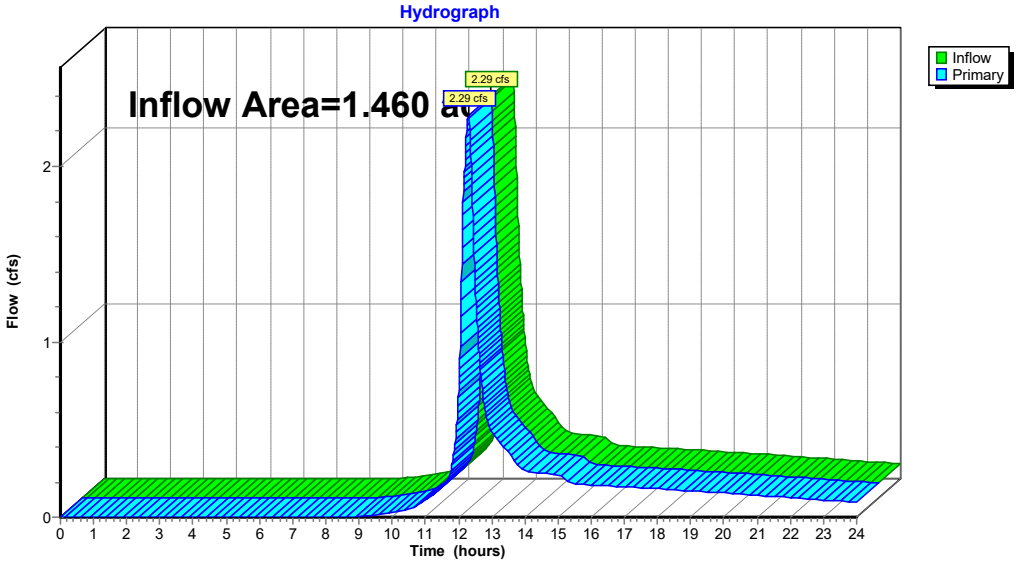


Summary for Link 34L: PR / E

Inflow Area = 1.460 ac, 0.00% Impervious, Inflow Depth > 2.35" for 25-Year event
Inflow = 2.29 cfs @ 12.29 hrs, Volume= 0.286 af
Primary = 2.29 cfs @ 12.29 hrs, Volume= 0.286 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 34L: PR / E



Summary for Subcatchment 1S: EXWS-10

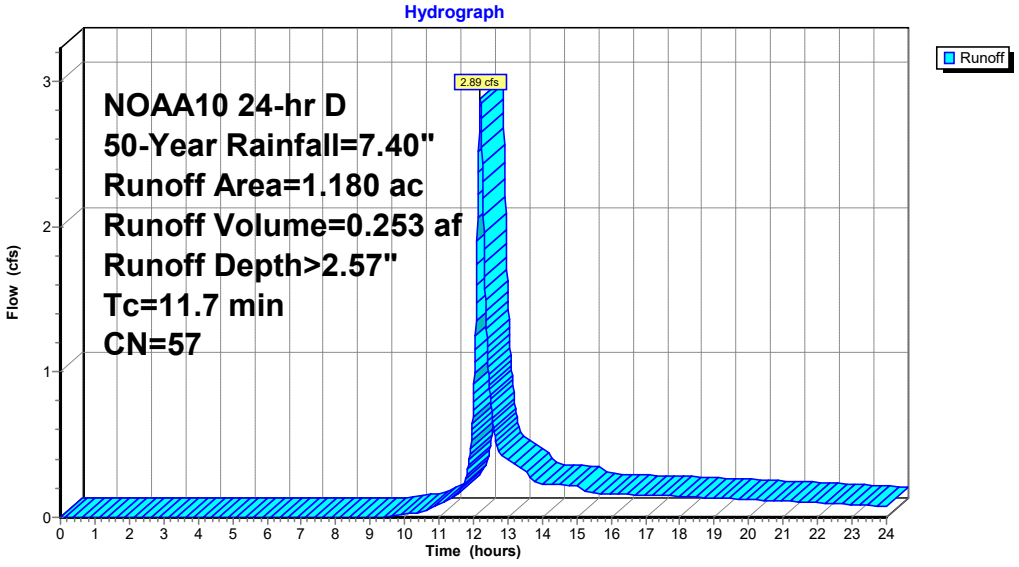
Runoff = 2.89 cfs @ 12.20 hrs, Volume= 0.253 af, Depth> 2.57"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	1.180	57	
	1.180		100.00% Pervious Area

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

Subcatchment 1S: EXWS-10



Summary for Subcatchment 2S: EXWS-11

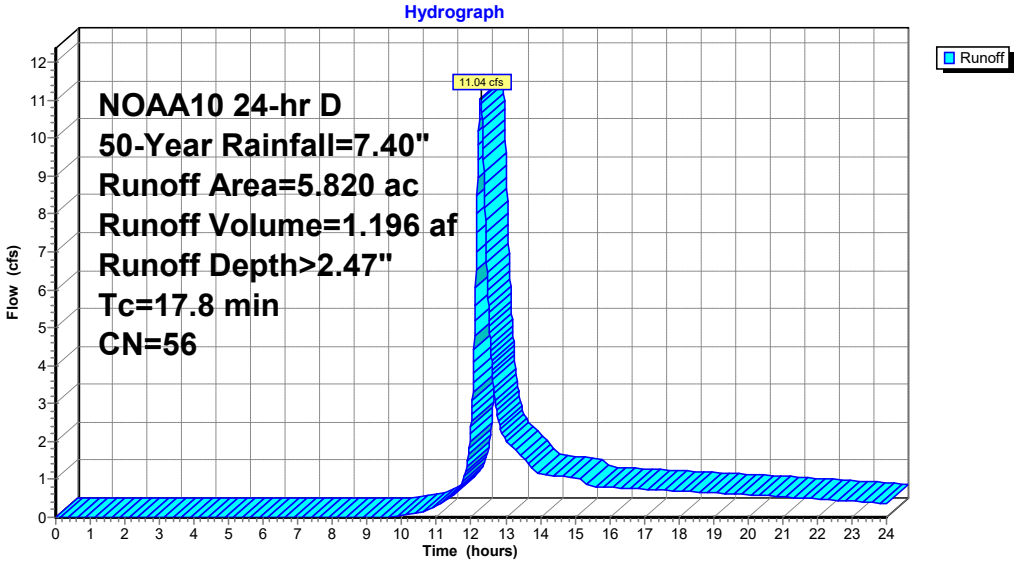
Runoff = 11.04 cfs @ 12.28 hrs, Volume= 1.196 af, Depth> 2.47"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	5.820	56	
	5.820		100.00% Pervious Area

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

Subcatchment 2S: EXWS-11



Summary for Subcatchment 3S: EXWS-12 (Offsite)

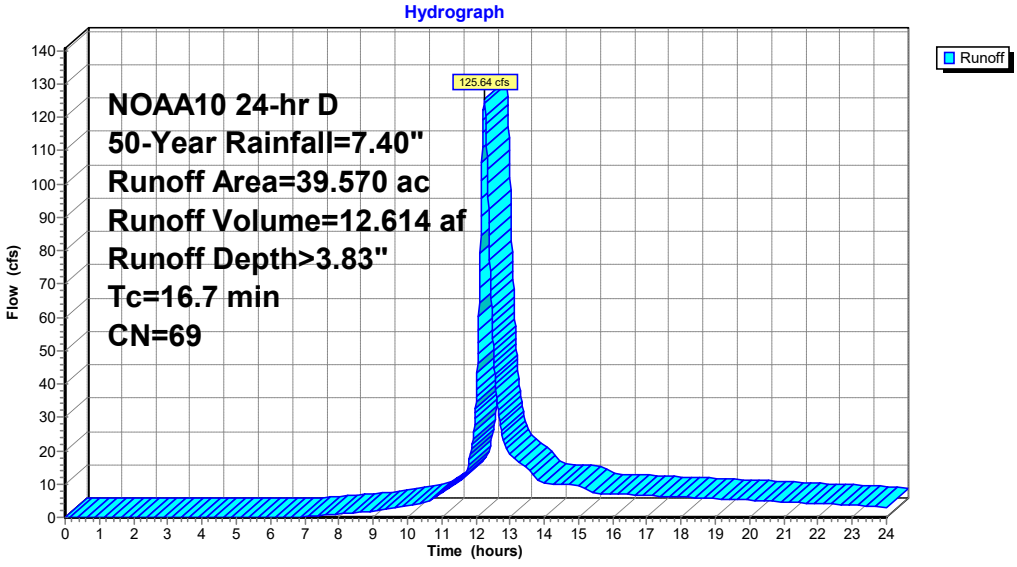
Runoff = 125.64 cfs @ 12.25 hrs, Volume= 12.614 af, Depth> 3.83"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: EXWS-12 (Offsite)



Summary for Subcatchment 5S: EXWS-20

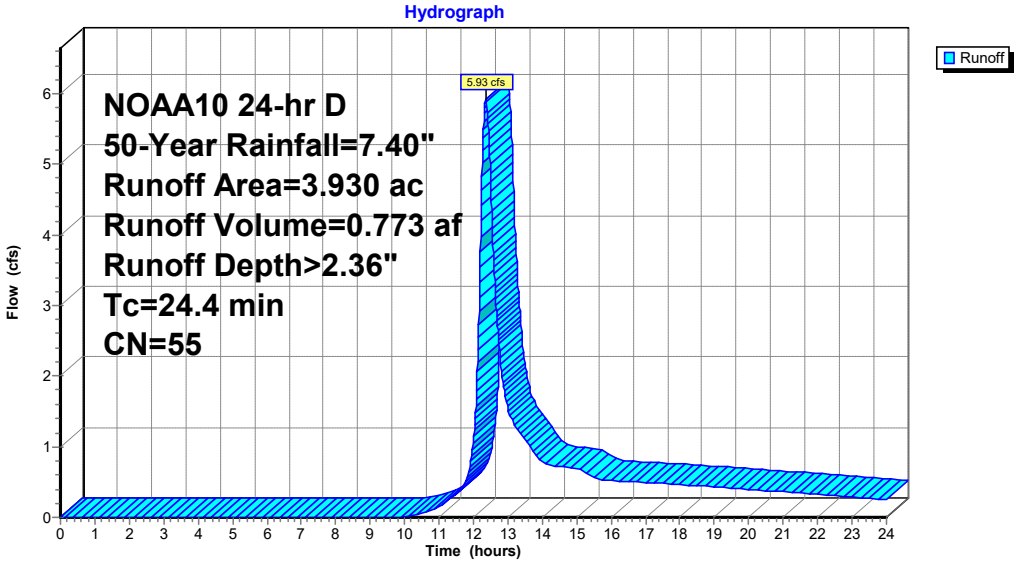
Runoff = 5.93 cfs @ 12.36 hrs, Volume= 0.773 af, Depth> 2.36"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	3.930	55	
	3.930		100.00% Pervious Area

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

Subcatchment 5S: EXWS-20



Summary for Subcatchment 6S: EXWS-21

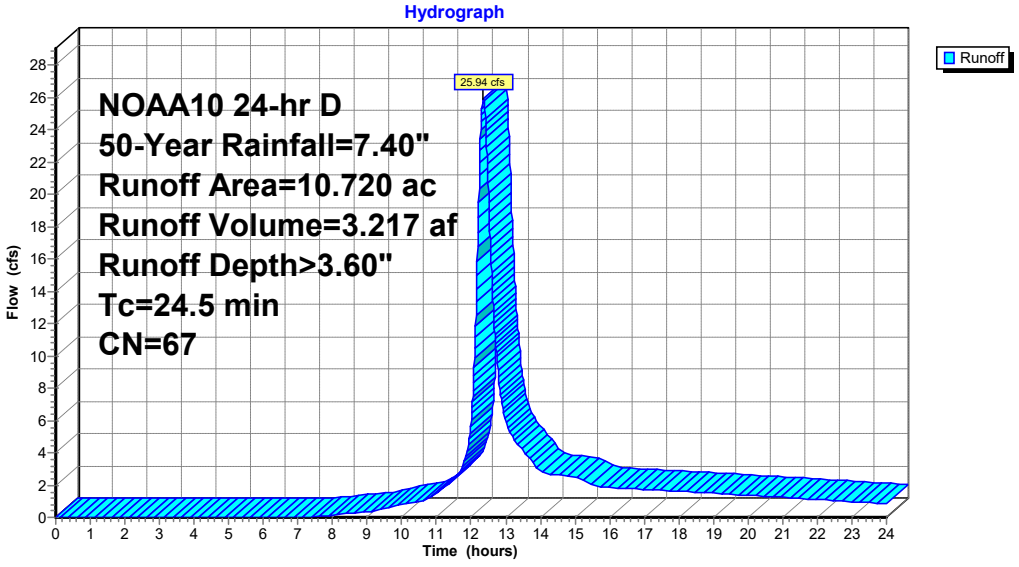
Runoff = 25.94 cfs @ 12.34 hrs, Volume= 3.217 af, Depth> 3.60"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	10.720	67	
	10.720		100.00% Pervious Area

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

Subcatchment 6S: EXWS-21



Summary for Subcatchment 8S: EXWS-30

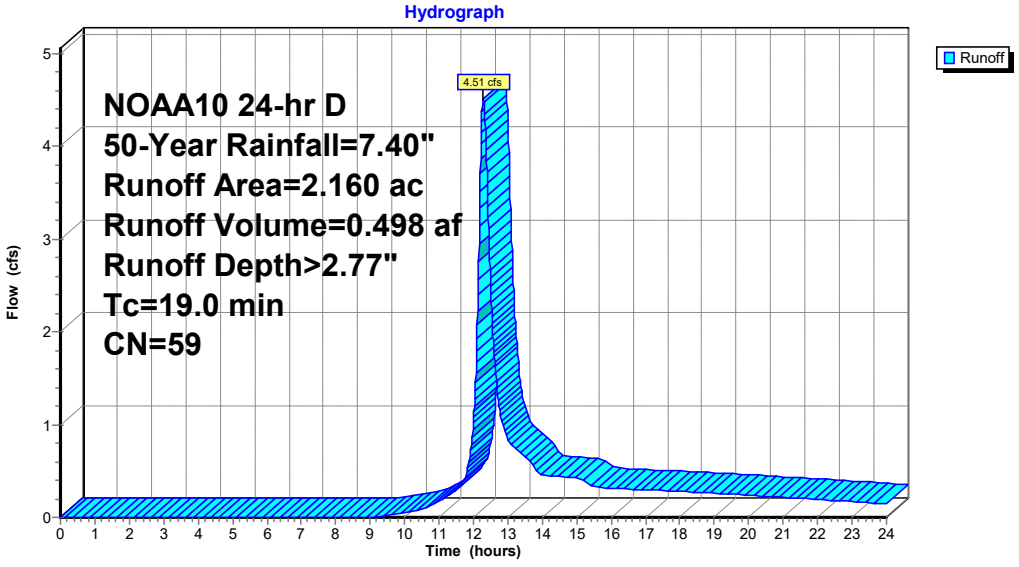
Runoff = 4.51 cfs @ 12.29 hrs, Volume= 0.498 af, Depth> 2.77"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	2.160	59	
	2.160		100.00% Pervious Area

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

Subcatchment 8S: EXWS-30



Summary for Subcatchment 9S: EXWS-31

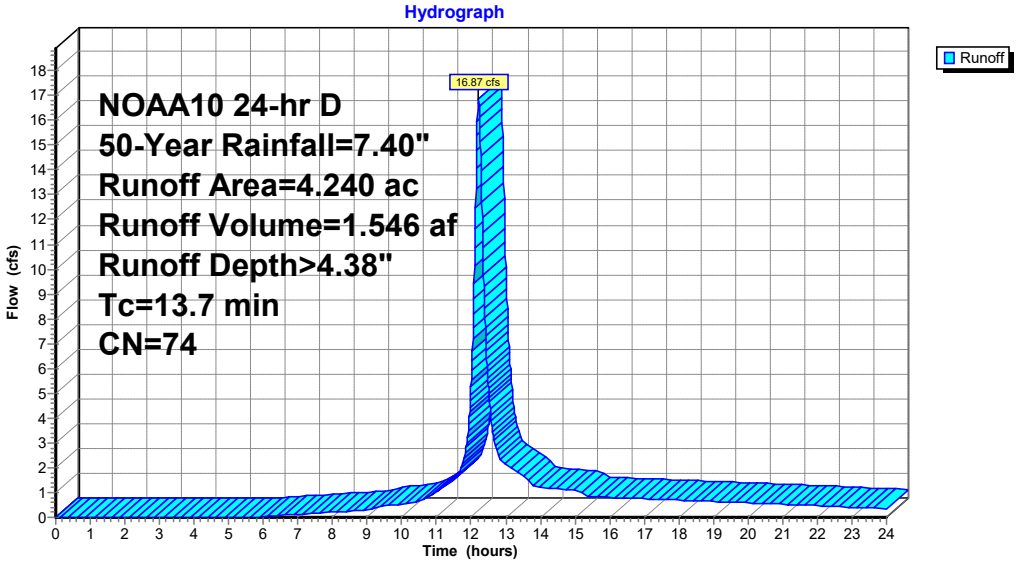
Runoff = 16.87 cfs @ 12.22 hrs, Volume= 1.546 af, Depth> 4.38"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 9S: EXWS-31



Summary for Subcatchment 11S: EXWS-40

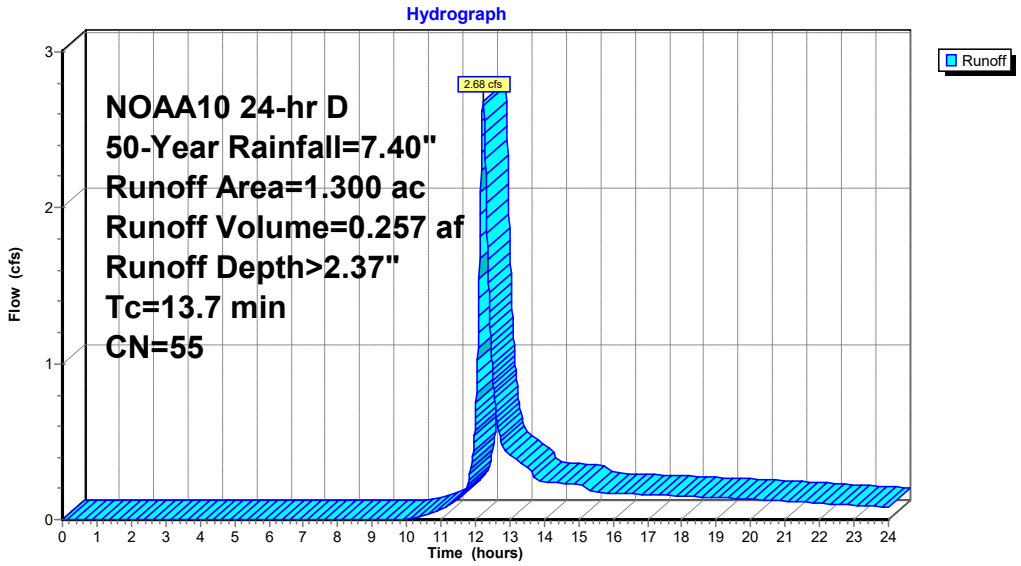
Runoff = 2.68 cfs @ 12.22 hrs, Volume= 0.257 af, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	1.300	55	
	1.300		100.00% Pervious Area

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

Subcatchment 11S: EXWS-40



Summary for Subcatchment 12S: PRWS-10

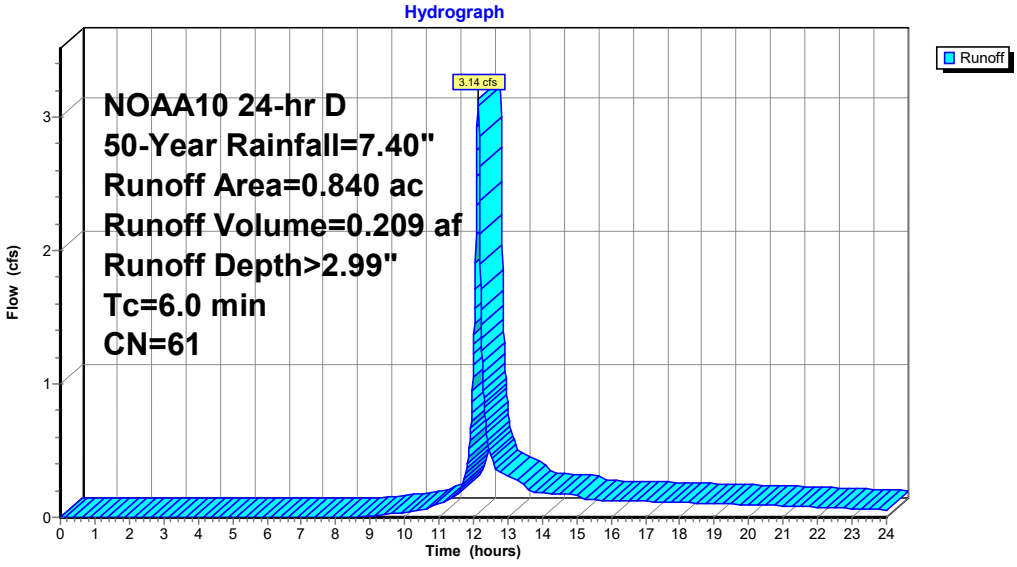
Runoff = 3.14 cfs @ 12.13 hrs, Volume= 0.209 af, Depth> 2.99"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	0.840	61	
	0.840		100.00% Pervious Area

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

Subcatchment 12S: PRWS-10



Summary for Subcatchment 13S: PRWS-11

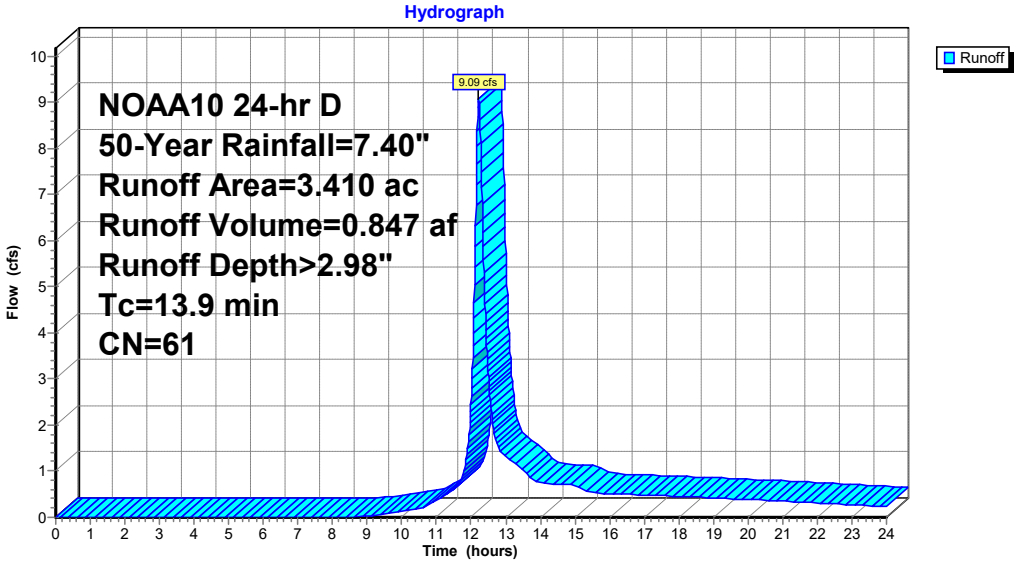
Runoff = 9.09 cfs @ 12.22 hrs, Volume= 0.847 af, Depth> 2.98"
Routed to Pond 35P : UG 110

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	3.410	61	
	3.410		100.00% Pervious Area

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

Subcatchment 13S: PRWS-11



Summary for Subcatchment 14S: EXWS-12 (Offsite)

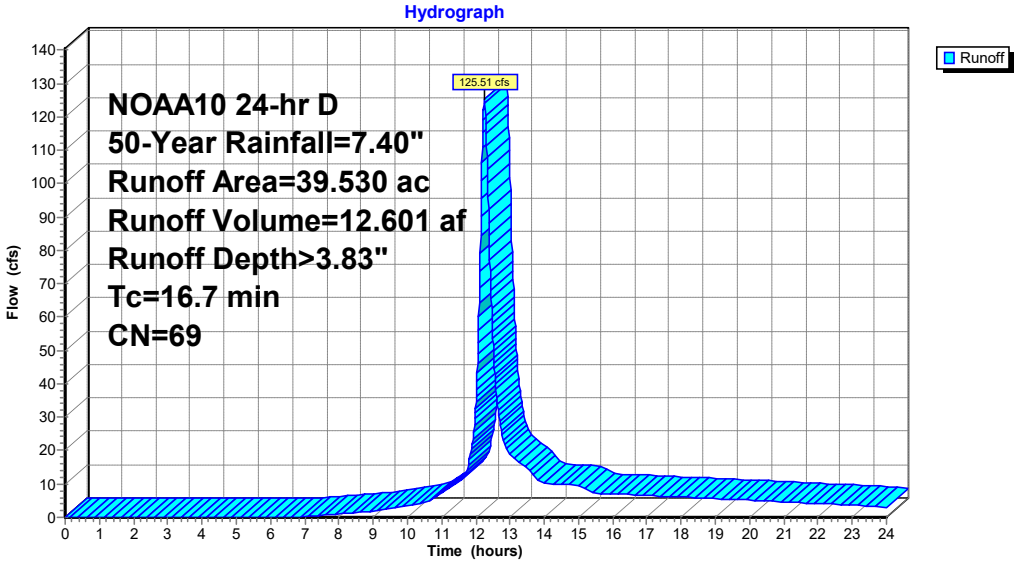
Runoff = 125.51 cfs @ 12.25 hrs, Volume= 12.601 af, Depth> 3.83"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	39.530	69	
	39.530		100.00% Pervious Area

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

Subcatchment 14S: EXWS-12 (Offsite)



Summary for Subcatchment 16S: PRWS-20

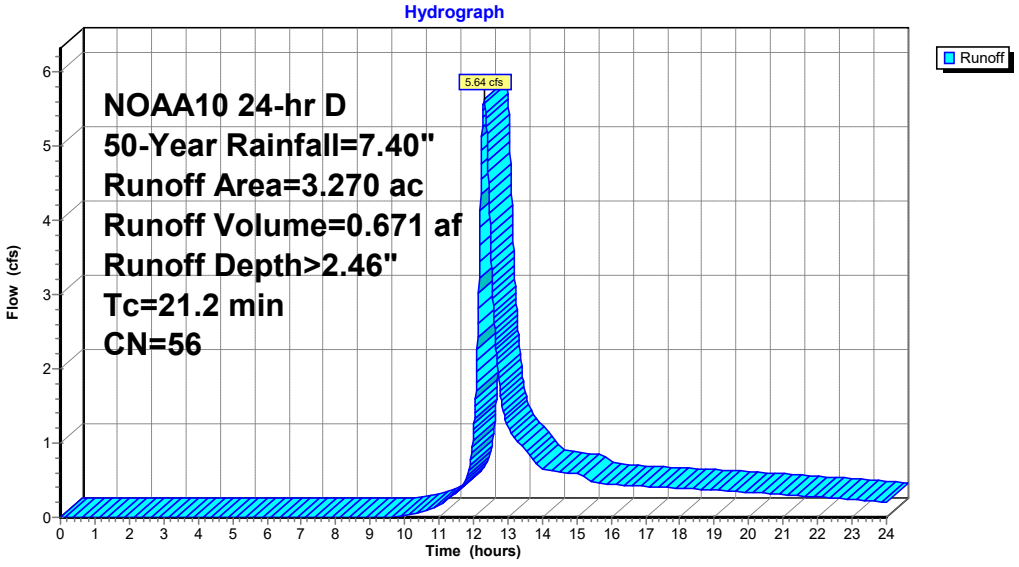
Runoff = 5.64 cfs @ 12.32 hrs, Volume= 0.671 af, Depth> 2.46"
Routed to Link 27L : PR / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	3.270	56	
	3.270		100.00% Pervious Area

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

Subcatchment 16S: PRWS-20



Summary for Subcatchment 17S: PRWS-21

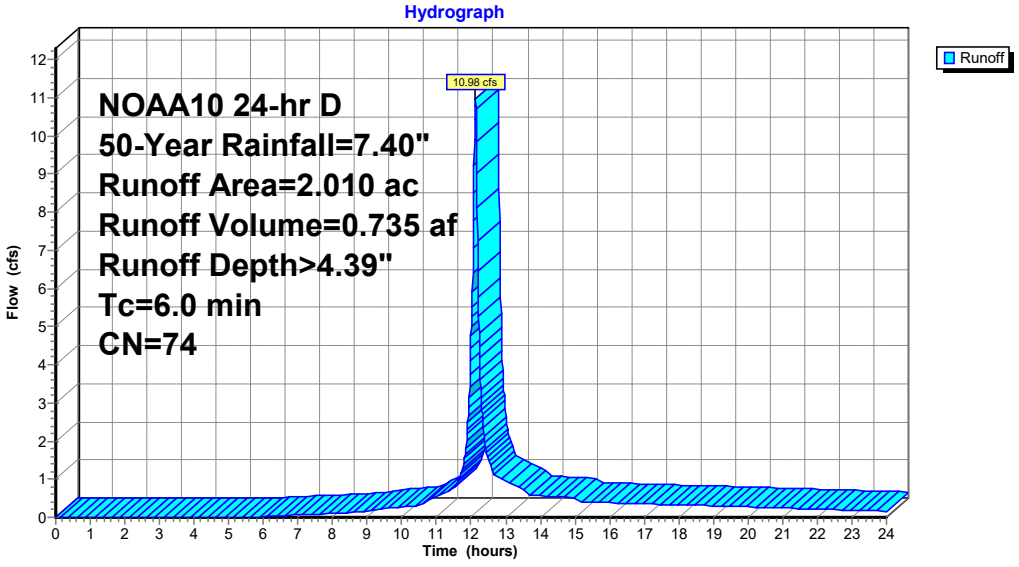
Runoff = 10.98 cfs @ 12.13 hrs, Volume= 0.735 af, Depth> 4.39"
Routed to Pond 37P : DET 210 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	2.010	74	
	2.010		100.00% Pervious Area

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

Subcatchment 17S: PRWS-21



Summary for Subcatchment 18S: PRWS-22

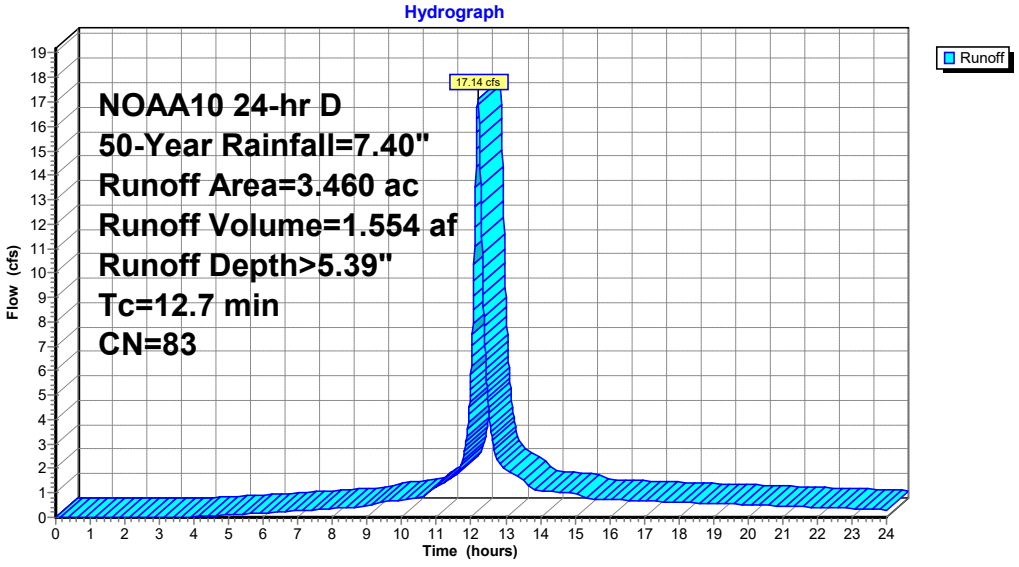
Runoff = 17.14 cfs @ 12.20 hrs, Volume= 1.554 af, Depth> 5.39"
Routed to Pond 36P : DET 220 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	3.460	83	
	3.460		100.00% Pervious Area

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

Subcatchment 18S: PRWS-22



Summary for Subcatchment 19S: PRWS-23

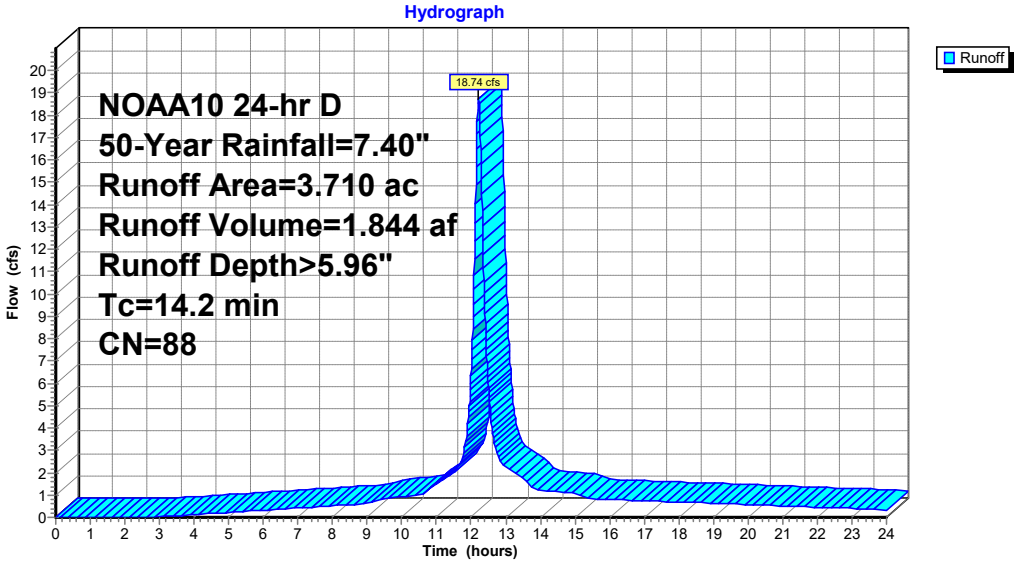
Runoff = 18.74 cfs @ 12.22 hrs, Volume= 1.844 af, Depth> 5.96"
Routed to Pond 22P : DET 230

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	3.710	88	
	3.710		100.00% Pervious Area

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

Subcatchment 19S: PRWS-23



Summary for Subcatchment 23S: PRWS-30

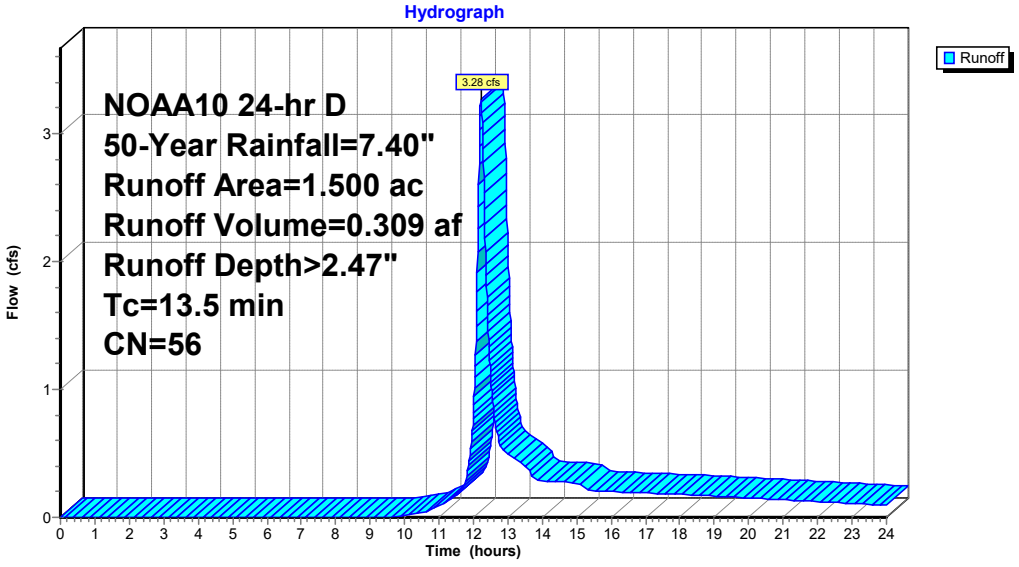
Runoff = 3.28 cfs @ 12.22 hrs, Volume= 0.309 af, Depth> 2.47"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	1.500	56	
	1.500		100.00% Pervious Area

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

Subcatchment 23S: PRWS-30



Summary for Subcatchment 24S: PRWS-31

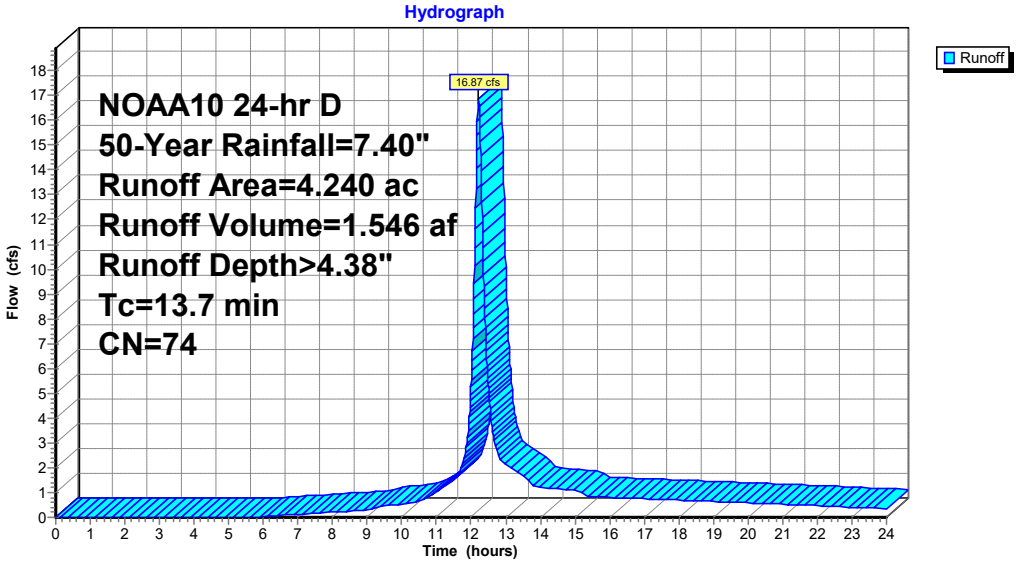
Runoff = 16.87 cfs @ 12.22 hrs, Volume= 1.546 af, Depth> 4.38"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 24S: PRWS-31



Summary for Subcatchment 26S: PRWS-40 / D

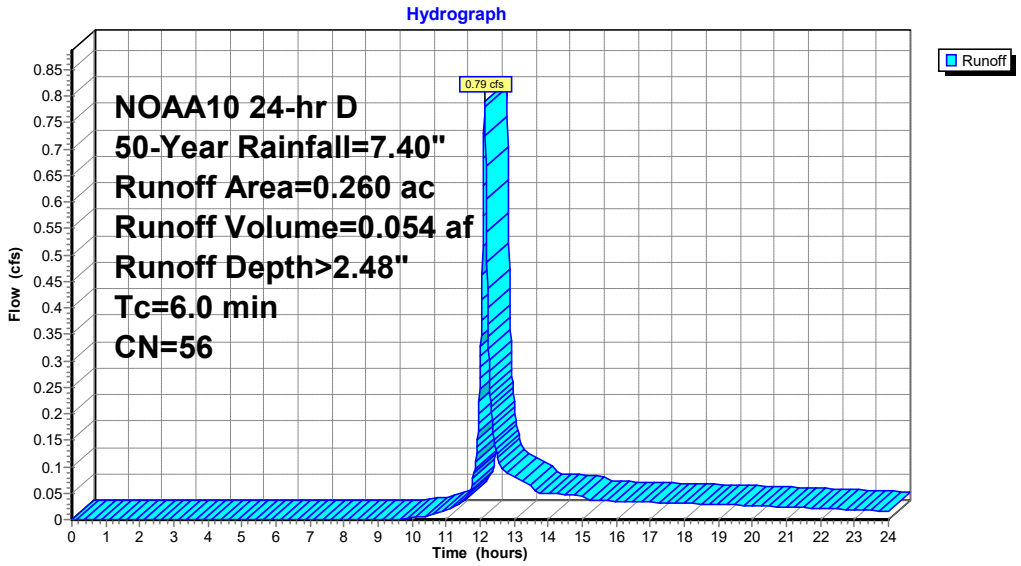
Runoff = 0.79 cfs @ 12.14 hrs, Volume= 0.054 af, Depth> 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	0.260	56	
	0.260		100.00% Pervious Area

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

Subcatchment 26S: PRWS-40 / D



Summary for Subcatchment 28S: EXWS-50

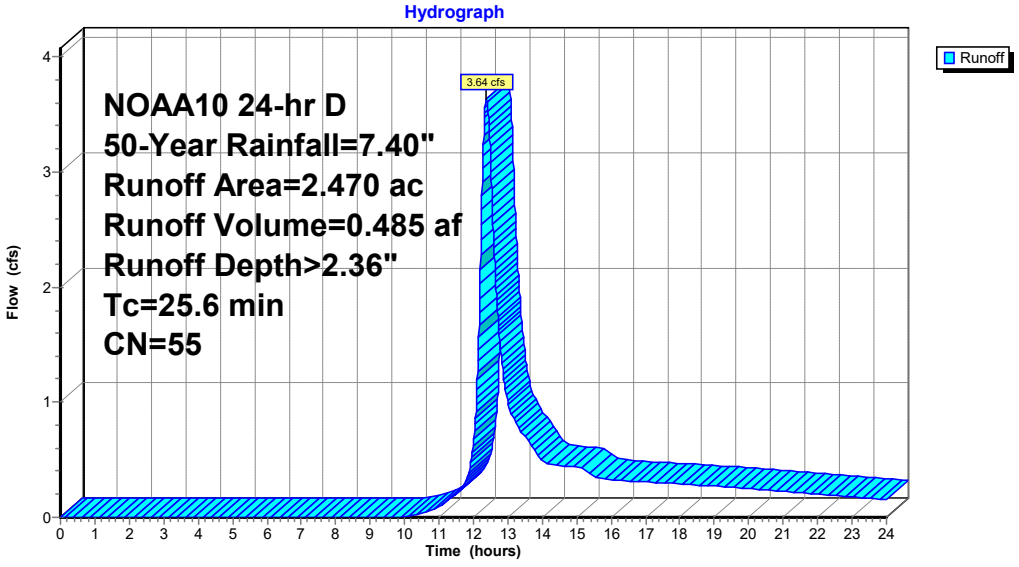
Runoff = 3.64 cfs @ 12.37 hrs, Volume= 0.485 af, Depth> 2.36"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	2.470	55	
	2.470		100.00% Pervious Area

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

Subcatchment 28S: EXWS-50



Summary for Subcatchment 29S: EXWS-51

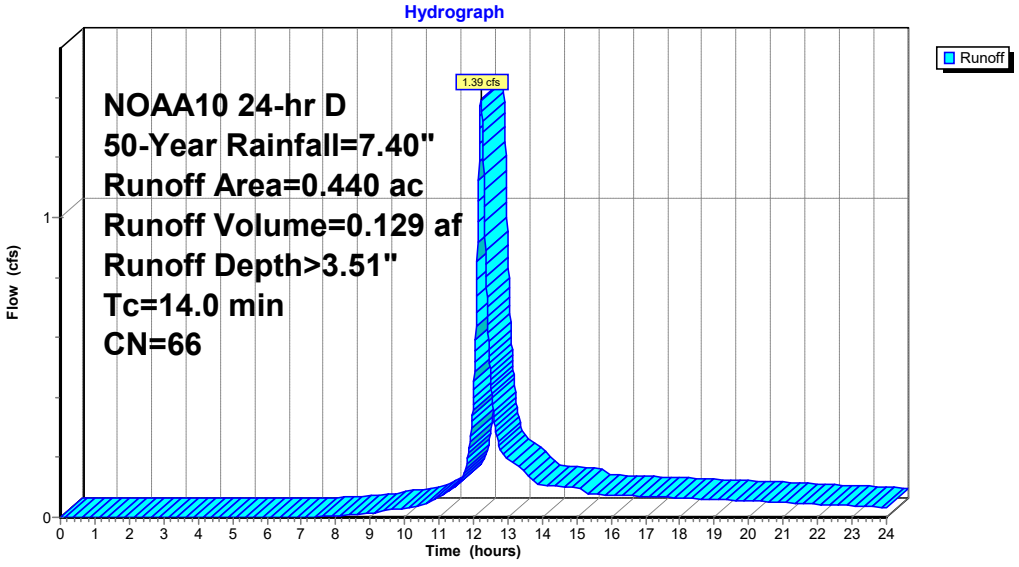
Runoff = 1.39 cfs @ 12.22 hrs, Volume= 0.129 af, Depth> 3.51"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 29S: EXWS-51



Summary for Subcatchment 31S: PRWS-221

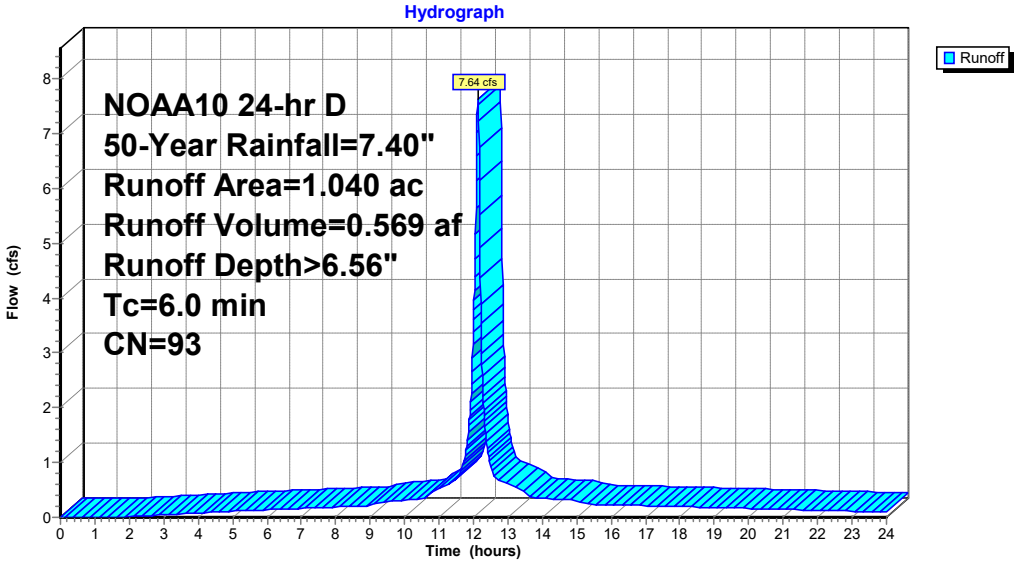
Runoff = 7.64 cfs @ 12.13 hrs, Volume= 0.569 af, Depth> 6.56"
Routed to Pond 33P : UG 221

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	1.040	93	
	1.040		100.00% Pervious Area

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

Subcatchment 31S: PRWS-221



Summary for Subcatchment 32S: PRWS-51

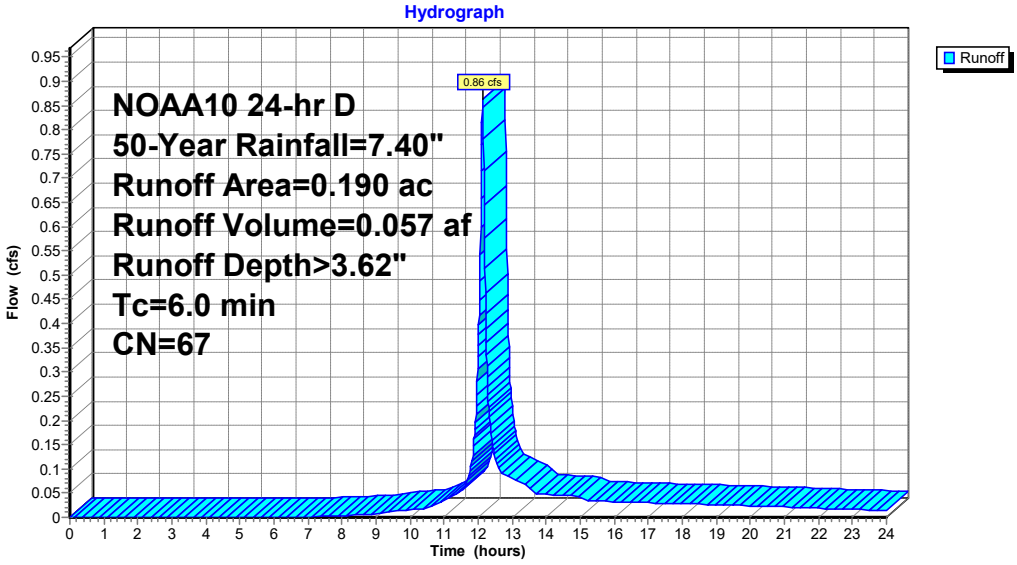
Runoff = 0.86 cfs @ 12.13 hrs, Volume= 0.057 af, Depth> 3.62"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	0.190	67	
	0.190		100.00% Pervious Area

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

Subcatchment 32S: PRWS-51



Summary for Subcatchment 33S: PRWS-50

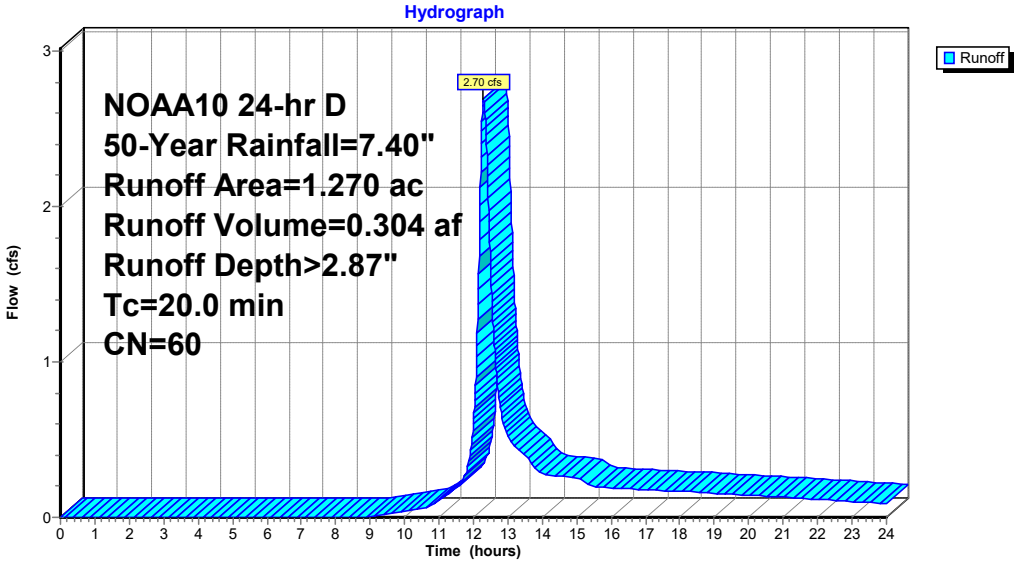
Runoff = 2.70 cfs @ 12.29 hrs, Volume= 0.304 af, Depth> 2.87"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	1.270	60	
	1.270		100.00% Pervious Area

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

Subcatchment 33S: PRWS-50



Summary for Subcatchment 35S: PRWS-52

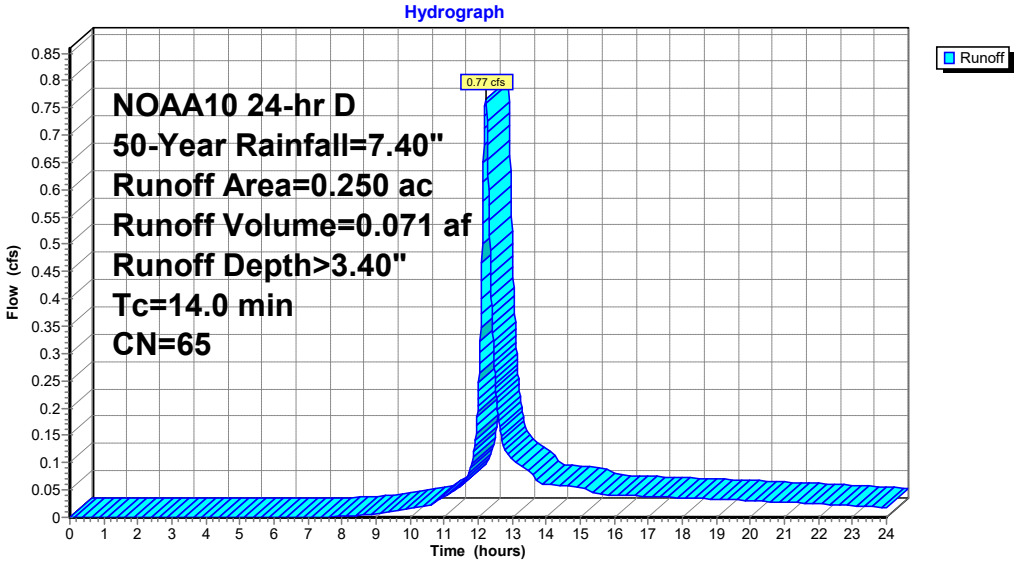
Runoff = 0.77 cfs @ 12.22 hrs, Volume= 0.071 af, Depth> 3.40"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	0.250	65	
	0.250		100.00% Pervious Area

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

Subcatchment 35S: PRWS-52



Summary for Subcatchment 36S: PRWS-222

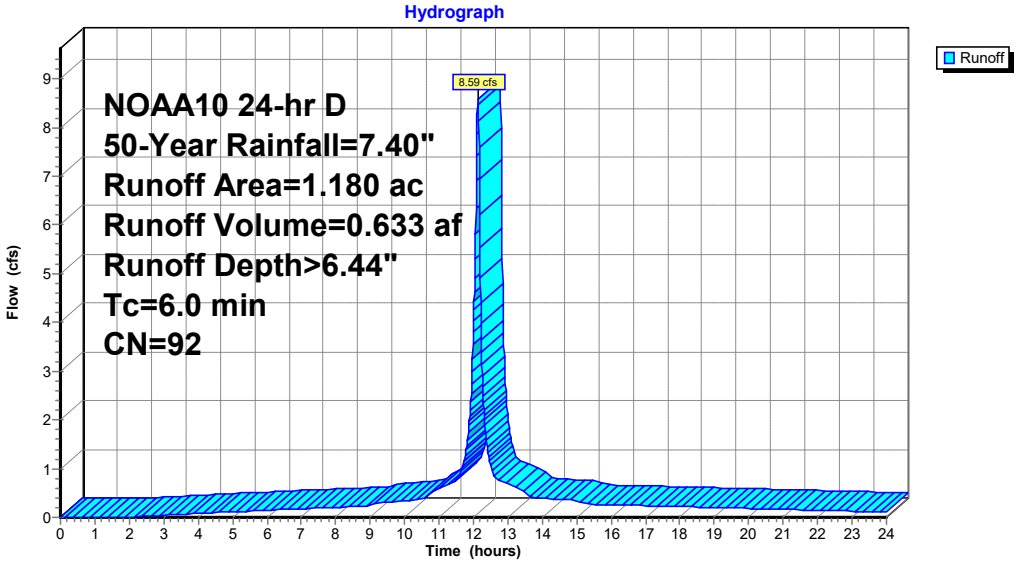
Runoff = 8.59 cfs @ 12.13 hrs, Volume= 0.633 af, Depth> 6.44"
Routed to Pond 41P : UG 222

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	1.180	92	
	1.180		100.00% Pervious Area

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

Subcatchment 36S: PRWS-222



Summary for Subcatchment 37S: PRWS-223

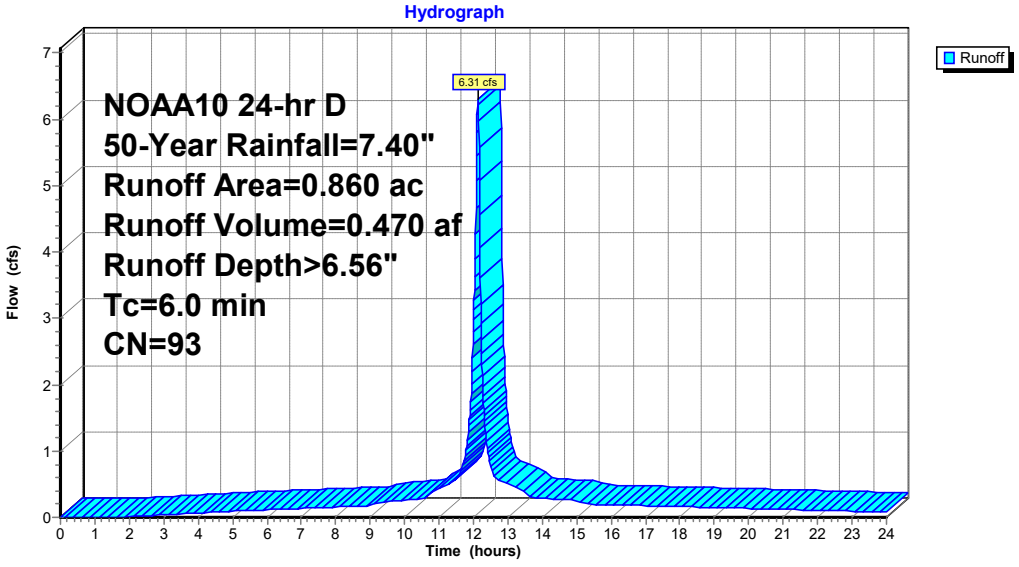
Runoff = 6.31 cfs @ 12.13 hrs, Volume= 0.470 af, Depth> 6.56"
Routed to Pond 42P : UG 223

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	0.860	93	
	0.860		100.00% Pervious Area

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

Subcatchment 37S: PRWS-223



Summary for Subcatchment 38S: PRWS-224

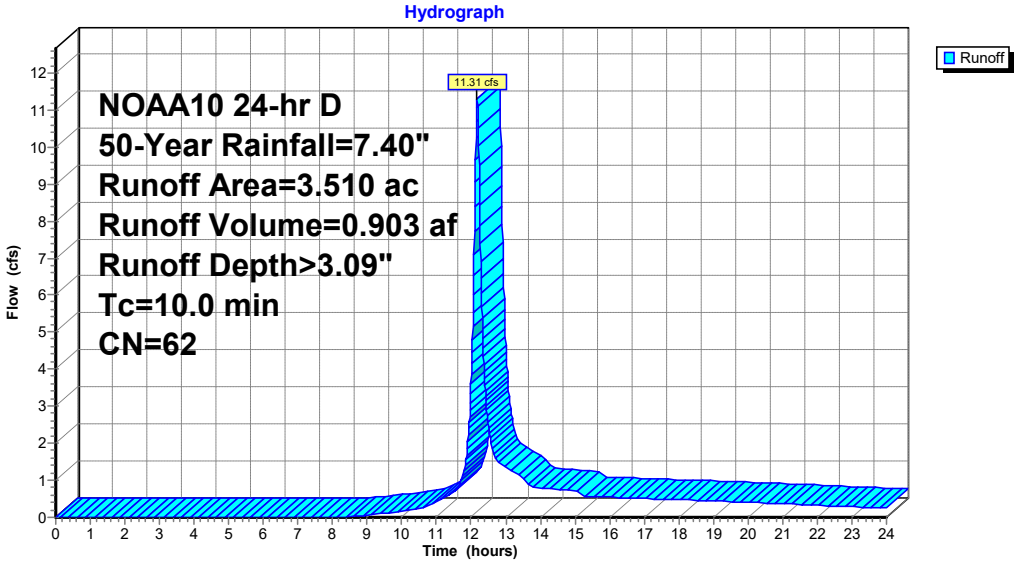
Runoff = 11.31 cfs @ 12.18 hrs, Volume= 0.903 af, Depth> 3.09"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	3.510	62	
	3.510		100.00% Pervious Area

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

Subcatchment 38S: PRWS-224



Summary for Subcatchment 39S: PRWS-225

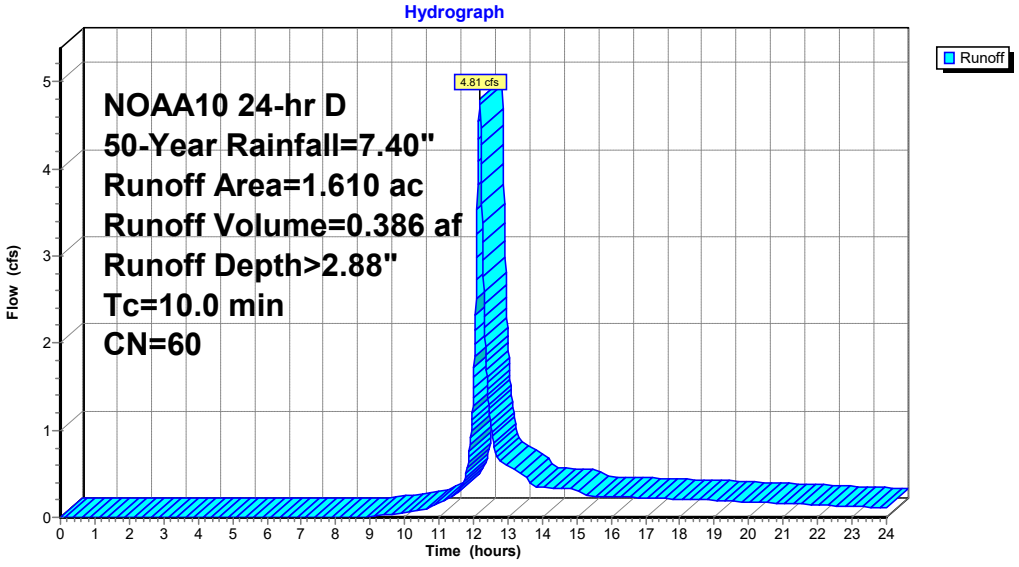
Runoff = 4.81 cfs @ 12.18 hrs, Volume= 0.386 af, Depth> 2.88"
Routed to Pond 44P : UG 225

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	1.610	60	
	1.610		100.00% Pervious Area

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

Subcatchment 39S: PRWS-225



Summary for Pond 22P: DET 230

Inflow Area = 3.710 ac, 0.00% Impervious, Inflow Depth > 5.96" for 50-Year event
Inflow = 18.74 cfs @ 12.22 hrs, Volume= 1.844 af
Outflow = 10.45 cfs @ 12.37 hrs, Volume= 1.796 af, Atten= 44%, Lag= 9.2 min
Primary = 10.45 cfs @ 12.37 hrs, Volume= 1.796 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 71.90' Surf.Area= 7,535 sf Storage= 12,410 cf
Peak Elev= 74.28' @ 12.37 hrs Surf.Area= 10,292 sf Storage= 33,555 cf (21,145 cf above start)

Plug-Flow detention time= 200.3 min calculated for 1.511 af (82% of inflow)
Center-of-Mass det. time= 58.6 min (861.2 - 802.5)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	53,127 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

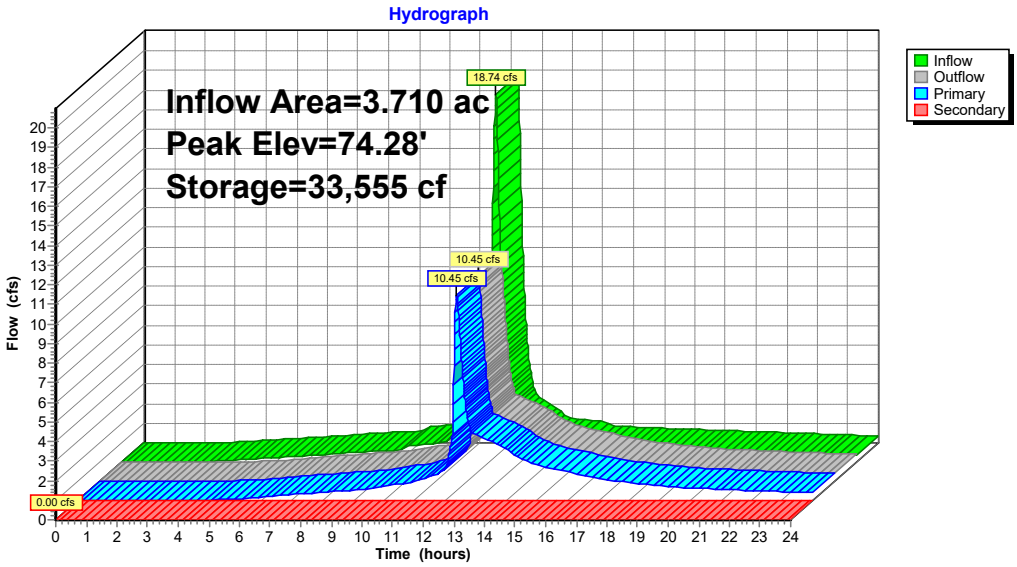
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
70.00	5,565	0	0	5,565
71.00	6,577	6,064	6,064	6,614
72.00	7,646	7,105	13,169	7,724
73.00	8,771	8,202	21,371	8,894
74.00	9,953	9,356	30,727	10,125
75.00	11,192	10,566	41,293	11,416
76.00	12,487	11,834	53,127	12,767

Device	Routing	Invert	Outlet Devices
#1	Primary	66.50'	**15.0" Round Culvert** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.50' / 59.00' S= 0.1042 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	71.90'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	73.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	74.00'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	75.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=10.45 cfs @ 12.37 hrs HW=74.28' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 10.45 cfs of 12.48 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 2.76 cfs @ 7.03 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.96 cfs @ 4.88 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Weir Controls 6.73 cfs @ 1.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=71.90' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 22P: DET 230



Summary for Pond 33P: UG 221

Inflow Area = 1.040 ac, 0.00% Impervious, Inflow Depth > 6.56" for 50-Year event
Inflow = 7.64 cfs @ 12.13 hrs, Volume= 0.569 af
Outflow = 6.23 cfs @ 12.17 hrs, Volume= 0.564 af, Atten= 18%, Lag= 2.4 min
Primary = 6.23 cfs @ 12.17 hrs, Volume= 0.564 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 92.37' @ 12.17 hrs Surf.Area= 0.032 ac Storage= 0.087 af

Plug-Flow detention time= 23.4 min calculated for 0.564 af (99% of inflow)
Center-of-Mass det. time= 18.0 min (791.6 - 773.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	0.007 af	**8.80'W x 160.00'L x 4.00'H Field A** 0.129 af Overall - 0.112 af Embedded = 0.018 af x 40.0% Voids
#2A	89.00'	0.086 af	**Concrete Galley 4x8x4** x 40 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 40 Chambers in 2 Rows
		0.093 af	Total Available Storage

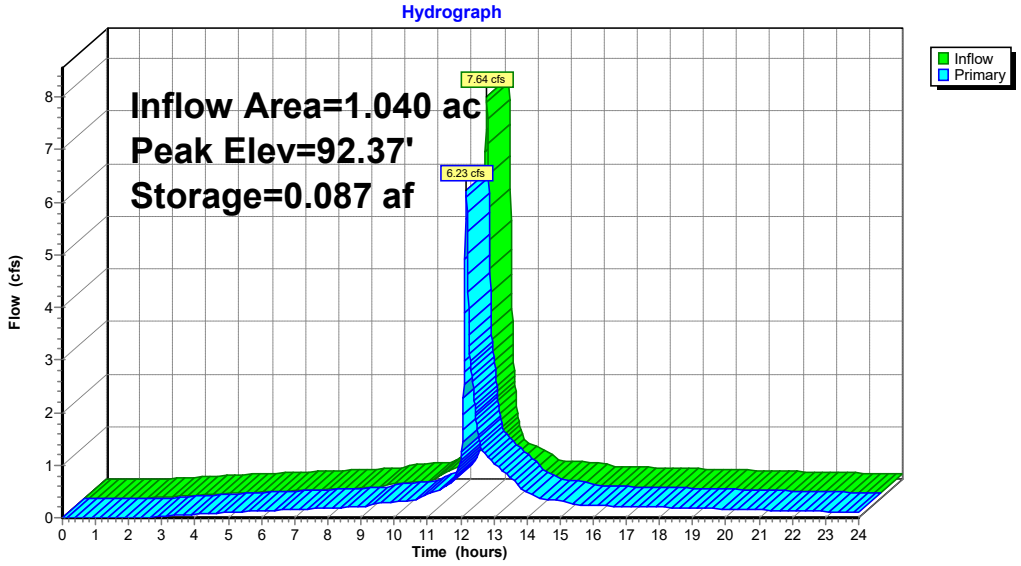
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.00'	**24.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.00' / 85.60' S= 0.0069 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	89.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=6.23 cfs @ 12.17 hrs HW=92.37' TW=76.52' (Dynamic Tailwater)
└─**1=Culvert** (Passes 6.23 cfs of 35.04 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.67 cfs @ 8.50 fps)
├─**3=Orifice/Grate** (Orifice Controls 1.71 cfs @ 4.89 fps)
└─**4=Sharp-Crested Rectangular Weir** (Weir Controls 2.85 cfs @ 1.98 fps)

Pond 33P: UG 221

Hydrograph



Summary for Pond 35P: UG 110

Inflow Area = 3.410 ac, 0.00% Impervious, Inflow Depth > 2.98" for 50-Year event
Inflow = 9.09 cfs @ 12.22 hrs, Volume= 0.847 af
Outflow = 5.67 cfs @ 12.36 hrs, Volume= 0.840 af, Atten= 38%, Lag= 8.1 min
Discarded = 0.02 cfs @ 11.73 hrs, Volume= 0.019 af
Primary = 5.64 cfs @ 12.36 hrs, Volume= 0.822 af
Routed to Link 15L : PR / A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 64.18' @ 12.36 hrs Surf.Area= 2,016 sf Storage= 5,521 cf

Plug-Flow detention time= 16.9 min calculated for 0.840 af (99% of inflow)
Center-of-Mass det. time= 12.7 min (901.5 - 888.7)

Volume	Invert	Avail.Storage	Storage Description
#1	61.20'	3,168 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	61.70'	2,880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		6,048 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.20	1,056	0	0
64.20	1,056	3,168	3,168

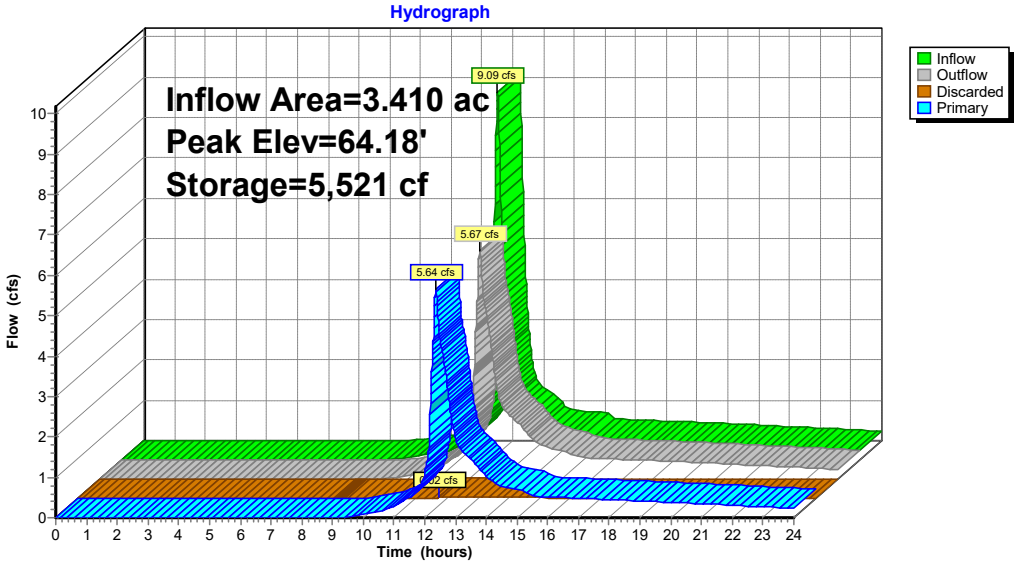
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.70	960	0	0
64.70	960	2,880	2,880

Device	Routing	Invert	Outlet Devices
#1	Discarded	61.20'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	61.10'	**18.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 61.10' / 60.90' S= 0.0077 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#3	Device 2	61.20'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	62.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	64.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.02 cfs @ 11.73 hrs HW=61.70' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=5.64 cfs @ 12.36 hrs HW=64.18' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 5.64 cfs of 12.98 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 2.73 cfs @ 7.83 fps)
  ├**4=Orifice/Grate** (Orifice Controls 1.95 cfs @ 5.58 fps)
  └**5=Sharp-Crested Rectangular Weir** (Weir Controls 0.96 cfs @ 1.37 fps)

Pond 35P: UG 110



Summary for Pond 36P: DET 220 OG

Inflow Area = 11.910 ac, 0.00% Impervious, Inflow Depth > 4.60" for 50-Year event
Inflow = 39.46 cfs @ 12.18 hrs, Volume= 4.568 af
Outflow = 36.94 cfs @ 12.26 hrs, Volume= 4.115 af, Atten= 6%, Lag= 4.6 min
Discarded = 0.71 cfs @ 12.26 hrs, Volume= 0.962 af
Primary = 36.23 cfs @ 12.26 hrs, Volume= 3.153 af
Routed to Pond 37P : DET 210 OG
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 76.65' @ 12.26 hrs Surf.Area= 9,826 sf Storage= 28,886 cf

Plug-Flow detention time= 83.6 min calculated for 4.114 af (90% of inflow)
Center-of-Mass det. time= 31.9 min (865.2 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	43,165 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	6,115	0	0
74.00	7,054	6,585	6,585
75.00	8,050	7,552	14,137
76.00	9,103	8,577	22,713
77.00	10,212	9,658	32,371
78.00	11,377	10,795	43,165

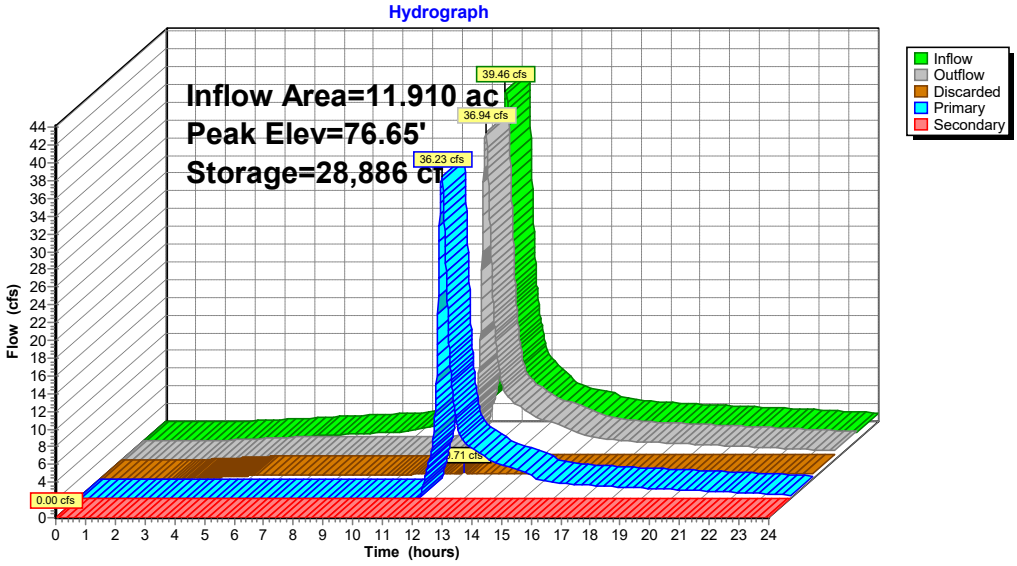
Device	Routing	Invert	Outlet Devices
#1	Discarded	73.00'	**3.100 in/hr Exfiltration over Surface area**
#2	Primary	75.60'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Secondary	77.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.71 cfs @ 12.26 hrs HW=76.65' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.71 cfs)

Primary OutFlow Max=36.21 cfs @ 12.26 hrs HW=76.65' TW=74.61' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 36.21 cfs @ 2.62 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 36P: DET 220 OG



Summary for Pond 37P: DET 210 OG

Inflow Area = 13.920 ac, 0.00% Impervious, Inflow Depth > 3.35" for 50-Year event
Inflow = 40.48 cfs @ 12.24 hrs, Volume= 3.887 af
Outflow = 6.60 cfs @ 13.23 hrs, Volume= 3.861 af, Atten= 84%, Lag= 59.6 min
Primary = 6.60 cfs @ 13.23 hrs, Volume= 3.861 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 76.19' @ 13.23 hrs Surf.Area= 21,528 sf Storage= 60,094 cf

Plug-Flow detention time= 102.6 min calculated for 3.859 af (99% of inflow)
Center-of-Mass det. time= 98.7 min (957.0 - 858.3)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	92,201 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

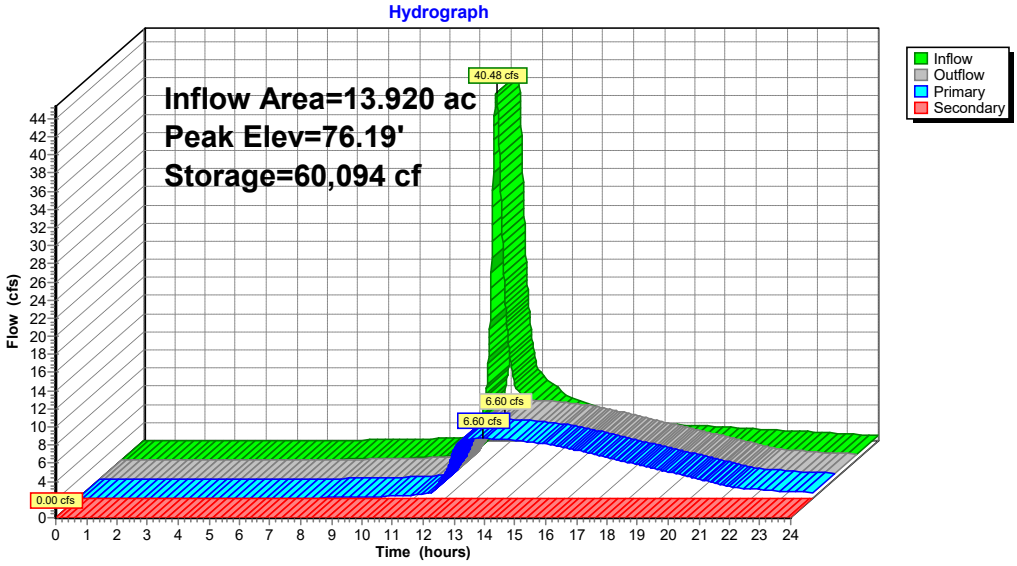
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
72.00	2,507	0	0	2,507
73.00	13,430	7,247	7,247	13,434
74.00	14,957	14,187	21,433	15,018
75.00	16,541	15,742	37,176	16,663
76.00	21,175	18,810	55,986	21,323
77.00	23,044	22,103	78,089	23,265
77.60	24,000	14,112	92,201	24,275

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	72.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	76.30'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Secondary	76.70'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=6.60 cfs @ 13.23 hrs HW=76.19' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 6.60 cfs of 7.70 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 6.60 cfs @ 9.46 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=72.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 37P: DET 210 OG



Summary for Pond 41P: UG 222

Inflow Area = 1.180 ac, 0.00% Impervious, Inflow Depth > 6.44" for 50-Year event
Inflow = 8.59 cfs @ 12.13 hrs, Volume= 0.633 af
Outflow = 5.62 cfs @ 12.19 hrs, Volume= 0.628 af, Atten= 35%, Lag= 3.6 min
Primary = 5.62 cfs @ 12.19 hrs, Volume= 0.628 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 91.79' @ 12.19 hrs Surf.Area= 0.036 ac Storage= 0.085 af

Plug-Flow detention time= 22.2 min calculated for 0.628 af (99% of inflow)
Center-of-Mass det. time= 16.5 min (795.1 - 778.6)

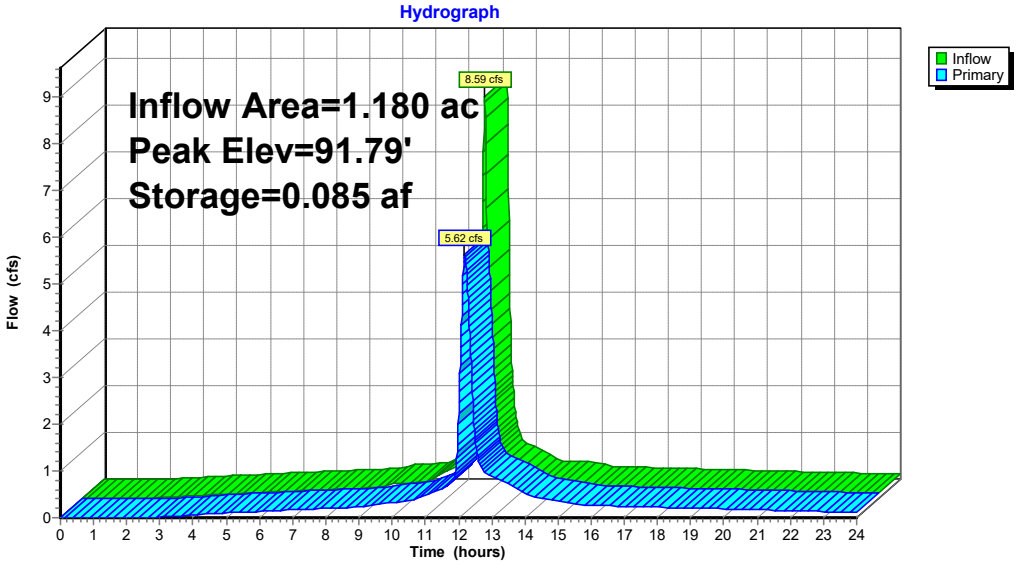
Volume	Invert	Avail.Storage	Storage Description
#1A	88.80'	0.008 af	**8.80'W x 176.00'L x 4.00'H Field A** 0.142 af Overall - 0.123 af Embedded = 0.019 af x 40.0% Voids
#2A	88.80'	0.095 af	**Concrete Galley 4x8x4** x 44 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 44 Chambers in 2 Rows
		0.102 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**18.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 88.30' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	88.80'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.80'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=5.62 cfs @ 12.19 hrs HW=91.79' TW=76.58' (Dynamic Tailwater)
- **1=Culvert** (Passes 5.62 cfs of 11.68 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 1.56 cfs @ 7.97 fps)
  - **3=Orifice/Grate** (Orifice Controls 4.06 cfs @ 5.81 fps)
  - **4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 41P: UG 222



Summary for Pond 42P: UG 223

Inflow Area = 0.860 ac, 0.00% Impervious, Inflow Depth > 6.56" for 50-Year event
Inflow = 6.31 cfs @ 12.13 hrs, Volume= 0.470 af
Outflow = 6.08 cfs @ 12.15 hrs, Volume= 0.470 af, Atten= 4%, Lag= 1.1 min
Primary = 6.08 cfs @ 12.15 hrs, Volume= 0.470 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 91.33' @ 12.15 hrs Surf.Area= 0.016 ac Storage= 0.036 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.7 min (778.4 - 773.6)

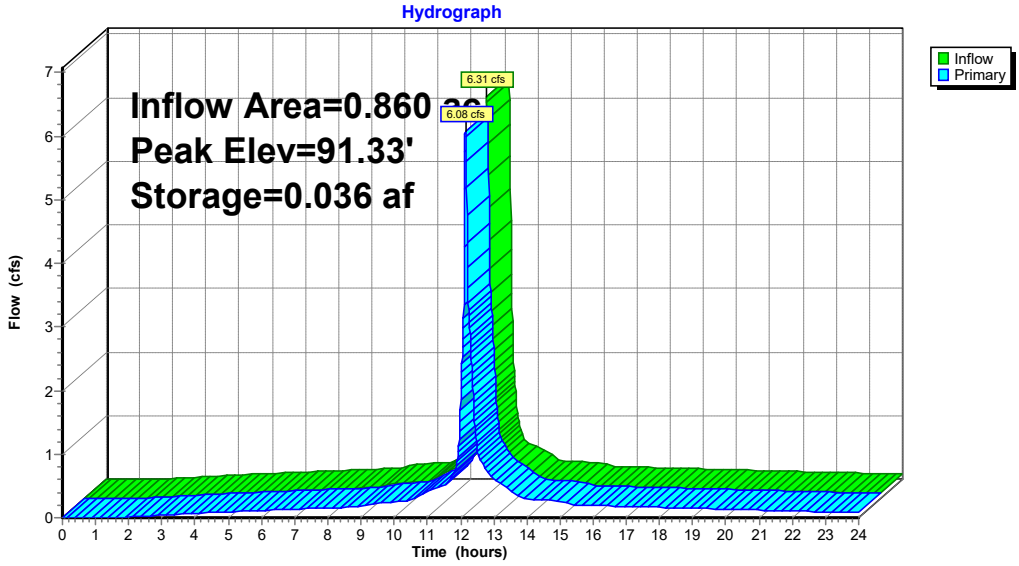
Volume	Invert	Avail.Storage	Storage Description
#1A	88.50'	0.004 af	**8.80'W x 80.00'L x 4.00'H Field A** 0.065 af Overall - 0.056 af Embedded = 0.009 af x 40.0% Voids
#2A	88.50'	0.043 af	**Concrete Galley 4x8x4** x 20 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 20 Chambers in 2 Rows
		0.046 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.00'	**12.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.00' / 86.50' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	88.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=6.06 cfs @ 12.15 hrs HW=91.33' TW=76.43' (Dynamic Tailwater)
└─**1=Culvert** (Passes 6.06 cfs of 6.16 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.58 cfs @ 8.03 fps)
├─**3=Orifice/Grate** (Orifice Controls 2.06 cfs @ 5.89 fps)
└─**4=Sharp-Crested Rectangular Weir** (Weir Controls 2.43 cfs @ 1.88 fps)

Pond 42P: UG 223



Summary for Pond 43P: UG 224

Inflow Area = 3.760 ac, 0.00% Impervious, Inflow Depth > 3.11" for 50-Year event
Inflow = 12.02 cfs @ 12.18 hrs, Volume= 0.974 af
Outflow = 8.46 cfs @ 12.26 hrs, Volume= 0.972 af, Atten= 30%, Lag= 5.1 min
Primary = 8.46 cfs @ 12.26 hrs, Volume= 0.972 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 92.85' @ 12.26 hrs Surf.Area= 0.065 ac Storage= 0.141 af

Plug-Flow detention time= 15.7 min calculated for 0.971 af (100% of inflow)
Center-of-Mass det. time= 14.3 min (896.7 - 882.4)

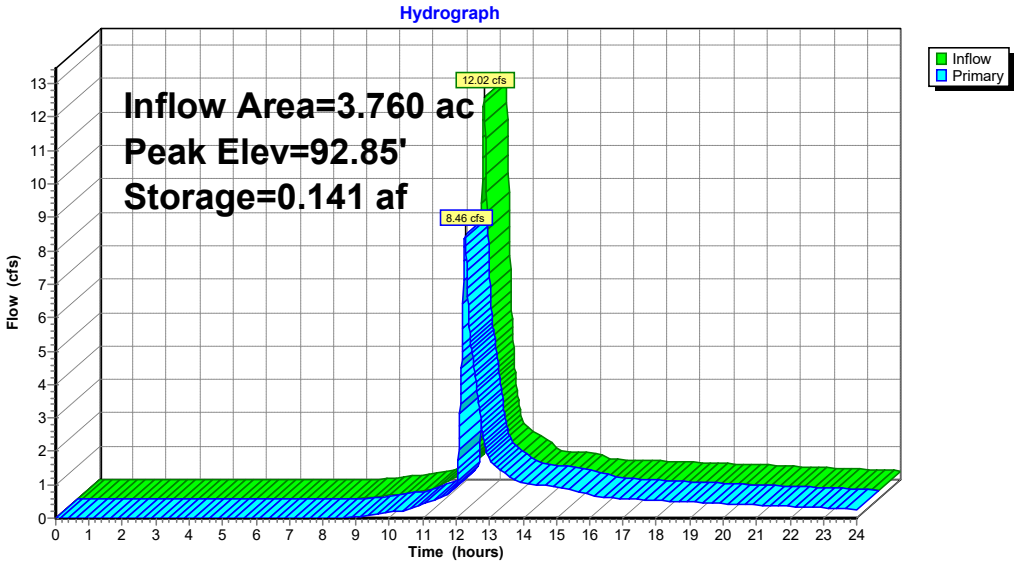
Volume	Invert	Avail.Storage	Storage Description
#1A	89.50'	0.002 af	**13.20'W x 32.00'L x 4.00'H Field A** 0.039 af Overall - 0.034 af Embedded = 0.005 af x 40.0% Voids
#2A	89.50'	0.026 af	**Concrete Galley 4x8x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 12 Chambers in 3 Rows
#3B	90.00'	0.006 af	**13.20'W x 88.00'L x 4.00'H Field B** 0.107 af Overall - 0.092 af Embedded = 0.015 af x 40.0% Voids
#4B	90.00'	0.071 af	**Concrete Galley 4x8x4** x 33 Inside #3 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 33 Chambers in 3 Rows
#5C	90.50'	0.006 af	**13.20'W x 96.00'L x 4.00'H Field C** 0.116 af Overall - 0.101 af Embedded = 0.016 af x 40.0% Voids
#6C	90.50'	0.077 af	**Concrete Galley 4x8x4** x 36 Inside #5 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 36 Chambers in 3 Rows
		0.188 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.50'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.50' / 89.18' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	89.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=8.44 cfs @ 12.26 hrs HW=92.85' TW=76.65' (Dynamic Tailwater)
└─**1=Culvert** (Passes 8.44 cfs of 9.75 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 1.66 cfs @ 8.48 fps)
  └─**3=Orifice/Grate** (Orifice Controls 4.14 cfs @ 5.93 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Weir Controls 2.64 cfs @ 1.93 fps)

Pond 43P: UG 224



Summary for Pond 44P: UG 225

Inflow Area = 1.610 ac, 0.00% Impervious, Inflow Depth > 2.88" for 50-Year event
Inflow = 4.81 cfs @ 12.18 hrs, Volume= 0.386 af
Outflow = 1.73 cfs @ 12.38 hrs, Volume= 0.380 af, Atten= 64%, Lag= 11.9 min
Primary = 1.73 cfs @ 12.38 hrs, Volume= 0.380 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 94.76' @ 12.38 hrs Surf.Area= 0.039 ac Storage= 0.086 af

Plug-Flow detention time= 38.3 min calculated for 0.380 af (98% of inflow)
Center-of-Mass det. time= 29.1 min (918.1 - 888.9)

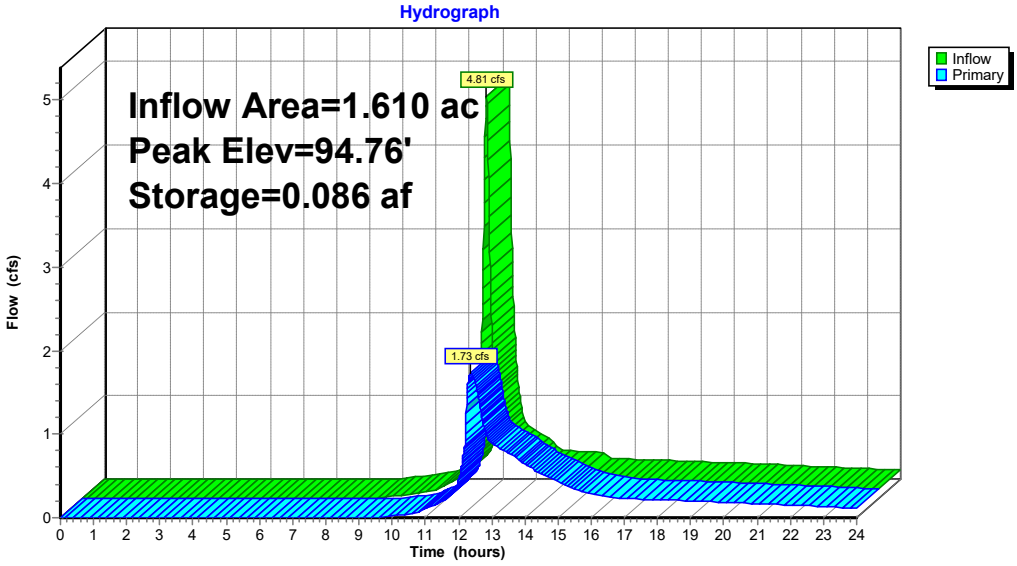
Volume	Invert	Avail.Storage	Storage Description
#1A	92.00'	0.008 af	**17.60'W x 96.00'L x 4.00'H Field A** 0.155 af Overall - 0.134 af Embedded = 0.021 af x 40.0% Voids
#2A	92.00'	0.103 af	**Concrete Galley 4x8x4** x 48 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 48 Chambers in 4 Rows
		0.112 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	92.00'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.00' / 90.53' S= 0.0432 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	92.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	94.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.73 cfs @ 12.38 hrs HW=94.76' TW=76.50' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.73 cfs of 8.64 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.05 cfs @ 7.70 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.68 cfs @ 3.45 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 44P: UG 225

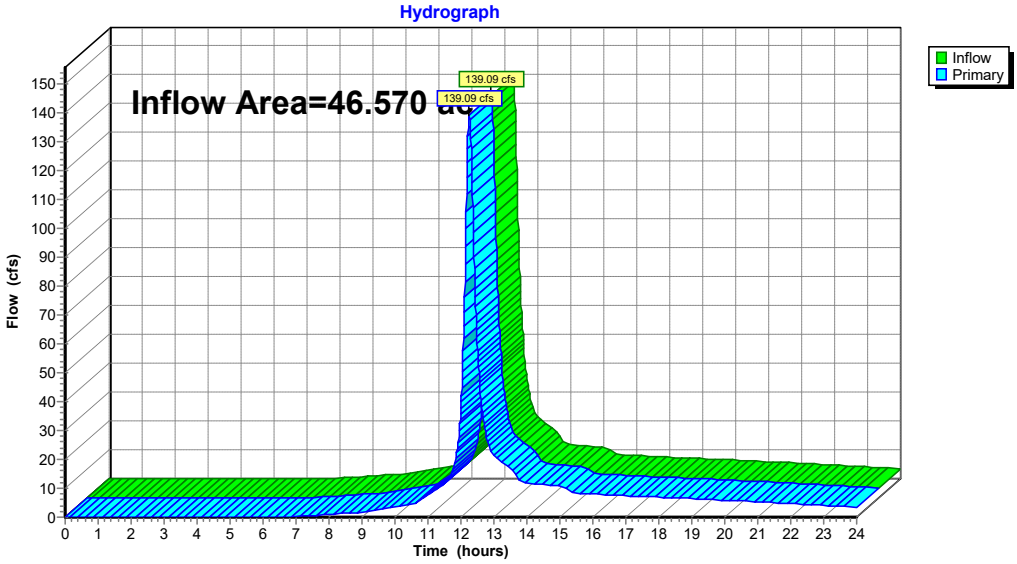


Summary for Link 4L: EX / A

Inflow Area = 46.570 ac, 0.00% Impervious, Inflow Depth > 3.62" for 50-Year event
Inflow = 139.09 cfs @ 12.25 hrs, Volume= 14.063 af
Primary = 139.09 cfs @ 12.25 hrs, Volume= 14.063 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: EX / A

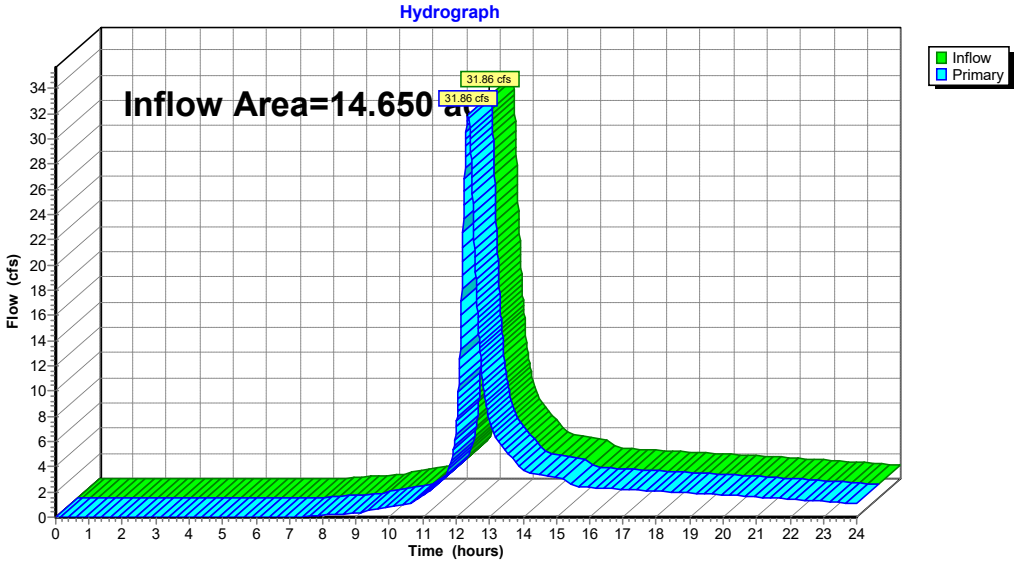


Summary for Link 7L: EX / B

Inflow Area = 14.650 ac, 0.00% Impervious, Inflow Depth > 3.27" for 50-Year event
Inflow = 31.86 cfs @ 12.35 hrs, Volume= 3.989 af
Primary = 31.86 cfs @ 12.35 hrs, Volume= 3.989 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: EX / B

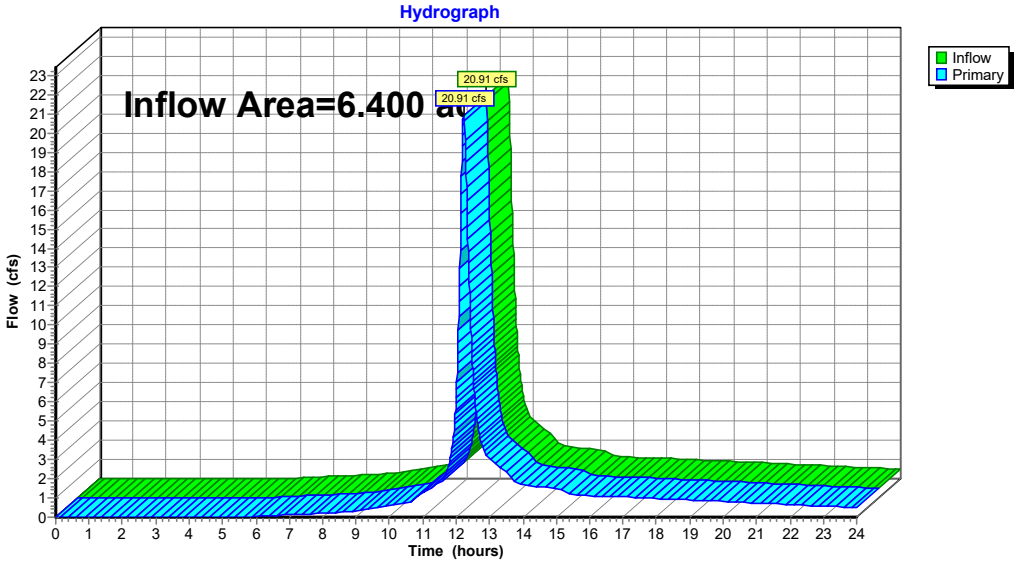


Summary for Link 10L: EX / C

Inflow Area = 6.400 ac, 0.00% Impervious, Inflow Depth > 3.83" for 50-Year event
Inflow = 20.91 cfs @ 12.22 hrs, Volume= 2.045 af
Primary = 20.91 cfs @ 12.22 hrs, Volume= 2.045 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 10L: EX / C

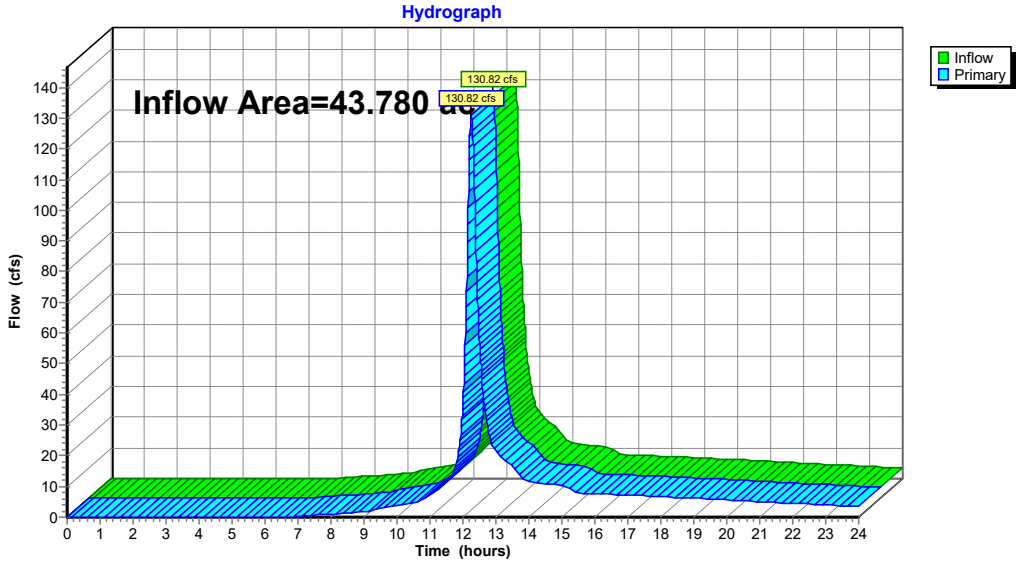


Summary for Link 15L: PR / A

Inflow Area = 43.780 ac, 0.00% Impervious, Inflow Depth > 3.74" for 50-Year event
Inflow = 130.82 cfs @ 12.25 hrs, Volume= 13.632 af
Primary = 130.82 cfs @ 12.25 hrs, Volume= 13.632 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 15L: PR / A

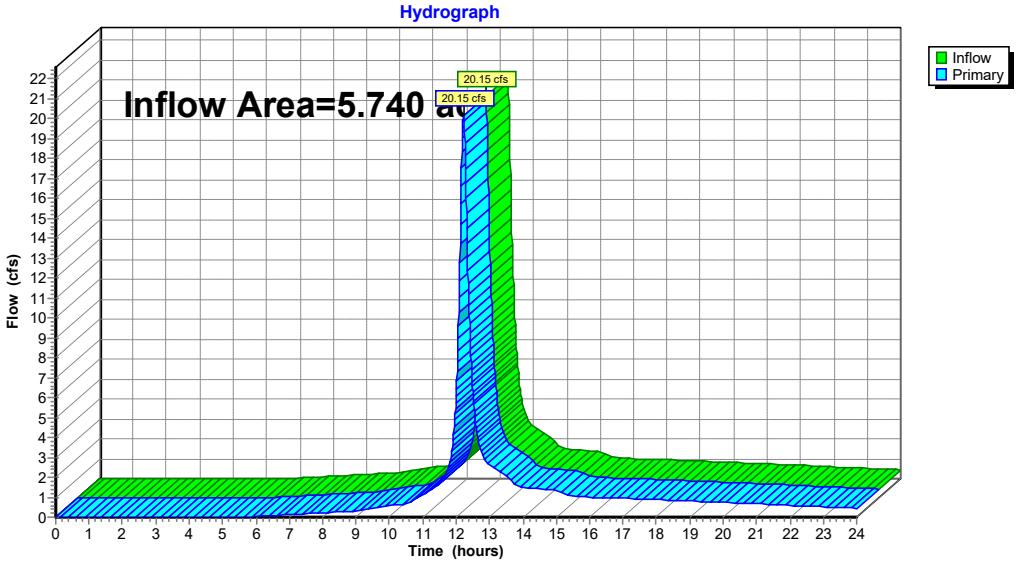


Summary for Link 25L: PR / C

Inflow Area = 5.740 ac, 0.00% Impervious, Inflow Depth > 3.88" for 50-Year event
Inflow = 20.15 cfs @ 12.22 hrs, Volume= 1.855 af
Primary = 20.15 cfs @ 12.22 hrs, Volume= 1.855 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 25L: PR / C

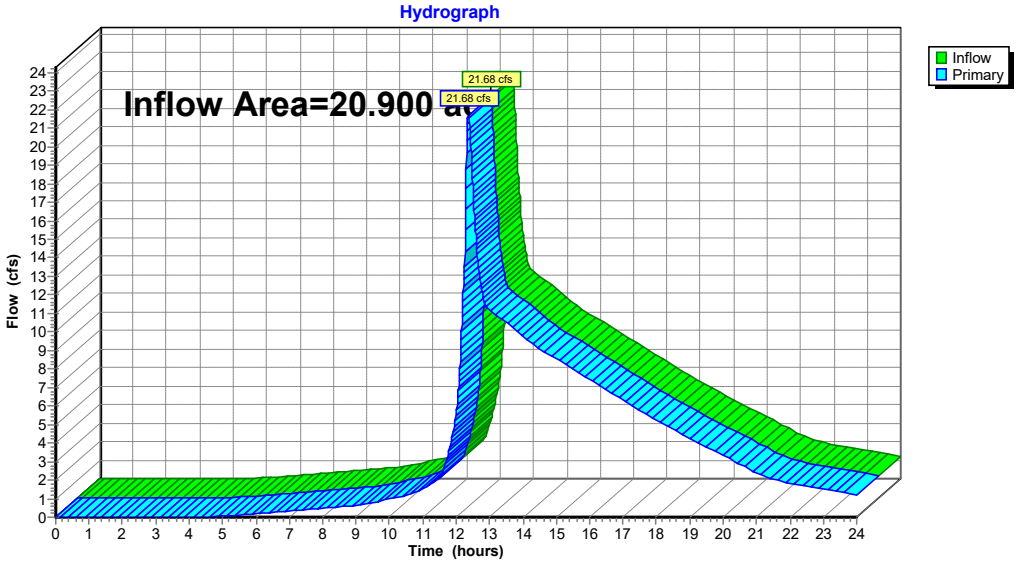


Summary for Link 27L: PR / B

Inflow Area = 20.900 ac, 0.00% Impervious, Inflow Depth > 3.63" for 50-Year event
Inflow = 21.68 cfs @ 12.37 hrs, Volume= 6.328 af
Primary = 21.68 cfs @ 12.37 hrs, Volume= 6.328 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 27L: PR / B

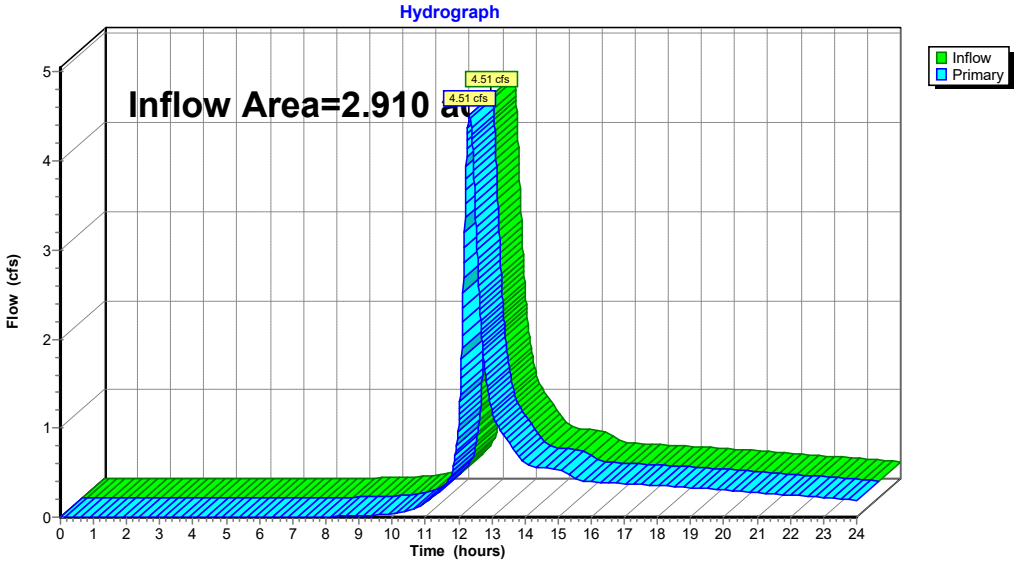


Summary for Link 30L: EX / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 2.53" for 50-Year event
Inflow = 4.51 cfs @ 12.32 hrs, Volume= 0.614 af
Primary = 4.51 cfs @ 12.32 hrs, Volume= 0.614 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 30L: EX / E

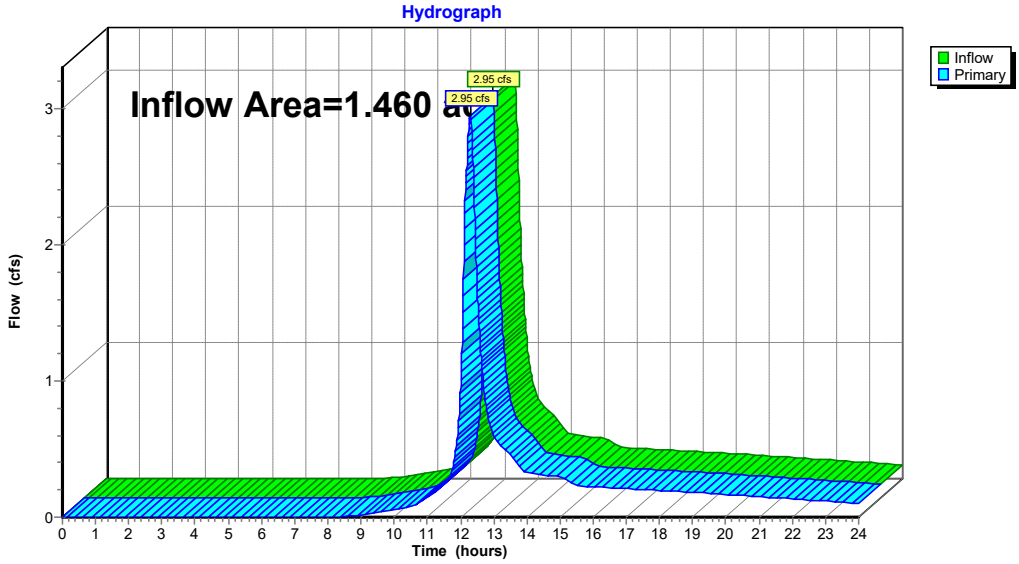


Summary for Link 34L: PR / E

Inflow Area = 1.460 ac, 0.00% Impervious, Inflow Depth > 2.97" for 50-Year event
Inflow = 2.95 cfs @ 12.29 hrs, Volume= 0.361 af
Primary = 2.95 cfs @ 12.29 hrs, Volume= 0.361 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 34L: PR / E



Summary for Subcatchment 1S: EXWS-10

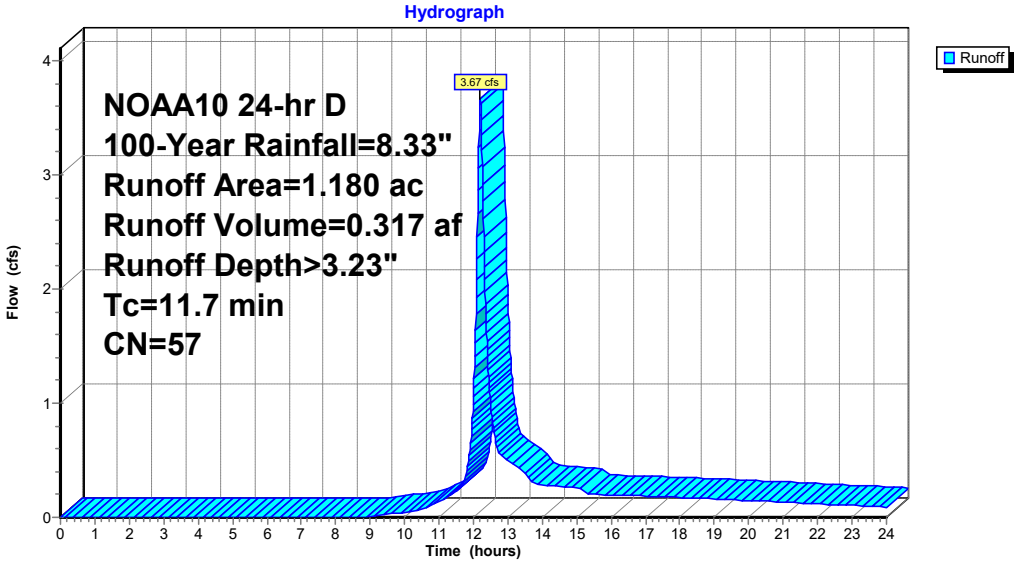
Runoff = 3.67 cfs @ 12.20 hrs, Volume= 0.317 af, Depth> 3.23"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	1.180	57	
	1.180		100.00% Pervious Area

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

Subcatchment 1S: EXWS-10



Summary for Subcatchment 2S: EXWS-11

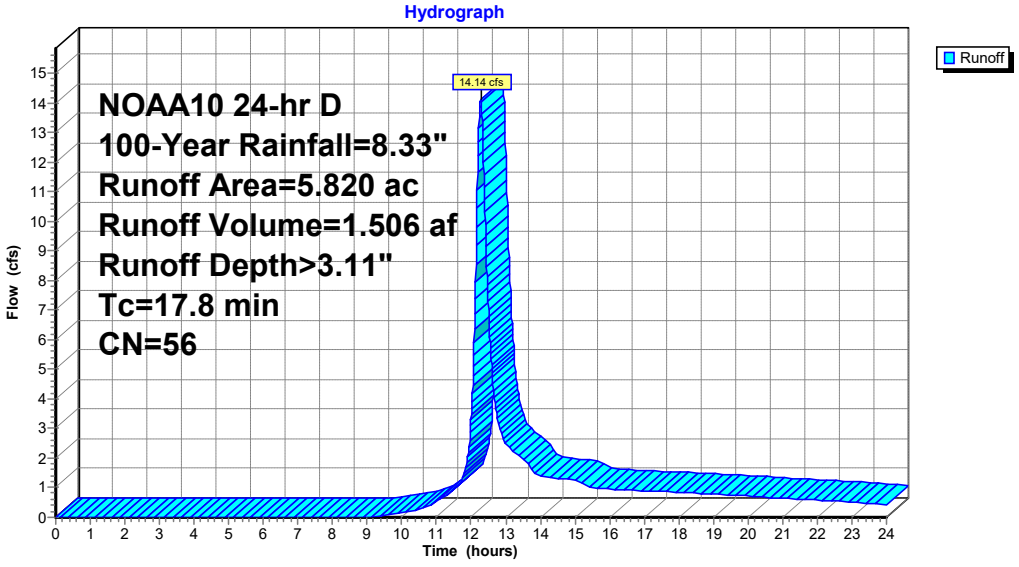
Runoff = 14.14 cfs @ 12.27 hrs, Volume= 1.506 af, Depth> 3.11"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	5.820	56	
	5.820		100.00% Pervious Area

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

Subcatchment 2S: EXWS-11



Summary for Subcatchment 3S: EXWS-12 (Offsite)

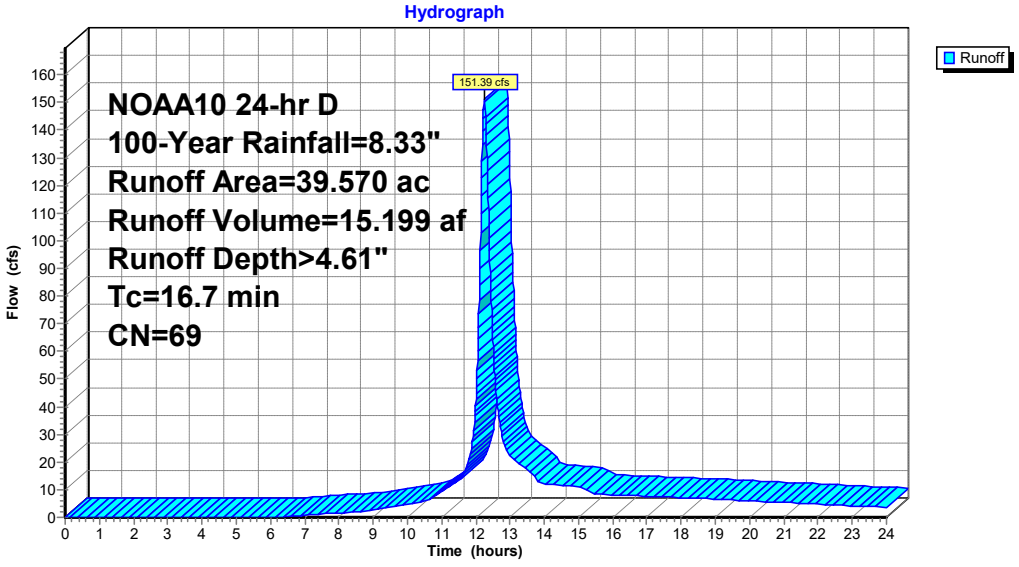
Runoff = 151.39 cfs @ 12.25 hrs, Volume= 15.199 af, Depth> 4.61"
Routed to Link 4L : EX / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: EXWS-12 (Offsite)



Summary for Subcatchment 5S: EXWS-20

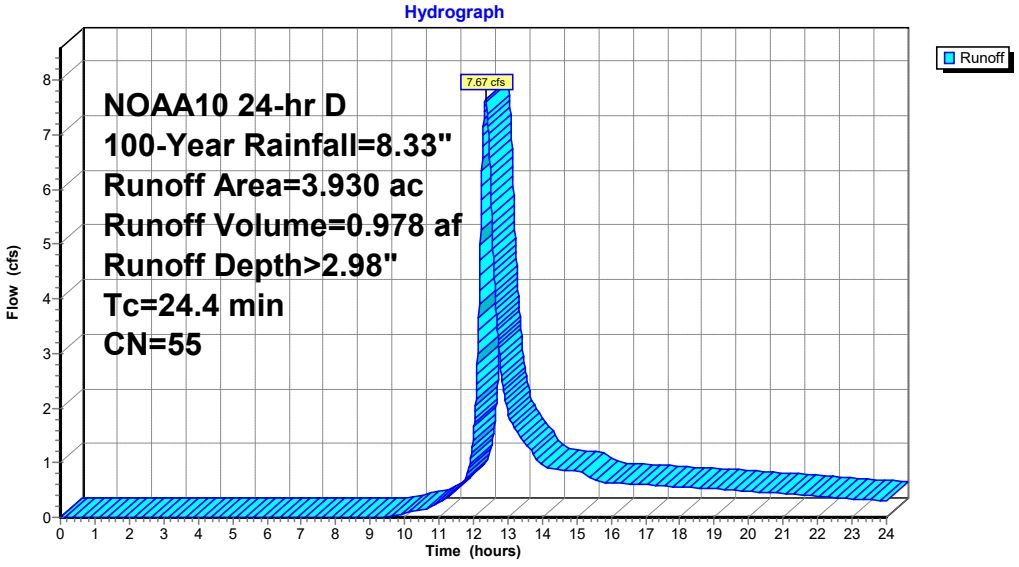
Runoff = 7.67 cfs @ 12.36 hrs, Volume= 0.978 af, Depth> 2.98"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	3.930	55	
	3.930		100.00% Pervious Area

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

Subcatchment 5S: EXWS-20



Summary for Subcatchment 6S: EXWS-21

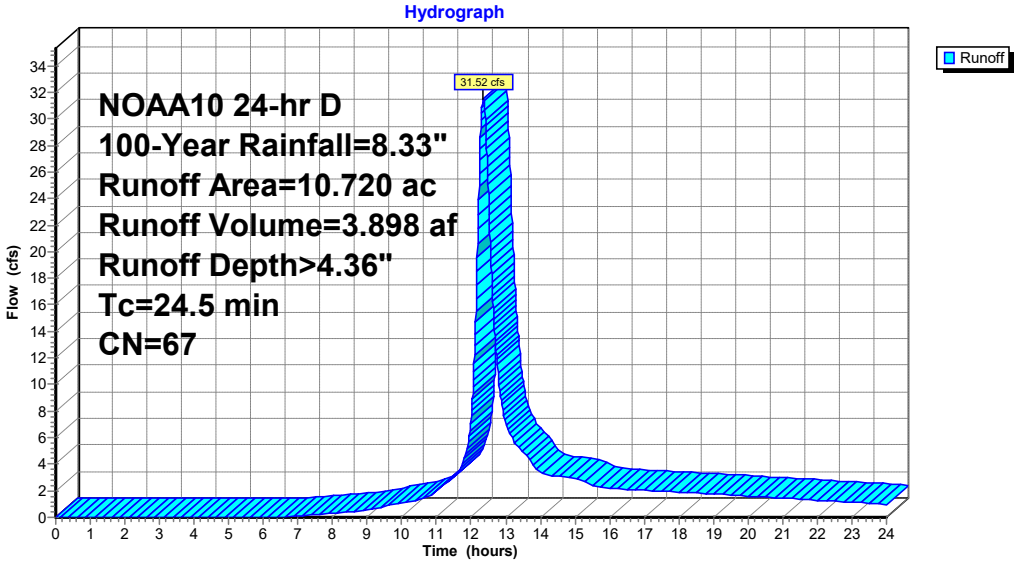
Runoff = 31.52 cfs @ 12.34 hrs, Volume= 3.898 af, Depth> 4.36"
Routed to Link 7L : EX / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	10.720	67	
	10.720		100.00% Pervious Area

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

Subcatchment 6S: EXWS-21



Summary for Subcatchment 8S: EXWS-30

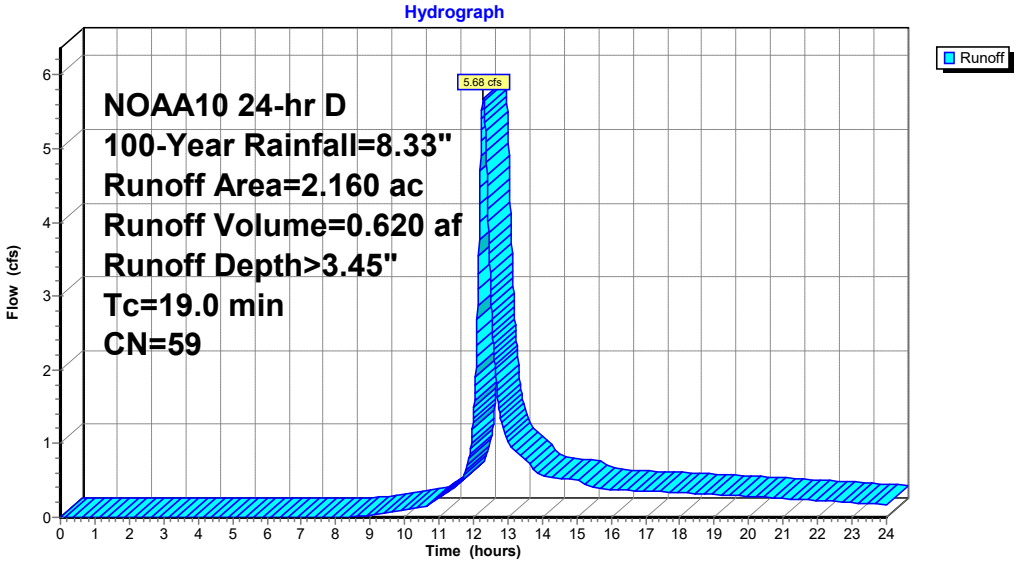
Runoff = 5.68 cfs @ 12.28 hrs, Volume= 0.620 af, Depth> 3.45"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	2.160	59	
	2.160		100.00% Pervious Area

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

Subcatchment 8S: EXWS-30



Summary for Subcatchment 9S: EXWS-31

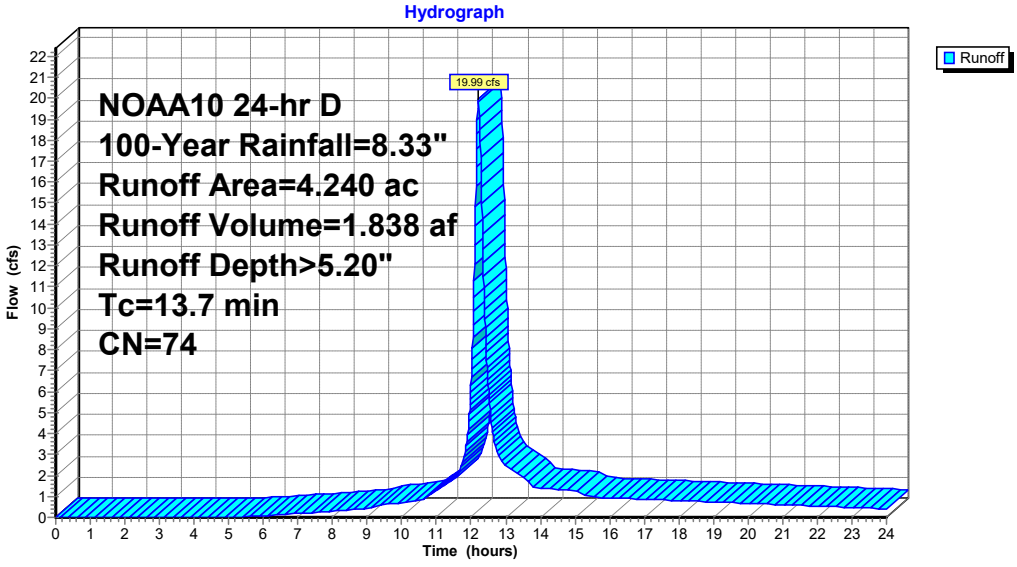
Runoff = 19.99 cfs @ 12.22 hrs, Volume= 1.838 af, Depth> 5.20"
Routed to Link 10L : EX / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 9S: EXWS-31



Summary for Subcatchment 11S: EXWS-40

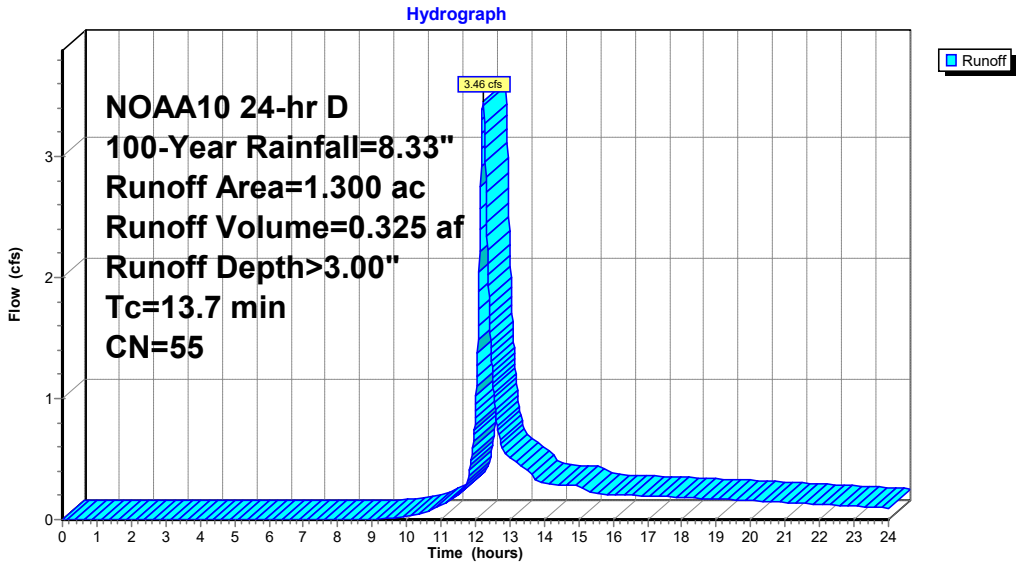
Runoff = 3.46 cfs @ 12.22 hrs, Volume= 0.325 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	1.300	55	
	1.300		100.00% Pervious Area

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

Subcatchment 11S: EXWS-40



Summary for Subcatchment 12S: PRWS-10

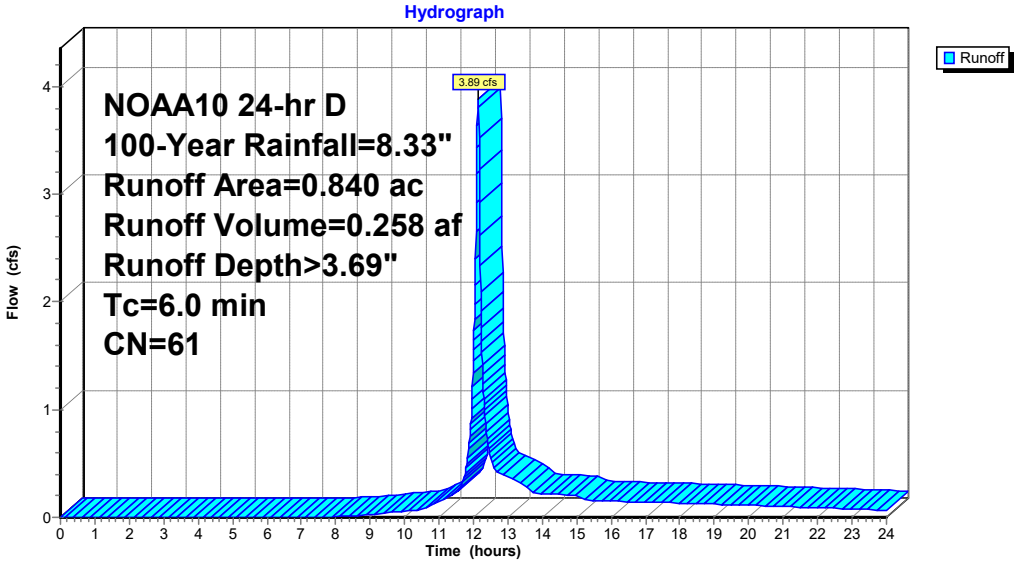
Runoff = 3.89 cfs @ 12.13 hrs, Volume= 0.258 af, Depth> 3.69"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	0.840	61	
	0.840		100.00% Pervious Area

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

Subcatchment 12S: PRWS-10



Summary for Subcatchment 13S: PRWS-11

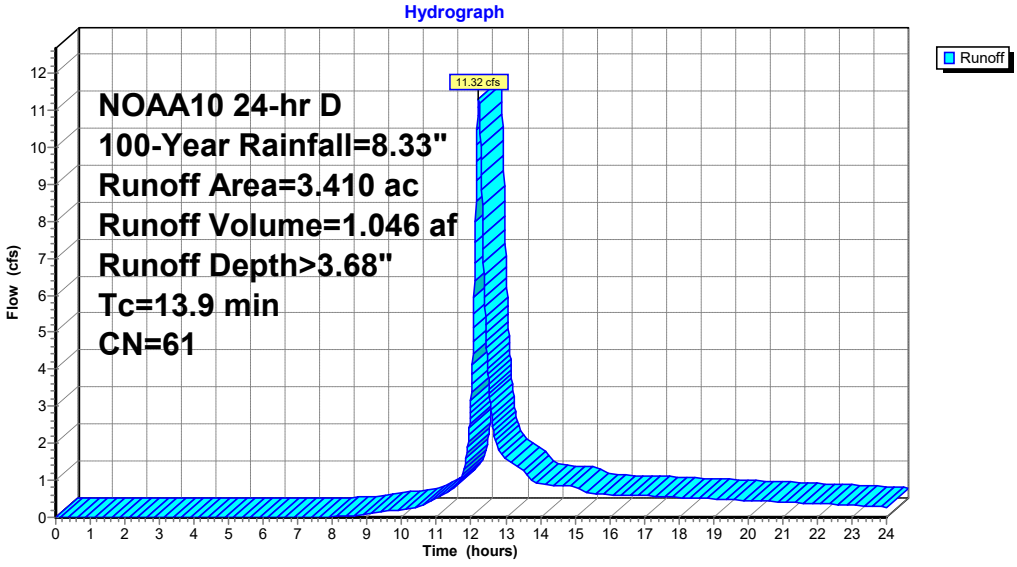
Runoff = 11.32 cfs @ 12.22 hrs, Volume= 1.046 af, Depth> 3.68"
Routed to Pond 35P : UG 110

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	3.410	61	
	3.410		100.00% Pervious Area

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

Subcatchment 13S: PRWS-11



Summary for Subcatchment 14S: EXWS-12 (Offsite)

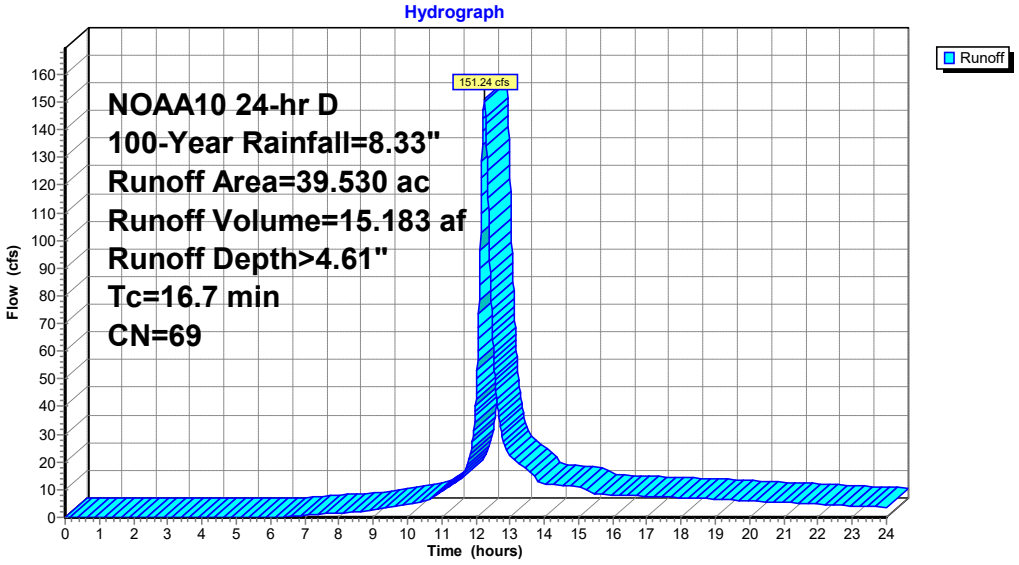
Runoff = 151.24 cfs @ 12.25 hrs, Volume= 15.183 af, Depth> 4.61"
Routed to Link 15L : PR / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	39.530	69	
	39.530		100.00% Pervious Area

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

Subcatchment 14S: EXWS-12 (Offsite)



Summary for Subcatchment 16S: PRWS-20

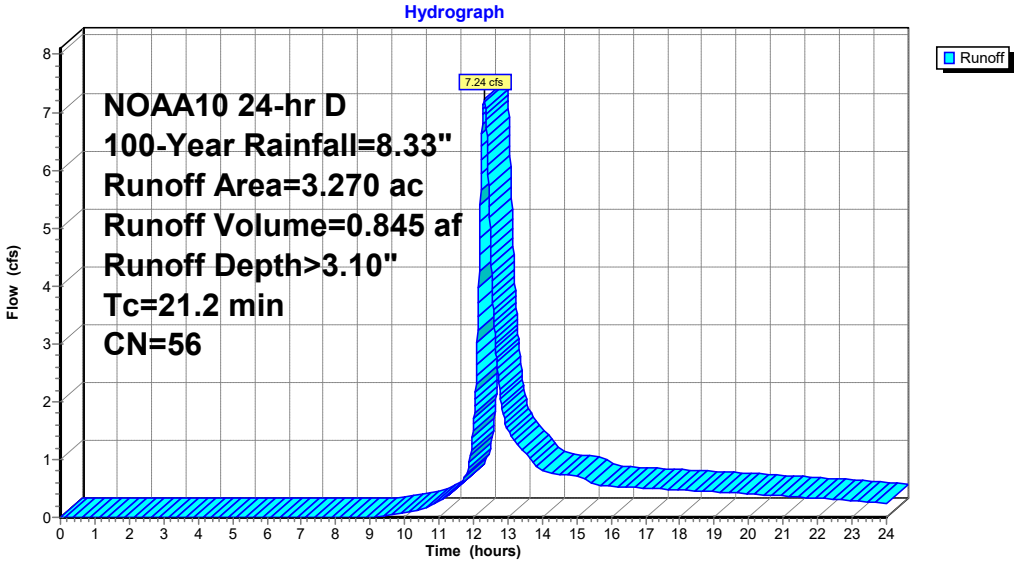
Runoff = 7.24 cfs @ 12.32 hrs, Volume= 0.845 af, Depth> 3.10"
Routed to Link 27L : PR / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	3.270	56	
	3.270		100.00% Pervious Area

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

Subcatchment 16S: PRWS-20



Summary for Subcatchment 17S: PRWS-21

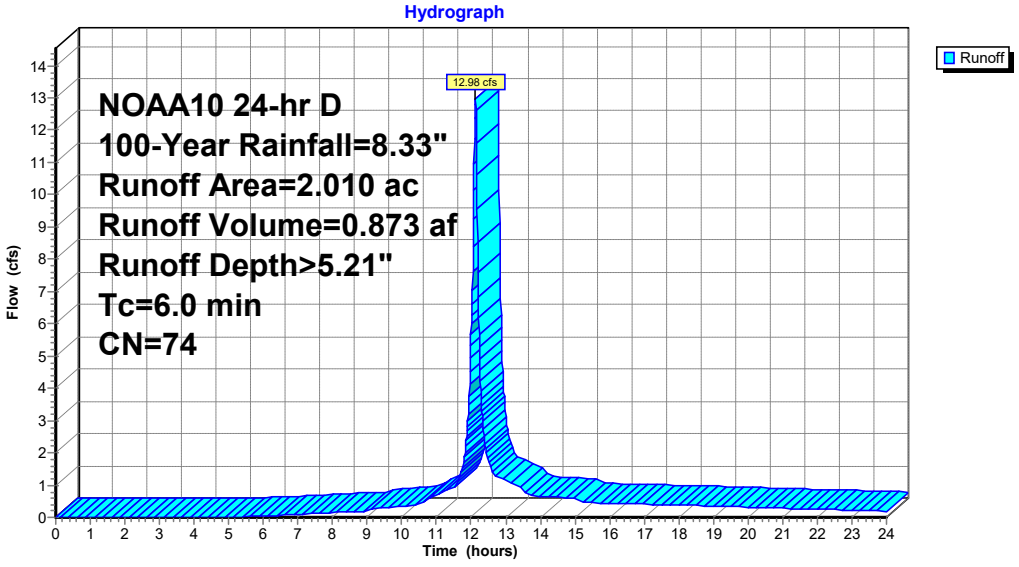
Runoff = 12.98 cfs @ 12.13 hrs, Volume= 0.873 af, Depth> 5.21"
Routed to Pond 37P : DET 210 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	2.010	74	
	2.010		100.00% Pervious Area

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

Subcatchment 17S: PRWS-21



Summary for Subcatchment 18S: PRWS-22

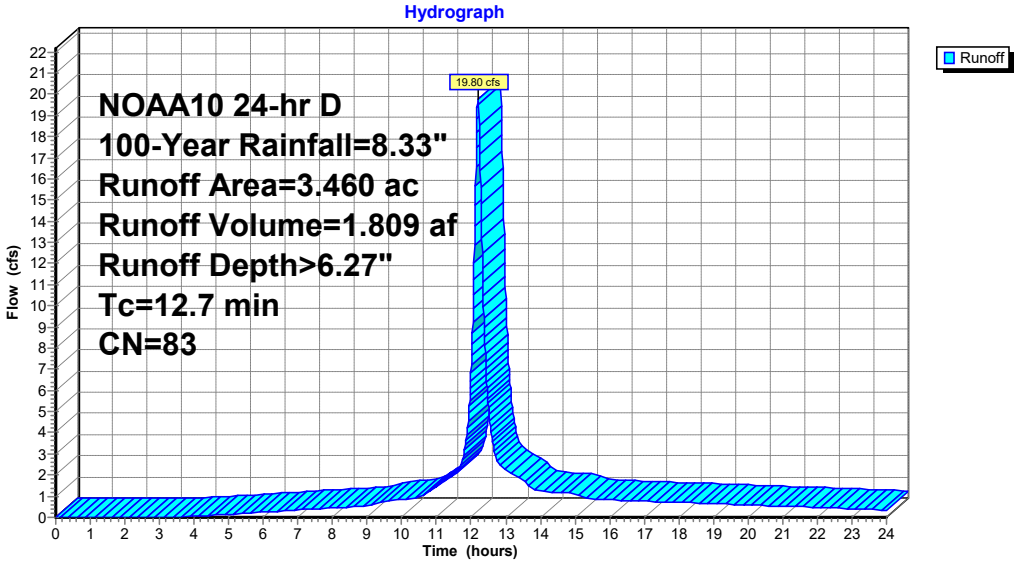
Runoff = 19.80 cfs @ 12.20 hrs, Volume= 1.809 af, Depth> 6.27"
Routed to Pond 36P : DET 220 OG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	3.460	83	
	3.460		100.00% Pervious Area

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

Subcatchment 18S: PRWS-22



Summary for Subcatchment 19S: PRWS-23

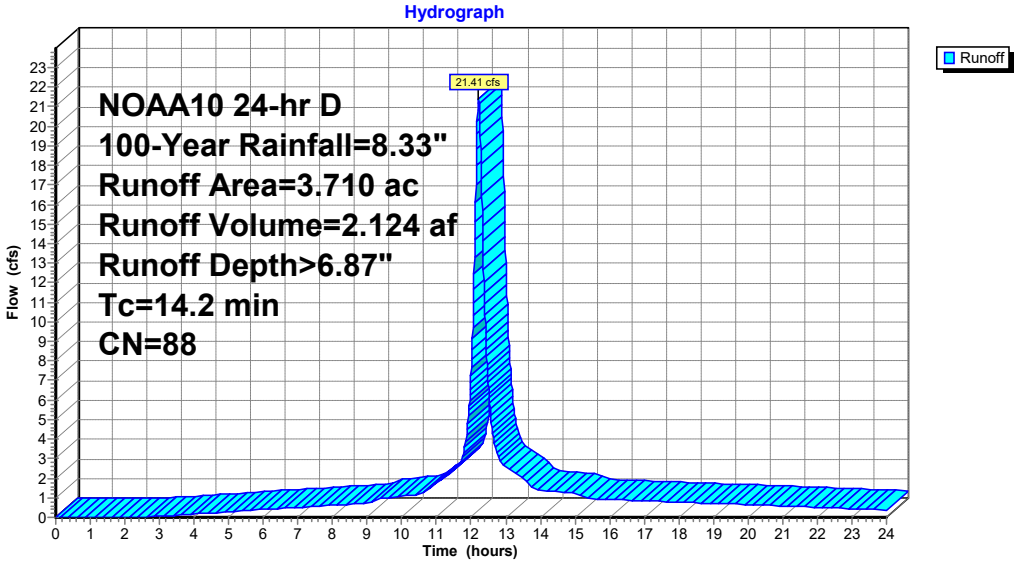
Runoff = 21.41 cfs @ 12.22 hrs, Volume= 2.124 af, Depth> 6.87"
Routed to Pond 22P : DET 230

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	3.710	88	
	3.710		100.00% Pervious Area

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

Subcatchment 19S: PRWS-23



Summary for Subcatchment 23S: PRWS-30

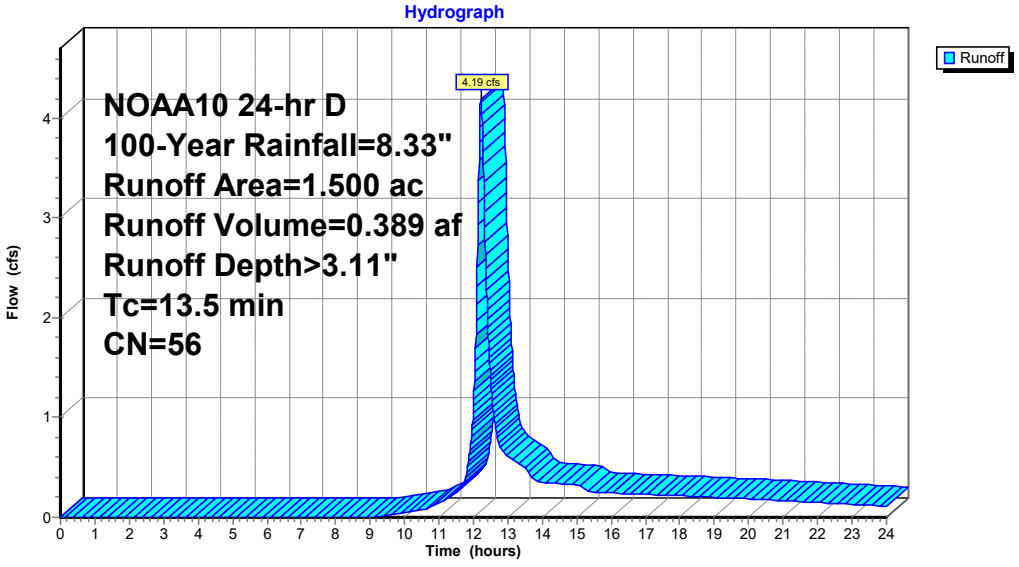
Runoff = 4.19 cfs @ 12.22 hrs, Volume= 0.389 af, Depth> 3.11"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	1.500	56	
	1.500		100.00% Pervious Area

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

Subcatchment 23S: PRWS-30



Summary for Subcatchment 24S: PRWS-31

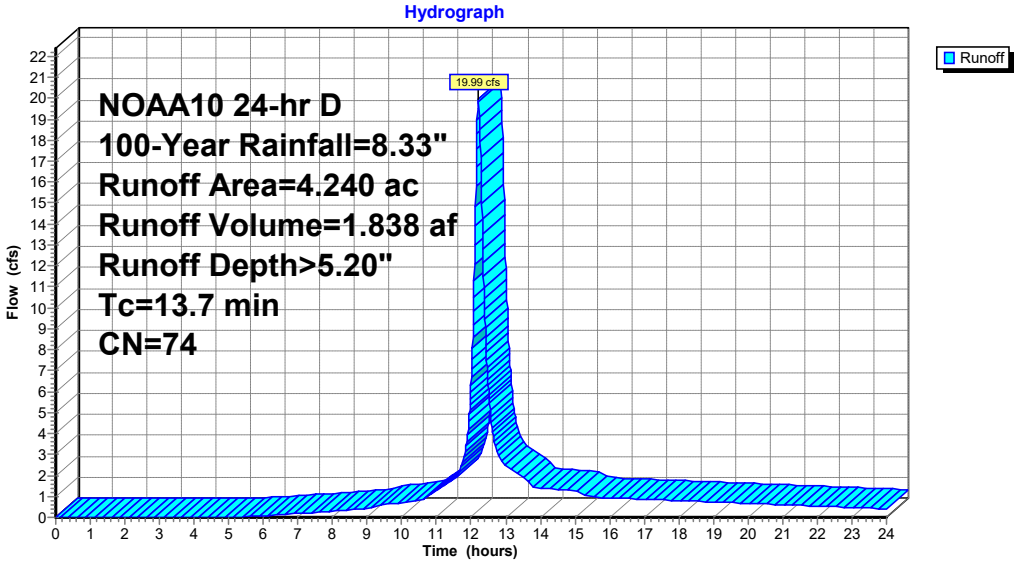
Runoff = 19.99 cfs @ 12.22 hrs, Volume= 1.838 af, Depth> 5.20"
Routed to Link 25L : PR / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	4.240	74	
	4.240		100.00% Pervious Area

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

Subcatchment 24S: PRWS-31



Summary for Subcatchment 26S: PRWS-40 / D

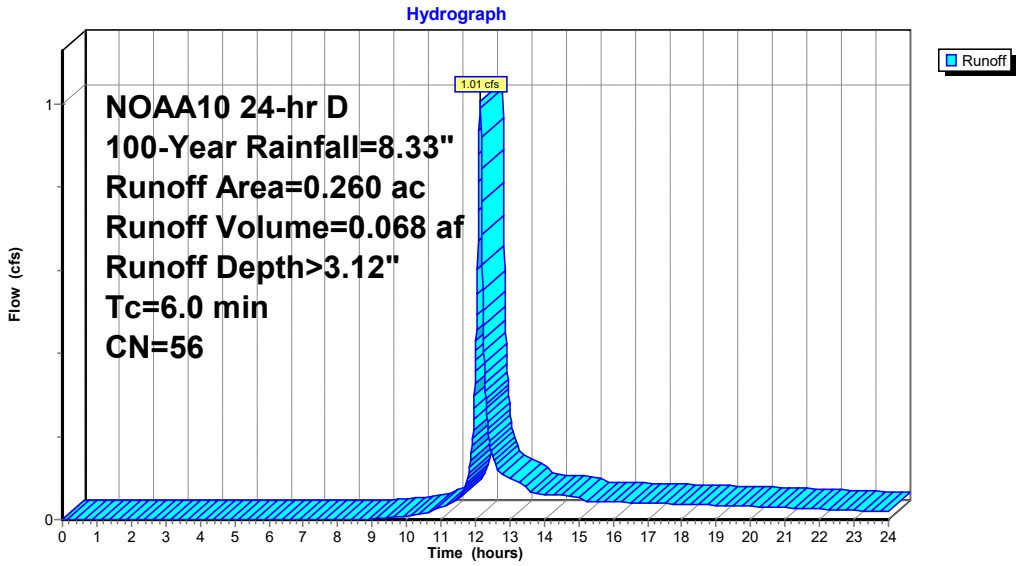
Runoff = 1.01 cfs @ 12.13 hrs, Volume= 0.068 af, Depth> 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	0.260	56	
	0.260		100.00% Pervious Area

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

Subcatchment 26S: PRWS-40 / D



Summary for Subcatchment 28S: EXWS-50

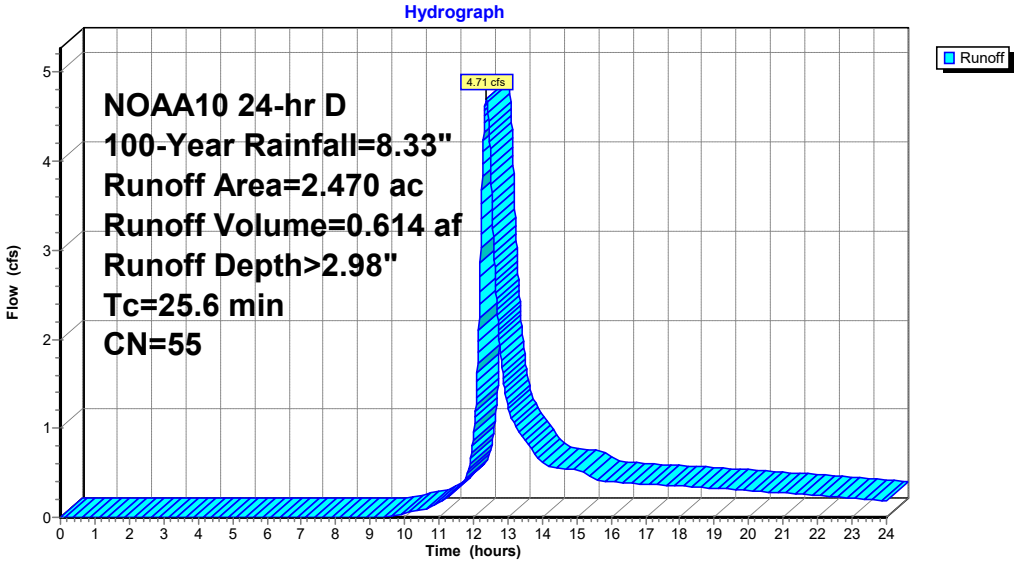
Runoff = 4.71 cfs @ 12.37 hrs, Volume= 0.614 af, Depth> 2.98"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	2.470	55	
	2.470		100.00% Pervious Area

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

Subcatchment 28S: EXWS-50



Summary for Subcatchment 29S: EXWS-51

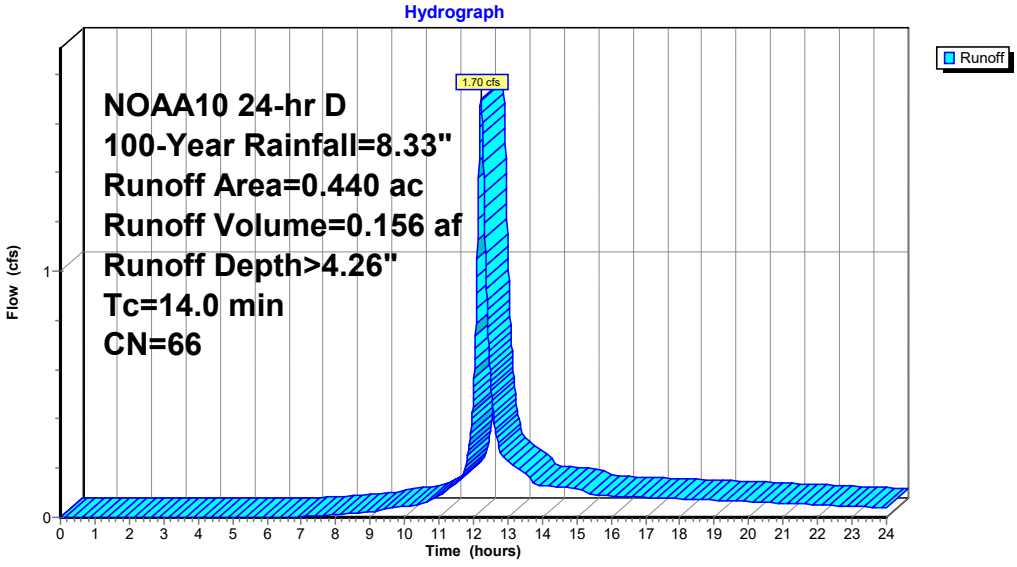
Runoff = 1.70 cfs @ 12.22 hrs, Volume= 0.156 af, Depth> 4.26"
Routed to Link 30L : EX / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 29S: EXWS-51



Summary for Subcatchment 31S: PRWS-221

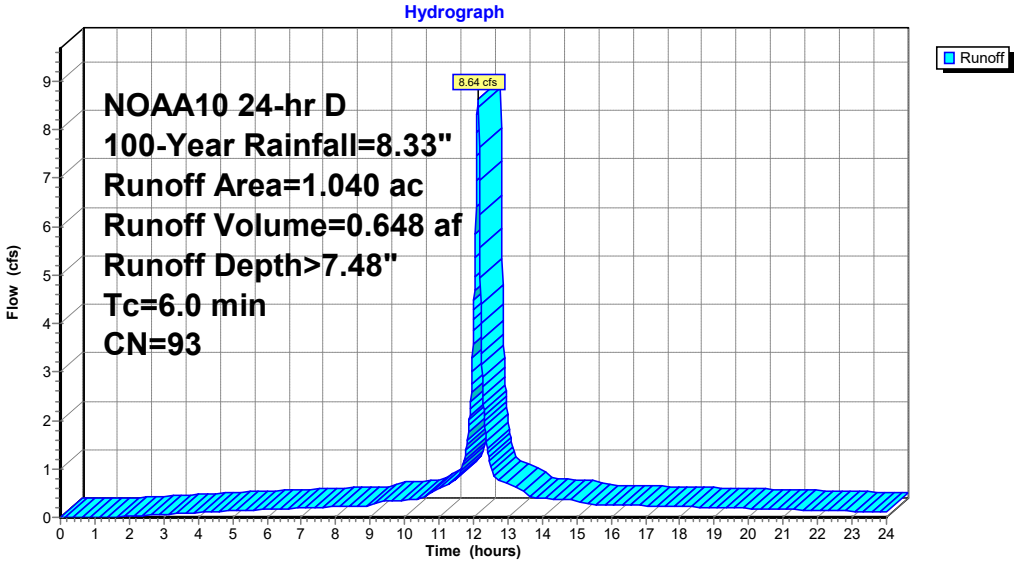
Runoff = 8.64 cfs @ 12.13 hrs, Volume= 0.648 af, Depth> 7.48"
Routed to Pond 33P : UG 221

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	1.040	93	
	1.040		100.00% Pervious Area

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

Subcatchment 31S: PRWS-221



Summary for Subcatchment 32S: PRWS-51

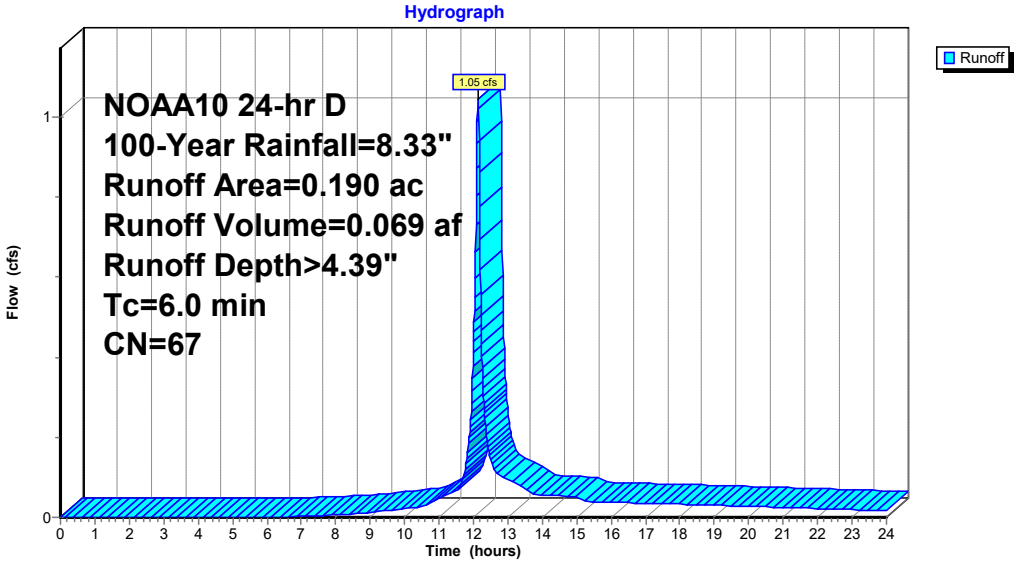
Runoff = 1.05 cfs @ 12.13 hrs, Volume= 0.069 af, Depth> 4.39"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	0.190	67	
	0.190		100.00% Pervious Area

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

Subcatchment 32S: PRWS-51



Summary for Subcatchment 33S: PRWS-50

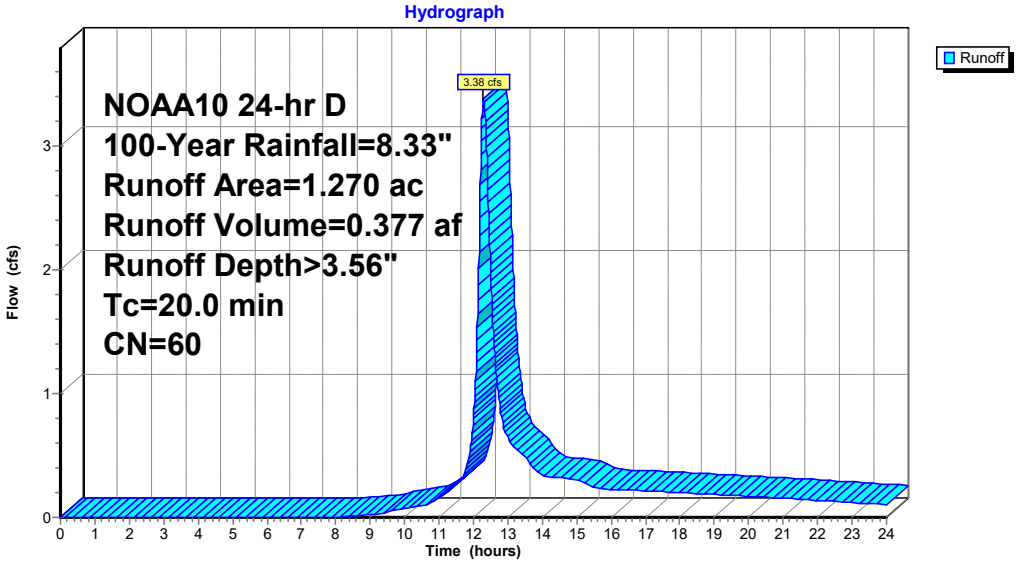
Runoff = 3.38 cfs @ 12.29 hrs, Volume= 0.377 af, Depth> 3.56"
Routed to Link 34L : PR / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	1.270	60	
	1.270		100.00% Pervious Area

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

Subcatchment 33S: PRWS-50



Summary for Subcatchment 35S: PRWS-52

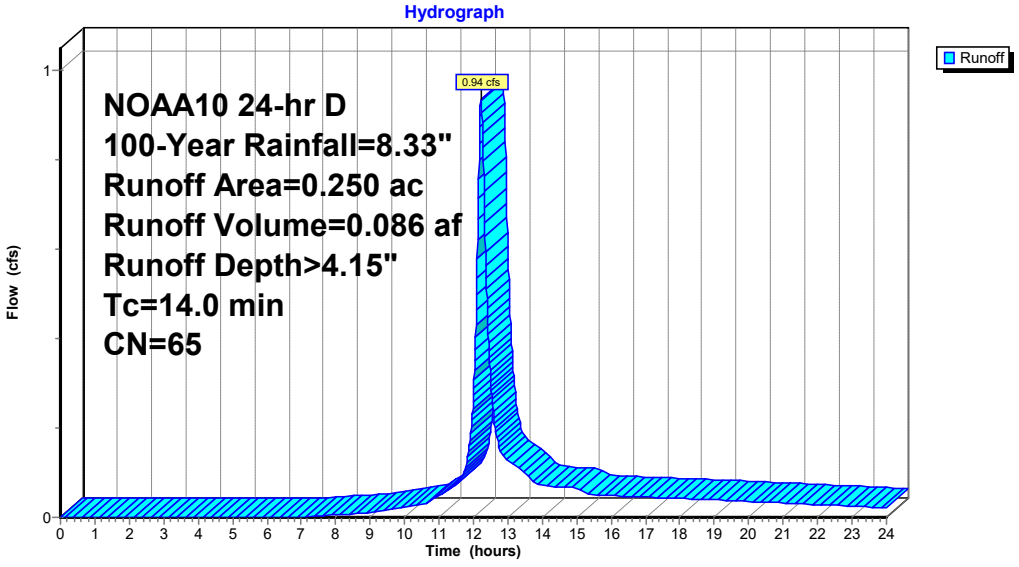
Runoff = 0.94 cfs @ 12.22 hrs, Volume= 0.086 af, Depth> 4.15"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	0.250	65	
	0.250		100.00% Pervious Area

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

Subcatchment 35S: PRWS-52



Summary for Subcatchment 36S: PRWS-222

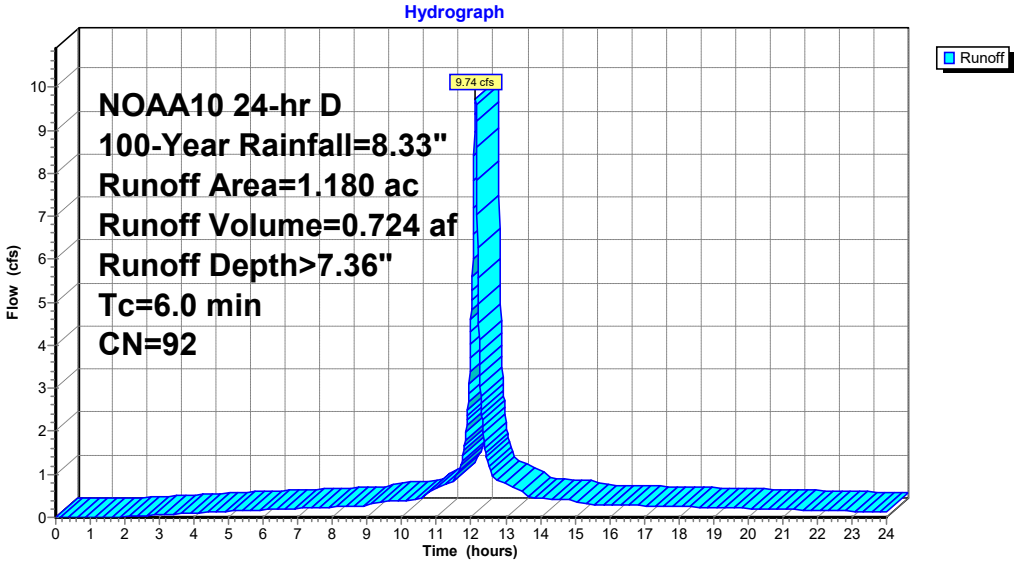
Runoff = 9.74 cfs @ 12.13 hrs, Volume= 0.724 af, Depth> 7.36"
Routed to Pond 41P : UG 222

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	1.180	92	
	1.180		100.00% Pervious Area

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

Subcatchment 36S: PRWS-222



Summary for Subcatchment 37S: PRWS-223

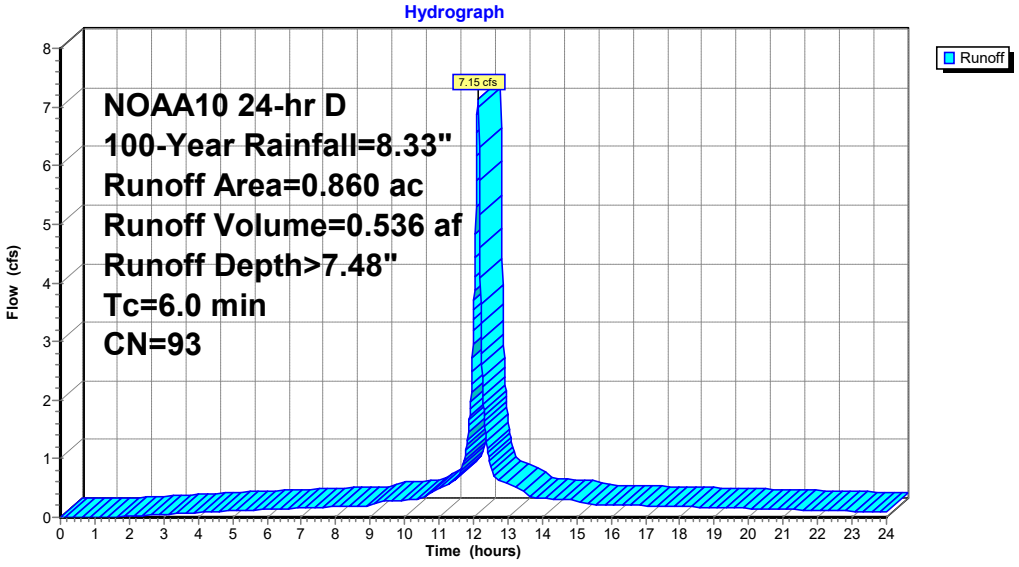
Runoff = 7.15 cfs @ 12.13 hrs, Volume= 0.536 af, Depth> 7.48"
Routed to Pond 42P : UG 223

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	0.860	93	
	0.860		100.00% Pervious Area

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

Subcatchment 37S: PRWS-223



Summary for Subcatchment 38S: PRWS-224

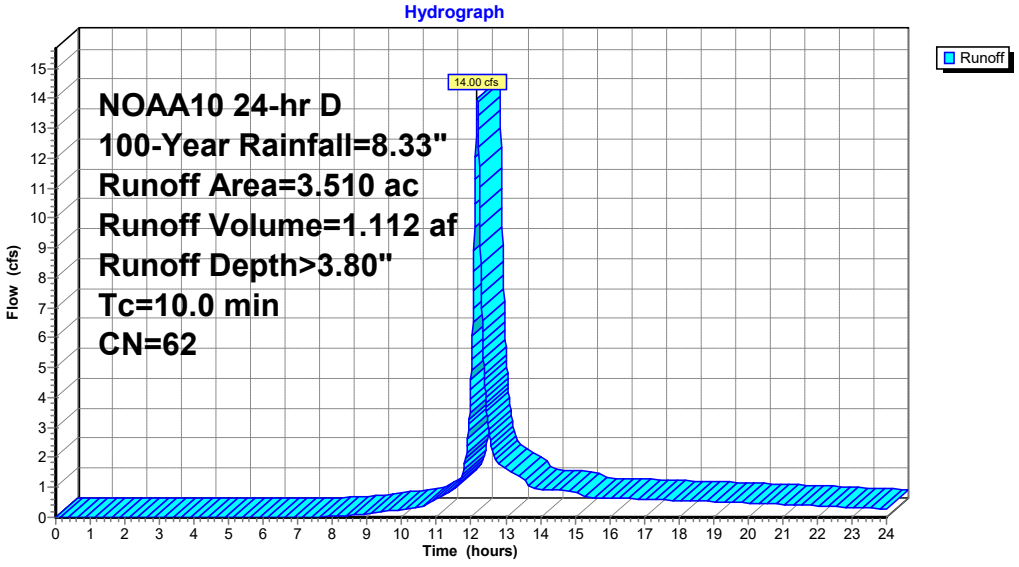
Runoff = 14.00 cfs @ 12.18 hrs, Volume= 1.112 af, Depth> 3.80"
Routed to Pond 43P : UG 224

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	3.510	62	
	3.510		100.00% Pervious Area

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

Subcatchment 38S: PRWS-224



Summary for Subcatchment 39S: PRWS-225

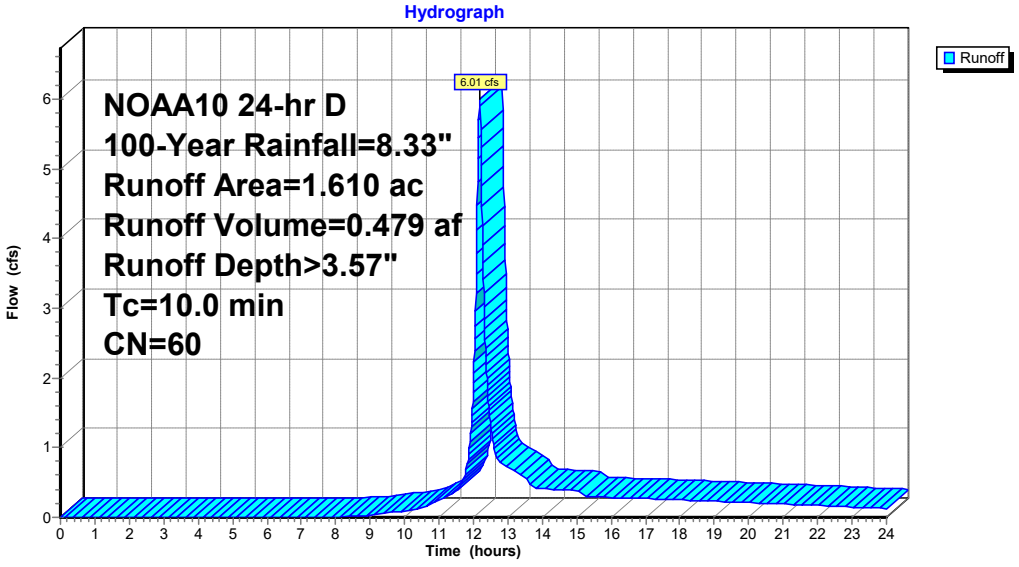
Runoff = 6.01 cfs @ 12.18 hrs, Volume= 0.479 af, Depth> 3.57"
Routed to Pond 44P : UG 225

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	1.610	60	
	1.610		100.00% Pervious Area

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

Subcatchment 39S: PRWS-225



Summary for Pond 22P: DET 230

Inflow Area = 3.710 ac, 0.00% Impervious, Inflow Depth > 6.87" for 100-Year event
Inflow = 21.41 cfs @ 12.22 hrs, Volume= 2.124 af
Outflow = 12.60 cfs @ 12.36 hrs, Volume= 2.072 af, Atten= 41%, Lag= 8.6 min
Primary = 12.60 cfs @ 12.36 hrs, Volume= 2.072 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 71.90' Surf.Area= 7,535 sf Storage= 12,410 cf
Peak Elev= 74.42' @ 12.36 hrs Surf.Area= 10,470 sf Storage= 35,056 cf (22,647 cf above start)

Plug-Flow detention time= 186.0 min calculated for 1.787 af (84% of inflow)
Center-of-Mass det. time= 56.1 min (853.7 - 797.6)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	53,127 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

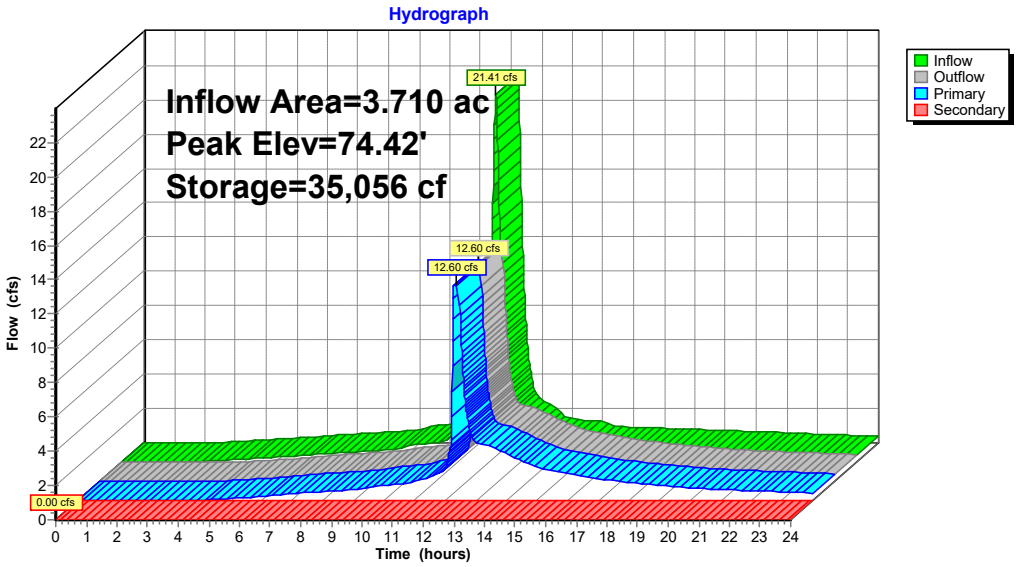
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
70.00	5,565	0	0	5,565
71.00	6,577	6,064	6,064	6,614
72.00	7,646	7,105	13,169	7,724
73.00	8,771	8,202	21,371	8,894
74.00	9,953	9,356	30,727	10,125
75.00	11,192	10,566	41,293	11,416
76.00	12,487	11,834	53,127	12,767

Device	Routing	Invert	Outlet Devices
#1	Primary	66.50'	**15.0" Round Culvert** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.50' / 59.00' S= 0.1042 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	71.90'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	73.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	74.00'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	75.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=12.60 cfs @ 12.36 hrs HW=74.42' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.60 cfs @ 10.27 fps)
  └─**2=Orifice/Grate** (Passes < 2.85 cfs potential flow)
  └─**3=Orifice/Grate** (Passes < 1.02 cfs potential flow)
  └─**4=Sharp-Crested Rectangular Weir** (Passes < 12.56 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=71.90' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 22P: DET 230



Summary for Pond 33P: UG 221

Inflow Area = 1.040 ac, 0.00% Impervious, Inflow Depth > 7.48" for 100-Year event
Inflow = 8.64 cfs @ 12.13 hrs, Volume= 0.648 af
Outflow = 7.78 cfs @ 12.16 hrs, Volume= 0.643 af, Atten= 10%, Lag= 1.7 min
Primary = 7.78 cfs @ 12.16 hrs, Volume= 0.643 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 92.48' @ 12.16 hrs Surf.Area= 0.032 ac Storage= 0.090 af

Plug-Flow detention time= 22.4 min calculated for 0.643 af (99% of inflow)
Center-of-Mass det. time= 17.3 min (787.2 - 769.9)

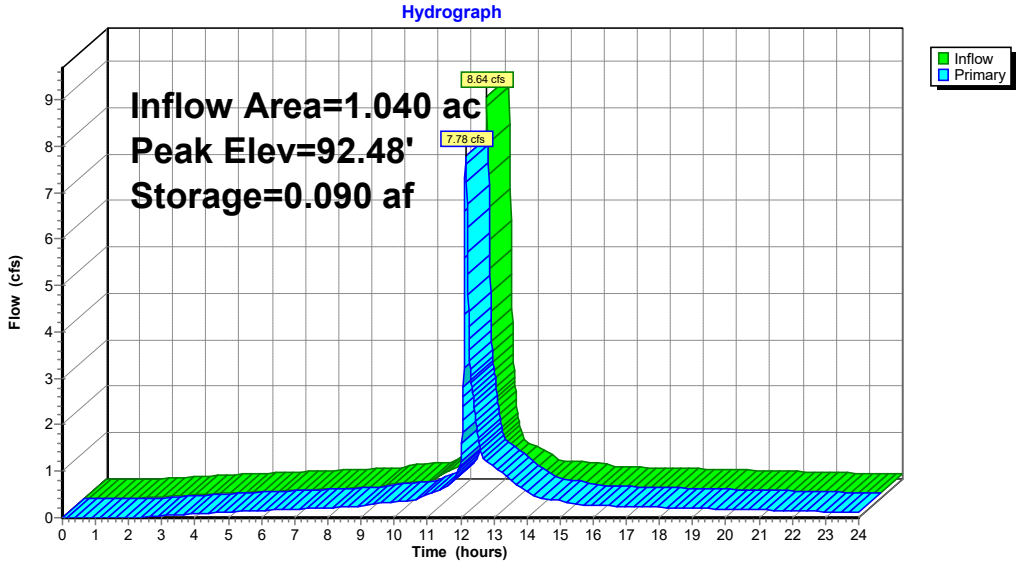
Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	0.007 af	**8.80'W x 160.00'L x 4.00'H Field A** 0.129 af Overall - 0.112 af Embedded = 0.018 af x 40.0% Voids
#2A	89.00'	0.086 af	**Concrete Galley 4x8x4** x 40 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 40 Chambers in 2 Rows
		0.093 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.00'	**24.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.00' / 85.60' S= 0.0069 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	89.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=7.76 cfs @ 12.16 hrs HW=92.48' TW=76.60' (Dynamic Tailwater)
└─**1=Culvert** (Passes 7.76 cfs of 35.41 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.70 cfs @ 8.66 fps)
├─**3=Orifice/Grate** (Orifice Controls 1.80 cfs @ 5.16 fps)
└─**4=Sharp-Crested Rectangular Weir** (Weir Controls 4.26 cfs @ 2.27 fps)

Pond 33P: UG 221



Summary for Pond 35P: UG 110

Inflow Area = 3.410 ac, 0.00% Impervious, Inflow Depth > 3.68" for 100-Year event
Inflow = 11.32 cfs @ 12.22 hrs, Volume= 1.046 af
Outflow = 9.92 cfs @ 12.28 hrs, Volume= 1.039 af, Atten= 12%, Lag= 3.8 min
Discarded = 0.02 cfs @ 11.45 hrs, Volume= 0.020 af
Primary = 9.89 cfs @ 12.28 hrs, Volume= 1.019 af
Routed to Link 15L : PR / A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 64.52' @ 12.28 hrs Surf.Area= 2,016 sf Storage= 5,877 cf

Plug-Flow detention time= 16.0 min calculated for 1.039 af (99% of inflow)
Center-of-Mass det. time= 12.3 min (892.7 - 880.4)

Volume	Invert	Avail.Storage	Storage Description
#1	61.20'	3,168 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	61.70'	2,880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		6,048 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.20	1,056	0	0
64.20	1,056	3,168	3,168

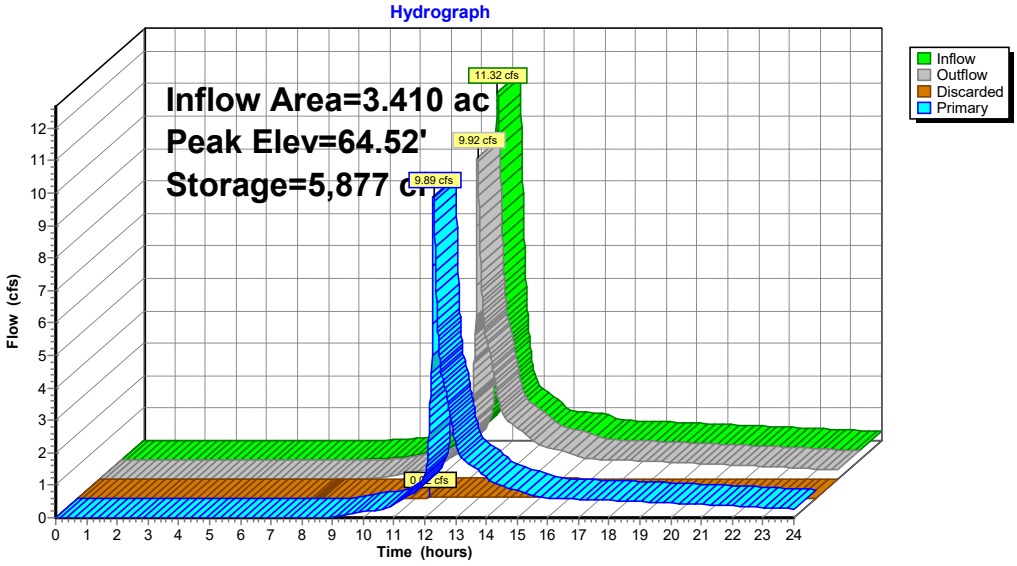
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.70	960	0	0
64.70	960	2,880	2,880

Device	Routing	Invert	Outlet Devices
#1	Discarded	61.20'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	61.10'	**18.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 61.10' / 60.90' S= 0.0077 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#3	Device 2	61.20'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	62.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	64.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.02 cfs @ 11.45 hrs HW=61.70' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=9.86 cfs @ 12.28 hrs HW=64.52' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 9.86 cfs of 13.90 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 2.90 cfs @ 8.32 fps)
  ├**4=Orifice/Grate** (Orifice Controls 2.18 cfs @ 6.25 fps)
  └**5=Sharp-Crested Rectangular Weir** (Weir Controls 4.77 cfs @ 2.36 fps)

Pond 35P: UG 110



Summary for Pond 36P: DET 220 OG

Inflow Area = 11.910 ac, 0.00% Impervious, Inflow Depth > 5.41" for 100-Year event
Inflow = 51.33 cfs @ 12.19 hrs, Volume= 5.374 af
Outflow = 45.70 cfs @ 12.23 hrs, Volume= 4.919 af, Atten= 11%, Lag= 2.6 min
Discarded = 0.72 cfs @ 12.23 hrs, Volume= 0.998 af
Primary = 44.98 cfs @ 12.23 hrs, Volume= 3.921 af
Routed to Pond 37P : DET 210 OG
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 76.79' @ 12.23 hrs Surf.Area= 9,983 sf Storage= 30,289 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 33.6 min (862.5 - 828.9)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	43,165 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	6,115	0	0
74.00	7,054	6,585	6,585
75.00	8,050	7,552	14,137
76.00	9,103	8,577	22,713
77.00	10,212	9,658	32,371
78.00	11,377	10,795	43,165

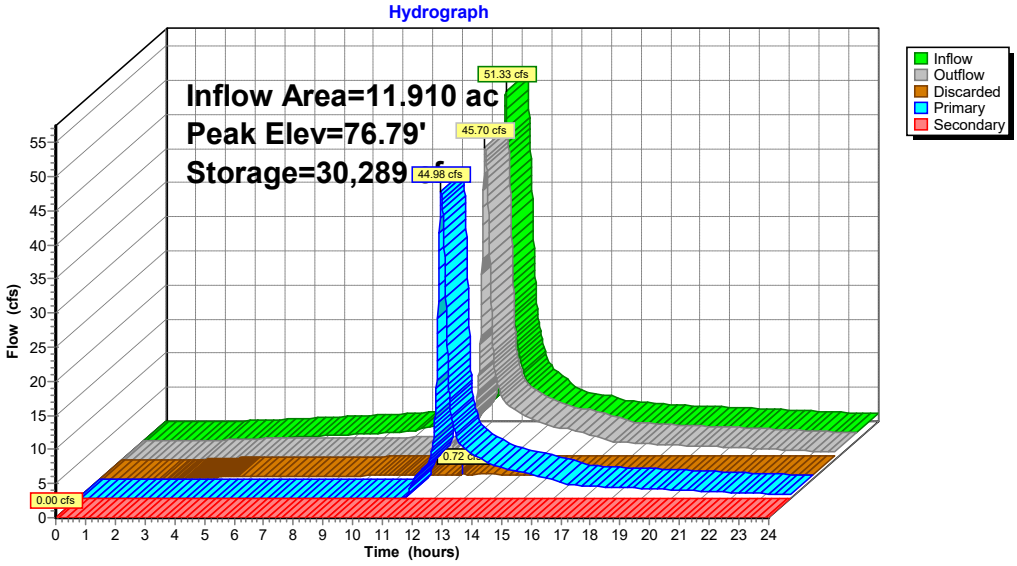
Device	Routing	Invert	Outlet Devices
#1	Discarded	73.00'	**3.100 in/hr Exfiltration over Surface area**
#2	Primary	75.60'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Secondary	77.00'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.72 cfs @ 12.23 hrs HW=76.79' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.72 cfs)

Primary OutFlow Max=44.96 cfs @ 12.23 hrs HW=76.79' TW=75.06' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 44.96 cfs @ 2.77 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 36P: DET 220 OG



Summary for Pond 37P: DET 210 OG

Inflow Area = 13.920 ac, 0.00% Impervious, Inflow Depth > 4.13" for 100-Year event
Inflow = 50.99 cfs @ 12.22 hrs, Volume= 4.794 af
Outflow = 8.13 cfs @ 13.07 hrs, Volume= 4.761 af, Atten= 84%, Lag= 51.5 min
Primary = 8.13 cfs @ 13.07 hrs, Volume= 4.761 af
Routed to Link 27L : PR / B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 27L : PR / B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 76.70' @ 13.07 hrs Surf.Area= 22,474 sf Storage= 71,243 cf

Plug-Flow detention time= 109.5 min calculated for 4.761 af (99% of inflow)
Center-of-Mass det. time= 105.6 min (963.3 - 857.7)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	92,201 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

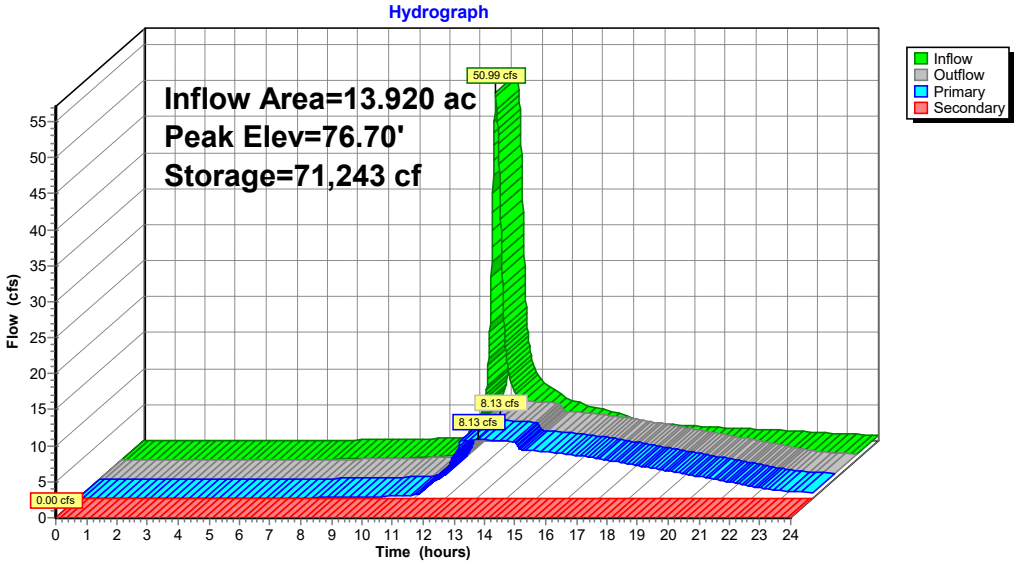
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
72.00	2,507	0	0	2,507
73.00	13,430	7,247	7,247	13,434
74.00	14,957	14,187	21,433	15,018
75.00	16,541	15,742	37,176	16,663
76.00	21,175	18,810	55,986	21,323
77.00	23,044	22,103	78,089	23,265
77.60	24,000	14,112	92,201	24,275

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	72.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	76.30'	**14.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Secondary	76.70'	**10.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=8.13 cfs @ 13.07 hrs HW=76.70' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 8.13 cfs @ 10.35 fps)
└**2=Orifice/Grate** (Passes < 7.02 cfs potential flow)
└**3=Sharp-Crested Rectangular Weir** (Passes < 11.48 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=72.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 37P: DET 210 OG



Summary for Pond 41P: UG 222

Inflow Area = 1.180 ac, 0.00% Impervious, Inflow Depth > 7.36" for 100-Year event
Inflow = 9.74 cfs @ 12.13 hrs, Volume= 0.724 af
Outflow = 7.43 cfs @ 12.18 hrs, Volume= 0.718 af, Atten= 24%, Lag= 2.8 min
Primary = 7.43 cfs @ 12.18 hrs, Volume= 0.718 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 92.03' @ 12.18 hrs Surf.Area= 0.036 ac Storage= 0.091 af

Plug-Flow detention time= 21.4 min calculated for 0.718 af (99% of inflow)
Center-of-Mass det. time= 16.1 min (790.6 - 774.5)

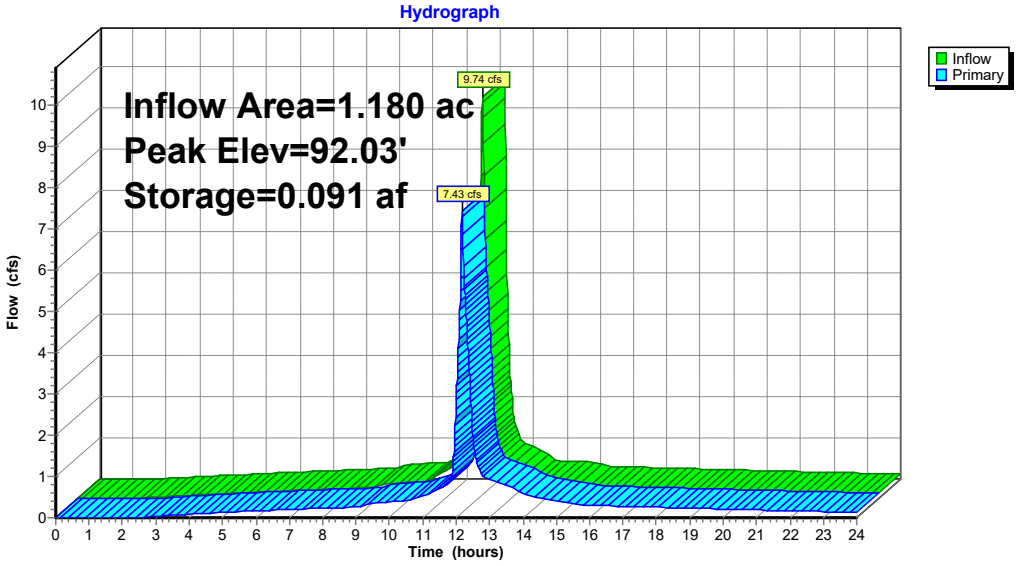
Volume	Invert	Avail.Storage	Storage Description
#1A	88.80'	0.008 af	**8.80'W x 176.00'L x 4.00'H Field A** 0.142 af Overall - 0.123 af Embedded = 0.019 af x 40.0% Voids
#2A	88.80'	0.095 af	**Concrete Galley 4x8x4** x 44 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 44 Chambers in 2 Rows
		0.102 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**18.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 88.30' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	88.80'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.80'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=7.40 cfs @ 12.18 hrs HW=92.03' TW=76.68' (Dynamic Tailwater)
└─**1=Culvert** (Passes 7.40 cfs of 12.35 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.63 cfs @ 8.31 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 4.37 cfs @ 6.27 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Weir Controls 1.39 cfs @ 1.56 fps)

Pond 41P: UG 222



Summary for Pond 42P: UG 223

Inflow Area = 0.860 ac, 0.00% Impervious, Inflow Depth > 7.48" for 100-Year event
Inflow = 7.15 cfs @ 12.13 hrs, Volume= 0.536 af
Outflow = 6.33 cfs @ 12.16 hrs, Volume= 0.536 af, Atten= 11%, Lag= 1.8 min
Primary = 6.33 cfs @ 12.16 hrs, Volume= 0.536 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 91.55' @ 12.16 hrs Surf.Area= 0.016 ac Storage= 0.039 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.9 min (774.8 - 769.9)

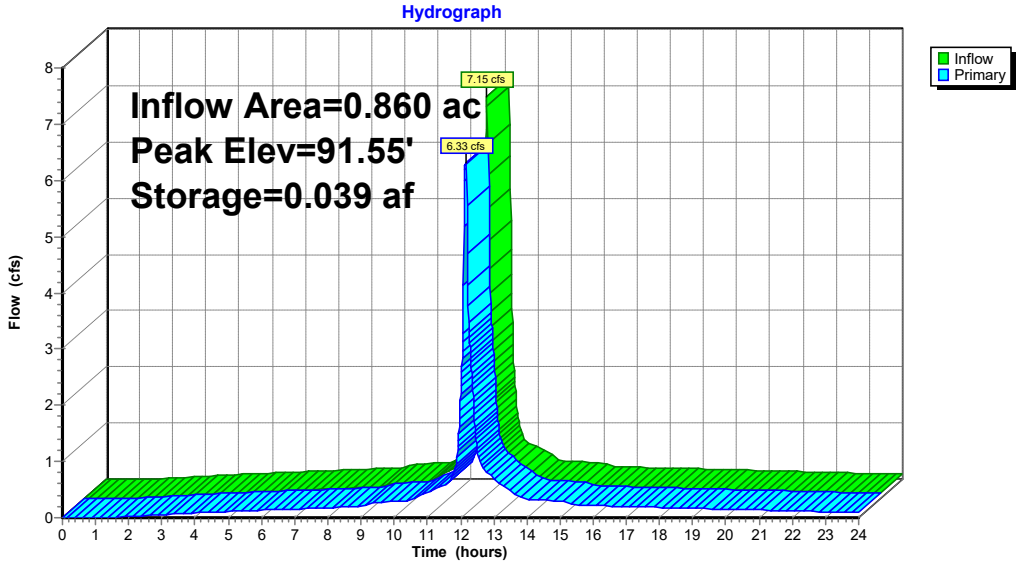
Volume	Invert	Avail.Storage	Storage Description
#1A	88.50'	0.004 af	**8.80'W x 80.00'L x 4.00'H Field A** 0.065 af Overall - 0.056 af Embedded = 0.009 af x 40.0% Voids
#2A	88.50'	0.043 af	**Concrete Galley 4x8x4** x 20 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 20 Chambers in 2 Rows
		0.046 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.00'	**12.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.00' / 86.50' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	88.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=6.33 cfs @ 12.16 hrs HW=91.55' TW=76.61' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 6.33 cfs @ 8.06 fps)
├─**2=Orifice/Grate** (Passes < 1.64 cfs potential flow)
├─**3=Orifice/Grate** (Passes < 2.20 cfs potential flow)
└─**4=Sharp-Crested Rectangular Weir** (Passes < 5.12 cfs potential flow)

Pond 42P: UG 223



Summary for Pond 43P: UG 224

Inflow Area = 3.760 ac, 0.00% Impervious, Inflow Depth > 3.82" for 100-Year event
Inflow = 14.86 cfs @ 12.18 hrs, Volume= 1.198 af
Outflow = 10.51 cfs @ 12.26 hrs, Volume= 1.196 af, Atten= 29%, Lag= 5.0 min
Primary = 10.51 cfs @ 12.26 hrs, Volume= 1.196 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 93.29' @ 12.26 hrs Surf.Area= 0.065 ac Storage= 0.162 af

Plug-Flow detention time= 16.2 min calculated for 1.196 af (100% of inflow)
Center-of-Mass det. time= 14.9 min (889.2 - 874.3)

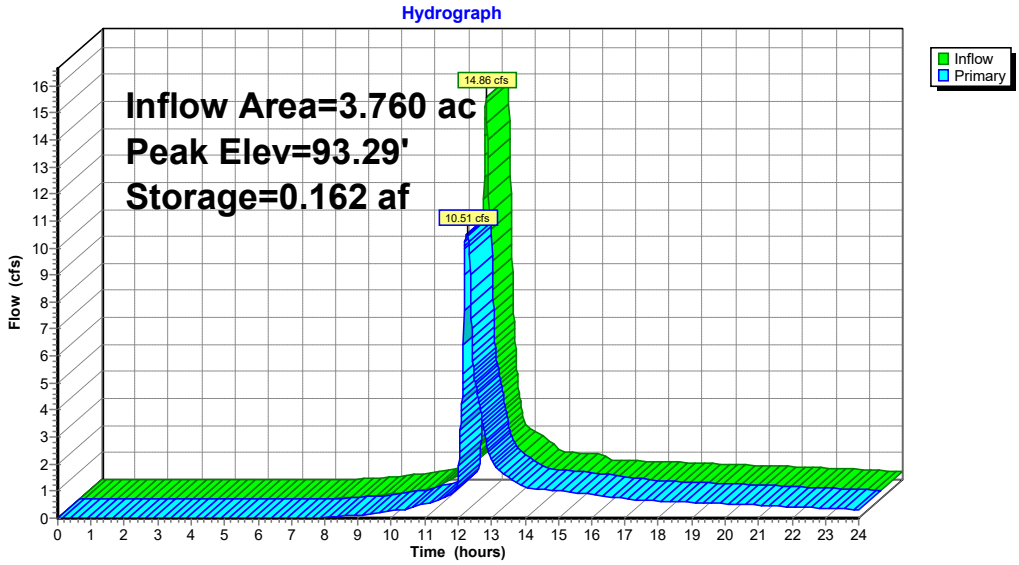
Volume	Invert	Avail.Storage	Storage Description
#1A	89.50'	0.002 af	**13.20'W x 32.00'L x 4.00'H Field A** 0.039 af Overall - 0.034 af Embedded = 0.005 af x 40.0% Voids
#2A	89.50'	0.026 af	**Concrete Galley 4x8x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 12 Chambers in 3 Rows
#3B	90.00'	0.006 af	**13.20'W x 88.00'L x 4.00'H Field B** 0.107 af Overall - 0.092 af Embedded = 0.015 af x 40.0% Voids
#4B	90.00'	0.071 af	**Concrete Galley 4x8x4** x 33 Inside #3 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 33 Chambers in 3 Rows
#5C	90.50'	0.006 af	**13.20'W x 96.00'L x 4.00'H Field C** 0.116 af Overall - 0.101 af Embedded = 0.016 af x 40.0% Voids
#6C	90.50'	0.077 af	**Concrete Galley 4x8x4** x 36 Inside #5 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 36 Chambers in 3 Rows
		0.188 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.50'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.50' / 89.18' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	89.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=10.51 cfs @ 12.26 hrs HW=93.29' TW=76.78' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 10.51 cfs @ 8.56 fps)
  └─**2=Orifice/Grate** (Passes < 1.78 cfs potential flow)
  └─**3=Orifice/Grate** (Passes < 4.70 cfs potential flow)
  └─**4=Sharp-Crested Rectangular Weir** (Passes < 8.80 cfs potential flow)

Pond 43P: UG 224



Summary for Pond 44P: UG 225

Inflow Area = 1.610 ac, 0.00% Impervious, Inflow Depth > 3.57" for 100-Year event
Inflow = 6.01 cfs @ 12.18 hrs, Volume= 0.479 af
Outflow = 3.28 cfs @ 12.30 hrs, Volume= 0.472 af, Atten= 45%, Lag= 7.2 min
Primary = 3.28 cfs @ 12.30 hrs, Volume= 0.472 af
Routed to Pond 36P : DET 220 OG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 95.21' @ 12.30 hrs Surf.Area= 0.039 ac Storage= 0.099 af

Plug-Flow detention time= 36.6 min calculated for 0.472 af (98% of inflow)
Center-of-Mass det. time= 28.3 min (908.7 - 880.4)

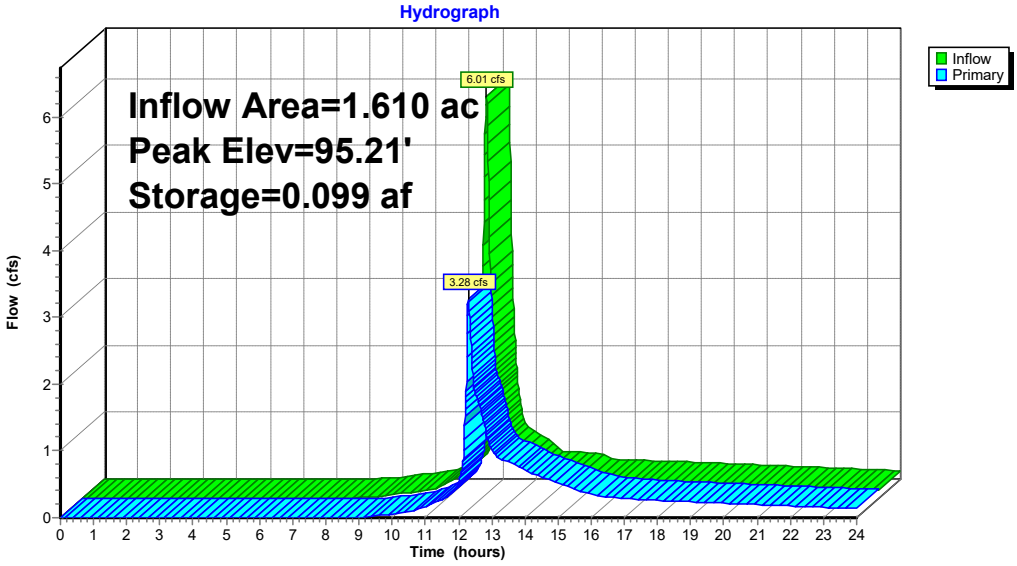
Volume	Invert	Avail.Storage	Storage Description
#1A	92.00'	0.008 af	**17.60'W x 96.00'L x 4.00'H Field A** 0.155 af Overall - 0.134 af Embedded = 0.021 af x 40.0% Voids
#2A	92.00'	0.103 af	**Concrete Galley 4x8x4** x 48 Inside #1 Inside= 42.0"W x 43.0"H => 12.47 sf x 7.50'L = 93.6 cf Outside= 52.8"W x 48.0"H => 15.20 sf x 8.00'L = 121.6 cf 48 Chambers in 4 Rows
		0.112 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	92.00'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.00' / 90.53' S= 0.0432 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	92.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	94.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.28 cfs @ 12.30 hrs HW=95.21' TW=76.74' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.28 cfs of 9.49 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.14 cfs @ 8.34 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.92 cfs @ 4.71 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Weir Controls 1.22 cfs @ 1.49 fps)

Pond 44P: UG 225

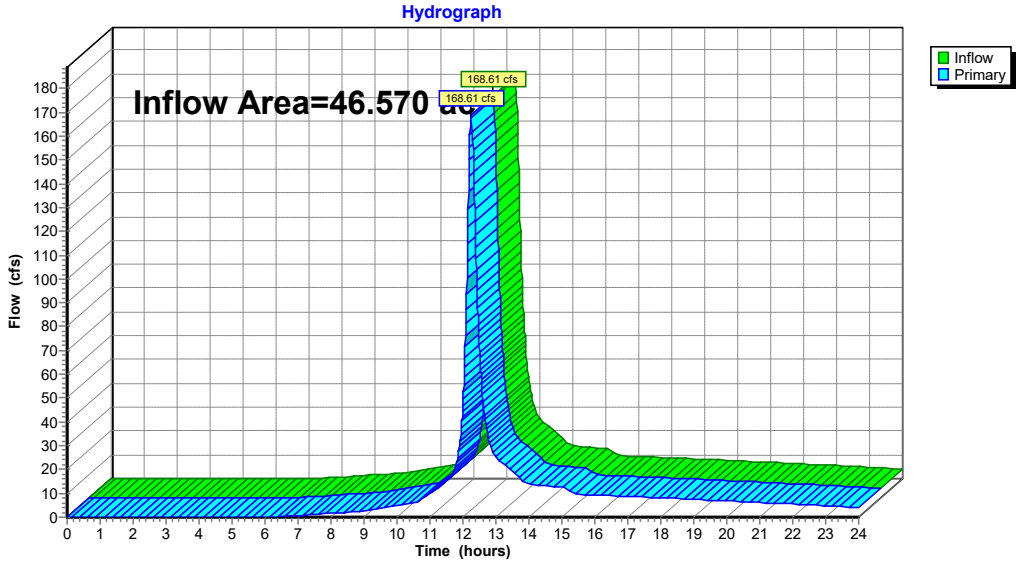


Summary for Link 4L: EX / A

Inflow Area = 46.570 ac, 0.00% Impervious, Inflow Depth > 4.39" for 100-Year event
Inflow = 168.61 cfs @ 12.25 hrs, Volume= 17.022 af
Primary = 168.61 cfs @ 12.25 hrs, Volume= 17.022 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: EX / A

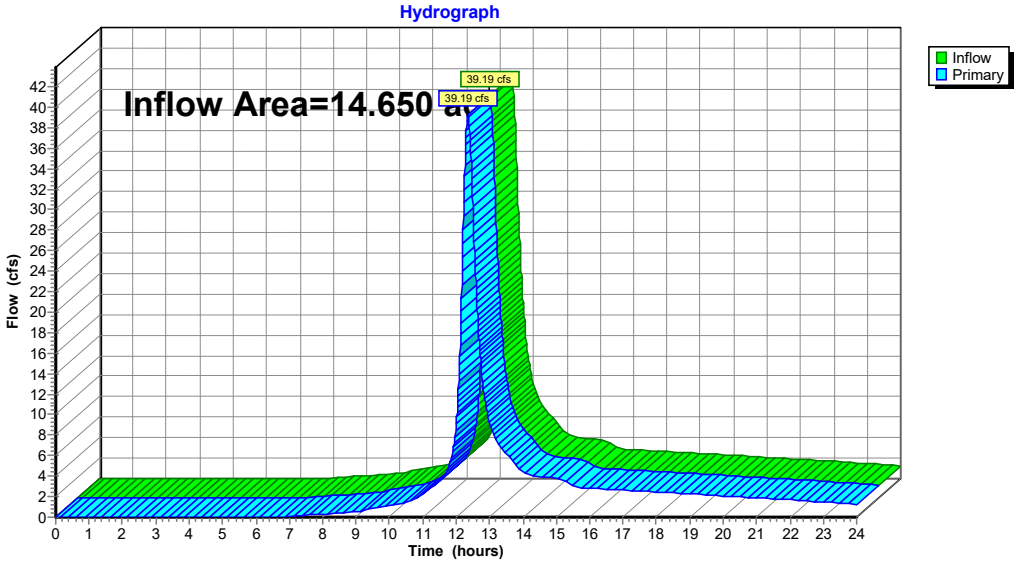


Summary for Link 7L: EX / B

Inflow Area = 14.650 ac, 0.00% Impervious, Inflow Depth > 3.99" for 100-Year event
Inflow = 39.19 cfs @ 12.34 hrs, Volume= 4.876 af
Primary = 39.19 cfs @ 12.34 hrs, Volume= 4.876 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: EX / B

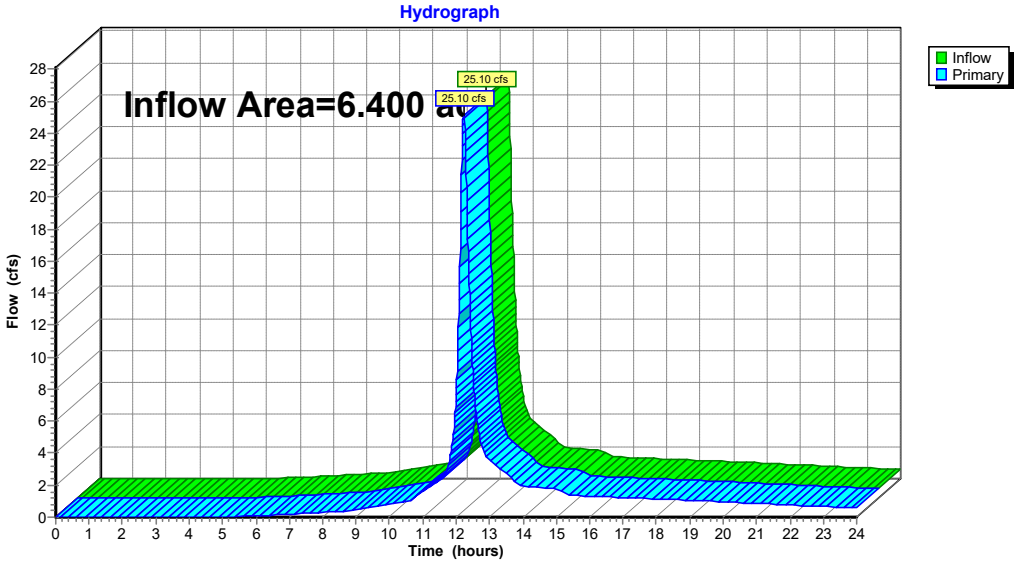


Summary for Link 10L: EX / C

Inflow Area = 6.400 ac, 0.00% Impervious, Inflow Depth > 4.61" for 100-Year event
Inflow = 25.10 cfs @ 12.22 hrs, Volume= 2.459 af
Primary = 25.10 cfs @ 12.22 hrs, Volume= 2.459 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 10L: EX / C

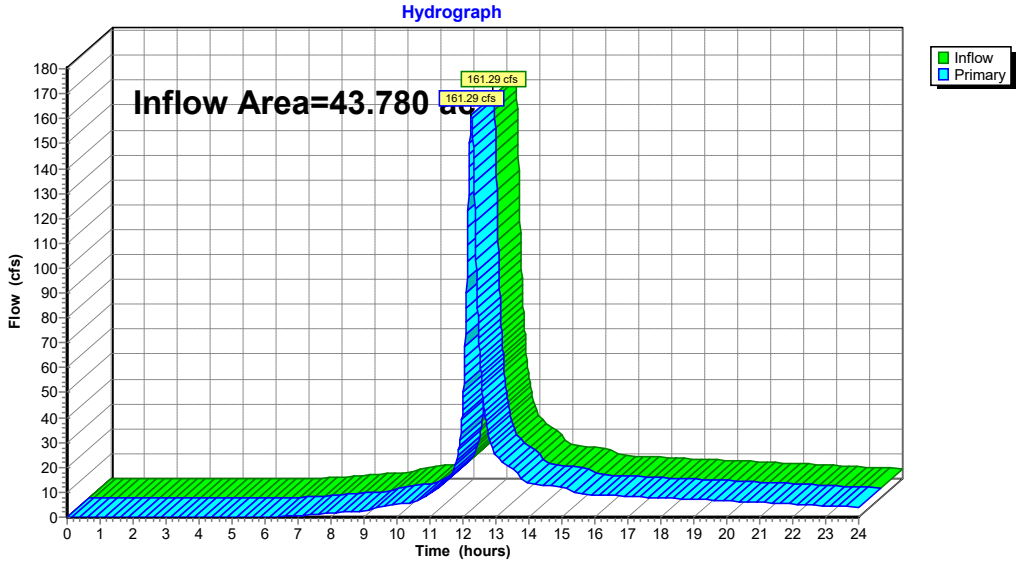


Summary for Link 15L: PR / A

Inflow Area = 43.780 ac, 0.00% Impervious, Inflow Depth > 4.51" for 100-Year event
Inflow = 161.29 cfs @ 12.26 hrs, Volume= 16.461 af
Primary = 161.29 cfs @ 12.26 hrs, Volume= 16.461 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 15L: PR / A

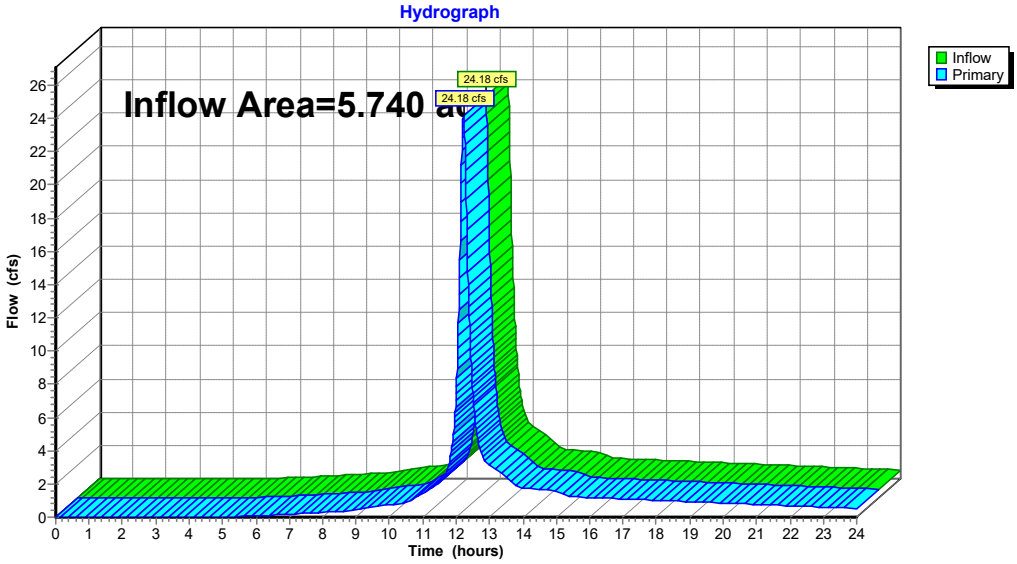


Summary for Link 25L: PR / C

Inflow Area = 5.740 ac, 0.00% Impervious, Inflow Depth > 4.66" for 100-Year event
Inflow = 24.18 cfs @ 12.22 hrs, Volume= 2.227 af
Primary = 24.18 cfs @ 12.22 hrs, Volume= 2.227 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 25L: PR / C

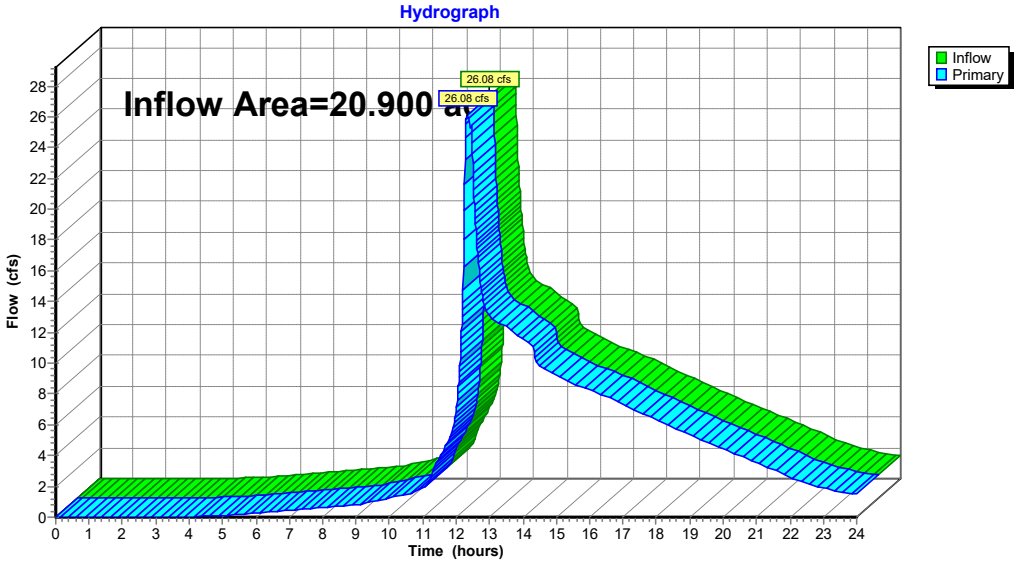


Summary for Link 27L: PR / B

Inflow Area = 20.900 ac, 0.00% Impervious, Inflow Depth > 4.41" for 100-Year event
Inflow = 26.08 cfs @ 12.34 hrs, Volume= 7.679 af
Primary = 26.08 cfs @ 12.34 hrs, Volume= 7.679 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 27L: PR / B

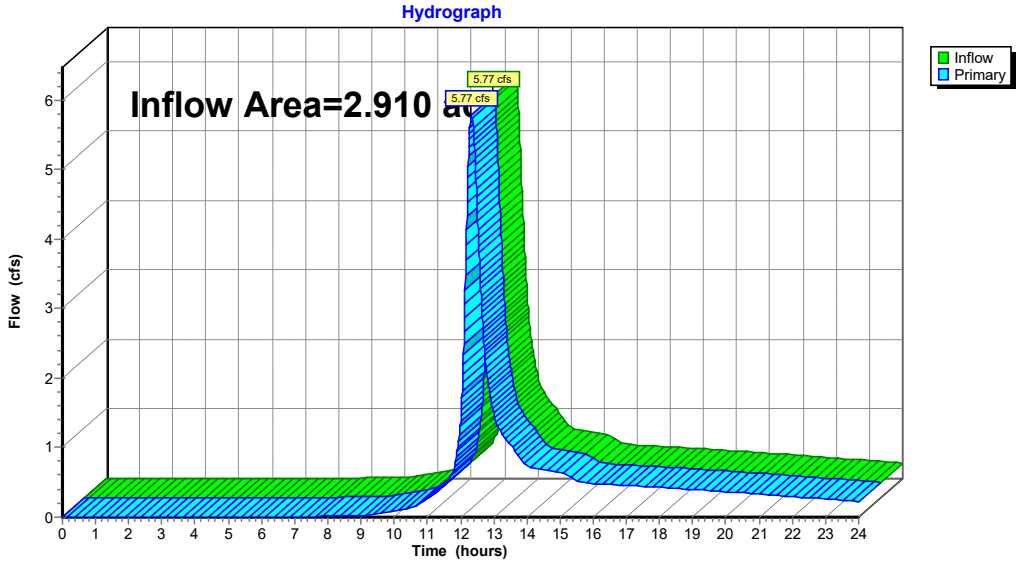


Summary for Link 30L: EX / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 3.18" for 100-Year event
Inflow = 5.77 cfs @ 12.32 hrs, Volume= 0.770 af
Primary = 5.77 cfs @ 12.32 hrs, Volume= 0.770 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 30L: EX / E

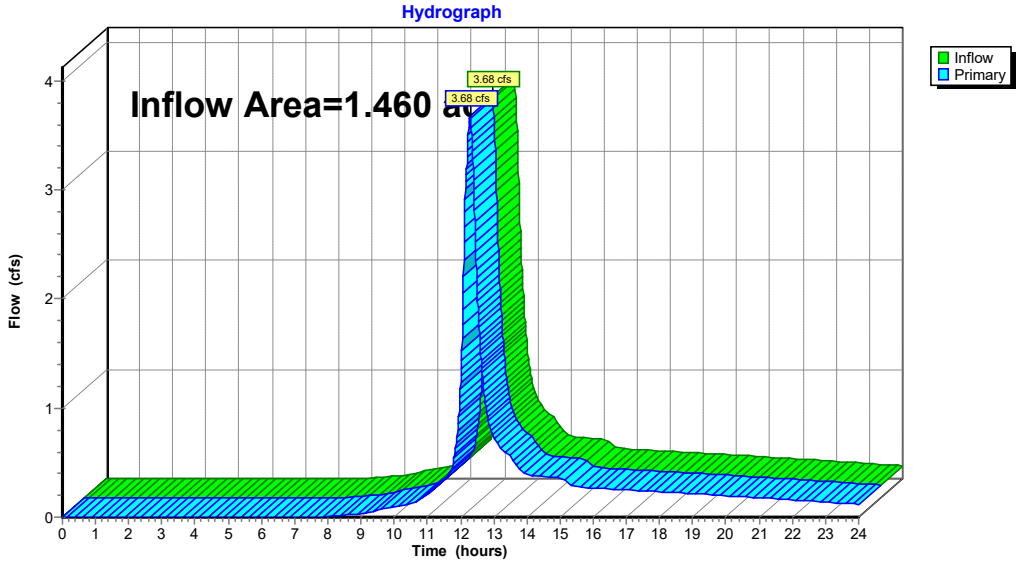


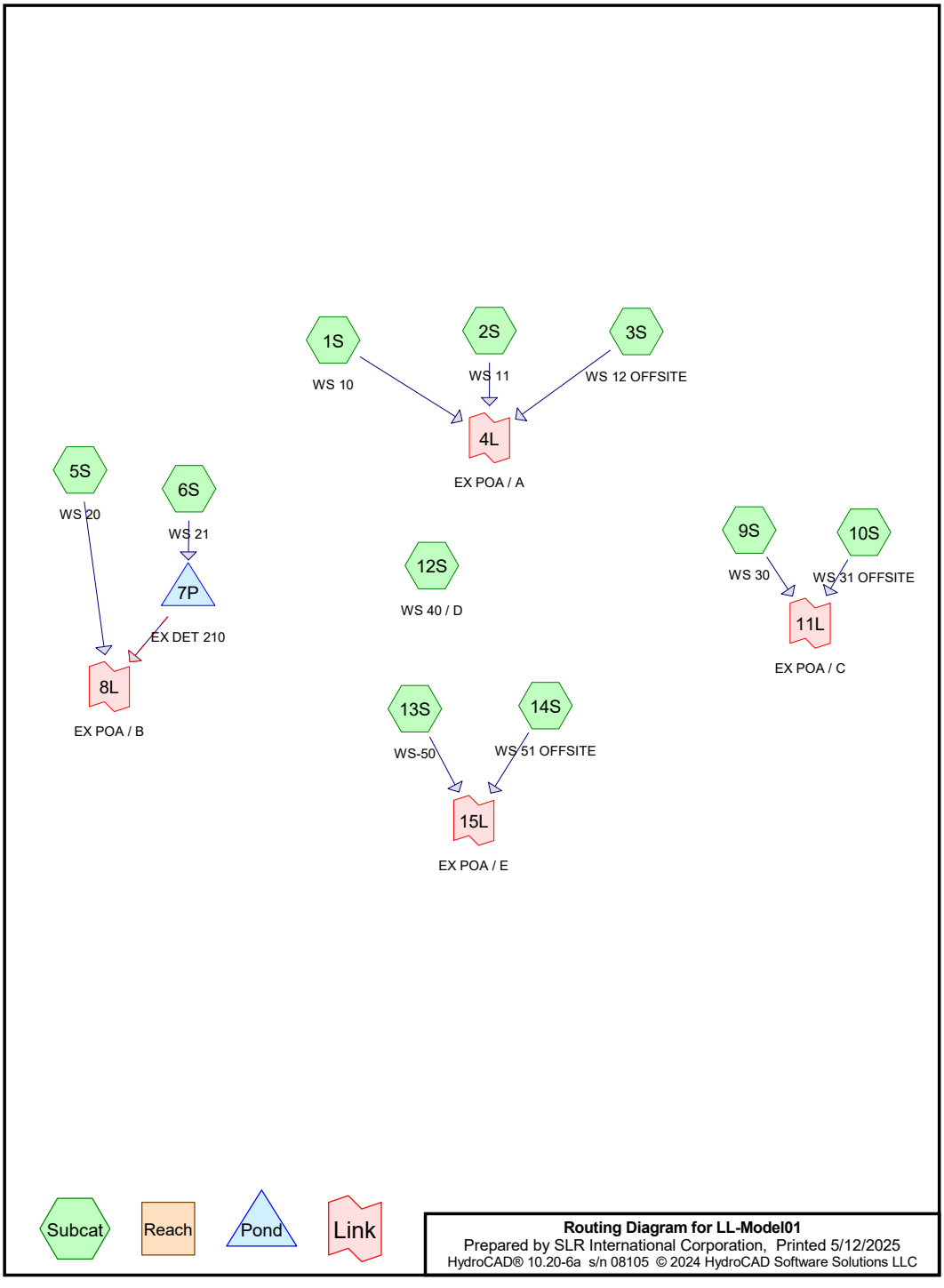
Summary for Link 34L: PR / E

Inflow Area = 1.460 ac, 0.00% Impervious, Inflow Depth > 3.67" for 100-Year event
Inflow = 3.68 cfs @ 12.29 hrs, Volume= 0.446 af
Primary = 3.68 cfs @ 12.29 hrs, Volume= 0.446 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 34L: PR / E




1S
WS 10
2S
WS 11
3S
WS 12 OFFSITE
4L
EX POA / A
5S
WS 20
6S
WS 21
7P
EX DET 210
8L
EX POA / B
12S
WS 40 / D
9S
WS 30
10S
WS 31 OFFSITE
11L
EX POA / C
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Subcat
Reach
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Link
Routing Diagram for LL-Model01
Prepared by SLR International Corporation, Printed 5/12/2025
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Summary for Subcatchment 1S: WS 10

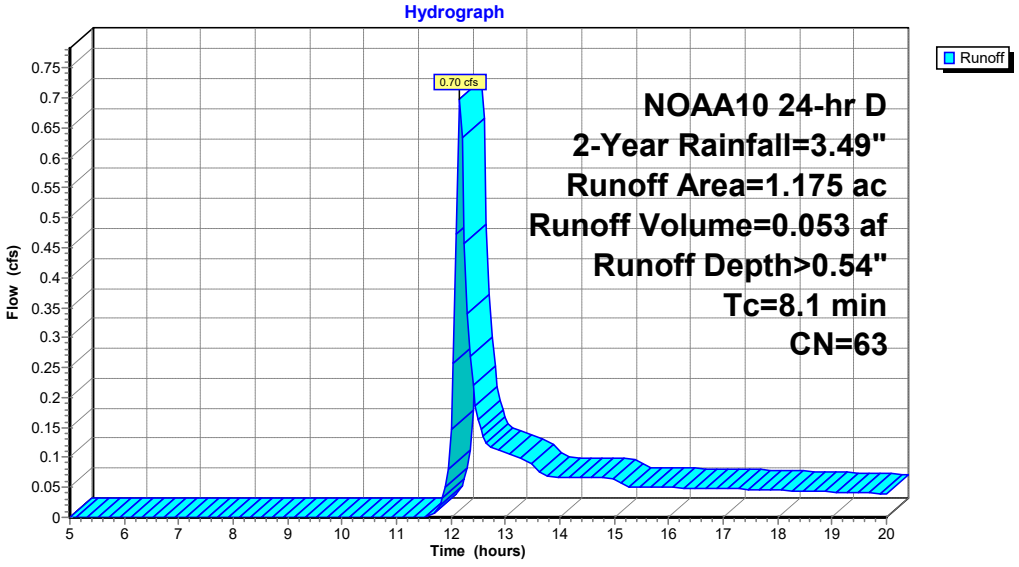
Runoff = 0.70 cfs @ 12.16 hrs, Volume= 0.053 af, Depth> 0.54"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	1.175	63	
	1.175		100.00% Pervious Area

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

Subcatchment 1S: WS 10



Summary for Subcatchment 2S: WS 11

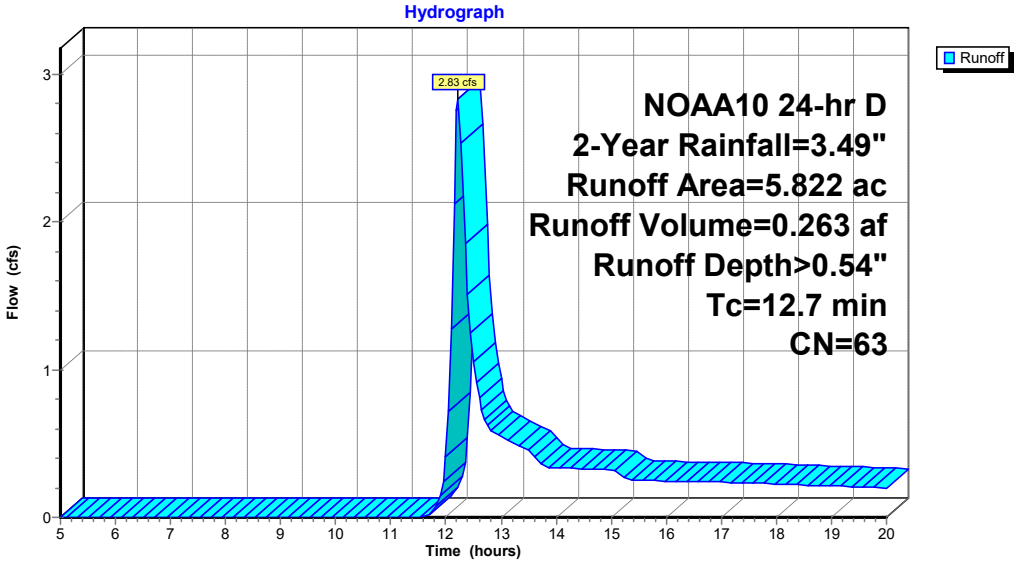
Runoff = 2.83 cfs @ 12.22 hrs, Volume= 0.263 af, Depth> 0.54"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	5.822	63	
	5.822		100.00% Pervious Area

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

Subcatchment 2S: WS 11



Summary for Subcatchment 3S: WS 12 OFFSITE

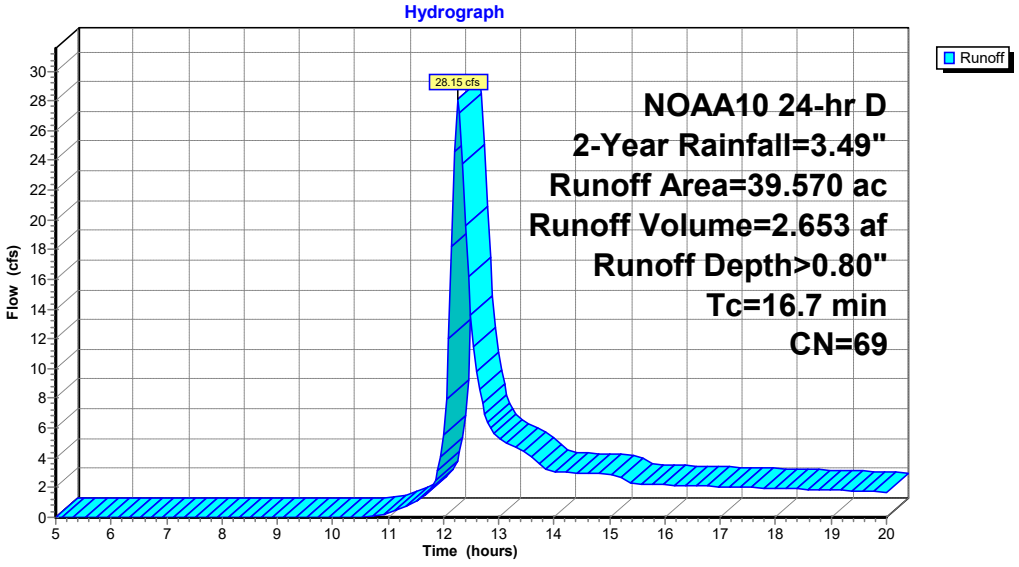
Runoff = 28.15 cfs @ 12.27 hrs, Volume= 2.653 af, Depth> 0.80"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: WS 12 OFFSITE



Summary for Subcatchment 5S: WS 20

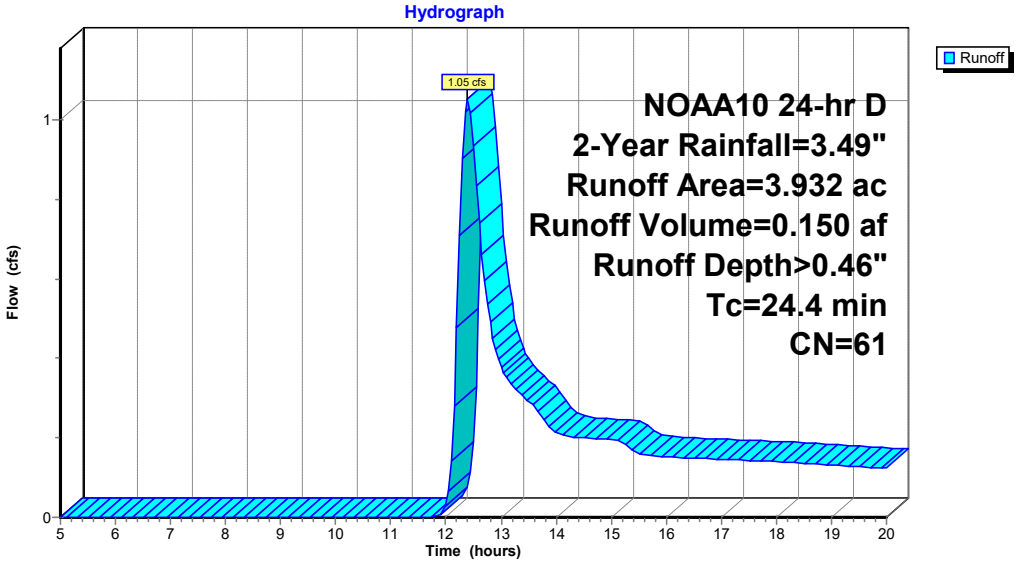
Runoff = 1.05 cfs @ 12.40 hrs, Volume= 0.150 af, Depth> 0.46"
Routed to Link 8L : EX POA / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	3.932	61	
	3.932		100.00% Pervious Area

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

Subcatchment 5S: WS 20



Summary for Subcatchment 6S: WS 21

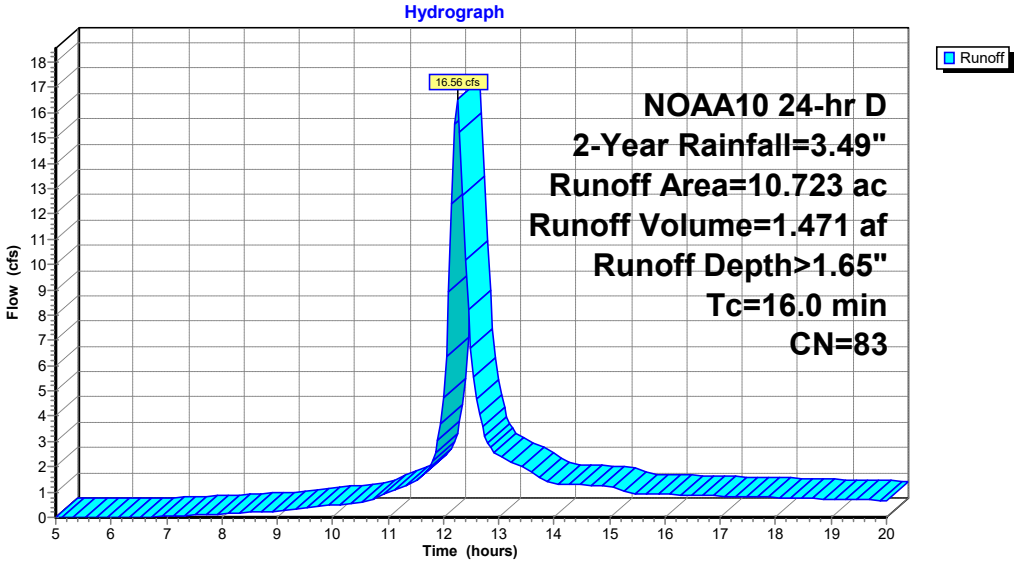
Runoff = 16.56 cfs @ 12.25 hrs, Volume= 1.471 af, Depth> 1.65"
Routed to Pond 7P : EX DET 210

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	10.723	83	
	10.723		100.00% Pervious Area

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

Subcatchment 6S: WS 21



Summary for Subcatchment 9S: WS 30

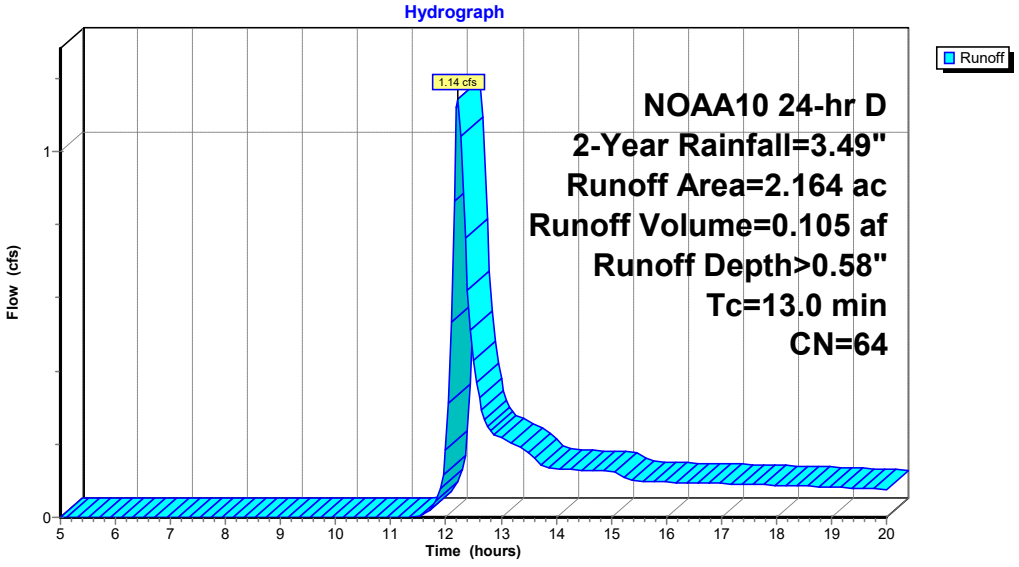
Runoff = 1.14 cfs @ 12.23 hrs, Volume= 0.105 af, Depth> 0.58"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	2.164	64	
	2.164		100.00% Pervious Area

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

Subcatchment 9S: WS 30



Summary for Subcatchment 10S: WS 31 OFFSITE

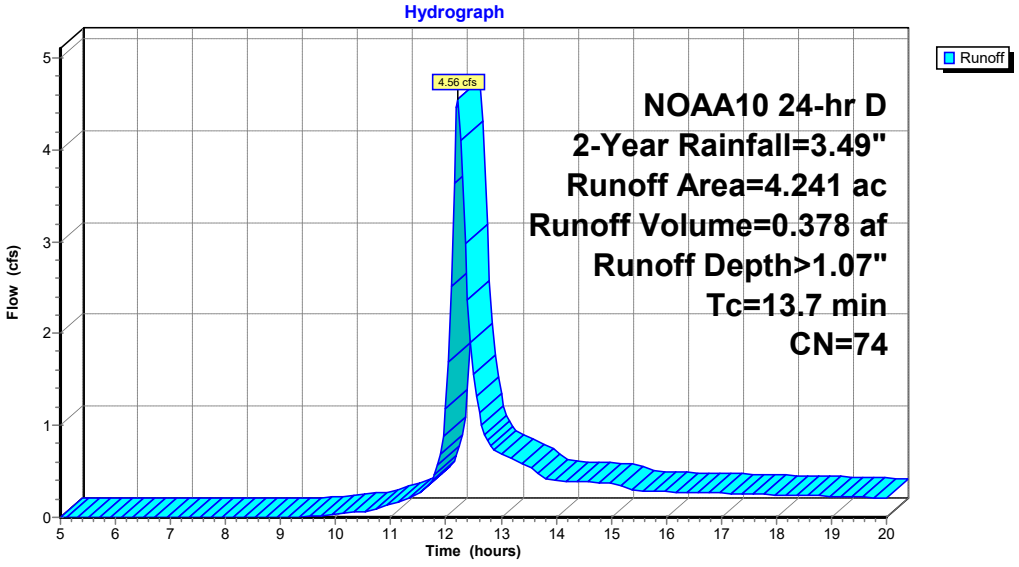
Runoff = 4.56 cfs @ 12.22 hrs, Volume= 0.378 af, Depth> 1.07"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	4.241	74	
	4.241		100.00% Pervious Area

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

Subcatchment 10S: WS 31 OFFSITE



Summary for Subcatchment 12S: WS 40 / D

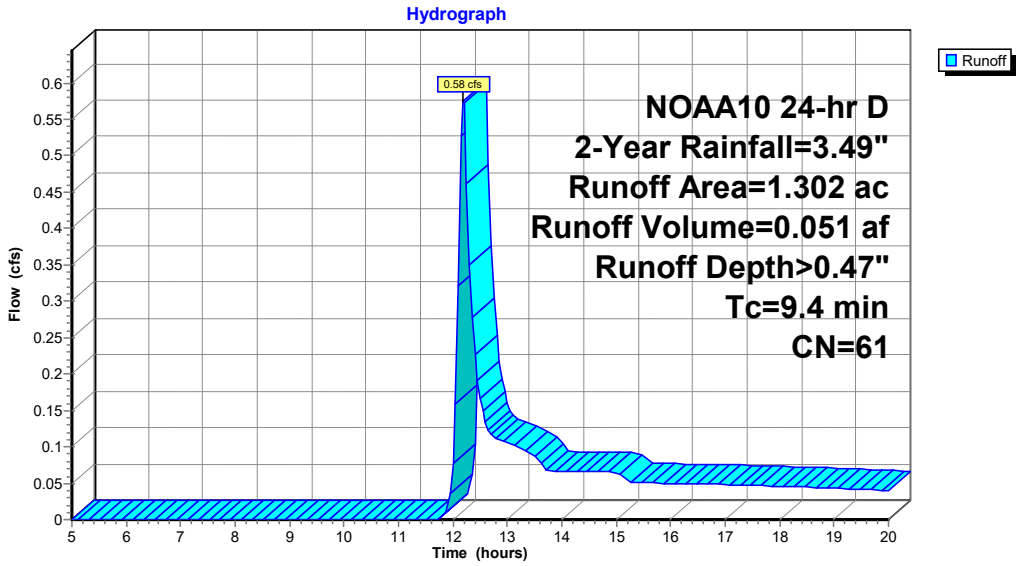
Runoff = 0.58 cfs @ 12.19 hrs, Volume= 0.051 af, Depth> 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	1.302	61	
	1.302		100.00% Pervious Area

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

Subcatchment 12S: WS 40 / D



Summary for Subcatchment 13S: WS-50

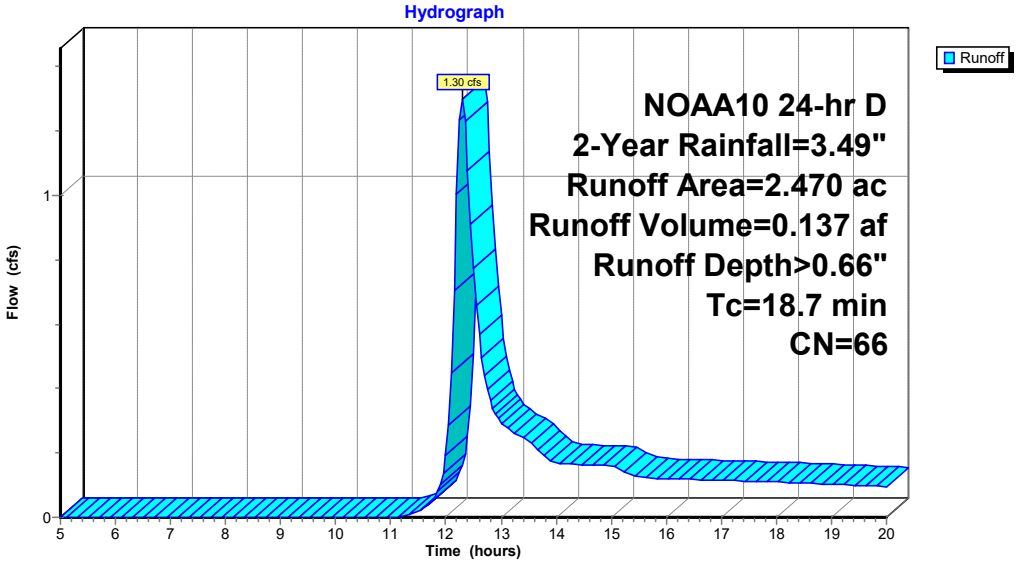
Runoff = 1.30 cfs @ 12.30 hrs, Volume= 0.137 af, Depth> 0.66"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	2.470	66	
	2.470		100.00% Pervious Area

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

Subcatchment 13S: WS-50



Summary for Subcatchment 14S: WS 51 OFFSITE

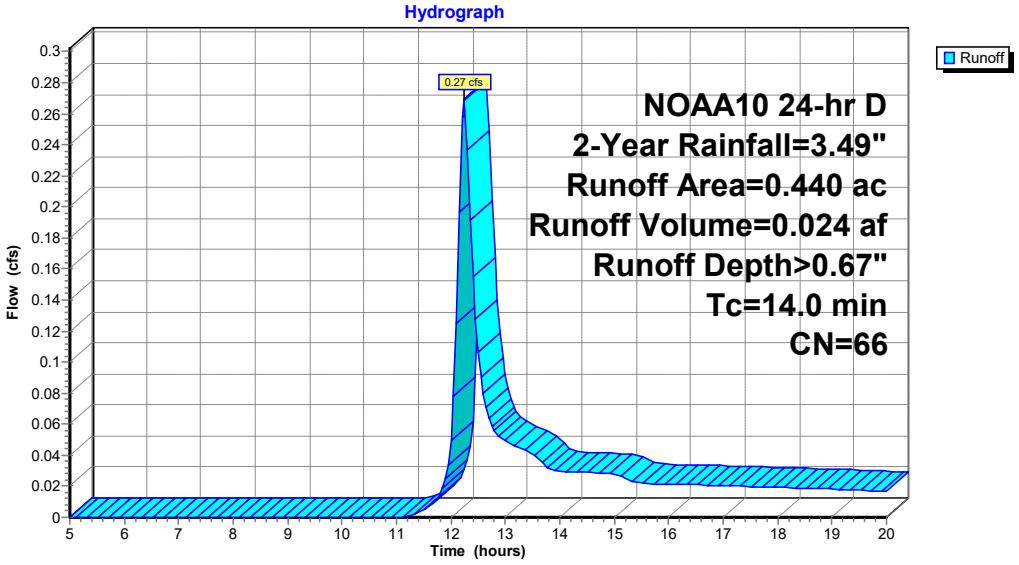
Runoff = 0.27 cfs @ 12.24 hrs, Volume= 0.024 af, Depth> 0.67"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 2-Year Rainfall=3.49"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 14S: WS 51 OFFSITE



Summary for Pond 7P: EX DET 210

Inflow Area = 10.723 ac, 0.00% Impervious, Inflow Depth > 1.65" for 2-Year event
Inflow = 16.56 cfs @ 12.25 hrs, Volume= 1.471 af
Outflow = 4.38 cfs @ 12.63 hrs, Volume= 1.468 af, Atten= 74%, Lag= 22.7 min
Primary = 4.38 cfs @ 12.63 hrs, Volume= 1.468 af
Routed to Link 8L : EX POA / B
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link 8L : EX POA / B

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 73.22' @ 12.63 hrs Surf.Area= 13,718 sf Storage= 15,646 cf

Plug-Flow detention time= 26.6 min calculated for 1.468 af (100% of inflow)
Center-of-Mass det. time= 25.8 min (837.2 - 811.4)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	62,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

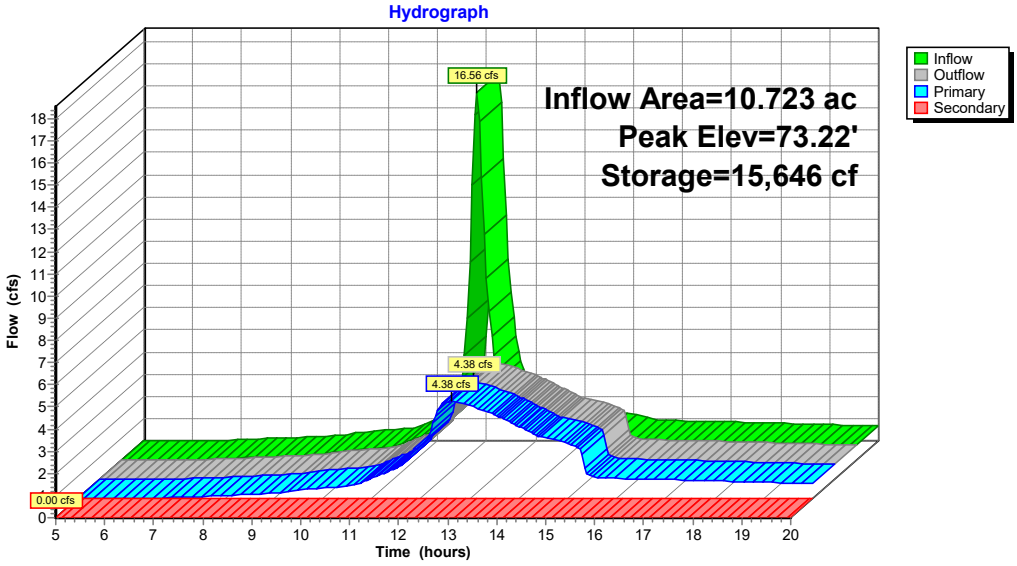
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	11,893	0	0
74.00	14,880	26,773	26,773
76.00	21,147	36,027	62,800

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	75.00'	**15.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=4.38 cfs @ 12.63 hrs HW=73.22' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 4.38 cfs @ 5.57 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=72.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 7P: EX DET 210

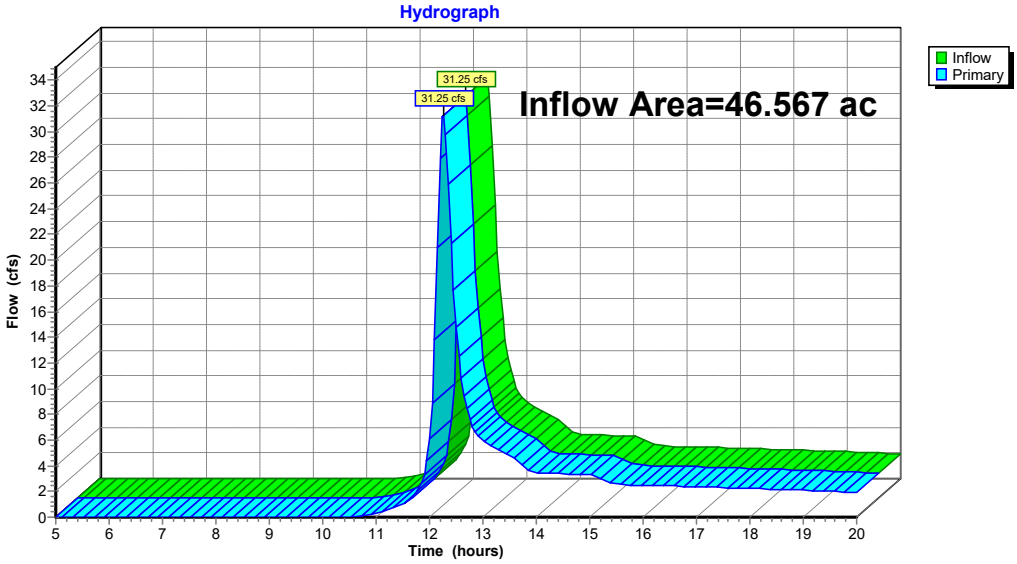


Summary for Link 4L: EX POA / A

Inflow Area = 46.567 ac, 0.00% Impervious, Inflow Depth > 0.76" for 2-Year event
Inflow = 31.25 cfs @ 12.26 hrs, Volume= 2.969 af
Primary = 31.25 cfs @ 12.26 hrs, Volume= 2.969 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: EX POA / A

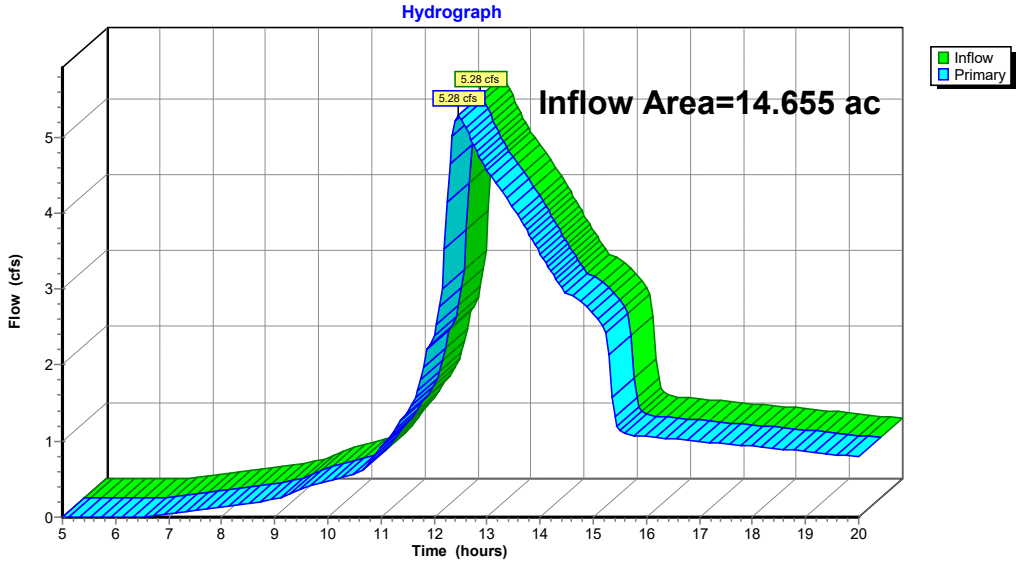


Summary for Link 8L: EX POA / B

Inflow Area = 14.655 ac, 0.00% Impervious, Inflow Depth > 1.32" for 2-Year event
Inflow = 5.28 cfs @ 12.47 hrs, Volume= 1.618 af
Primary = 5.28 cfs @ 12.47 hrs, Volume= 1.618 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 8L: EX POA / B

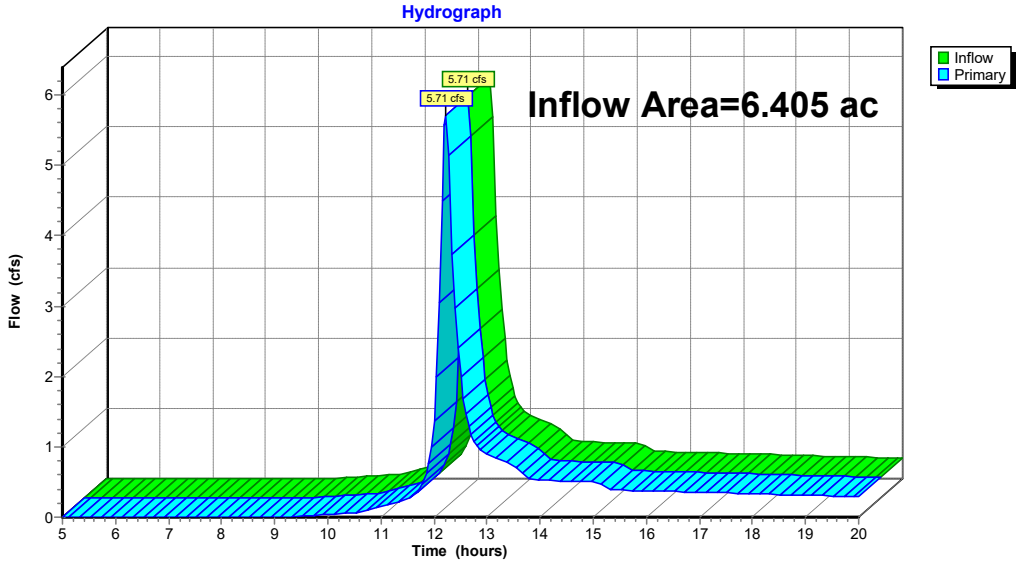


Summary for Link 11L: EX POA / C

Inflow Area = 6.405 ac, 0.00% Impervious, Inflow Depth > 0.90" for 2-Year event
Inflow = 5.71 cfs @ 12.22 hrs, Volume= 0.483 af
Primary = 5.71 cfs @ 12.22 hrs, Volume= 0.483 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 11L: EX POA / C

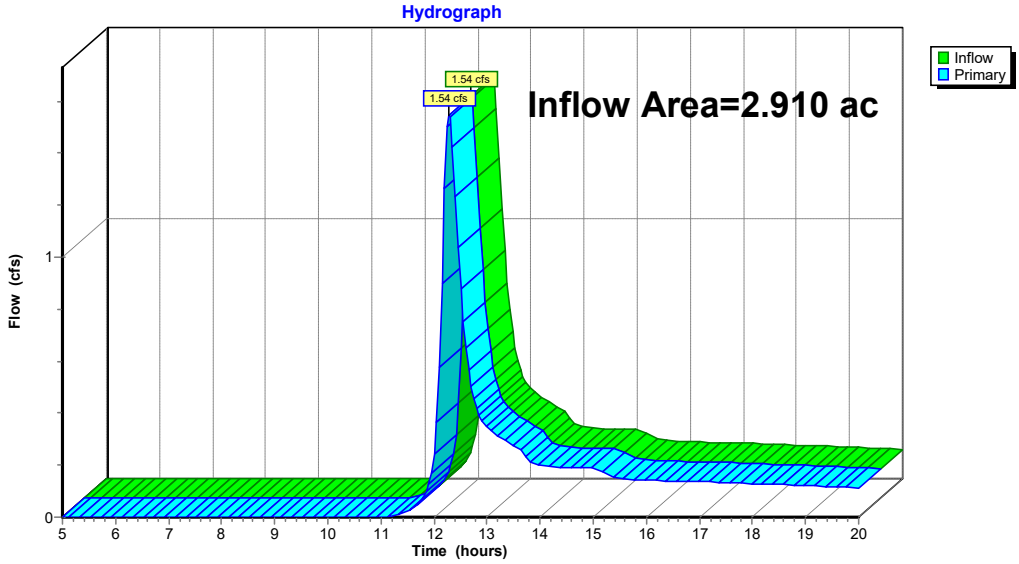


Summary for Link 15L: EX POA / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 0.66" for 2-Year event
Inflow = 1.54 cfs @ 12.29 hrs, Volume= 0.161 af
Primary = 1.54 cfs @ 12.29 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 15L: EX POA / E



Summary for Subcatchment 1S: WS 10

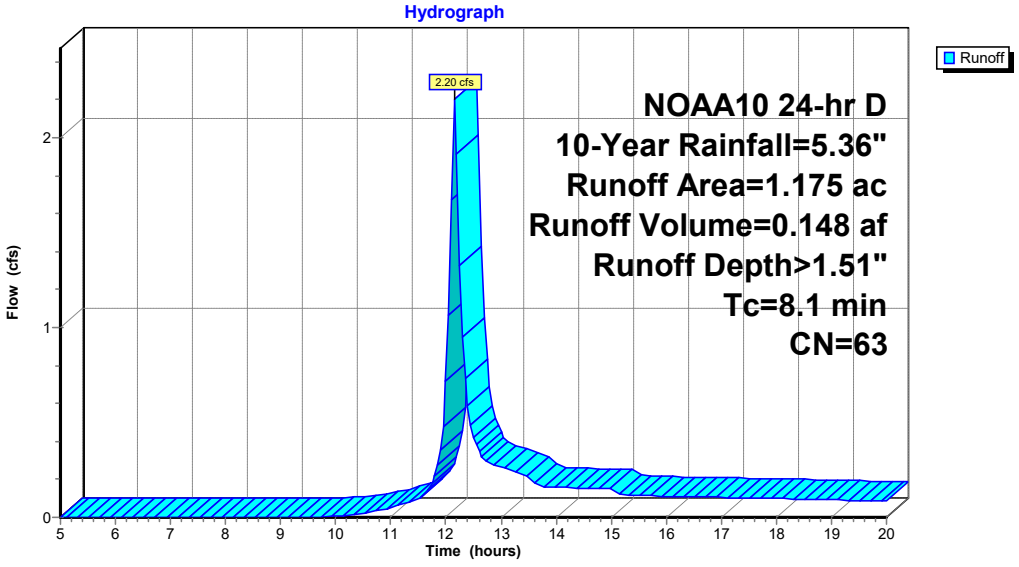
Runoff = 2.20 cfs @ 12.16 hrs, Volume= 0.148 af, Depth> 1.51"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	1.175	63	
	1.175		100.00% Pervious Area

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

Subcatchment 1S: WS 10



Summary for Subcatchment 2S: WS 11

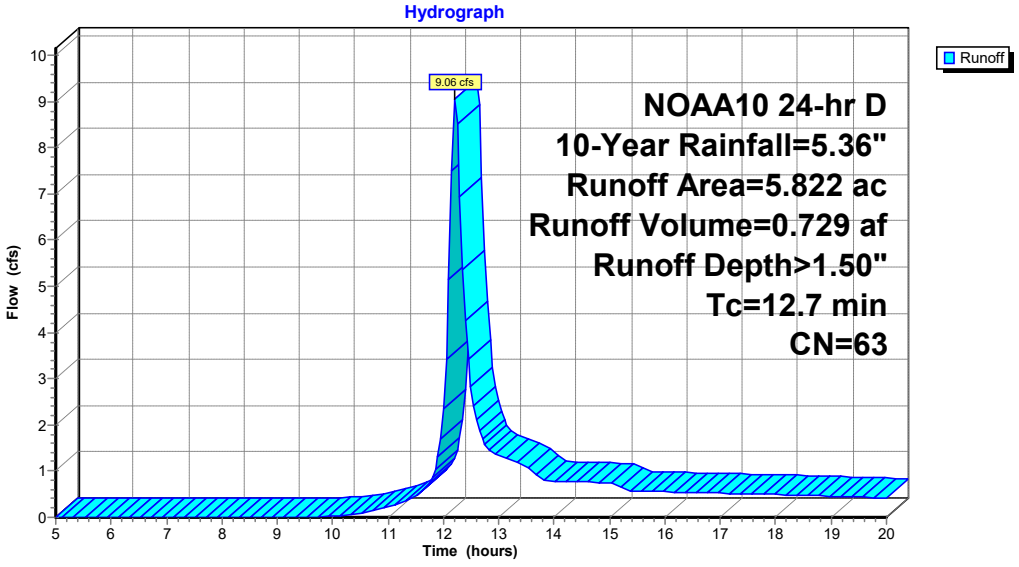
Runoff = 9.06 cfs @ 12.21 hrs, Volume= 0.729 af, Depth> 1.50"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	5.822	63	
	5.822		100.00% Pervious Area

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

Subcatchment 2S: WS 11



Summary for Subcatchment 3S: WS 12 OFFSITE

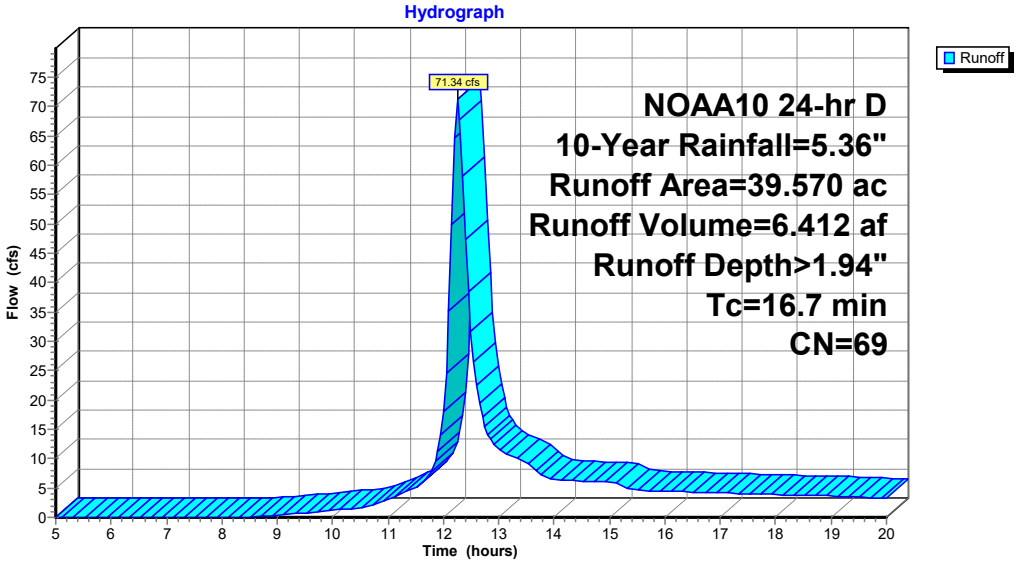
Runoff = 71.34 cfs @ 12.26 hrs, Volume= 6.412 af, Depth> 1.94"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: WS 12 OFFSITE



Summary for Subcatchment 5S: WS 20

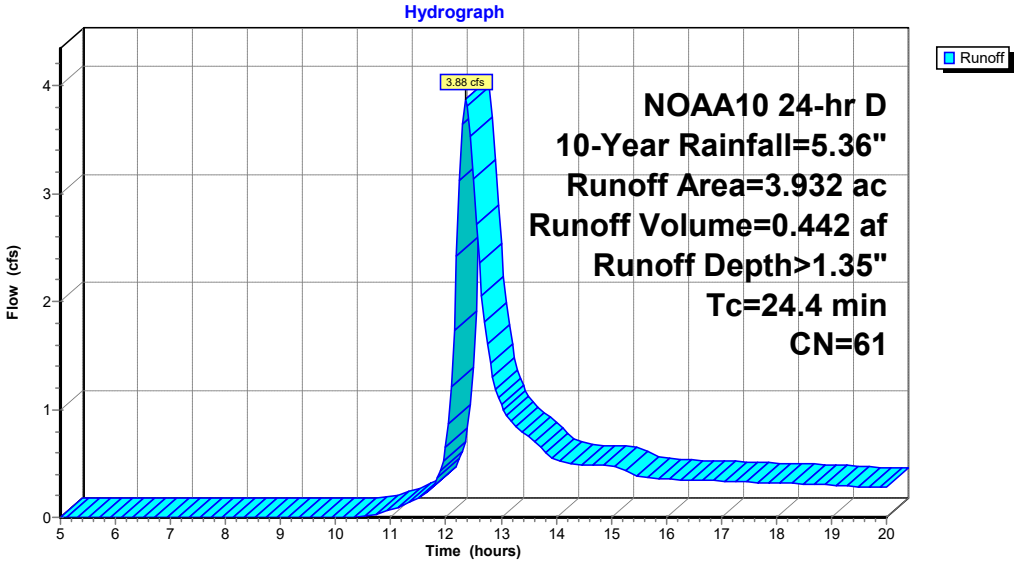
Runoff = 3.88 cfs @ 12.36 hrs, Volume= 0.442 af, Depth> 1.35"
Routed to Link 8L : EX POA / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	3.932	61	
	3.932		100.00% Pervious Area

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

Subcatchment 5S: WS 20



Summary for Subcatchment 6S: WS 21

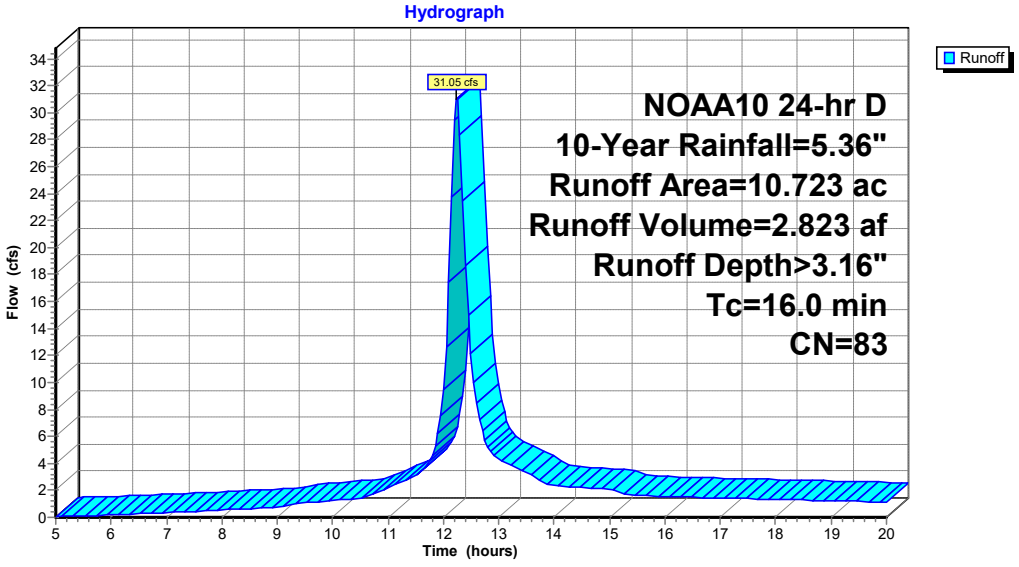
Runoff = 31.05 cfs @ 12.24 hrs, Volume= 2.823 af, Depth> 3.16"
Routed to Pond 7P : EX DET 210

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	10.723	83	
	10.723		100.00% Pervious Area

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

Subcatchment 6S: WS 21



Summary for Subcatchment 9S: WS 30

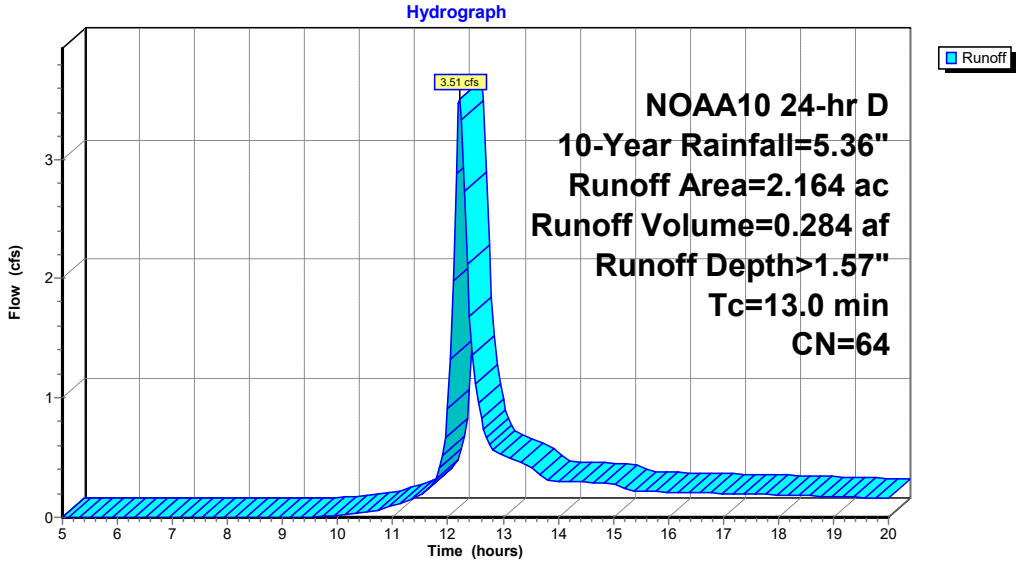
Runoff = 3.51 cfs @ 12.22 hrs, Volume= 0.284 af, Depth> 1.57"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	2.164	64	
	2.164		100.00% Pervious Area

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

Subcatchment 9S: WS 30



Summary for Subcatchment 10S: WS 31 OFFSITE

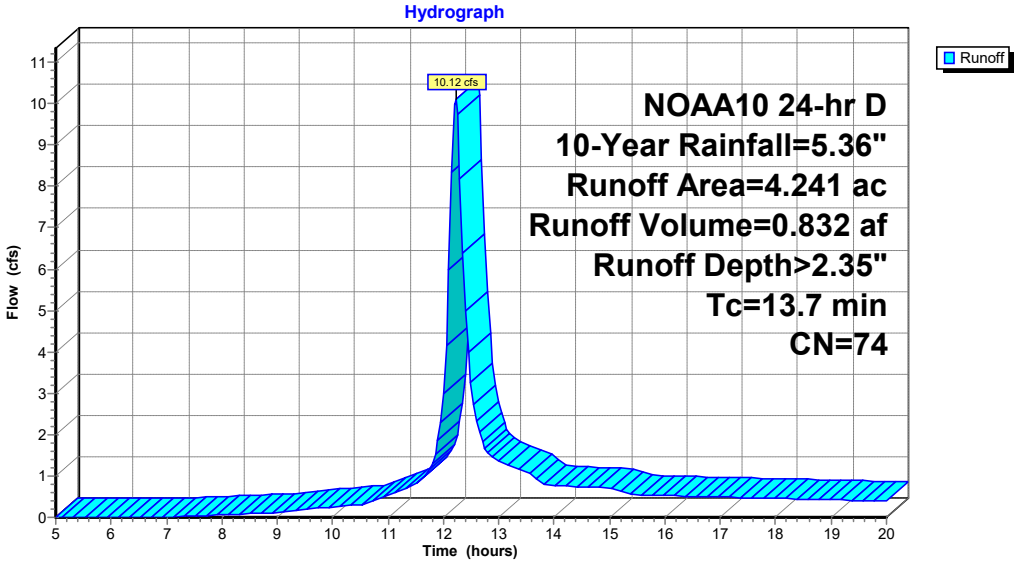
Runoff = 10.12 cfs @ 12.22 hrs, Volume= 0.832 af, Depth> 2.35"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	4.241	74	
	4.241		100.00% Pervious Area

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

Subcatchment 10S: WS 31 OFFSITE



Summary for Subcatchment 12S: WS 40 / D

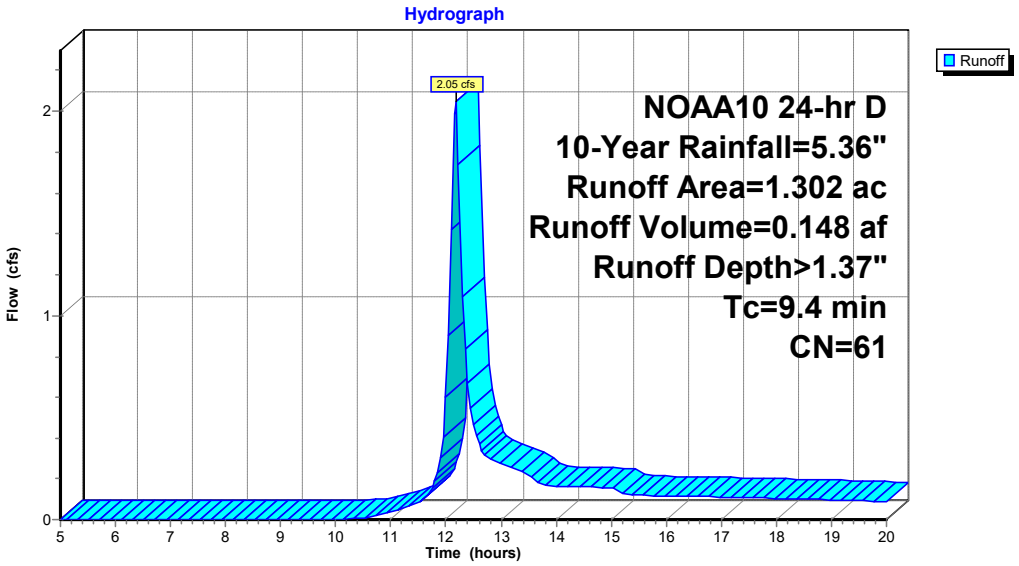
Runoff = 2.05 cfs @ 12.17 hrs, Volume= 0.148 af, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	1.302	61	
	1.302		100.00% Pervious Area

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

Subcatchment 12S: WS 40 / D



Summary for Subcatchment 13S: WS-50

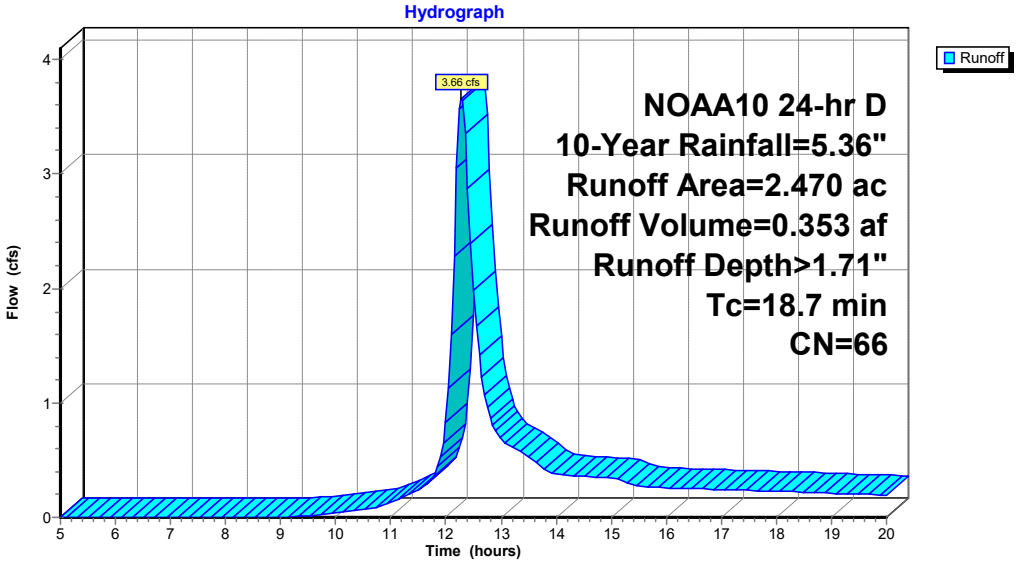
Runoff = 3.66 cfs @ 12.29 hrs, Volume= 0.353 af, Depth> 1.71"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	2.470	66	
	2.470		100.00% Pervious Area

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

Subcatchment 13S: WS-50



Summary for Subcatchment 14S: WS 51 OFFSITE

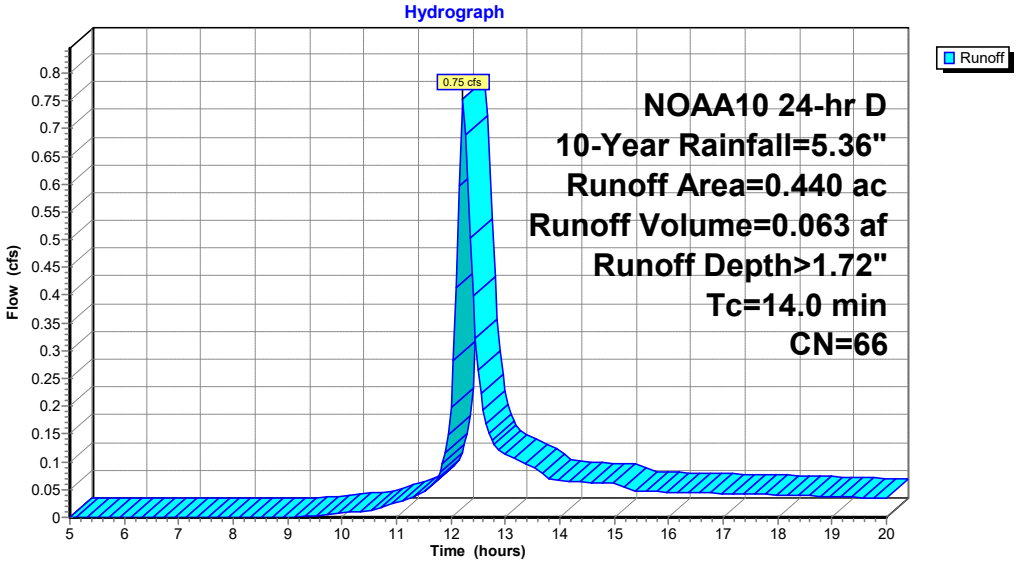
Runoff = 0.75 cfs @ 12.23 hrs, Volume= 0.063 af, Depth> 1.72"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 10-Year Rainfall=5.36"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 14S: WS 51 OFFSITE



Summary for Pond 7P: EX DET 210

Inflow Area = 10.723 ac, 0.00% Impervious, Inflow Depth > 3.16" for 10-Year event
Inflow = 31.05 cfs @ 12.24 hrs, Volume= 2.823 af
Outflow = 6.17 cfs @ 12.72 hrs, Volume= 2.817 af, Atten= 80%, Lag= 28.5 min
Primary = 6.17 cfs @ 12.72 hrs, Volume= 2.817 af
Routed to Link 8L : EX POA / B
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link 8L : EX POA / B

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 74.62' @ 12.72 hrs Surf.Area= 16,820 sf Storage= 36,584 cf

Plug-Flow detention time= 50.2 min calculated for 2.817 af (100% of inflow)
Center-of-Mass det. time= 49.4 min (839.9 - 790.5)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	62,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

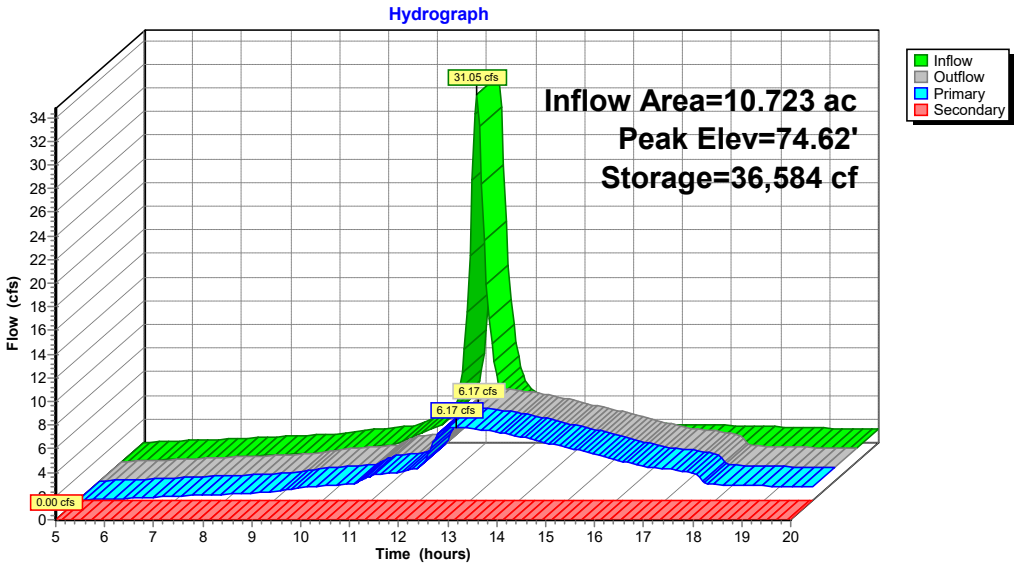
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	11,893	0	0
74.00	14,880	26,773	26,773
76.00	21,147	36,027	62,800

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	75.00'	**15.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=6.17 cfs @ 12.72 hrs HW=74.62' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 6.17 cfs @ 7.85 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=72.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 7P: EX DET 210

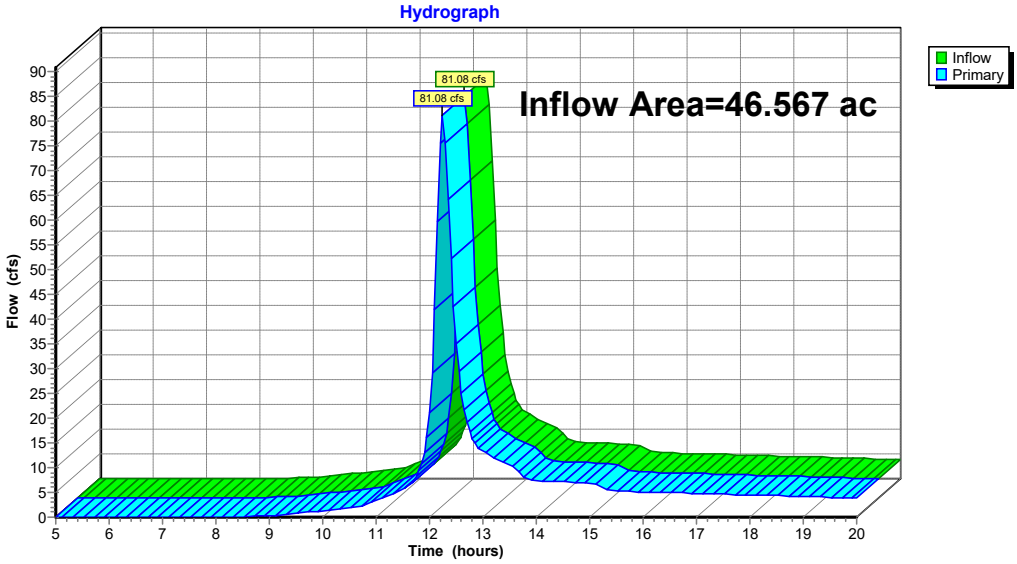


Summary for Link 4L: EX POA / A

Inflow Area = 46.567 ac, 0.00% Impervious, Inflow Depth > 1.88" for 10-Year event
Inflow = 81.08 cfs @ 12.25 hrs, Volume= 7.288 af
Primary = 81.08 cfs @ 12.25 hrs, Volume= 7.288 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: EX POA / A

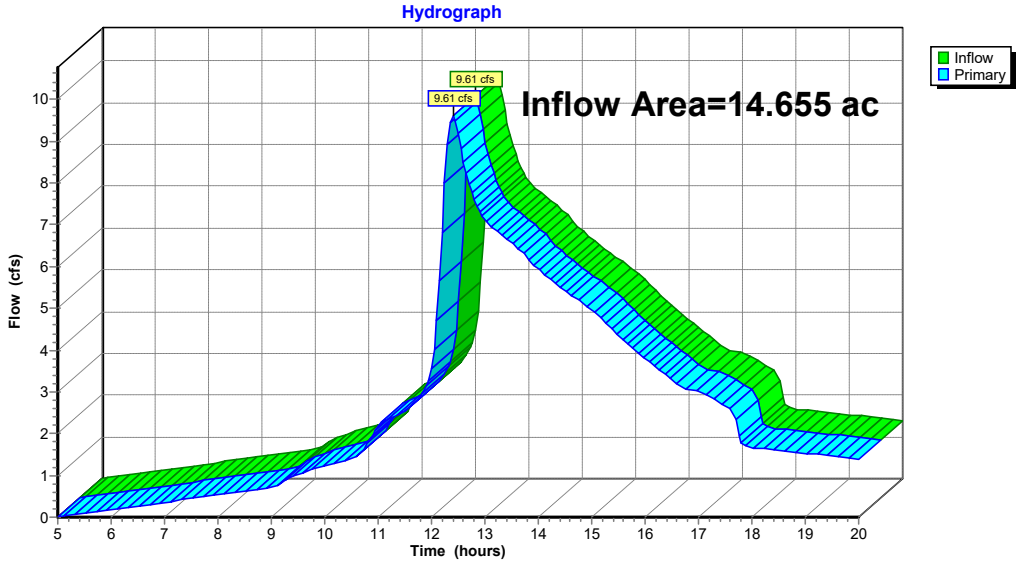


Summary for Link 8L: EX POA / B

Inflow Area = 14.655 ac, 0.00% Impervious, Inflow Depth > 2.67" for 10-Year event
Inflow = 9.61 cfs @ 12.40 hrs, Volume= 3.259 af
Primary = 9.61 cfs @ 12.40 hrs, Volume= 3.259 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 8L: EX POA / B

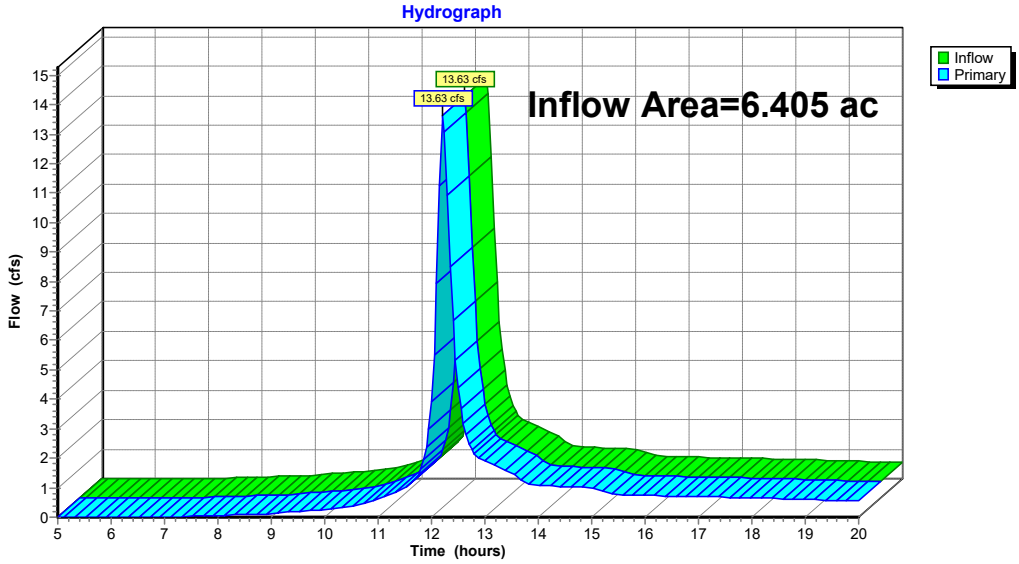


Summary for Link 11L: EX POA / C

Inflow Area = 6.405 ac, 0.00% Impervious, Inflow Depth > 2.09" for 10-Year event
Inflow = 13.63 cfs @ 12.22 hrs, Volume= 1.116 af
Primary = 13.63 cfs @ 12.22 hrs, Volume= 1.116 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 11L: EX POA / C

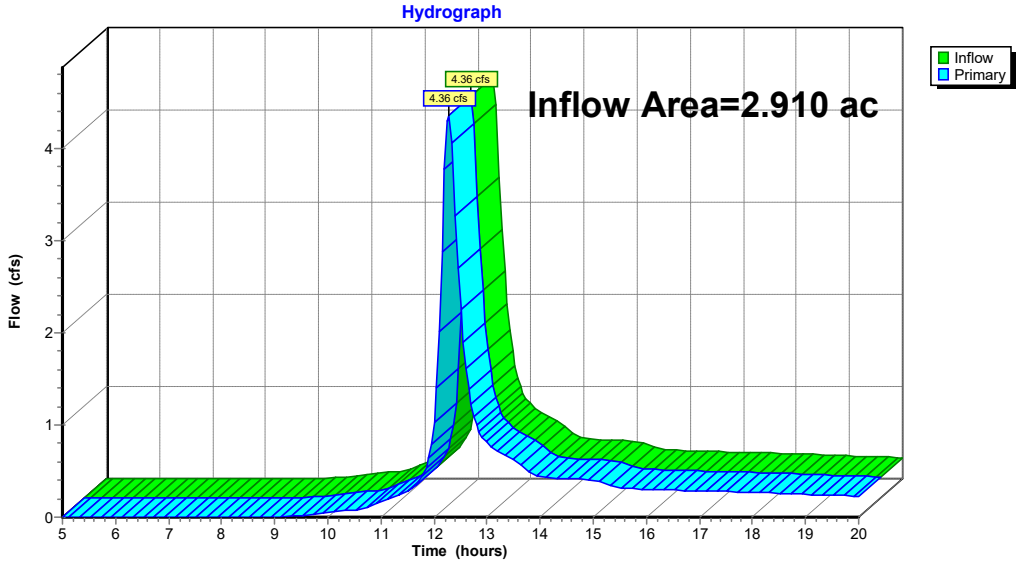


Summary for Link 15L: EX POA / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 1.71" for 10-Year event
Inflow = 4.36 cfs @ 12.27 hrs, Volume= 0.416 af
Primary = 4.36 cfs @ 12.27 hrs, Volume= 0.416 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 15L: EX POA / E



Summary for Subcatchment 1S: WS 10

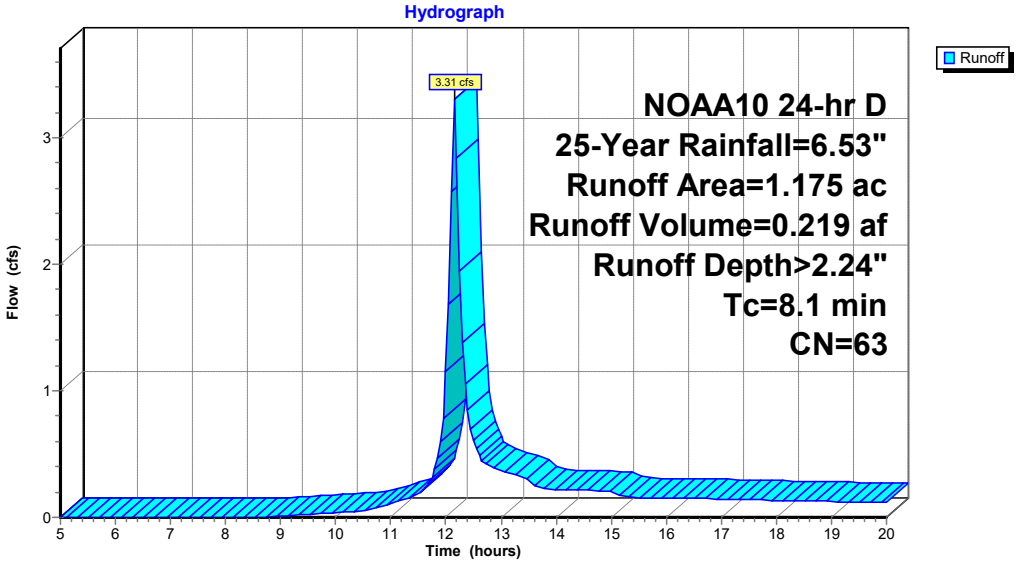
Runoff = 3.31 cfs @ 12.16 hrs, Volume= 0.219 af, Depth> 2.24"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	1.175	63	
	1.175		100.00% Pervious Area

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

Subcatchment 1S: WS 10



Summary for Subcatchment 2S: WS 11

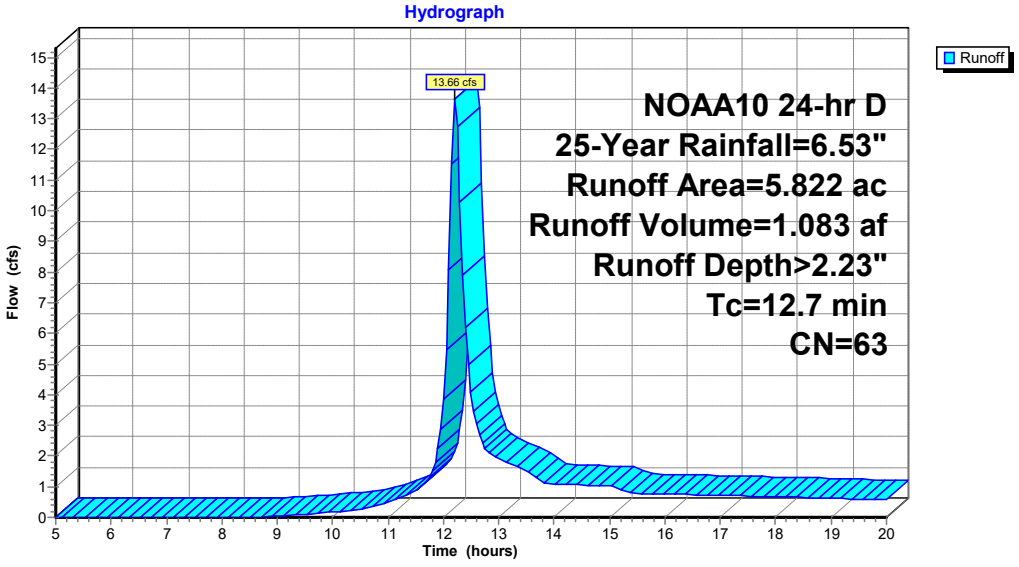
Runoff = 13.66 cfs @ 12.21 hrs, Volume= 1.083 af, Depth> 2.23"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	5.822	63	
	5.822		100.00% Pervious Area

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

Subcatchment 2S: WS 11



Summary for Subcatchment 3S: WS 12 OFFSITE

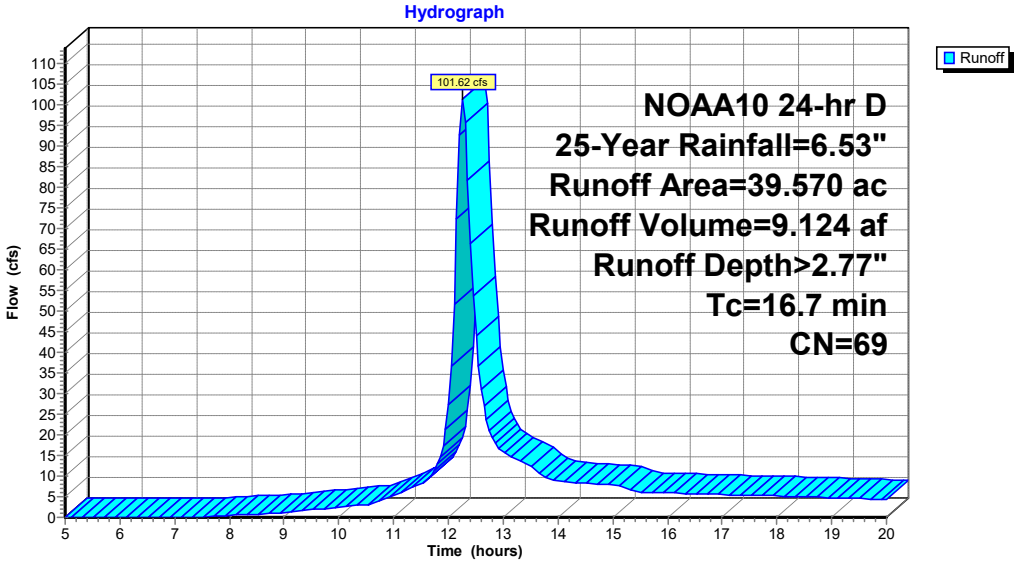
Runoff = 101.62 cfs @ 12.26 hrs, Volume= 9.124 af, Depth> 2.77"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: WS 12 OFFSITE



Summary for Subcatchment 5S: WS 20

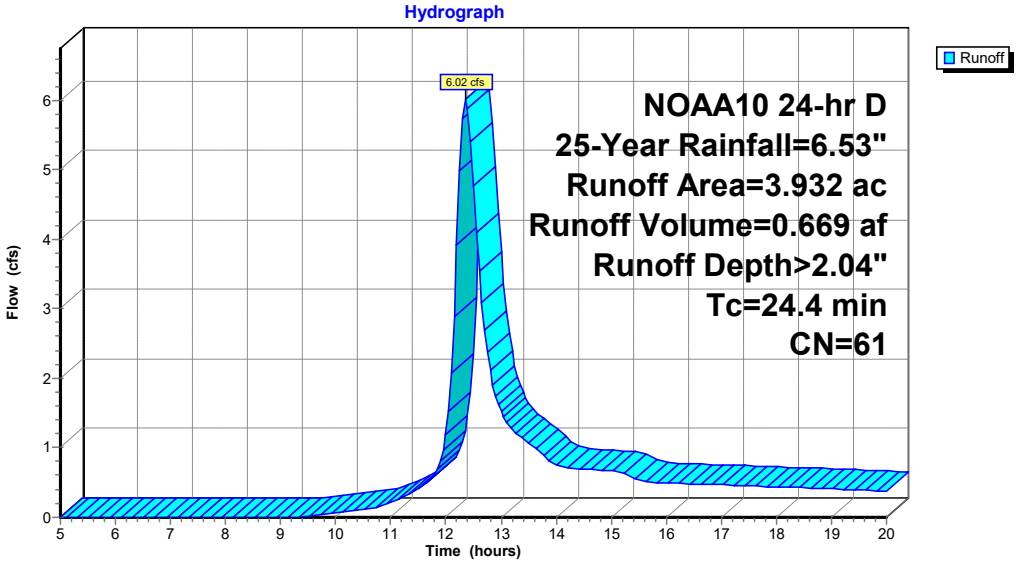
Runoff = 6.02 cfs @ 12.36 hrs, Volume= 0.669 af, Depth> 2.04"
Routed to Link 8L : EX POA / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	3.932	61	
	3.932		100.00% Pervious Area

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

Subcatchment 5S: WS 20



Summary for Subcatchment 6S: WS 21

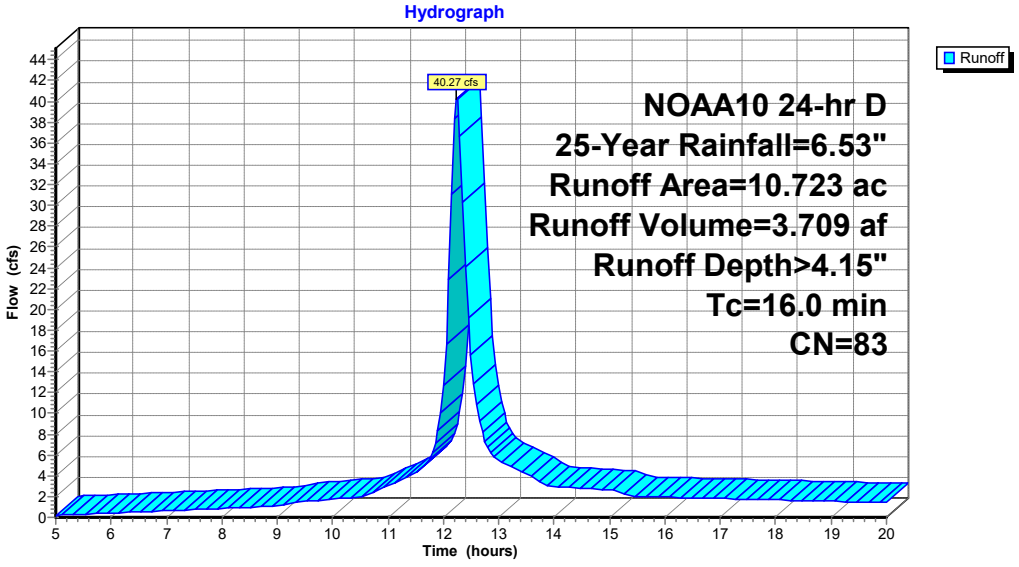
Runoff = 40.27 cfs @ 12.24 hrs, Volume= 3.709 af, Depth> 4.15"
Routed to Pond 7P : EX DET 210

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	10.723	83	
	10.723		100.00% Pervious Area

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

Subcatchment 6S: WS 21



Summary for Subcatchment 9S: WS 30

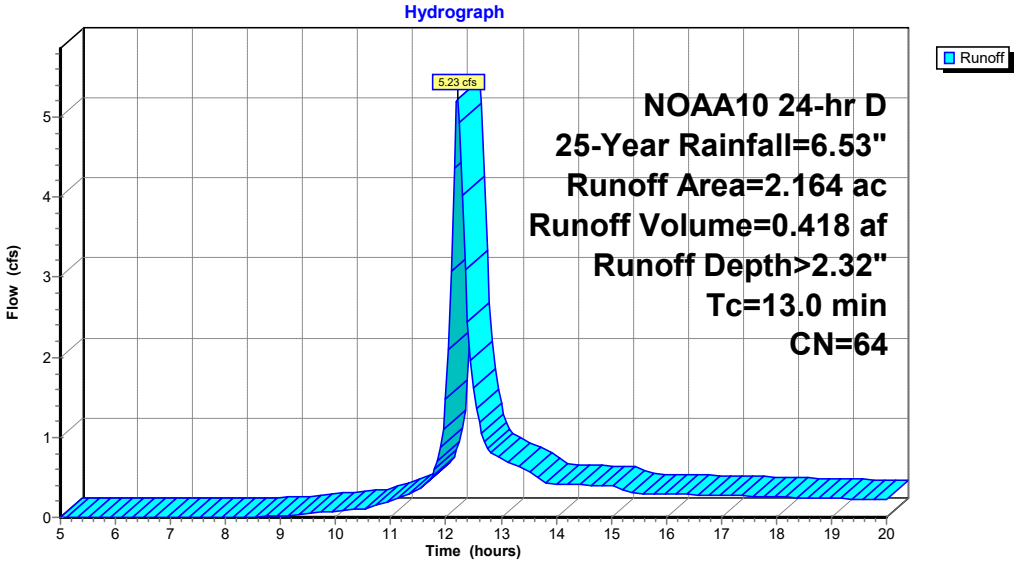
Runoff = 5.23 cfs @ 12.21 hrs, Volume= 0.418 af, Depth> 2.32"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	2.164	64	
	2.164		100.00% Pervious Area

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

Subcatchment 9S: WS 30



Summary for Subcatchment 10S: WS 31 OFFSITE

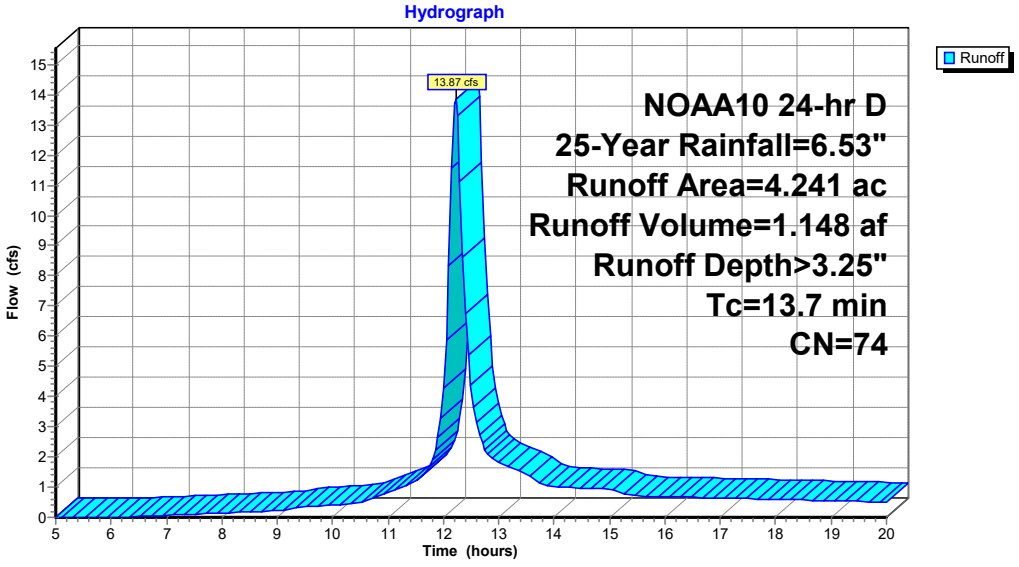
Runoff = 13.87 cfs @ 12.22 hrs, Volume= 1.148 af, Depth> 3.25"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	4.241	74	
	4.241		100.00% Pervious Area

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

Subcatchment 10S: WS 31 OFFSITE



Summary for Subcatchment 12S: WS 40 / D

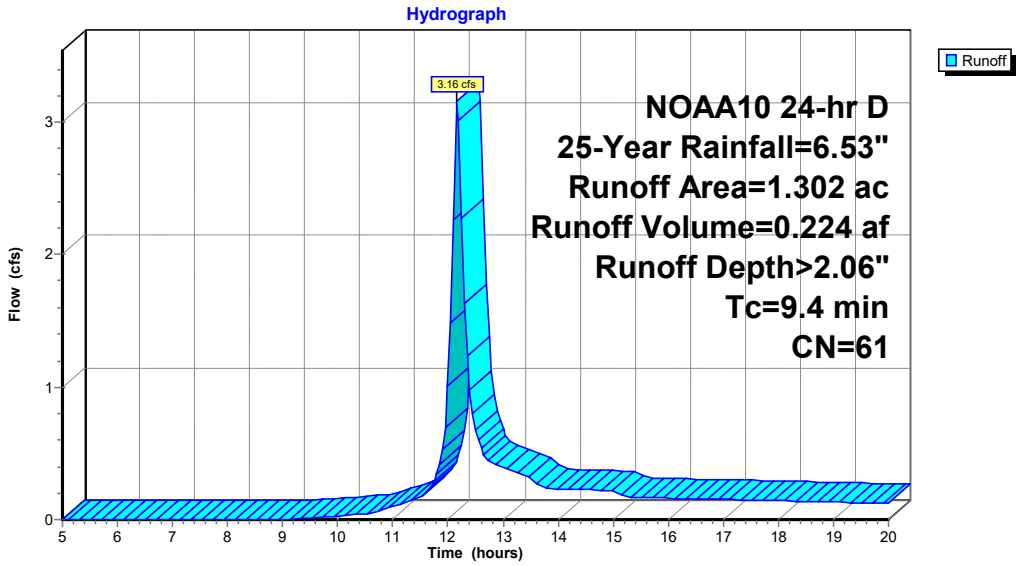
Runoff = 3.16 cfs @ 12.17 hrs, Volume= 0.224 af, Depth> 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	1.302	61	
	1.302		100.00% Pervious Area

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

Subcatchment 12S: WS 40 / D



Summary for Subcatchment 13S: WS-50

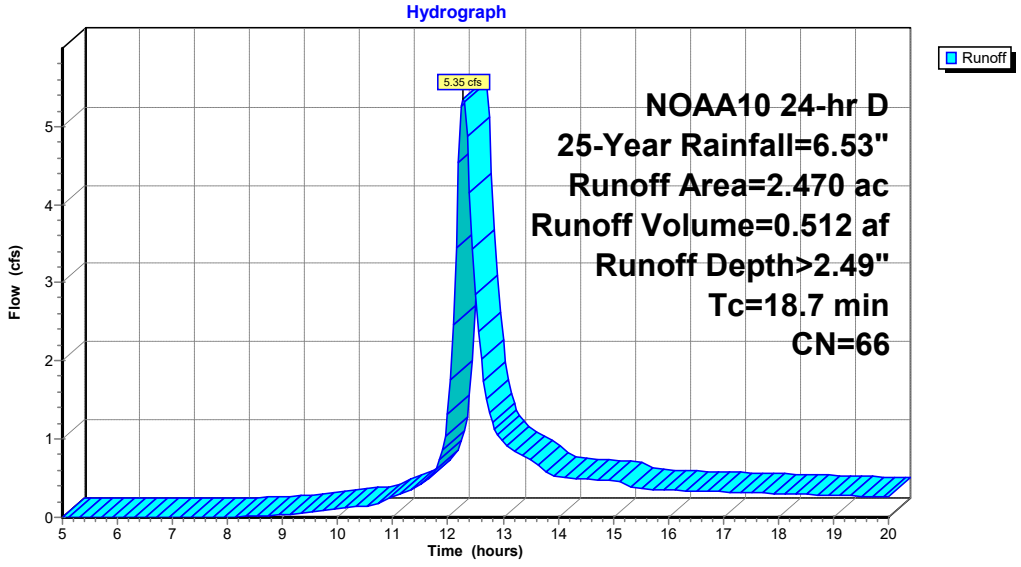
Runoff = 5.35 cfs @ 12.28 hrs, Volume= 0.512 af, Depth> 2.49"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	2.470	66	
	2.470		100.00% Pervious Area

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

Subcatchment 13S: WS-50



Summary for Subcatchment 14S: WS 51 OFFSITE

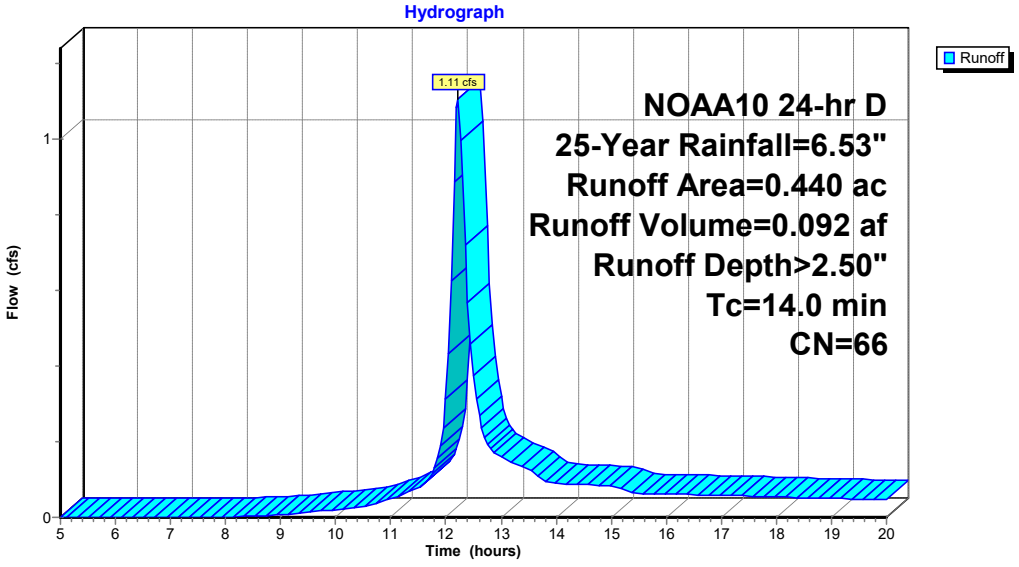
Runoff = 1.11 cfs @ 12.22 hrs, Volume= 0.092 af, Depth> 2.50"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 25-Year Rainfall=6.53"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 14S: WS 51 OFFSITE



Summary for Pond 7P: EX DET 210

Inflow Area = 10.723 ac, 0.00% Impervious, Inflow Depth > 4.15" for 25-Year event
Inflow = 40.27 cfs @ 12.24 hrs, Volume= 3.709 af
Outflow = 12.28 cfs @ 12.57 hrs, Volume= 3.702 af, Atten= 70%, Lag= 19.6 min
Primary = 6.84 cfs @ 12.57 hrs, Volume= 3.536 af
Routed to Link 8L : EX POA / B
Secondary = 5.44 cfs @ 12.57 hrs, Volume= 0.166 af
Routed to Link 8L : EX POA / B

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 75.27' @ 12.57 hrs Surf.Area= 18,860 sf Storage= 48,203 cf

Plug-Flow detention time= 57.9 min calculated for 3.689 af (99% of inflow)
Center-of-Mass det. time= 56.9 min (839.2 - 782.3)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	62,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

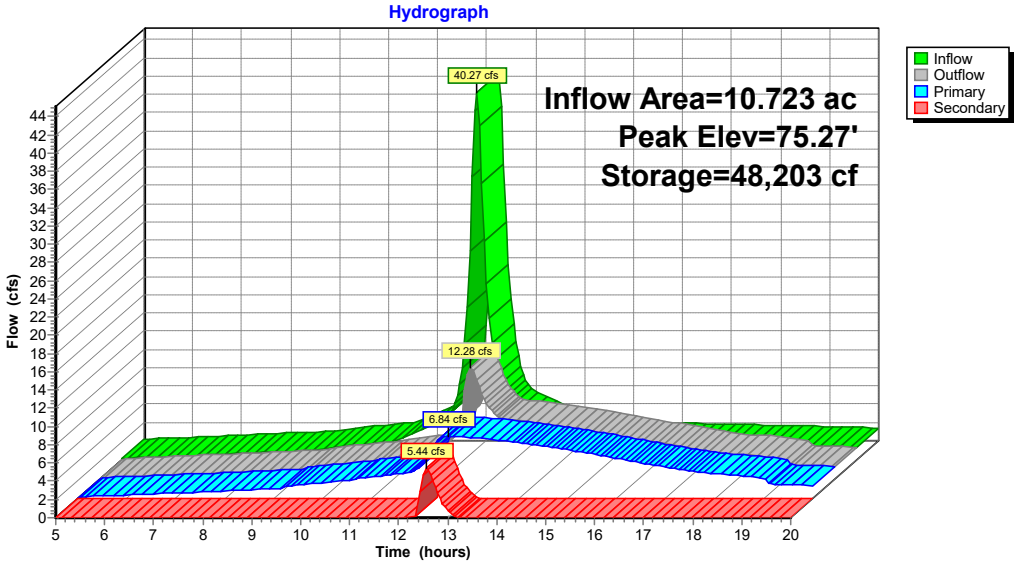
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	11,893	0	0
74.00	14,880	26,773	26,773
76.00	21,147	36,027	62,800

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	75.00'	**15.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=6.84 cfs @ 12.57 hrs HW=75.27' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 6.84 cfs @ 8.71 fps)

Secondary OutFlow Max=5.33 cfs @ 12.57 hrs HW=75.27' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 5.33 cfs @ 1.26 fps)

Pond 7P: EX DET 210

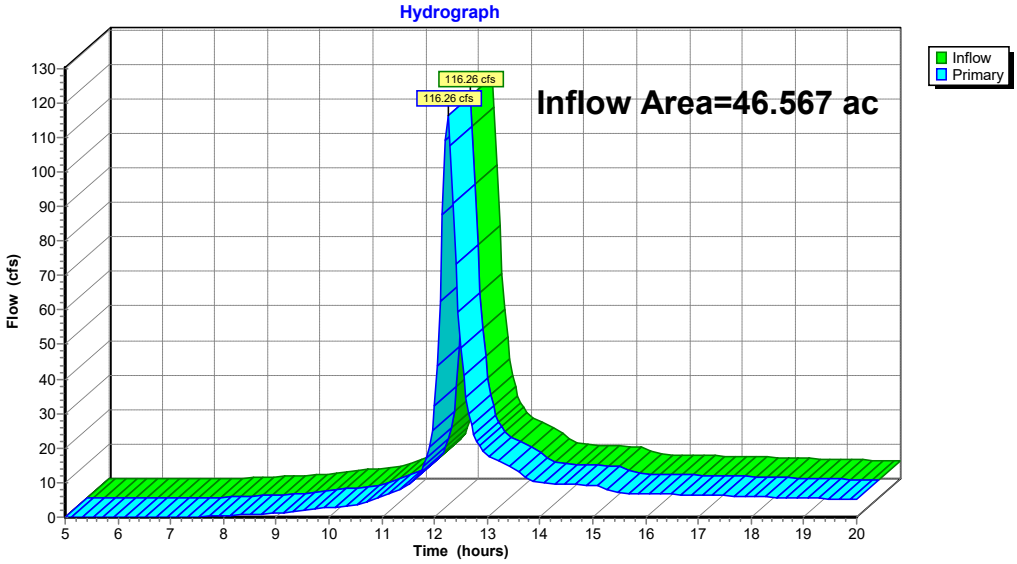


Summary for Link 4L: EX POA / A

Inflow Area = 46.567 ac, 0.00% Impervious, Inflow Depth > 2.69" for 25-Year event
Inflow = 116.26 cfs @ 12.25 hrs, Volume= 10.426 af
Primary = 116.26 cfs @ 12.25 hrs, Volume= 10.426 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: EX POA / A

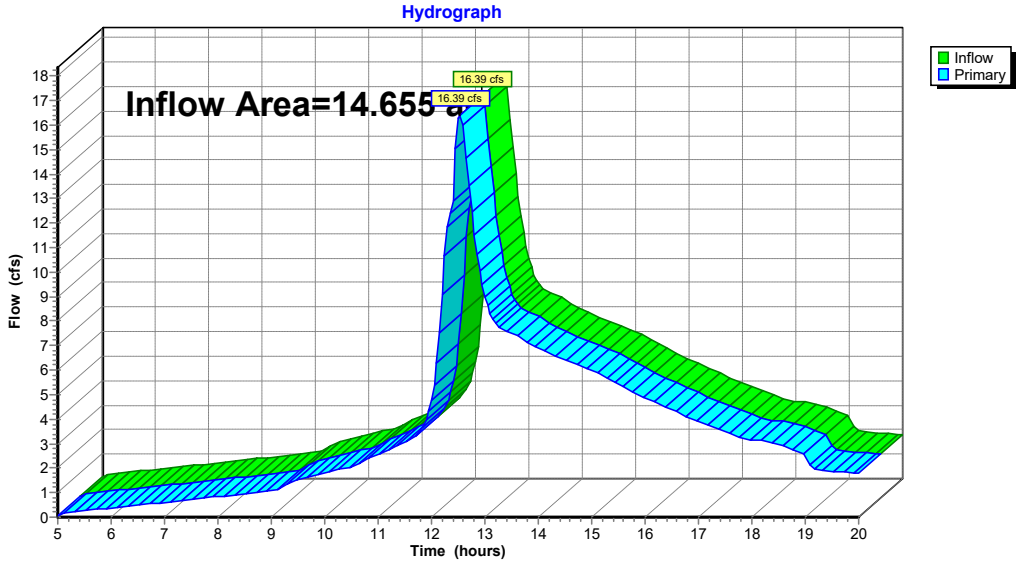


Summary for Link 8L: EX POA / B

Inflow Area = 14.655 ac, 0.00% Impervious, Inflow Depth > 3.58" for 25-Year event
Inflow = 16.39 cfs @ 12.53 hrs, Volume= 4.371 af
Primary = 16.39 cfs @ 12.53 hrs, Volume= 4.371 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 8L: EX POA / B

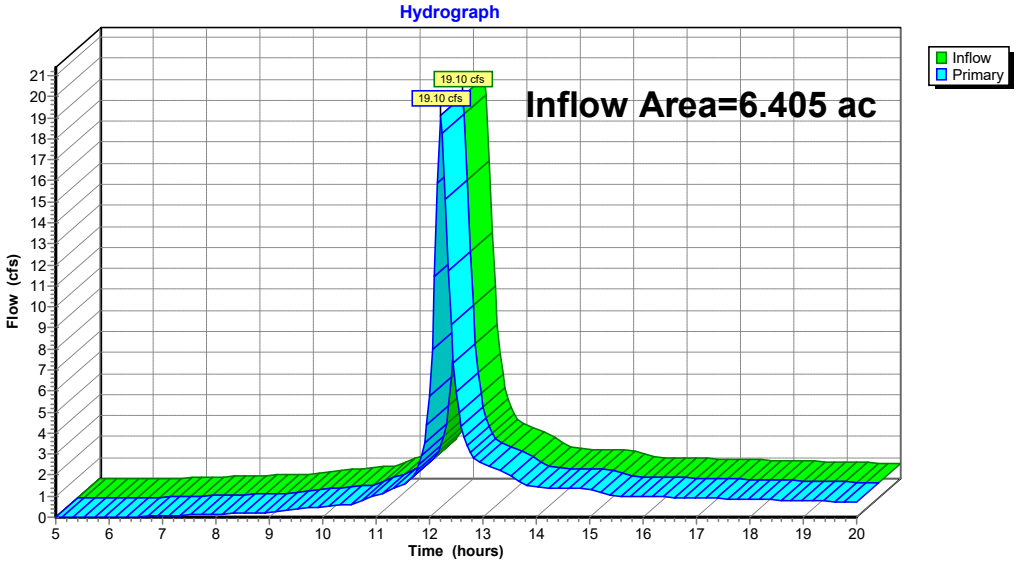


Summary for Link 11L: EX POA / C

Inflow Area = 6.405 ac, 0.00% Impervious, Inflow Depth > 2.93" for 25-Year event
Inflow = 19.10 cfs @ 12.22 hrs, Volume= 1.566 af
Primary = 19.10 cfs @ 12.22 hrs, Volume= 1.566 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 11L: EX POA / C

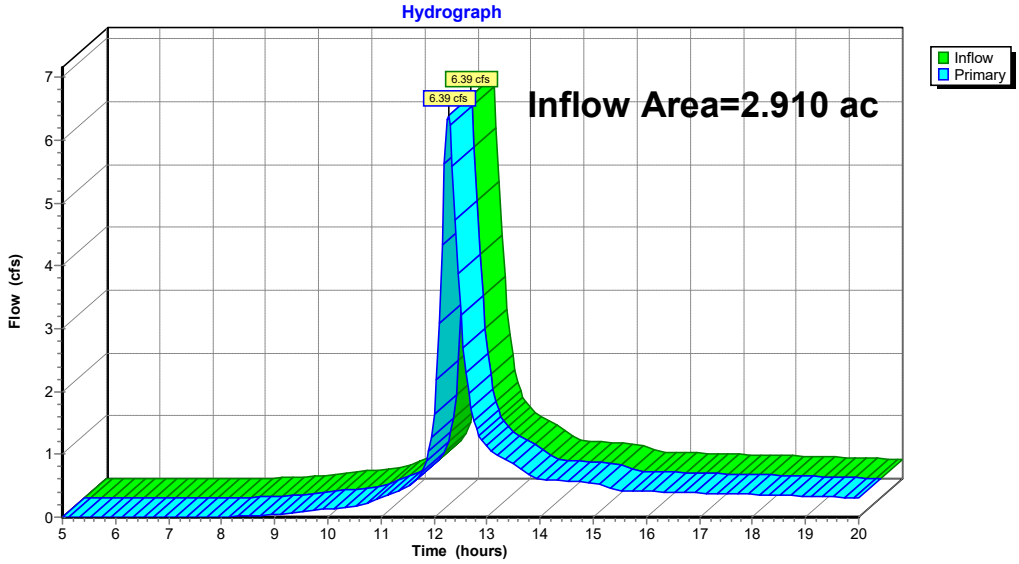


Summary for Link 15L: EX POA / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 2.49" for 25-Year event
Inflow = 6.39 cfs @ 12.27 hrs, Volume= 0.604 af
Primary = 6.39 cfs @ 12.27 hrs, Volume= 0.604 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 15L: EX POA / E



Summary for Subcatchment 1S: WS 10

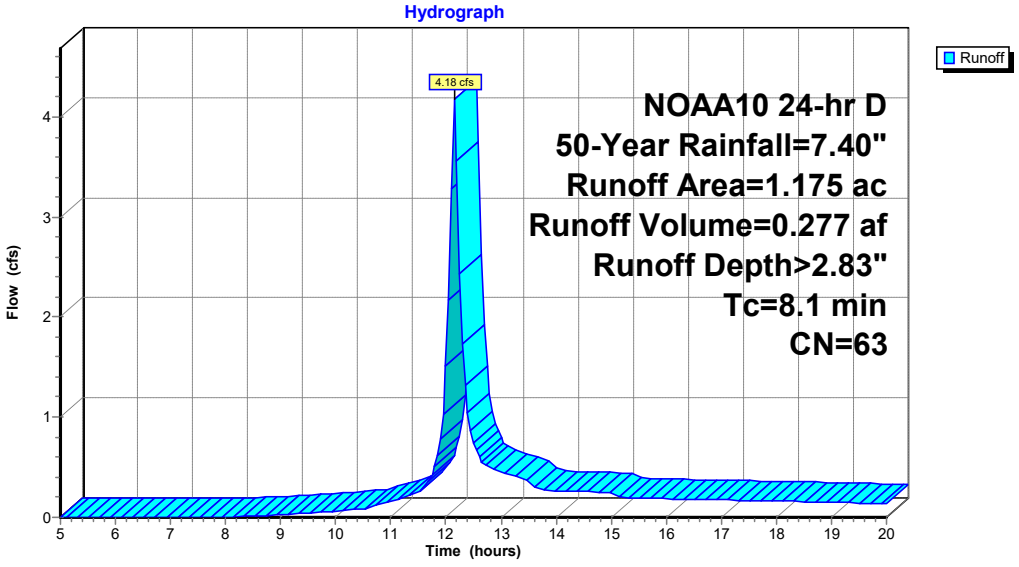
Runoff = 4.18 cfs @ 12.15 hrs, Volume= 0.277 af, Depth> 2.83"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	1.175	63	
	1.175		100.00% Pervious Area

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

Subcatchment 1S: WS 10



Summary for Subcatchment 2S: WS 11

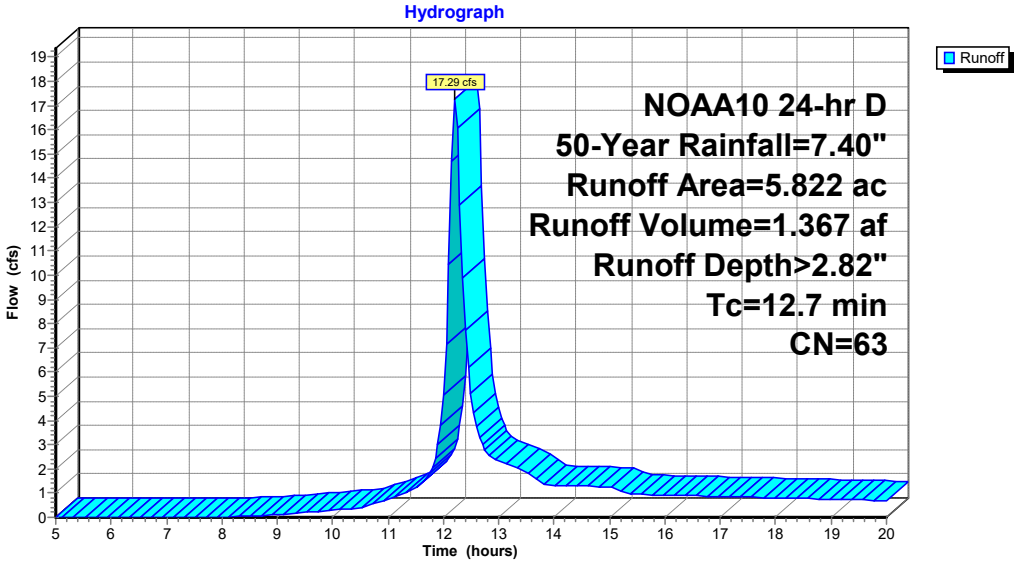
Runoff = 17.29 cfs @ 12.21 hrs, Volume= 1.367 af, Depth> 2.82"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	5.822	63	
	5.822		100.00% Pervious Area

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

Subcatchment 2S: WS 11



Summary for Subcatchment 3S: WS 12 OFFSITE

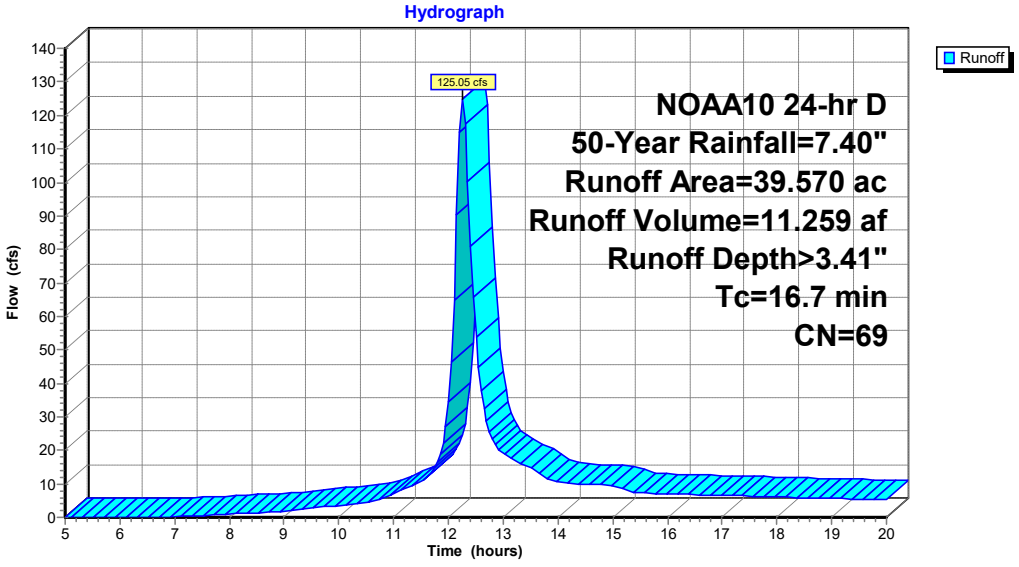
Runoff = 125.05 cfs @ 12.25 hrs, Volume= 11.259 af, Depth> 3.41"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: WS 12 OFFSITE



Summary for Subcatchment 5S: WS 20

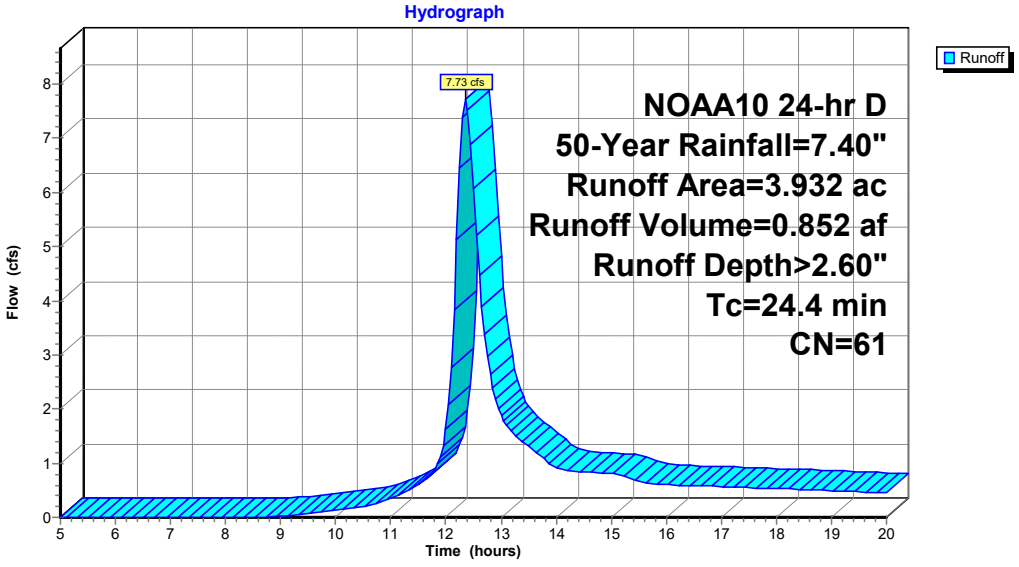
Runoff = 7.73 cfs @ 12.35 hrs, Volume= 0.852 af, Depth> 2.60"
Routed to Link 8L : EX POA / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	3.932	61	
	3.932		100.00% Pervious Area

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

Subcatchment 5S: WS 20



Summary for Subcatchment 6S: WS 21

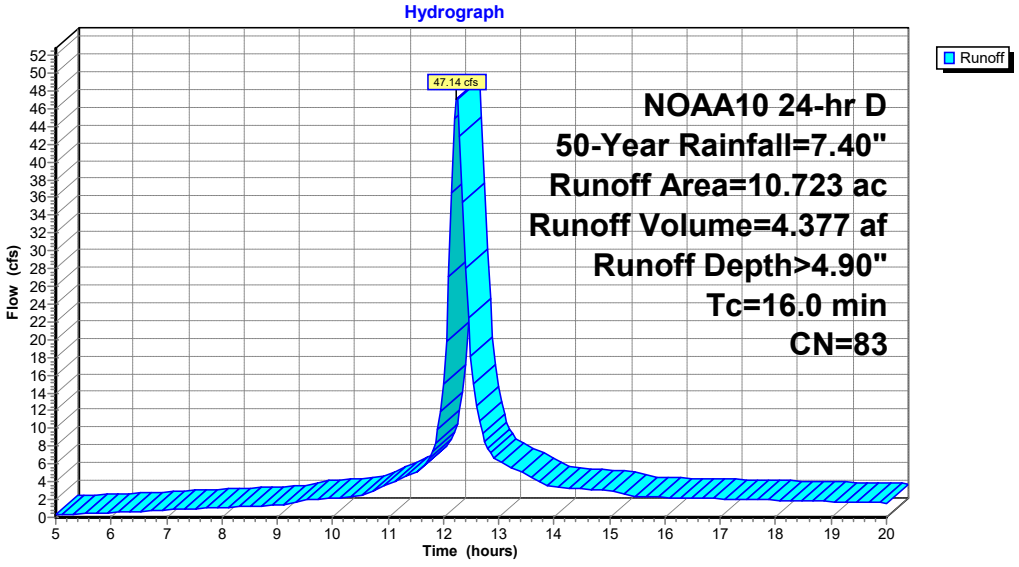
Runoff = 47.14 cfs @ 12.24 hrs, Volume= 4.377 af, Depth> 4.90"
Routed to Pond 7P : EX DET 210

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	10.723	83	
	10.723		100.00% Pervious Area

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

Subcatchment 6S: WS 21



Summary for Subcatchment 9S: WS 30

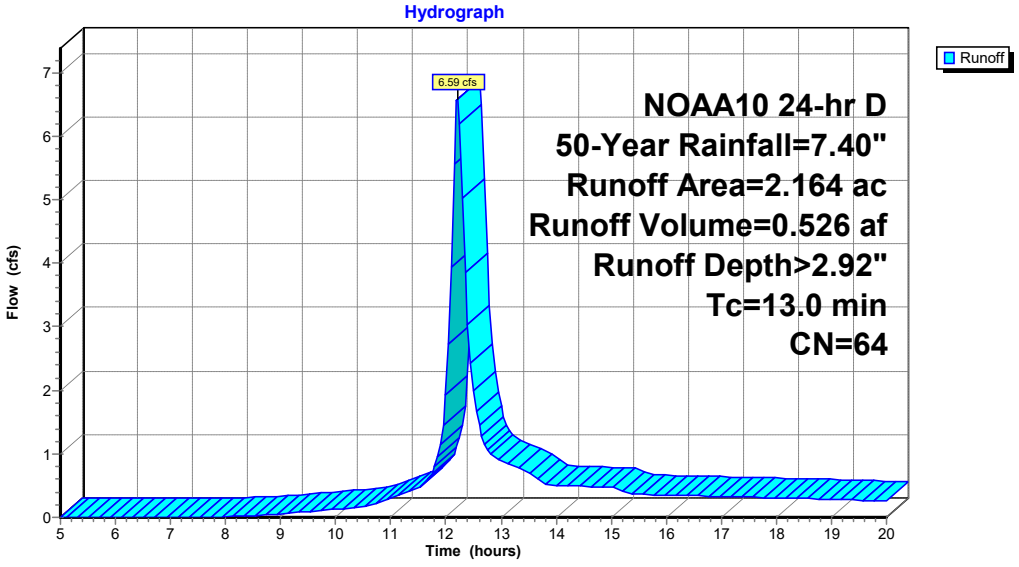
Runoff = 6.59 cfs @ 12.21 hrs, Volume= 0.526 af, Depth> 2.92"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	2.164	64	
	2.164		100.00% Pervious Area

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

Subcatchment 9S: WS 30



Summary for Subcatchment 10S: WS 31 OFFSITE

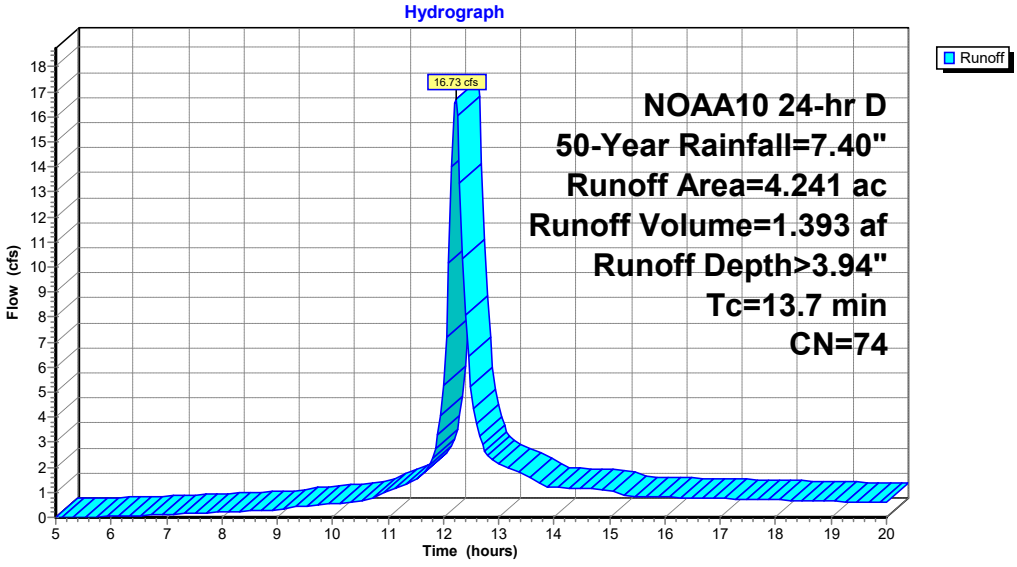
Runoff = 16.73 cfs @ 12.22 hrs, Volume= 1.393 af, Depth> 3.94"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	4.241	74	
	4.241		100.00% Pervious Area

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

Subcatchment 10S: WS 31 OFFSITE



Summary for Subcatchment 12S: WS 40 / D

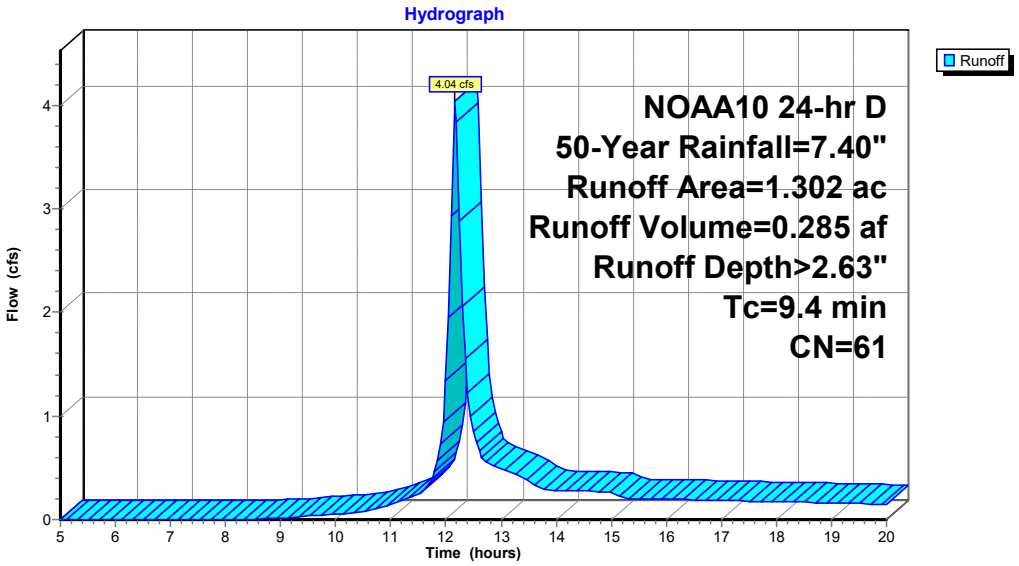
Runoff = 4.04 cfs @ 12.17 hrs, Volume= 0.285 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	1.302	61	
	1.302		100.00% Pervious Area

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

Subcatchment 12S: WS 40 / D



Summary for Subcatchment 13S: WS-50

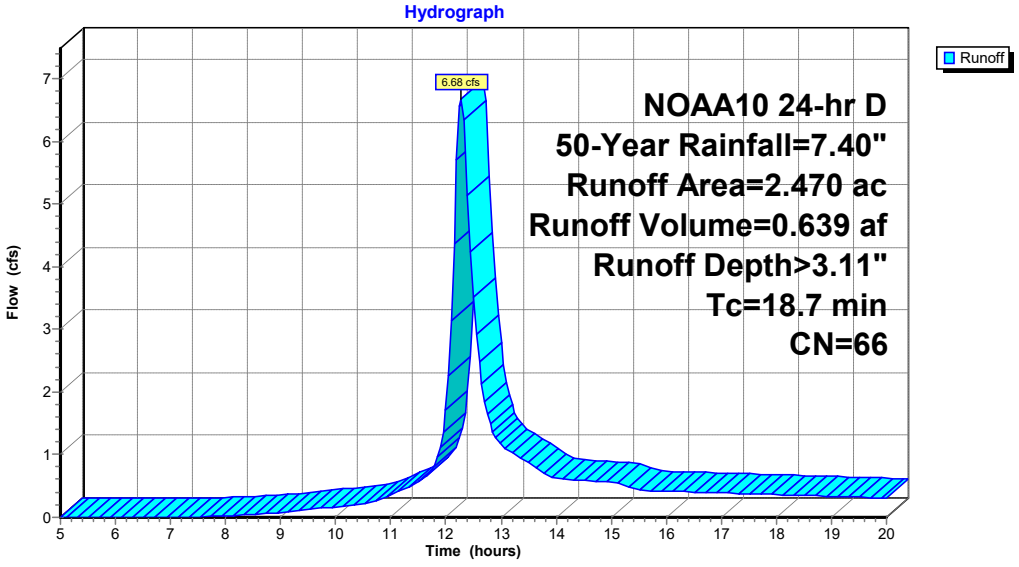
Runoff = 6.68 cfs @ 12.28 hrs, Volume= 0.639 af, Depth> 3.11"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	2.470	66	
	2.470		100.00% Pervious Area

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

Subcatchment 13S: WS-50



Summary for Subcatchment 14S: WS 51 OFFSITE

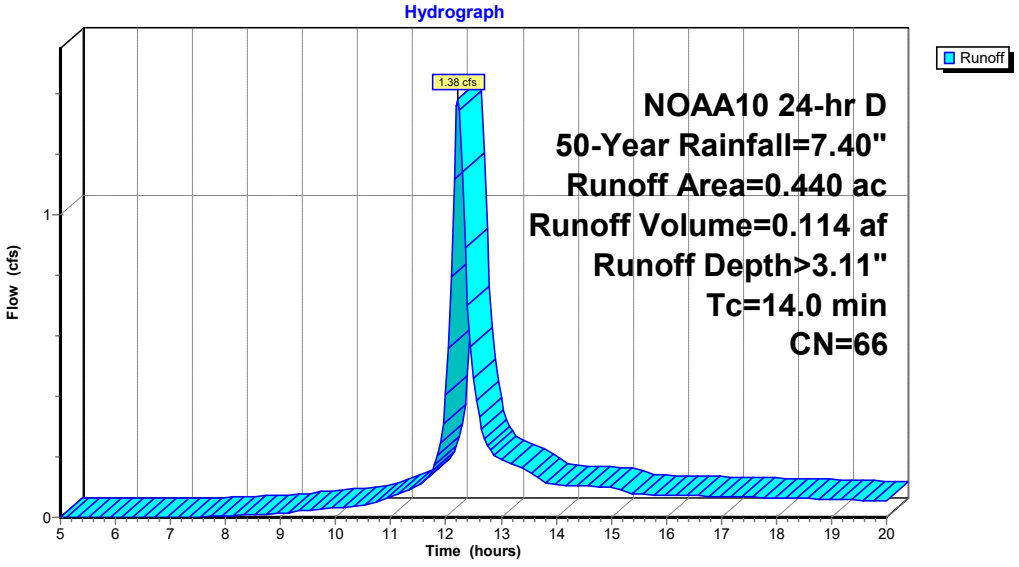
Runoff = 1.38 cfs @ 12.22 hrs, Volume= 0.114 af, Depth> 3.11"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 50-Year Rainfall=7.40"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 14S: WS 51 OFFSITE



Summary for Pond 7P: EX DET 210

Inflow Area = 10.723 ac, 0.00% Impervious, Inflow Depth > 4.90" for 50-Year event
Inflow = 47.14 cfs @ 12.24 hrs, Volume= 4.377 af
Outflow = 21.91 cfs @ 12.46 hrs, Volume= 4.369 af, Atten= 54%, Lag= 13.3 min
Primary = 7.06 cfs @ 12.46 hrs, Volume= 3.903 af
Routed to Link 8L : EX POA / B
Secondary = 14.85 cfs @ 12.46 hrs, Volume= 0.466 af
Routed to Link 8L : EX POA / B

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 75.50' @ 12.46 hrs Surf.Area= 19,570 sf Storage= 52,557 cf

Plug-Flow detention time= 56.3 min calculated for 4.354 af (99% of inflow)
Center-of-Mass det. time= 55.3 min (832.9 - 777.6)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	62,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

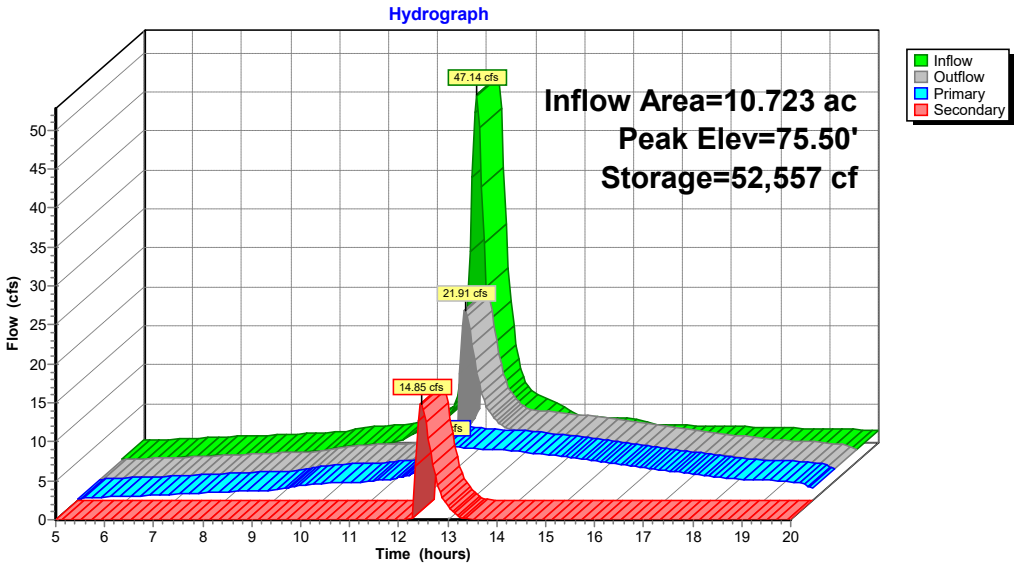
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	11,893	0	0
74.00	14,880	26,773	26,773
76.00	21,147	36,027	62,800

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	75.00'	**15.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=7.06 cfs @ 12.46 hrs HW=75.49' (Free Discharge)
1=Culvert (Barrel Controls 7.06 cfs @ 8.99 fps)

Secondary OutFlow Max=14.58 cfs @ 12.46 hrs HW=75.49' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 14.58 cfs @ 1.80 fps)

Pond 7P: EX DET 210

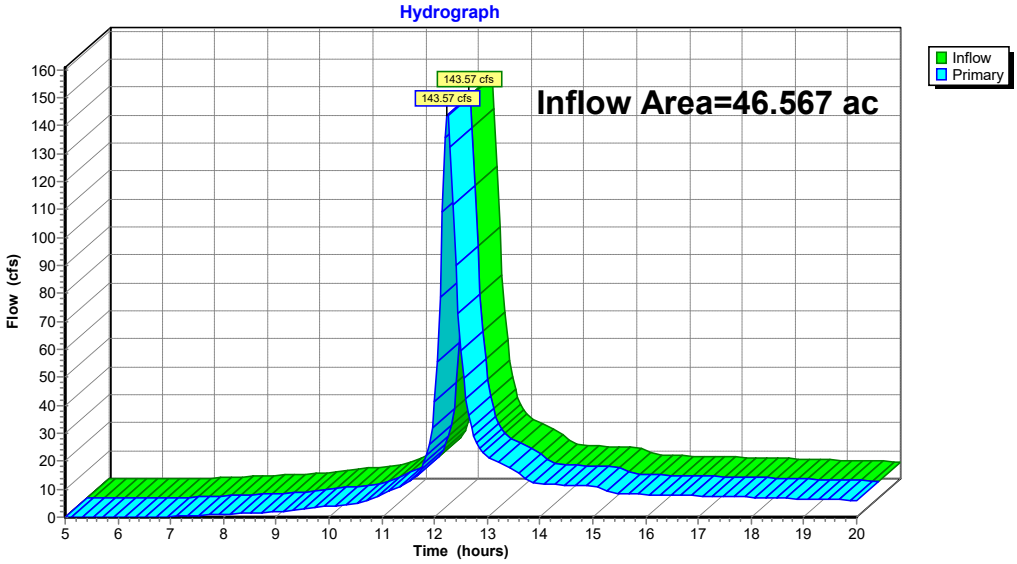


Summary for Link 4L: EX POA / A

Inflow Area = 46.567 ac, 0.00% Impervious, Inflow Depth > 3.32" for 50-Year event
Inflow = 143.57 cfs @ 12.25 hrs, Volume= 12.903 af
Primary = 143.57 cfs @ 12.25 hrs, Volume= 12.903 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: EX POA / A

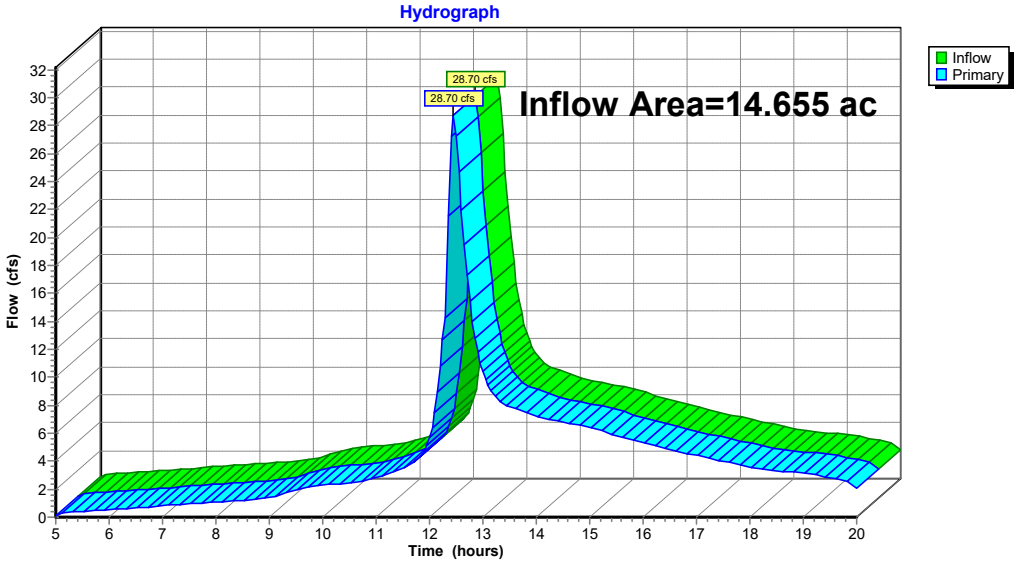


Summary for Link 8L: EX POA / B

Inflow Area = 14.655 ac, 0.00% Impervious, Inflow Depth > 4.28" for 50-Year event
Inflow = 28.70 cfs @ 12.45 hrs, Volume= 5.221 af
Primary = 28.70 cfs @ 12.45 hrs, Volume= 5.221 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 8L: EX POA / B

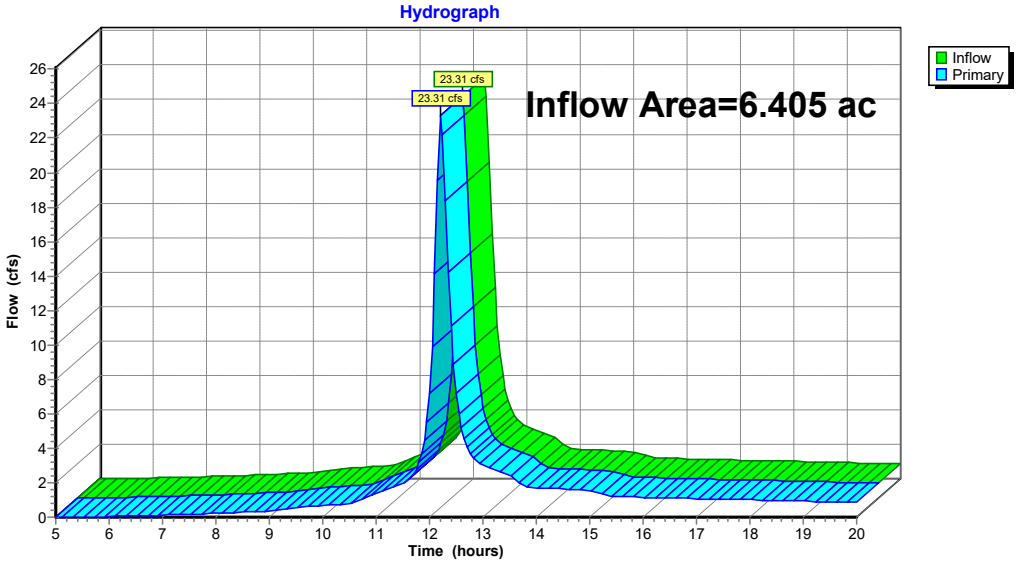


Summary for Link 11L: EX POA / C

Inflow Area = 6.405 ac, 0.00% Impervious, Inflow Depth > 3.60" for 50-Year event
Inflow = 23.31 cfs @ 12.22 hrs, Volume= 1.919 af
Primary = 23.31 cfs @ 12.22 hrs, Volume= 1.919 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 11L: EX POA / C

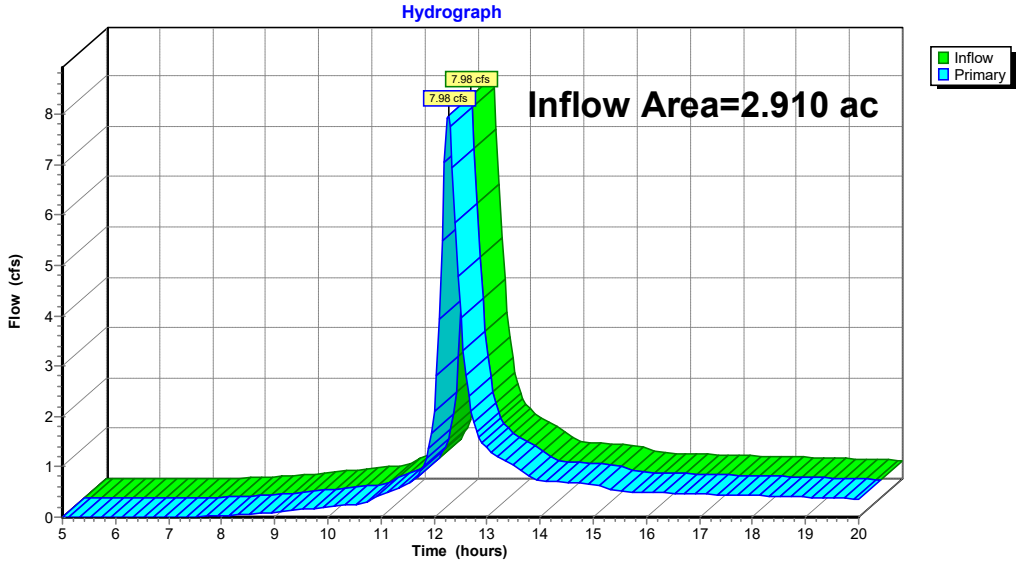


Summary for Link 15L: EX POA / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 3.11" for 50-Year event
Inflow = 7.98 cfs @ 12.27 hrs, Volume= 0.753 af
Primary = 7.98 cfs @ 12.27 hrs, Volume= 0.753 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 15L: EX POA / E



Summary for Subcatchment 1S: WS 10

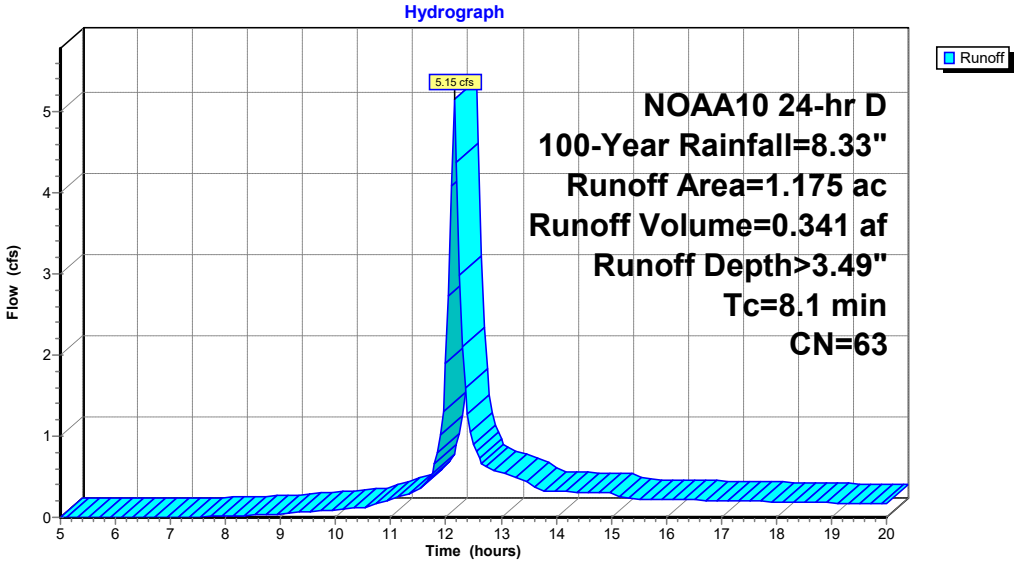
Runoff = 5.15 cfs @ 12.15 hrs, Volume= 0.341 af, Depth> 3.49"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	1.175	63	
	1.175		100.00% Pervious Area

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

Subcatchment 1S: WS 10



Summary for Subcatchment 2S: WS 11

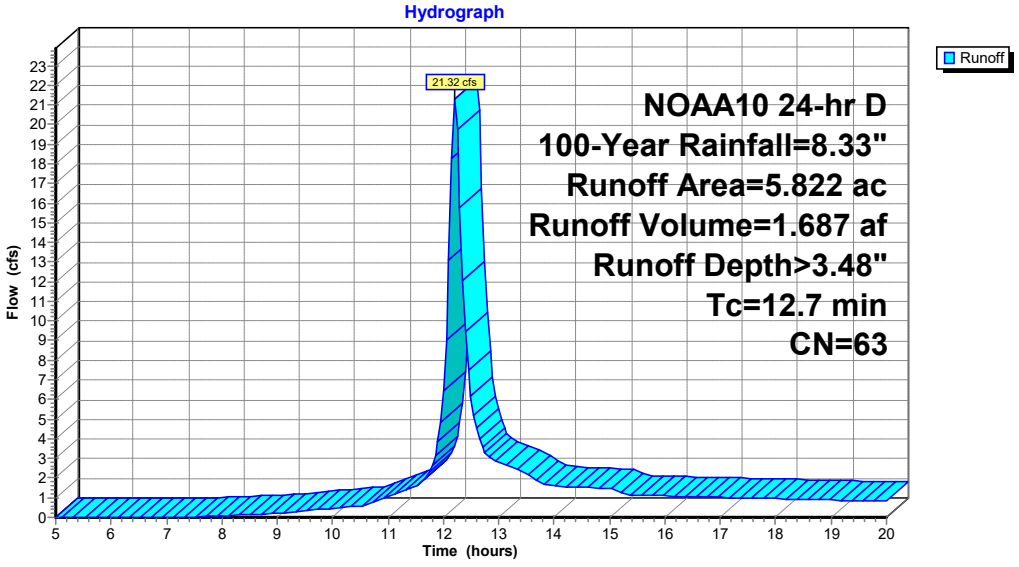
Runoff = 21.32 cfs @ 12.21 hrs, Volume= 1.687 af, Depth> 3.48"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	5.822	63	
	5.822		100.00% Pervious Area

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

Subcatchment 2S: WS 11



Summary for Subcatchment 3S: WS 12 OFFSITE

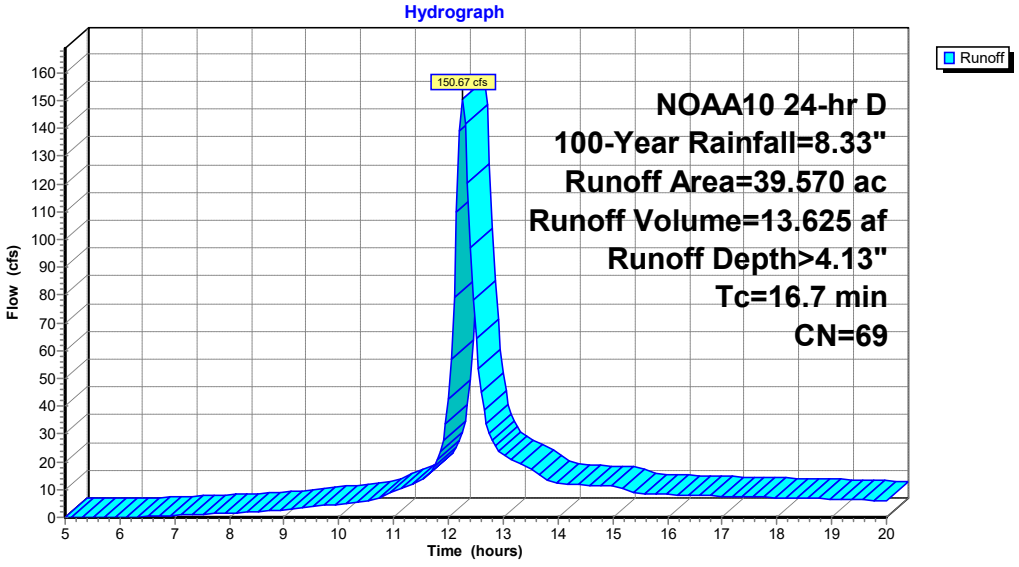
Runoff = 150.67 cfs @ 12.25 hrs, Volume= 13.625 af, Depth> 4.13"
Routed to Link 4L : EX POA / A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	39.570	69	
	39.570		100.00% Pervious Area

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

Subcatchment 3S: WS 12 OFFSITE



Summary for Subcatchment 5S: WS 20

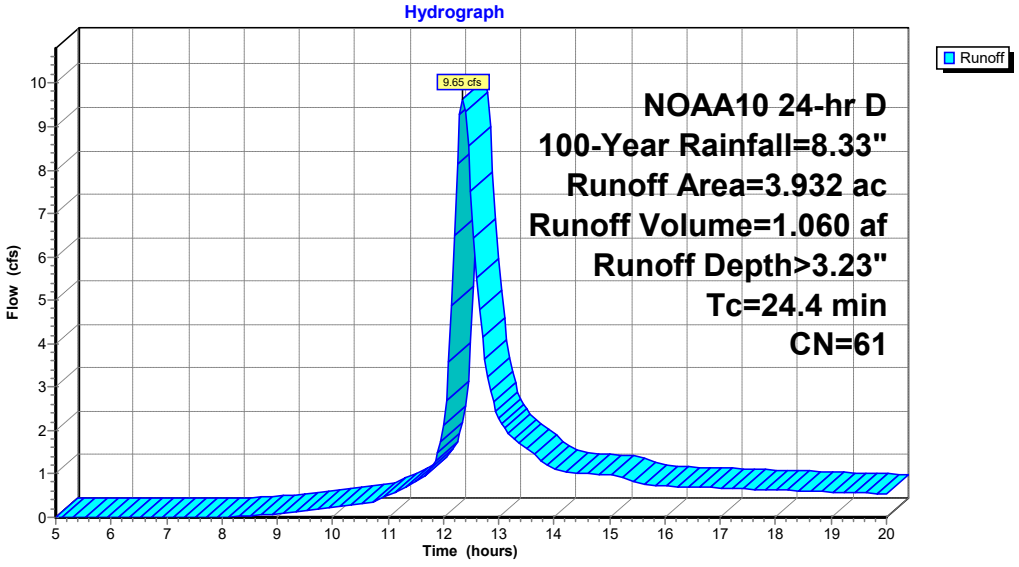
Runoff = 9.65 cfs @ 12.35 hrs, Volume= 1.060 af, Depth> 3.23"
Routed to Link 8L : EX POA / B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	3.932	61	
	3.932		100.00% Pervious Area

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

Subcatchment 5S: WS 20



Summary for Subcatchment 6S: WS 21

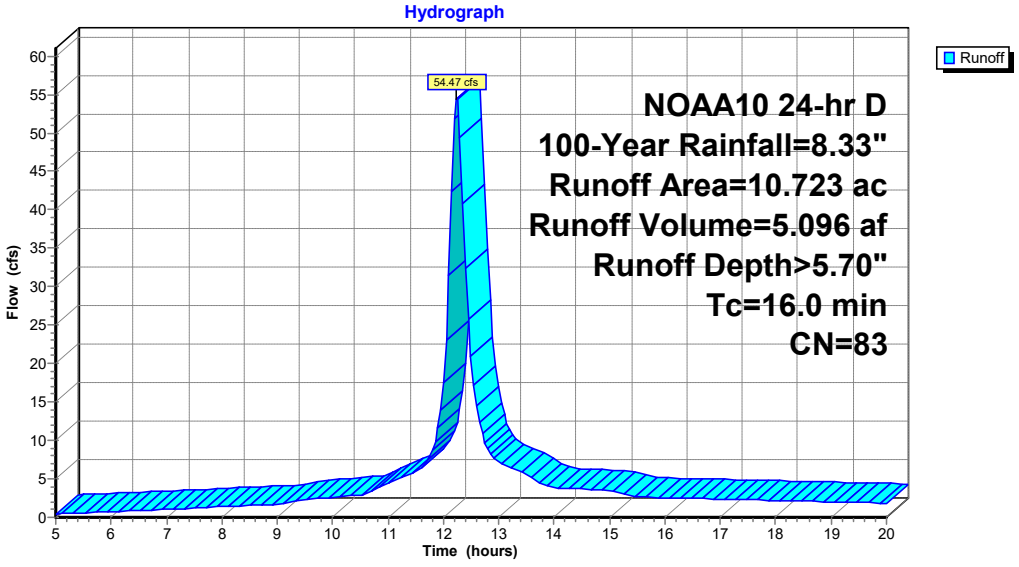
Runoff = 54.47 cfs @ 12.24 hrs, Volume= 5.096 af, Depth> 5.70"
Routed to Pond 7P : EX DET 210

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	10.723	83	
	10.723		100.00% Pervious Area

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

Subcatchment 6S: WS 21



Summary for Subcatchment 9S: WS 30

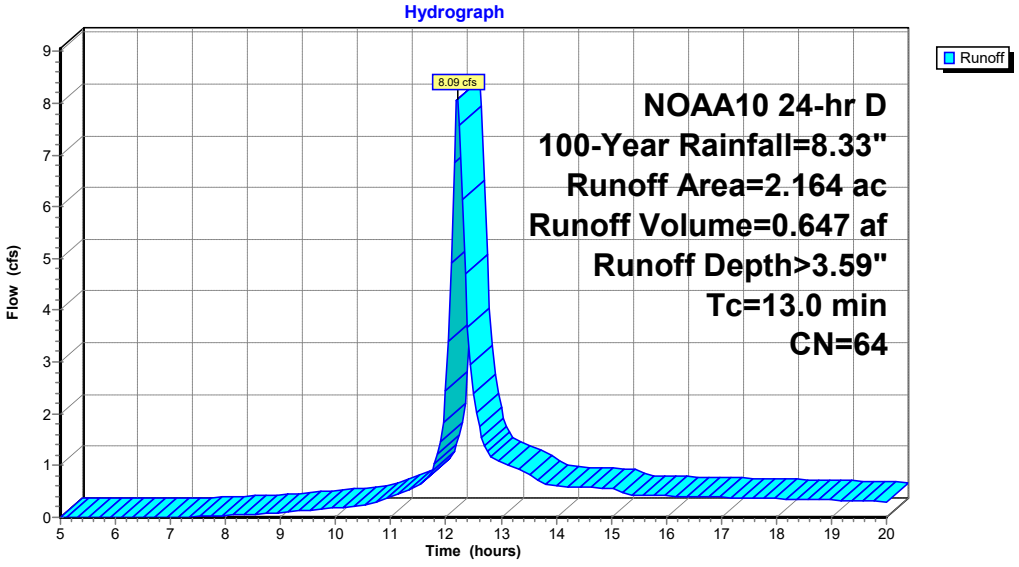
Runoff = 8.09 cfs @ 12.21 hrs, Volume= 0.647 af, Depth> 3.59"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	2.164	64	
	2.164		100.00% Pervious Area

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

Subcatchment 9S: WS 30



Summary for Subcatchment 10S: WS 31 OFFSITE

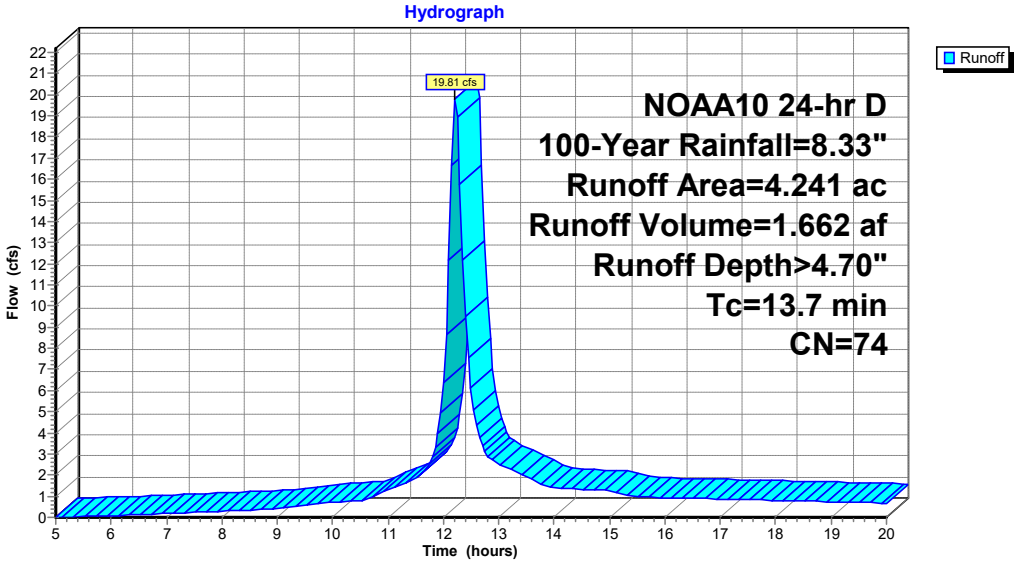
Runoff = 19.81 cfs @ 12.22 hrs, Volume= 1.662 af, Depth> 4.70"
Routed to Link 11L : EX POA / C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	4.241	74	
	4.241		100.00% Pervious Area

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

Subcatchment 10S: WS 31 OFFSITE



Summary for Subcatchment 12S: WS 40 / D

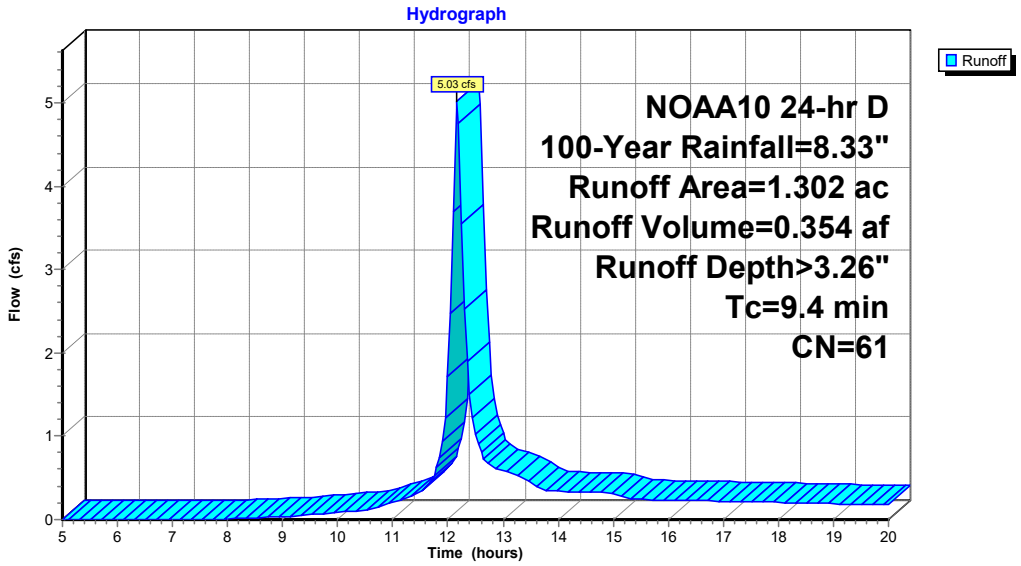
Runoff = 5.03 cfs @ 12.17 hrs, Volume= 0.354 af, Depth> 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	1.302	61	
	1.302		100.00% Pervious Area

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

Subcatchment 12S: WS 40 / D



Summary for Subcatchment 13S: WS-50

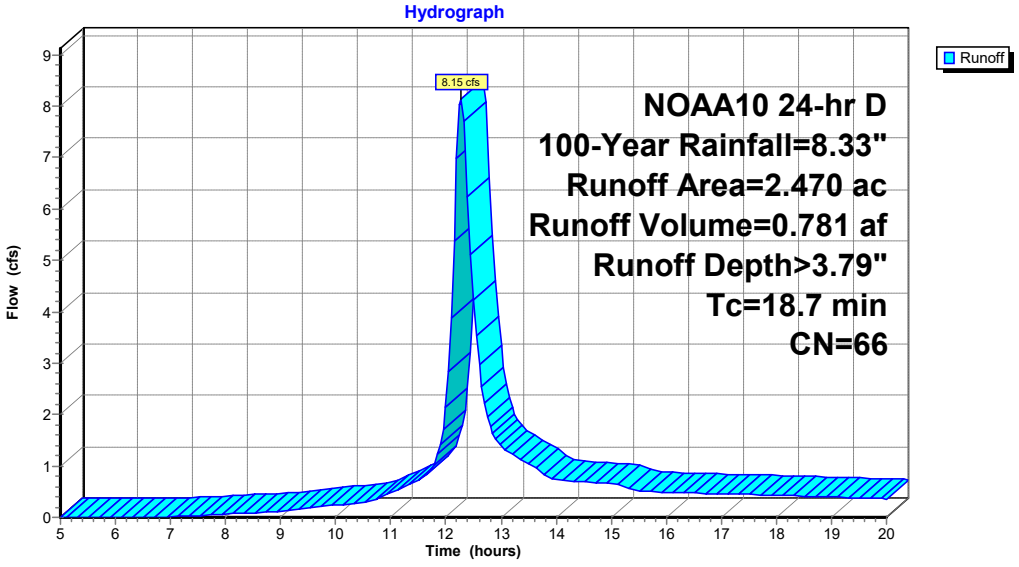
Runoff = 8.15 cfs @ 12.28 hrs, Volume= 0.781 af, Depth> 3.79"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	2.470	66	
	2.470		100.00% Pervious Area

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

Subcatchment 13S: WS-50



Summary for Subcatchment 14S: WS 51 OFFSITE

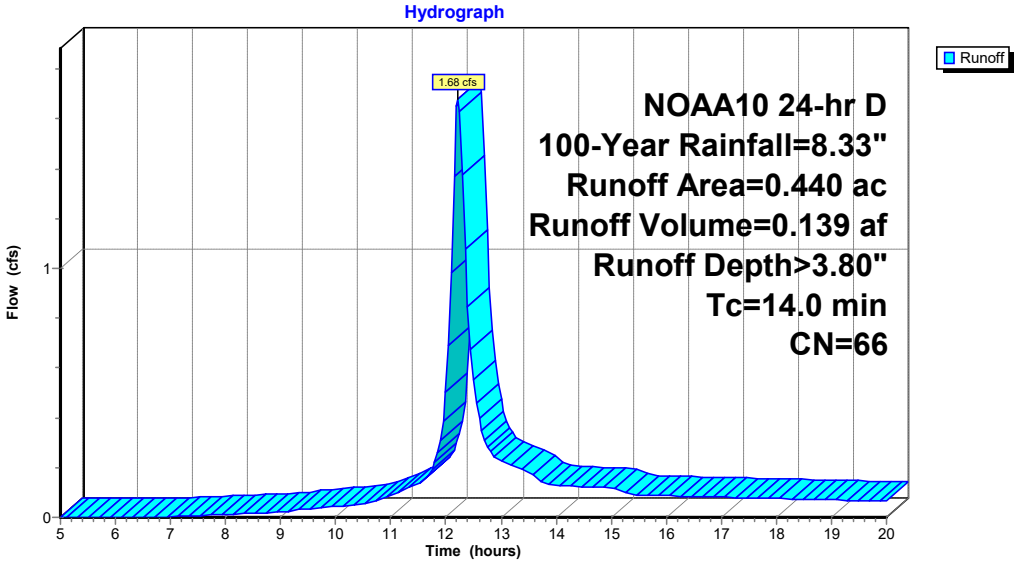
Runoff = 1.68 cfs @ 12.22 hrs, Volume= 0.139 af, Depth> 3.80"
Routed to Link 15L : EX POA / E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA10 24-hr D 100-Year Rainfall=8.33"

	Area (ac)	CN	Description
*	0.440	66	
	0.440		100.00% Pervious Area

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

Subcatchment 14S: WS 51 OFFSITE



Summary for Pond 7P: EX DET 210

Inflow Area = 10.723 ac, 0.00% Impervious, Inflow Depth > 5.70" for 100-Year event
Inflow = 54.47 cfs @ 12.24 hrs, Volume= 5.096 af
Outflow = 32.92 cfs @ 12.41 hrs, Volume= 5.049 af, Atten= 40%, Lag= 9.9 min
Primary = 7.24 cfs @ 12.41 hrs, Volume= 4.232 af
Routed to Link 8L : EX POA / B
Secondary = 25.68 cfs @ 12.41 hrs, Volume= 0.817 af
Routed to Link 8L : EX POA / B

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 75.69' @ 12.41 hrs Surf.Area= 20,172 sf Storage= 56,375 cf

Plug-Flow detention time= 55.2 min calculated for 5.049 af (99% of inflow)
Center-of-Mass det. time= 51.2 min (824.8 - 773.6)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	62,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

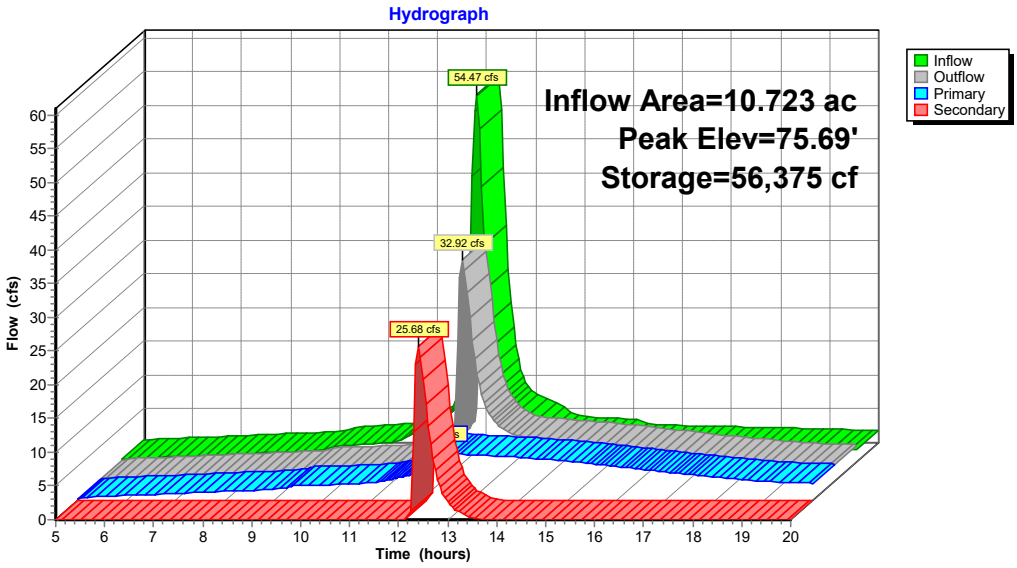
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	11,893	0	0
74.00	14,880	26,773	26,773
76.00	21,147	36,027	62,800

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**12.0" Round Culvert** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.80' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	75.00'	**15.0' long + 3.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=7.24 cfs @ 12.41 hrs HW=75.69' (Free Discharge)
1=Culvert (Barrel Controls 7.24 cfs @ 9.22 fps)

Secondary OutFlow Max=25.45 cfs @ 12.41 hrs HW=75.69' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 25.45 cfs @ 2.18 fps)

Pond 7P: EX DET 210

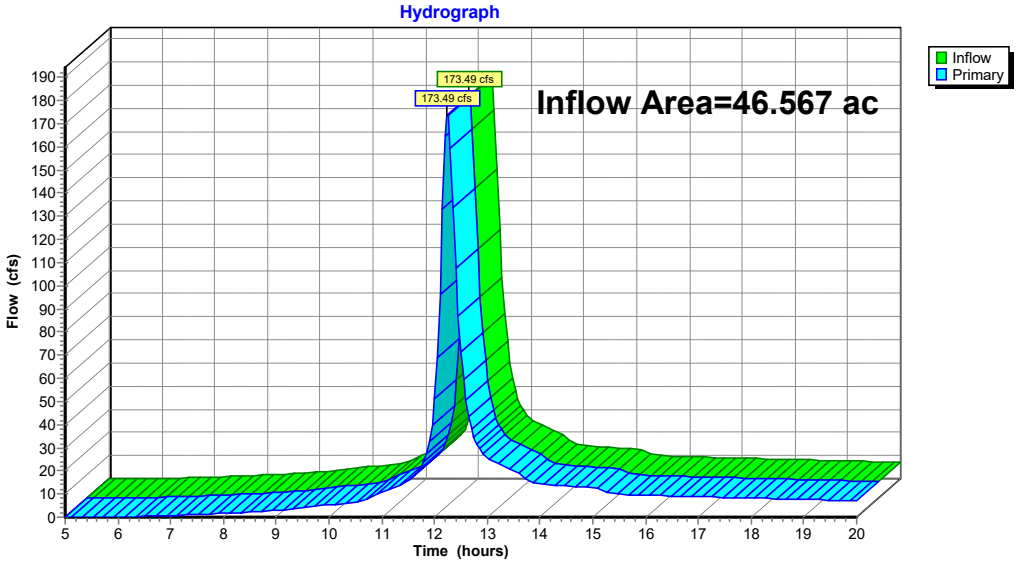


Summary for Link 4L: EX POA / A

Inflow Area = 46.567 ac, 0.00% Impervious, Inflow Depth > 4.03" for 100-Year event
Inflow = 173.49 cfs @ 12.24 hrs, Volume= 15.653 af
Primary = 173.49 cfs @ 12.24 hrs, Volume= 15.653 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: EX POA / A

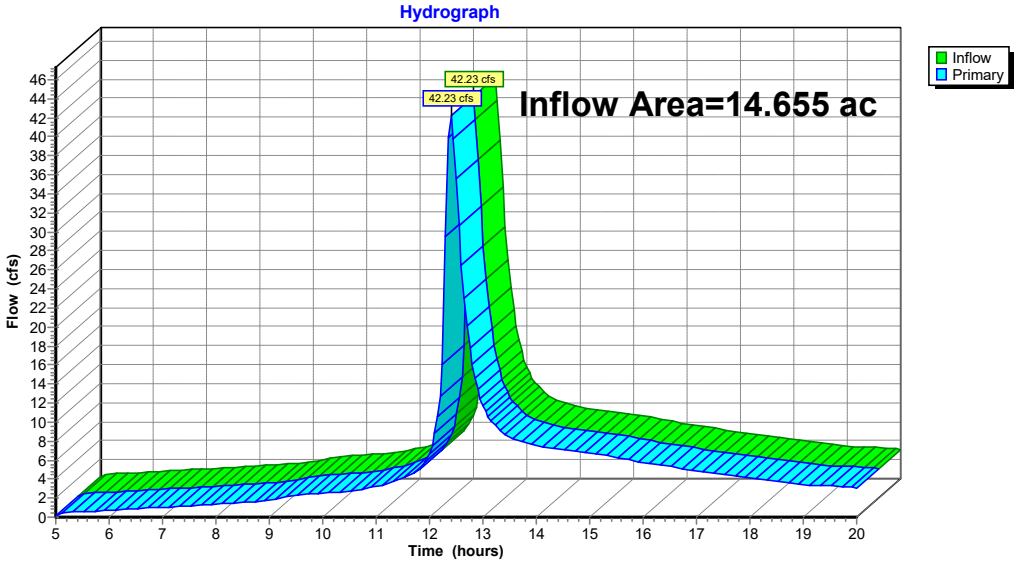


Summary for Link 8L: EX POA / B

Inflow Area = 14.655 ac, 0.00% Impervious, Inflow Depth > 5.00" for 100-Year event
Inflow = 42.23 cfs @ 12.40 hrs, Volume= 6.109 af
Primary = 42.23 cfs @ 12.40 hrs, Volume= 6.109 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 8L: EX POA / B

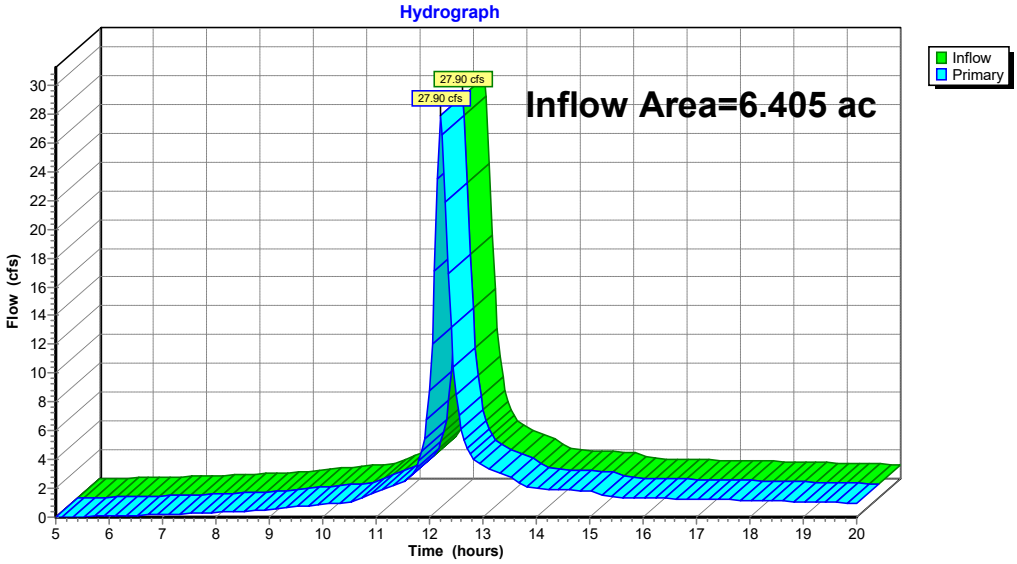


Summary for Link 11L: EX POA / C

Inflow Area = 6.405 ac, 0.00% Impervious, Inflow Depth > 4.33" for 100-Year event
Inflow = 27.90 cfs @ 12.21 hrs, Volume= 2.309 af
Primary = 27.90 cfs @ 12.21 hrs, Volume= 2.309 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 11L: EX POA / C

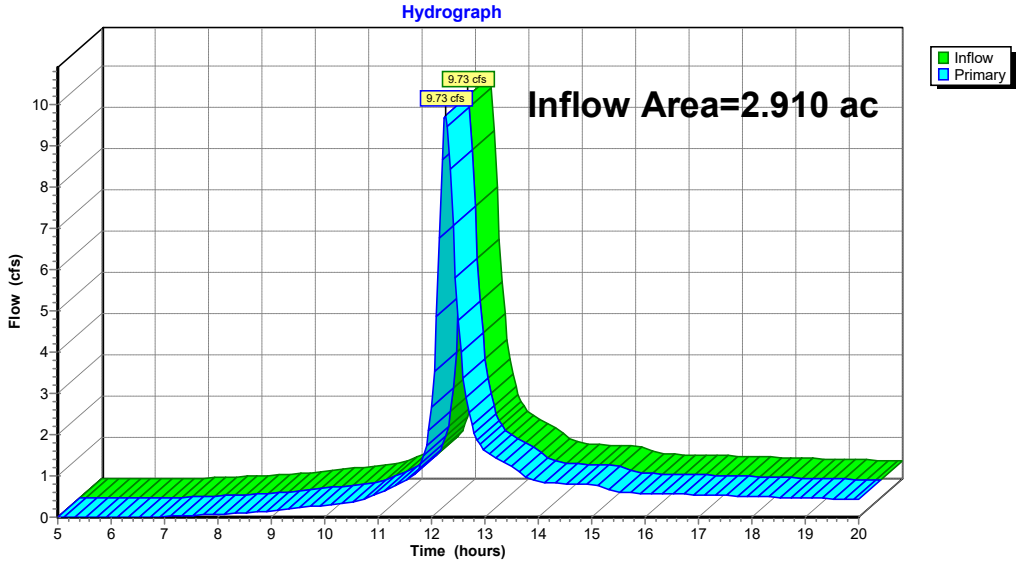


Summary for Link 15L: EX POA / E

Inflow Area = 2.910 ac, 0.00% Impervious, Inflow Depth > 3.79" for 100-Year event
Inflow = 9.73 cfs @ 12.27 hrs, Volume= 0.920 af
Primary = 9.73 cfs @ 12.27 hrs, Volume= 0.920 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 15L: EX POA / E



Appendix I
Watershed Maps

Long Lots Elementary School

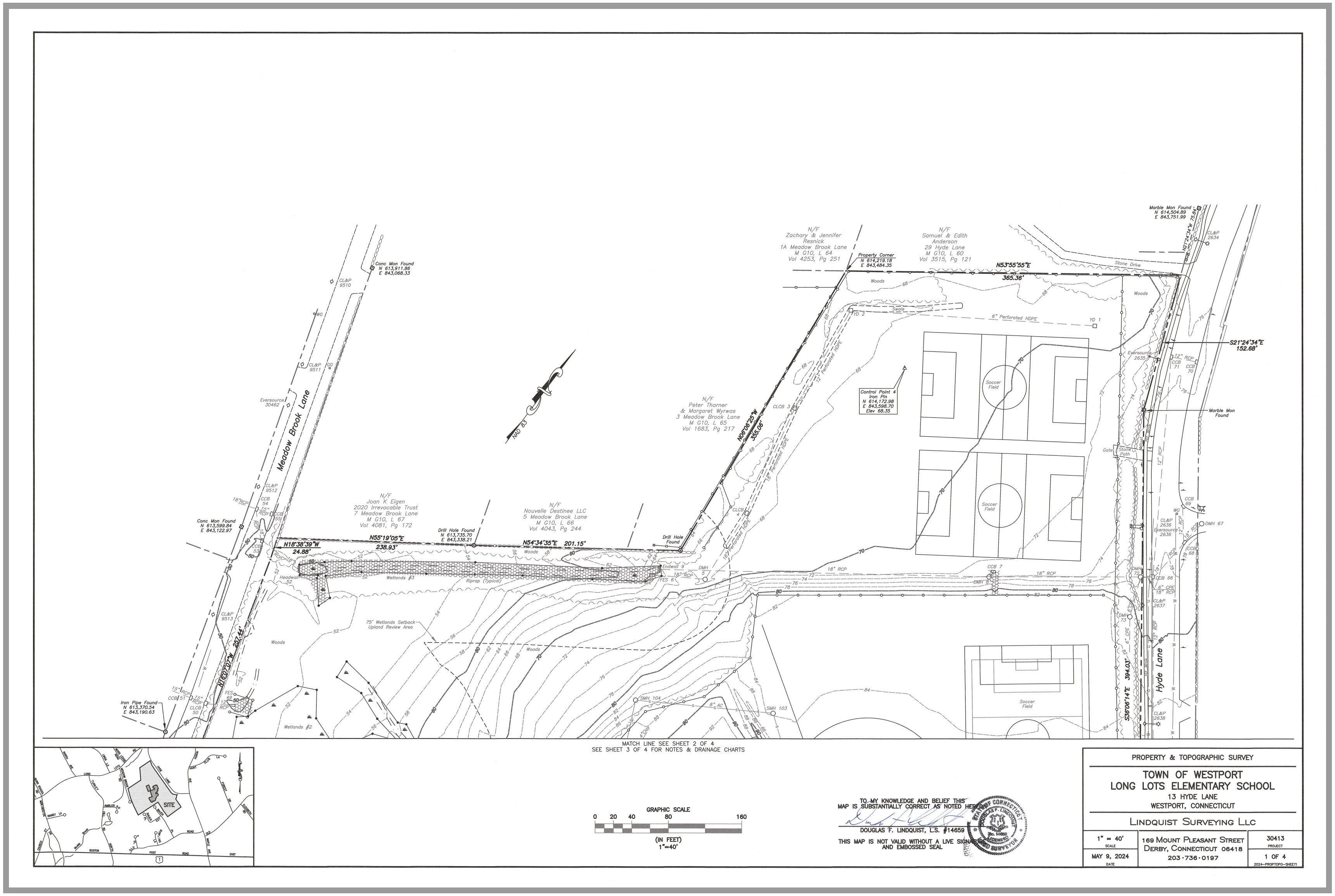
13 Hyde Lane, Westport, Connecticut

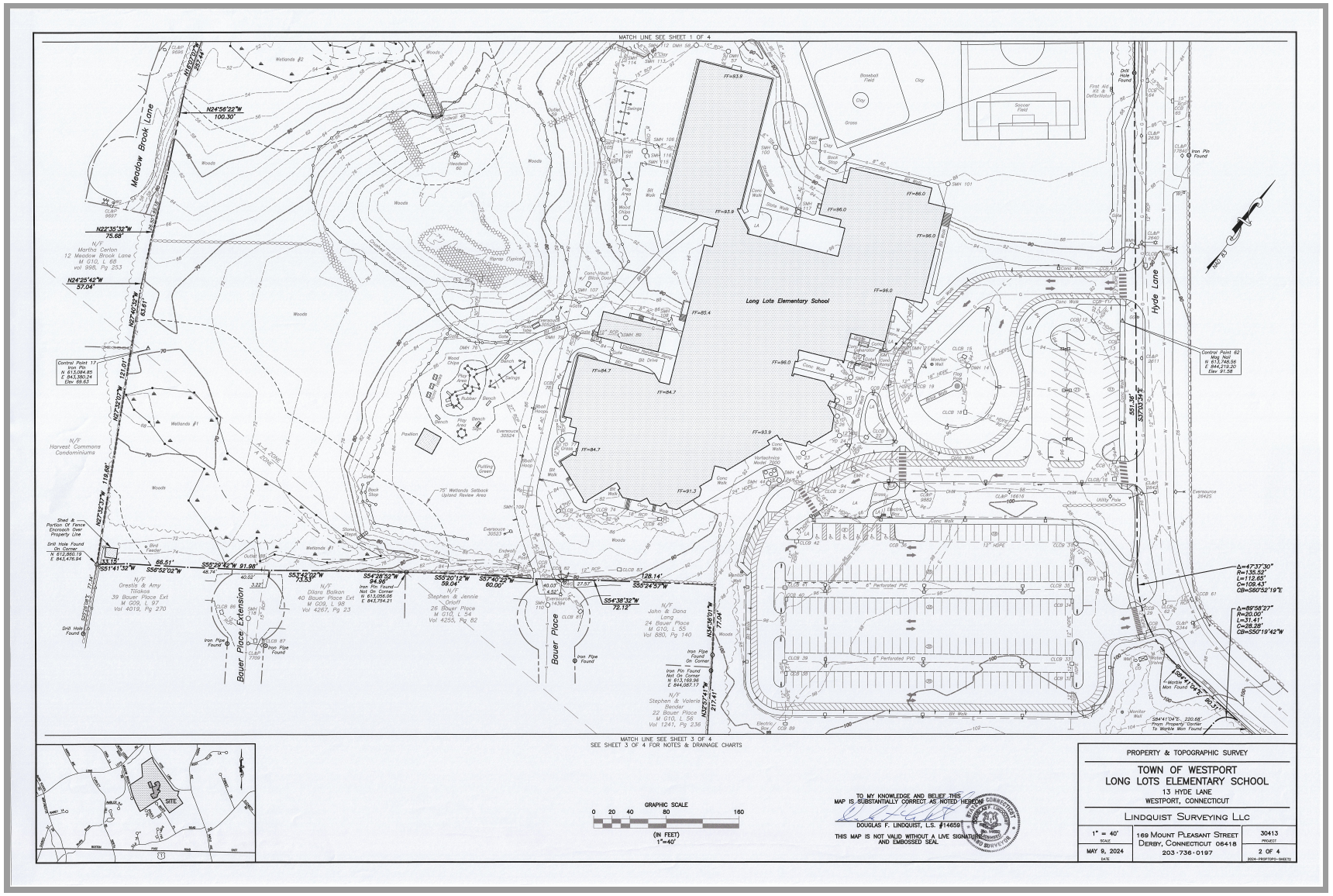
Drainage Report

Prepared for:
Svigals and Partners, an FCA Company
84 Orange Street
New Haven, CT 06510

SLR Project No.: 141.14847.00021

May 14, 2025


Meadow Brook Lane
Hyde Lane
N/F Zachary & Jennifer Resnick 1A Meadow Brook Lane M G10, L 64 Vol 4253, Pg 251
N/F Samuel & Edith Anderson 29 Hyde Lane M G10, L 60 Vol 3515, Pg 121
N/F Peter Thorner & Margaret Wyrwas 3 Meadow Brook Lane M G10, L 65 Vol 1683, Pg 217
N/F Joan K Eigen 2020 Irrevocable Trust 7 Meadow Brook Lane M G10, L 67 Vol 4081, Pg 172
N/F Nouvelle Destinee LLC 5 Meadow Brook Lane M G10, L 66 Vol 4043, Pg 244
N53°55'55"E 365.36'
S21°24'34"E 152.68'
S36°06'14"E 394.03'
N55°19'05"E 238.93'
N54°34'35"E 201.15'
N18°38'39"W 24.88'
Soccer Field
Wetlands #3
Wetlands #2
75' Wetlands Setback Upland Review Area
Woods
MATCH LINE SEE SHEET 2 OF 4
SEE SHEET 3 OF 4 FOR NOTES & DRAINAGE CHARTS
GRAPHIC SCALE
0 20 40 80 160
(IN FEET)
1"=40'
TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON
DOUGLAS F. LINDQUIST, L.S. #14659
THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE AND EMBOSSED SEAL
PROPERTY & TOPOGRAPHIC SURVEY
TOWN OF WESTPORT
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CONNECTICUT
LINDQUIST SURVEYING LLC
1" = 40'
SCALE
169 MOUNT PLEASANT STREET
DERBY, CONNECTICUT 06418
203·736·0197
30413
PROJECT
MAY 9, 2024
DATE
1 OF 4
2024-PROPTOPO-SHEET1


MATCH LINE SEE SHEET 1 OF 4
Meadow Brook Lane
Hyde Lane
Bauer Place Extension
Bauer Place
Long Lots Elementary School
MATCH LINE SEE SHEET 3 OF 4
SEE SHEET 3 OF 4 FOR NOTES & DRAINAGE CHARTS
SITE
GRAPHIC SCALE
0 20 40 80 160
(IN FEET)
1"=40'
TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON
DOUGLAS F. LINDQUIST, L.S. #14659
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PROPERTY & TOPOGRAPHIC SURVEY
TOWN OF WESTPORT
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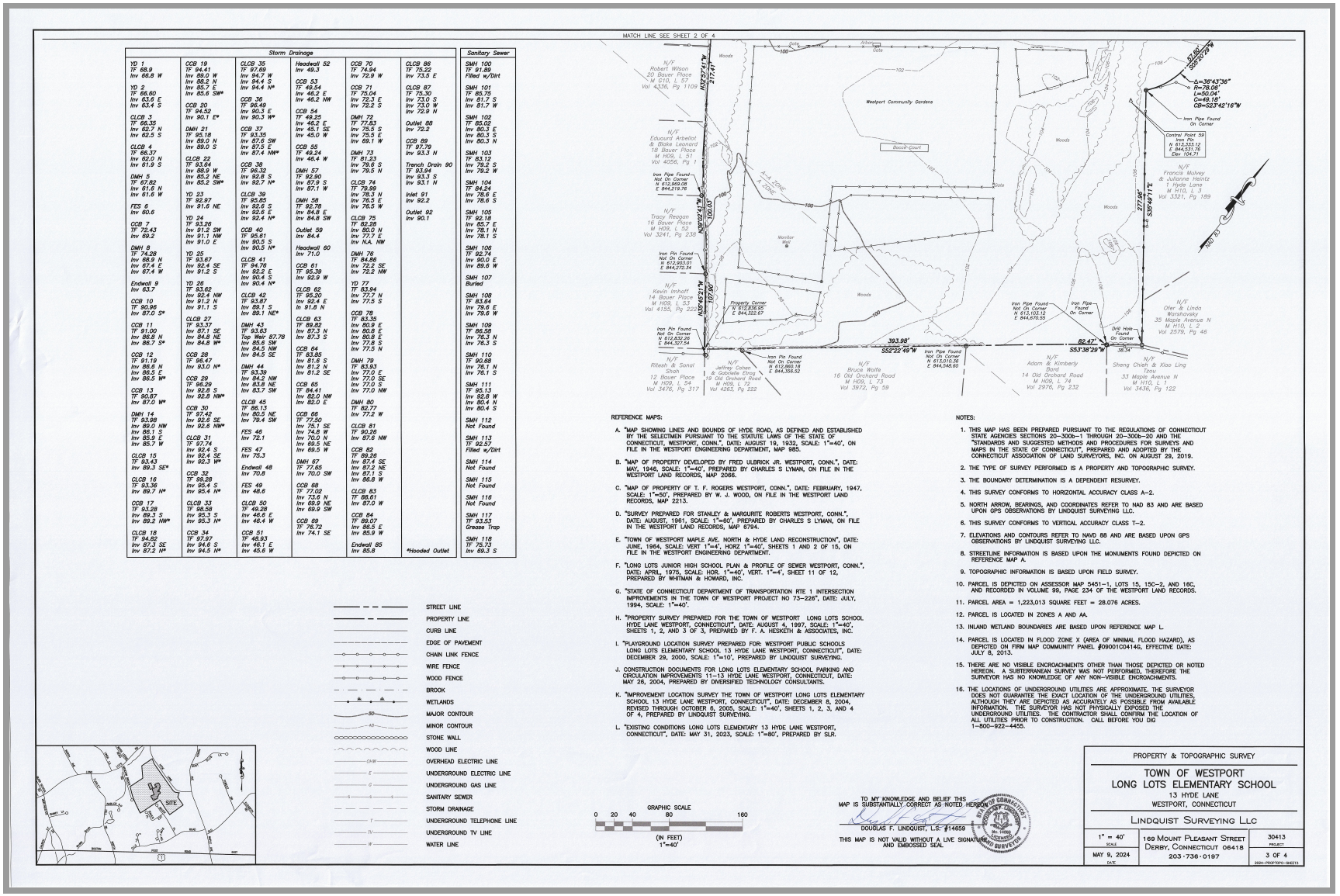
13 HYDE LANE
WESTPORT, CONNECTICUT
LINDQUIST SURVEYING LLC
1" = 40'
SCALE
MAY 9, 2024
DATE
169 MOUNT PLEASANT STREET
DERBY, CONNECTICUT 06418
203-736-0197
30413
PROJECT
2 OF 4



REFERENCE MAPS:

A. "MAP SHOWING LINES AND BOUNDS OF HYDE ROAD, AS DEFINED AND ESTABLISHED BY THE SELECTMEN PURSUANT TO THE STATUTE LAWS OF THE STATE OF CONNECTICUT, WESTPORT, CONN.", DATE: AUGUST 19, 1932, SCALE: 1"=40', ON FILE IN THE WESTPORT ENGINEERING DEPARTMENT, MAP 985.

B. "MAP OF PROPERTY DEVELOPED BY FRED ULBRICK JR. WESTPORT, CONN.", DATE: MAY, 1948, SCALE: 1"=40', PREPARED BY CHARLES S LYMAN, ON FILE IN THE WESTPORT LAND RECORDS, MAP 2086.

C. "MAP OF PROPERTY OF T. F. ROGERS WESTPORT, CONN.", DATE: FEBRUARY, 1947, SCALE: 1"=50', PREPARED BY W. J. WOOD, ON FILE IN THE WESTPORT LAND RECORDS, MAP 2213.

D. "SURVEY PREPARED FOR STANLEY & MARGUERITE ROBERTS WESTPORT, CONN.", DATE: AUGUST, 1961, SCALE: 1"=80', PREPARED BY CHARLES S LYMAN, ON FILE IN THE WESTPORT LAND RECORDS, MAP 6794.

E. "TOWN OF WESTPORT MAPLE AVE. NORTH & HYDE LAND RECONSTRUCTION", DATE: JUNE, 1964, SCALE: VERT 1"=4', HORZ 1"=40', SHEETS 1 AND 2 OF 15, ON FILE IN THE WESTPORT ENGINEERING DEPARTMENT.

F. "LONG LOTS JUNIOR HIGH SCHOOL PLAN & PROFILE OF SEWER WESTPORT, CONN.", DATE: APRIL, 1975, SCALE: HOR. 1"=40', VERT. 1"=4', SHEET 11 OF 12, PREPARED BY WHITMAN & HOWARD, INC.

G. "STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION RTE 1 INTERSECTION IMPROVEMENTS IN THE TOWN OF WESTPORT PROJECT NO 73-226", DATE: JULY, 1994, SCALE: 1"=40'.

H. "PROPERTY SURVEY PREPARED FOR THE TOWN OF WESTPORT LONG LOTS SCHOOL HYDE LANE WESTPORT, CONNECTICUT", DATE: AUGUST 4, 1997, SCALE: 1"=40', SHEETS 1, 2, AND 3 OF 3, PREPARED BY F. A. HESKETH & ASSOCIATES, INC.

I. "PLAYGROUND LOCATION SURVEY PREPARED FOR: WESTPORT PUBLIC SCHOOLS LONG LOTS ELEMENTARY SCHOOL 13 HYDE LANE WESTPORT, CONNECTICUT", DATE: DECEMBER 29, 2000, SCALE: 1"=10', PREPARED BY LINDQUIST SURVEYING.

J. CONSTRUCTION DOCUMENTS FOR LONG LOTS ELEMENTARY SCHOOL PARKING AND CIRCULATION IMPROVEMENTS 11-13 HYDE LANE WESTPORT, CONNECTICUT, DATE: MAY 26, 2004, PREPARED BY DIVERSIFIED TECHNOLOGY CONSULTANTS.

K. "IMPROVEMENT LOCATION SURVEY THE TOWN OF WESTPORT LONG LOTS ELEMENTARY SCHOOL 13 HYDE LANE WESTPORT, CONNECTICUT", DATE: DECEMBER 8, 2004, REVISED THROUGH OCTOBER 6, 2005, SCALE: 1"=40', SHEETS 1, 2, 3, AND 4 OF 4, PREPARED BY LINDQUIST SURVEYING.

L. "EXISTING CONDITIONS LONG LOTS ELEMENTARY 13 HYDE LANE WESTPORT, CONNECTICUT", DATE: MAY 31, 2023, SCALE: 1"=80', PREPARED BY SLR.

NOTES:

1. THIS MAP HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS AND SUGGESTED METHODS AND PROCEDURES FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT", PREPARED AND ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON AUGUST 29, 2019.
2. THE TYPE OF SURVEY PERFORMED IS A PROPERTY AND TOPOGRAPHIC SURVEY.
3. THE BOUNDARY DETERMINATION IS A DEPENDENT RESURVEY.
4. THIS SURVEY CONFORMS TO HORIZONTAL ACCURACY CLASS A-2.
5. NORTH ARROW, BEARINGS, AND COORDINATES REFER TO NAD 83 AND ARE BASED UPON GPS OBSERVATIONS BY LINDQUIST SURVEYING LLC.
6. THIS SURVEY CONFORMS TO VERTICAL ACCURACY CLASS T-2.
7. ELEVATIONS AND CONTOURS REFER TO NAVD 88 AND ARE BASED UPON GPS OBSERVATIONS BY LINDQUIST SURVEYING LLC.
8. STREETLINE INFORMATION IS BASED UPON THE MONUMENTS FOUND DEPICTED ON REFERENCE MAP A.
9. TOPOGRAPHIC INFORMATION IS BASED UPON FIELD SURVEY.
10. PARCEL IS DEPICTED ON ASSESSOR MAP 5451-1, LOTS 15, 15C-2, AND 16C, AND RECORDED IN VOLUME 99, PAGE 234 OF THE WESTPORT LAND RECORDS.
11. PARCEL AREA = 1,223,013 SQUARE FEET = 28.076 ACRES.
12. PARCEL IS LOCATED IN ZONES A AND AA.
13. INLAND WETLAND BOUNDARIES ARE BASED UPON REFERENCE MAP L.
14. PARCEL IS LOCATED IN FLOOD ZONE X (AREA OF MINIMAL FLOOD HAZARD), AS DEPICTED ON FIRM MAP COMMUNITY PANEL #09001C0414G, EFFECTIVE DATE: JULY 8, 2013.
15. THERE ARE NO VISIBLE ENCROACHMENTS OTHER THAN THOSE DEPICTED OR NOTED HEREON. A SUBTERRANEAN SURVEY WAS NOT PERFORMED, THEREFORE THE SURVEYOR HAS NO KNOWLEDGE OF ANY NON-VISIBLE ENCROACHMENTS.
16. THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE. THE SURVEYOR DOES NOT GUARANTEE THE EXACT LOCATION OF THE UNDERGROUND UTILITIES, ALTHOUGH THEY ARE DEPICTED AS ACCURATELY AS POSSIBLE FROM AVAILABLE INFORMATION. THE SURVEYOR HAS NOT PHYSICALLY EXPOSED THE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1-800-922-4455.

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON

DOUGLAS F. LINDQUIST, L.S.: #14659

THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE AND EMBOSSED SEAL.

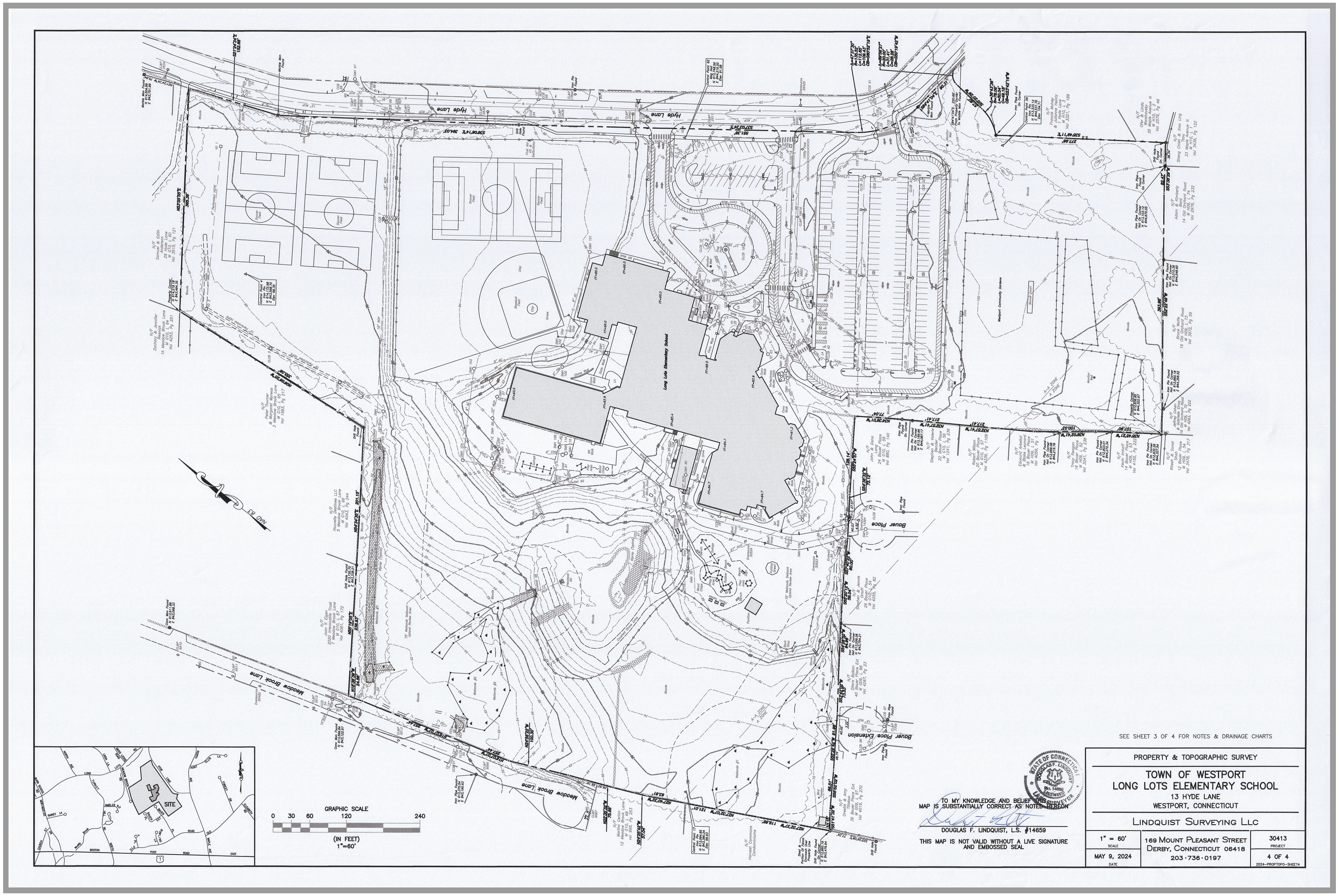
STATE OF CONNECTICUT DOUGLAS F. LINDQUIST No. 14659 REGISTERED LAND SURVEYOR

PROPERTY & TOPOGRAPHIC SURVEY

TOWN OF WESTPORT
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CONNECTICUT

LINDQUIST SURVEYING LLC

1" = 40' SCALE	169 MOUNT PLEASANT STREET DERBY, CONNECTICUT 06418 203-736-0197	30413 PROJECT
MAY 9, 2024 DATE		3 OF 4 2024-PROPTOPO-SHEET3



Hyde Lane
Meadow Brook Lane
Bauer Place
Bauer Place Extension
SITE
GRAPHIC SCALE
0 30 60 120 240
(IN FEET)
1"=60'
SEE SHEET 3 OF 4 FOR NOTES & DRAINAGE CHARTS
TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON
DOUGLAS F. LINDQUIST, L.S. #14659
THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE AND EMBOSSED SEAL
PROPERTY & TOPOGRAPHIC SURVEY
TOWN OF WESTPORT
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CONNECTICUT
LINDQUIST SURVEYING LLC
1" = 60'
SCALE
MAY 9, 2024
DATE
169 MOUNT PLEASANT STREET
DERBY, CONNECTICUT 06418
203-736-0197
30413
PROJECT
4 OF 4

LONG LOTS ELEMENTARY SCHOOL

13 HYDE LANE
WESTPORT, CT
SLR NO. 141.14847.00021
MAY 9, 2025

GENERAL NOTES

1. BOUNDARY AND TOPOGRAPHIC INFORMATION HAVE BEEN TAKEN FROM THE SURVEY ENTITLED, "PROPERTY & TOPOGRAPHIC SURVEY TOWN OF WESTPORT LONG LOTS ELEMENTARY SCHOOL", PREPARED BY LINDQUIST SURVEYING LLC., SCALED 1"=60', DATED MAY 9, 2024.
2. ELEVATIONS, CONTOURS AND BENCHMARKS ARE BASED UPON NAVD 88.
3. NORTH ARROW, BEARINGS AND COORDINATES ARE BASED UPON NAD 83.
4. INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE, AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE. THE LOCATION OF ALL EXISTING UTILITIES SHOULD BE CONFIRMED PRIOR TO BEGINNING CONSTRUCTION. CALL "CALL BEFORE YOU DIG", 1-800-922-4455. ALL UTILITY LOCATIONS THAT DO NOT MATCH THE VERTICAL OR HORIZONTAL CONTROL SHOWN ON THE PLANS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.
5. SLR INTERNATIONAL CORPORATION ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF MAPS AND DATA WHICH HAVE BEEN SUPPLIED BY OTHERS.
6. ALL UTILITY SERVICES ARE TO BE UNDERGROUND.
7. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
8. SEDIMENT AND EROSION CONTROL MEASURES AS DEPICTED ON THESE PLANS AND DESCRIBED WITHIN THE SEDIMENT AND EROSION CONTROL NARRATIVE SHALL BE IMPLEMENTED AND MAINTAINED UNTIL PERMANENT COVER AND STABILIZATION IS ESTABLISHED. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL CONFORM TO THE "GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, CONNECTICUT - 2002" AND IN ALL CASES BEST MANAGEMENT PRACTICES SHALL PREVAIL.
9. ALL DISTURBED AREAS SHALL RECEIVE A MINIMUM OF 6" TOPSOIL, AND BE SEEDED WITH GRASS, AS SHOWN ON THE PLANS.
10. ALL PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATE FINISHED GRADE.
11. ALL CONSTRUCTION MATERIALS AND METHODS SHALL CONFORM TO THE TOWN OF WESTPORT REQUIREMENTS AND TO THE APPLICABLE SECTIONS OF THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, AND INCIDENTAL CONSTRUCTION, FORM 818 AND ADDENDUMS.
12. THE PLANS REQUIRE A CONTRACTOR'S WORKING KNOWLEDGE OF LOCAL, MUNICIPAL, WATER AUTHORITY, AND STATE CODES FOR UTILITY SYSTEMS. ANY CONFLICTS BETWEEN MATERIALS AND LOCATIONS SHOWN, AND LOCAL REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE EXECUTION OF WORK. THE ENGINEER WILL NOT BE HELD LIABLE FOR COSTS INCURRED TO IMPLEMENT OR CORRECT WORK WHICH DOES NOT CONFORM TO LOCAL CODE.

CONSTRUCTION SEQUENCE

1. PRIOR TO COMMENCEMENT OF WORK A PRECONSTRUCTION MEETING SHALL BE HELD WITH TOWN STAFF AND REPRESENTATIVES OF THE CONTRACTOR AND OWNER. AT THIS MEETING, ONE PERSON WILL BE PLACED IN CHARGE OF SEDIMENT AND EROSION CONTROL FOR THE ENTIRE SITE.
2. CONTRACTOR TO STAKE OUT LIMIT OF DISTURBANCE, VEGETATION AND STONE WALLS TO BE RETAINED. NO DISTURBANCE IS TO TAKE PLACE BEYOND THE LIMITS OF WORK SHOWN.
3. CONTRACTOR TO INSTALL SEDIMENT AND EROSION CONTROLS ALONG THE PERIMETER, AND STABILIZED CONSTRUCTION ENTRANCES.
4. CLEAR AND GRUB SITE AND STOCKPILE TOPSOIL. PLACE SEDIMENT FILTER FENCE AND HAYBALES AROUND STOCKPILES.
5. INITIATE MASS EARTHWORK OPERATIONS AFTER ALL SILT FENCE & HAYBALES ARE INSTALLED.
6. INSTALL UTILITIES AND DRIVEWAYS.
7. THE SEDIMENT AND EROSION CONTROL PLAN SHALL BE MODIFIED BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER AND DESIGNATED TOWN REPRESENTATIVE AS NECESSITATED BY CHANGING SITE CONDITIONS.

ZONING DATA TABLE

DIMENSIONAL CRITERIA	REQUIRED		PROPOSED
ZONE	A	AA	--
MINIMUM LOT AREA	.5 ACRE	1 ACRE	±1,223,012 S.F. (±28.07 AC)
MAXIMUM LOT COVERAGE	25%	25%	±24.7%
MINIMUM LOT WIDTH	100'	150'	±798'
FRONT YARD SETBACK	30'	30'	±90.8'
SIDE YARD SETBACK	15'	25'	±105.8
REAR YARD SETBACK	25'	25'	±517.8'
MAXIMUM BUILDING HEIGHT	35'	40'	34.4'

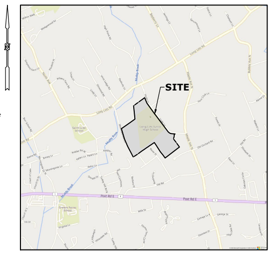
PARKING SUMMARY

CARS	250
PARENT QUEUE	±36
BUS	7 (SINGLE STACK)
	11 (DOUBLE STACK)

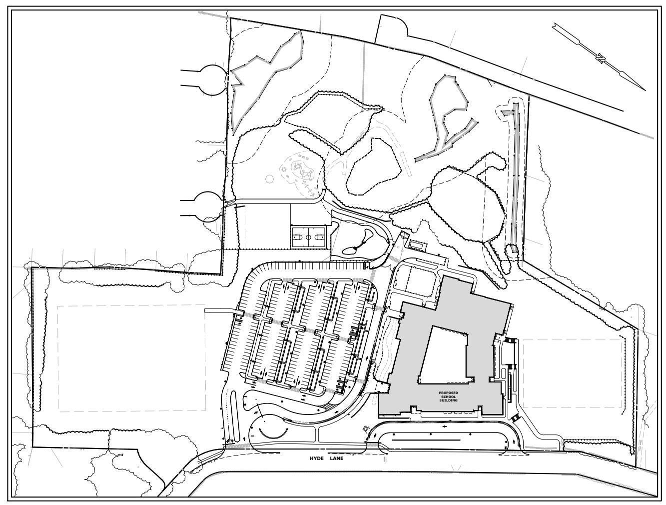
WETLANDS SUMMARY

TOTAL AREA: WETLANDS	47,886 SF
UPLAND REVIEW ACTIVITY	39,863 SF
WPLO REVIEW ACTIVITY	644 SF
DIRECT WETLAND ACTIVITY	303 SF

Know what's below. Call before you dig.
www.cbyd.com



LOCATION MAP:



PROJECT SITE VICINITY MAP:

PREPARED FOR:
SVIGALS AND PARTNERS AN FCA COMPANY
84 ORANGE STREET
NEW HAVEN, CONNECTICUT

PREPARED BY:
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

LIST OF CIVIL DRAWINGS

SVIGALS + PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

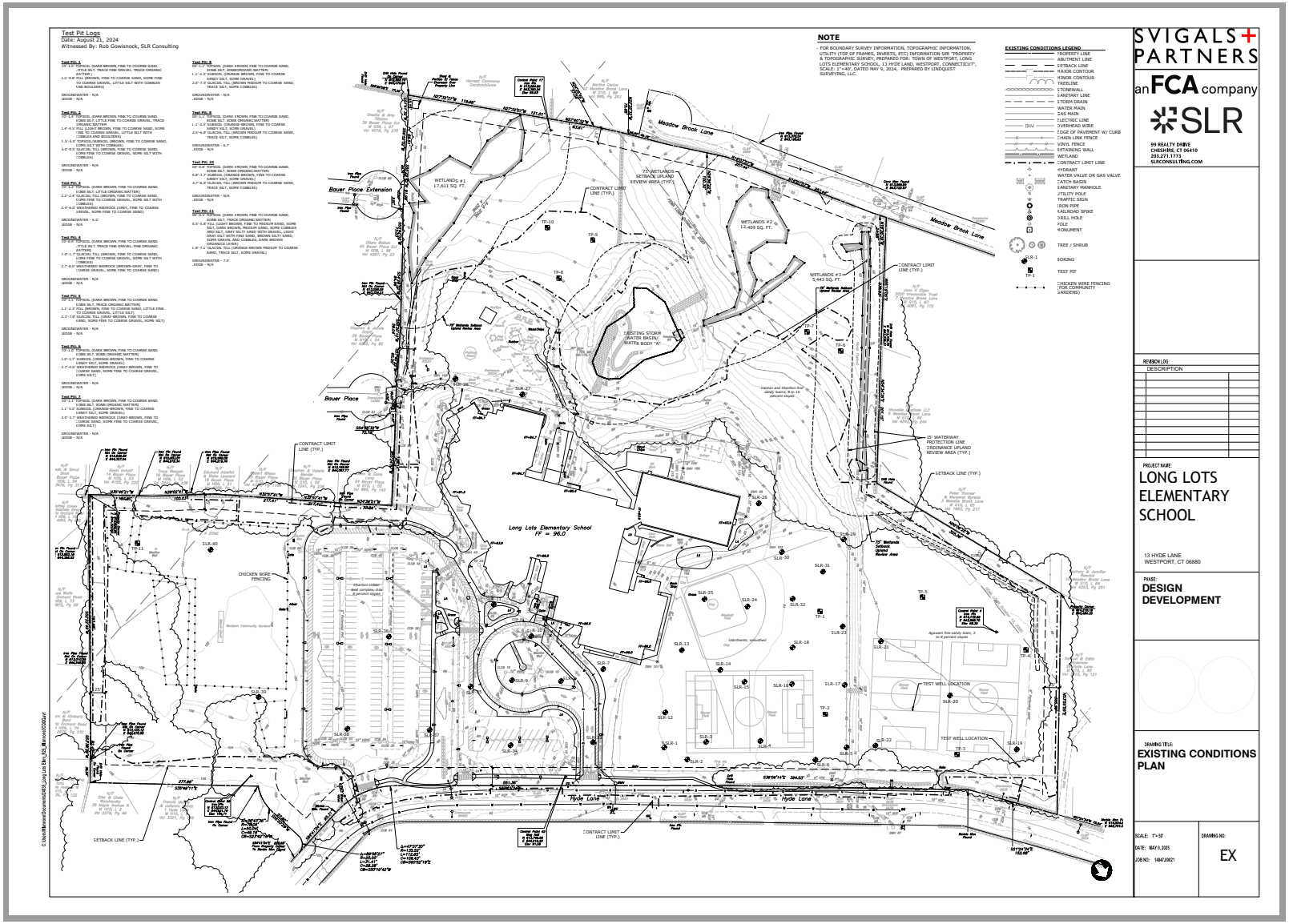
REVISION LOG:
DESCRIPTION

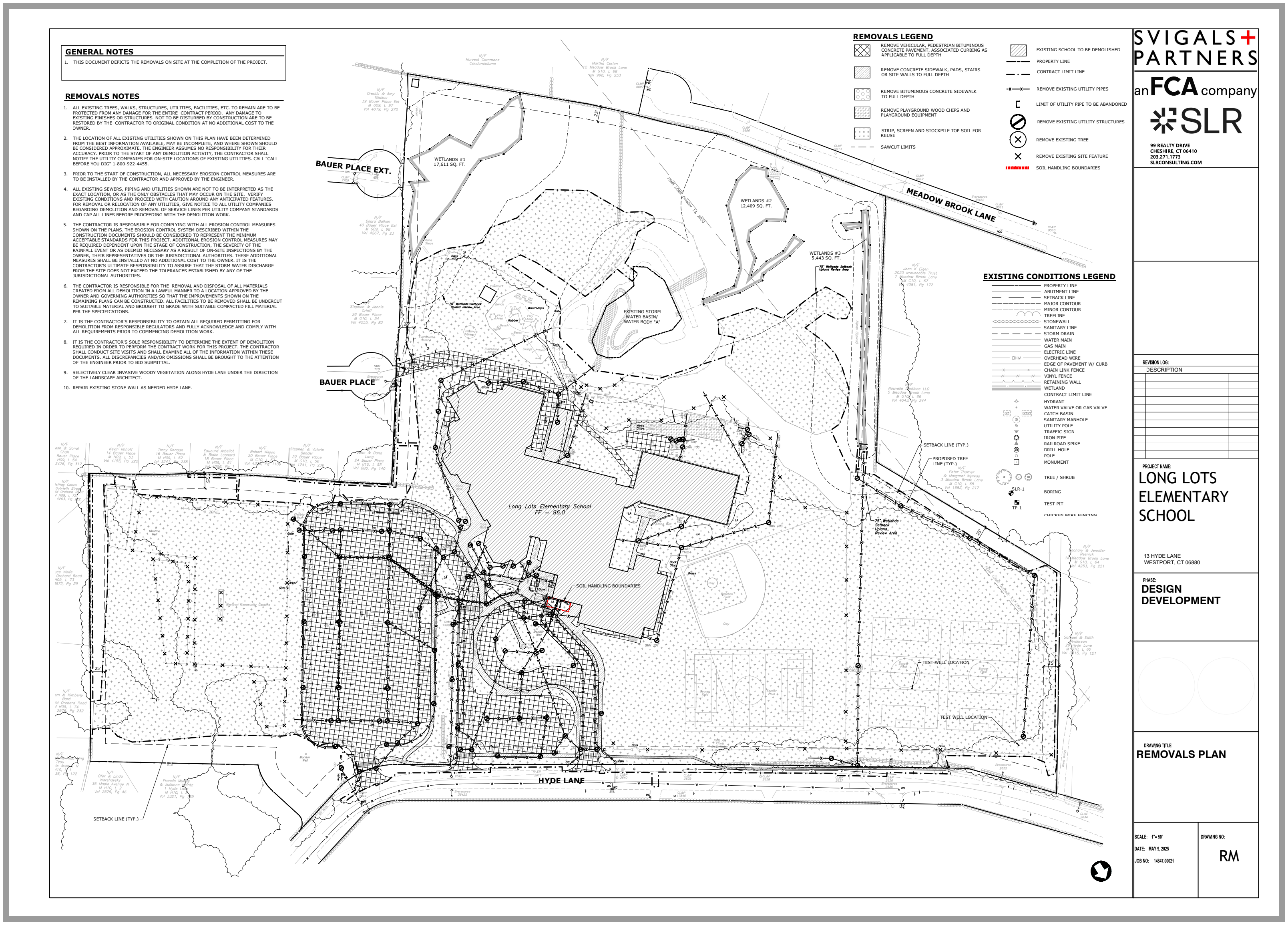
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880

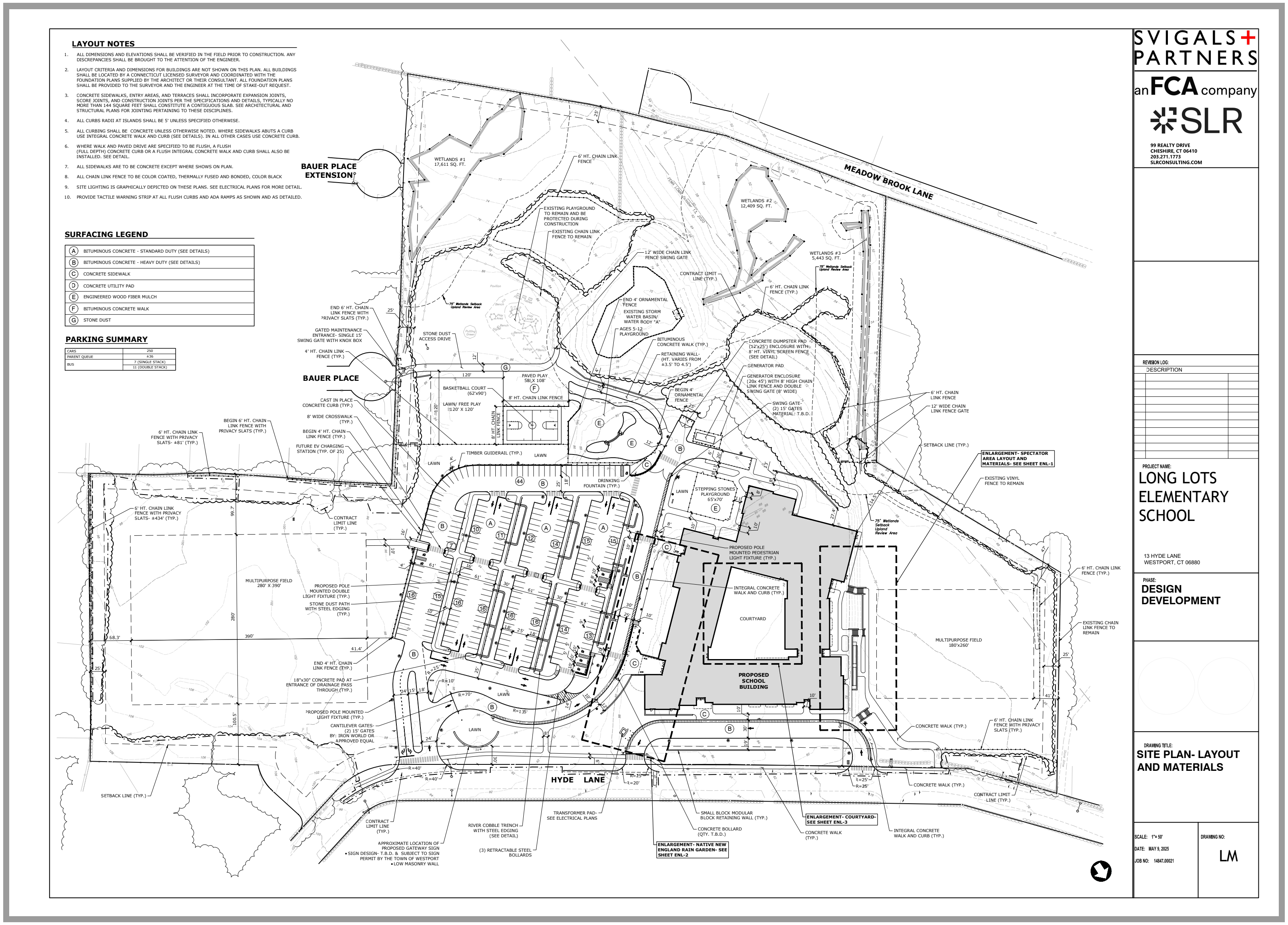
PHASE:
REGULATORY PERMIT SUBMISSION

DRAWING TITLE:
TITLE SHEET

SCALE: AS NOTED
DATE: MAY 14, 2025
JOB NO: 14847.00021
DRAWING NO:


Test Pit Logs
Date: August 21, 2024
Witnessed By: Rob Gowsinock, SLR Consulting
NOTE
- FOR BOUNDARY SURVEY INFORMATION, TOPOGRAPHIC INFORMATION, UTILITY (TOP OF FRAMES, INVERTS, ETC) INFORMATION SEE "PROPERTY & TOPOGRAPHIC SURVEY, PREPARED FOR: TOWN OF WESTPORT, LONG LOTS ELEMENTARY SCHOOL, 13 HYDE LANE, WESTPORT, CONNECTICUT", SCALE: 1"=40', DATED MAY 9, 2024, PREPARED BY LINDQUIST SURVEYING, LLC
EXISTING CONDITIONS LEGEND
PROPERTY LINE
ABUTMENT LINE
SETBACK LINE
MAJOR CONTOUR
MINOR CONTOUR
TREELINE
STONEWALL
SANITARY LINE
STORM DRAIN
WATER MAIN
GAS MAIN
ELECTRIC LINE
OVERHEAD WIRE
EDGE OF PAVEMENT W/ CURB
CHAIN LINK FENCE
VINYL FENCE
RETAINING WALL
WETLAND
CONTRACT LIMIT LINE
HYDRANT
WATER VALVE OR GAS VALVE
CATCH BASIN
SANITARY MANHOLE
UTILITY POLE
TRAFFIC SIGN
IRON PIPE
RAILROAD SPIKE
DRILL HOLE
POLE
MONUMENT
TREE / SHRUB
SLR-1 BORING
TP-1 TEST PIT
CHICKEN WIRE FENCING (FOR COMMUNITY GARDENS)
Meadow Brook Lane
Bauer Place Extension
Bauer Place
Hyde Lane
WETLANDS #1 17,611 SQ. FT.
WETLANDS #2 12,409 SQ. FT.
WETLANDS #3 5,443 SQ. FT.
75' WETLANDS SETBACK (UPLAND REVIEW AREA (TYP.)
CONTRACT LIMIT LINE (TYP.)
EXISTING STORM WATER BASIN/ WATER BODY "A"
Long Lots Elementary School FF = 96.0
CHICKEN WIRE FENCING
TEST WELL LOCATION
SETBACK LINE (TYP.)
15' WATERWAY PROTECTION LINE /ORDINANCE UPLAND REVIEW AREA (TYP.)
SVIGALS + PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM
REVISION LOG:
DESCRIPTION
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880
PHASE:
DESIGN DEVELOPMENT
DRAWING TITLE:
EXISTING CONDITIONS PLAN
SCALE: 1"=50'
DATE: MAY 9, 2025
JOB NO: 10407.00021
DRAWING NO:
EX


GENERAL NOTES
1. THIS DOCUMENT DEPICTS THE REMOVALS ON SITE AT THE COMPLETION OF THE PROJECT.
REMOVALS NOTES
1. ALL EXISTING TREES, WALKS, STRUCTURES, UTILITIES, FACILITIES, ETC. TO REMAIN ARE TO BE PROTECTED FROM ANY DAMAGE FOR THE ENTIRE CONTRACT PERIOD. ANY DAMAGE TO EXISTING FINISHES OR STRUCTURES NOT TO BE DISTURBED BY CONSTRUCTION ARE TO BE RESTORED BY THE CONTRACTOR TO ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE OWNER.
2. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE, MAY BE INCOMPLETE, AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR ON-SITE LOCATIONS OF EXISTING UTILITIES. CALL "CALL BEFORE YOU DIG" 1-800-922-4455.
3. PRIOR TO THE START OF CONSTRUCTION, ALL NECESSARY EROSION CONTROL MEASURES ARE TO BE INSTALLED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
4. ALL EXISTING SEWERS, PIPING AND UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. FOR REMOVAL OR RELOCATION OF ANY UTILITIES, GIVE NOTICE TO ALL UTILITY COMPANIES REGARDING DEMOLITION AND REMOVAL OF SERVICE LINES PER UTILITY COMPANY STANDARDS AND CAP ALL LINES BEFORE PROCEEDING WITH THE DEMOLITION WORK.
5. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. THE EROSION CONTROL SYSTEM DESCRIBED WITHIN THE CONSTRUCTION DOCUMENTS SHOULD BE CONSIDERED TO REPRESENT THE MINIMUM ACCEPTABLE STANDARDS FOR THIS PROJECT. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDENT UPON THE STAGE OF CONSTRUCTION, THE SEVERITY OF THE RAINFALL EVENT OR AS DEEMED NECESSARY AS A RESULT OF ON-SITE INSPECTIONS BY THE OWNER, THEIR REPRESENTATIVES OR THE JURISDICTIONAL AUTHORITIES. THESE ADDITIONAL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER. IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO ASSURE THAT THE STORM WATER DISCHARGE FROM THE SITE DOES NOT EXCEED THE TOLERANCES ESTABLISHED BY ANY OF THE JURISDICTIONAL AUTHORITIES.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL MATERIALS CREATED FROM ALL DEMOLITION IN A LAWFUL MANNER TO A LOCATION APPROVED BY THE OWNER AND GOVERNING AUTHORITIES SO THAT THE IMPROVEMENTS SHOWN ON THE REMAINING PLANS CAN BE CONSTRUCTED. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER THE SPECIFICATIONS.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL REQUIRED PERMITTING FOR DEMOLITION FROM RESPONSIBLE REGULATORS AND FULLY ACKNOWLEDGE AND COMPLY WITH ALL REQUIREMENTS PRIOR TO COMMENCING DEMOLITION WORK.
8. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE THE EXTENT OF DEMOLITION REQUIRED IN ORDER TO PERFORM THE CONTRACT WORK FOR THIS PROJECT. THE CONTRACTOR SHALL CONDUCT SITE VISITS AND SHALL EXAMINE ALL OF THE INFORMATION WITHIN THESE DOCUMENTS. ALL DISCREPANCIES AND/OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BID SUBMITTAL.
9. SELECTIVELY CLEAR INVASIVE WOODY VEGETATION ALONG HYDE LANE UNDER THE DIRECTION OF THE LANDSCAPE ARCHITECT.
10. REPAIR EXISTING STONE WALL AS NEEDED HYDE LANE.
REMOVALS LEGEND
REMOVE VEHICULAR, PEDESTRIAN BITUMINOUS CONCRETE PAVEMENT, ASSOCIATED CURBING AS APPLICABLE TO FULL DEPTH
REMOVE CONCRETE SIDEWALK, PADS, STAIRS OR SITE WALLS TO FULL DEPTH
REMOVE BITUMINOUS CONCRETE SIDEWALK TO FULL DEPTH
REMOVE PLAYGROUND WOOD CHIPS AND PLAYGROUND EQUIPMENT
STRIP, SCREEN AND STOCKPILE TOP SOIL FOR REUSE
SAWCUT LIMITS
EXISTING SCHOOL TO BE DEMOLISHED
PROPERTY LINE
CONTRACT LIMIT LINE
REMOVE EXISTING UTILITY PIPES
LIMIT OF UTILITY PIPE TO BE ABANDONED
REMOVE EXISTING UTILITY STRUCTURES
REMOVE EXISTING TREE
REMOVE EXISTING SITE FEATURE
SOIL HANDLING BOUNDARIES
EXISTING CONDITIONS LEGEND
BAUER PLACE EXT.
BAUER PLACE
MEADOW BROOK LANE
HYDE LANE
WETLANDS #1 17,611 SQ. FT.
WETLANDS #2 12,409 SQ. FT.
WETLANDS #3 5,443 SQ. FT.
EXISTING STORM WATER BASIN/ WATER BODY "A"
Long Lots Elementary School FF = 96.0
SOIL HANDLING BOUNDARIES
SETBACK LINE (TYP.)
PROPOSED TREE LINE (TYP.)
TEST WELL LOCATION
SVIGALS + PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM
REVISION LOG:
DESCRIPTION
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880
PHASE:
DESIGN DEVELOPMENT
DRAWING TITLE:
REMOVALS PLAN
SCALE: 1"= 50'
DATE: MAY 9, 2025
JOB NO: 14847.00021
DRAWING NO:
RM


LAYOUT NOTES
SURFACING LEGEND
PARKING SUMMARY
BAUER PLACE EXTENSION
BAUER PLACE
MEADOW BROOK LANE
HYDE LANE
PROPOSED SCHOOL BUILDING
COURTYARD
SVIGALS+PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880
PHASE:
DESIGN DEVELOPMENT
DRAWING TITLE:
SITE PLAN- LAYOUT AND MATERIALS
LM

PLANTING NOTES

1. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO EXCAVATING PLANT PITS.
2. SEED ALL DISTURBED AREAS TO LAWN UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL PROVIDE A 6" MINIMUM DEPTH OF SCREENED TOPSOIL, AS SPECIFIED, FOR ALL LAWN AREAS. AS NOTED ON THE DETAILS, SUBGRADE BENEATH PROPOSED LAWN AREAS SHALL BE LOOSENED OR SCARIFIED TO A MINIMUM DEPTH OF 24 INCHES.
3. ALL PLANTING BEDS SHALL HAVE 12" MINIMUM DEPTH OF TOPSOIL.
4. THE CONTRACTOR SHALL PROVIDE A 4" MIN. DEPTH OF SHREDDED HEMLOCK BARK MULCH OVER ALL PLANTING BEDS AND TREE PLANTINGS. MULCHED PLANT BEDS SHALL EXTEND 12" FURTHER THAN THE ADJACENT PLANTINGS. NO DYED MULCH.
5. ALL PLANT MATERIAL IS SUBJECT TO INSPECTION AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO AND AFTER PLANTING.
6. PLANT SPECIES MAY BE ADJUSTED BASED ON AVAILABILITY AT TIME OF PLANTING. ALL PLANT MATERIAL SUBSTITUTIONS ARE SUBJECT TO REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT.
7. ALL PLANT MATERIALS SHALL CARRY A FULL GUARANTEE FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, TO INCLUDE PROMPT TREATMENT OR REMOVAL AND REPLACEMENT OF ANY PLANTS FOUND TO BE IN AN UNHEALTHY CONDITION BY THE LANDSCAPE ARCHITECT. ALL REPLACEMENTS SHALL BE OF THE SAME KIND AND SIZE OF PLANTS SPECIFIED IN THE PLANT LIST.
8. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER PLANTING AND SHALL CONTINUE UNTIL ACCEPTANCE BY THE LANDSCAPE ARCHITECT AT THE END OF THE WARRANTY PERIOD. MAINTENANCE SHALL INCLUDE WATERING, MULCHING, TIGHTENING & REPLACING OF GUYS, REPLACEMENT OF SICK OR DEAD PLANTS, RESETTING PLANTS TO PROPER GRADE OR UPRIGHT (PLUMB) POSITION, RESTORATION OF SAUCERS, AND ALL OTHER CARE NEEDED FOR PROPER GROWTH OF THE PLANTS.
9. WHERE A SIZE RANGE IS SPECIFIED AT LEAST 50% OF PLANTS PROVIDED SHALL BE OF THE LARGER SIZE.
10. CONTRACTOR TO REMOVE TREE STAKES AFTER ONE GROWING SEASON.
11. TAKE NOTE TO PROTECT ROOT ZONES OF EXISTING TREES TO REMAIN DURING CONSTRUCTION AS SHOWN ON PLANS.

OVERALL PLANT SCHEDULE

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONT.	COMMENTS
TREES						
AG	T.B.D	Acer griseum	Paperbark Maple	2.5"-3.0" Cal.	B&B	FULL & DENSE
AR	T.B.D	Acer rubrum 'Red Sunset'	Red Sunset Red Maple	4" Cal.	B&B	FULL & DENSE
AM	T.B.D	Amelanchier Canadensis	Shadblow Serviceberry	2.5"-3.0" Cal.	B&B	FULL & DENSE
CA	T.B.D	Carpinus caroliniana	American Hornbeam	2.5"-3.0" Cal.	B&B	FULL & DENSE
CS	T.B.D	Cornus x rutgersensis 'Rutgan'	Stellar Pink® Dogwood	2.5"-3.0" Cal.	B&B	FULL & DENSE
GS	T.B.D	Gleditsia triacanthos inermis 'Skyline'	Skyline Honey Locust	4" Cal.	B&B	FULL & DENSE
QB	T.B.D	Quercus bicolor	Swamp White Oak	4" Cal.	B&B	FULL & DENSE
QP	T.B.D	Quercus palustris	Pin Oak	4" Cal.	B&B	FULL & DENSE
SP	T.B.D	Stewartia pseudocamellia	Japanese Stewartia	2.5"-3.0" Cal.	B&B	FULL & DENSE
UC	T.B.D	Ulmus x 'Frontier'	Frontier Elm	4" Cal.	B&B	FULL & DENSE
ZG	T.B.D	Zelkova serrata 'Green Vase'	Green Vase Japanese Zelkova	4" Cal.	B&B	FULL & DENSE
EVERGREEN TREES						
AC	T.B.D	Abies concolor	White Fir	6`/7` HT.	B&B	FULL & DENSE
PO	T.B.D	Picea omorika	Serbian Spruce	6`/7` HT.	B&B	FULL & DENSE
PC	T.B.D	Picea pungens	Colorado Spruce	8`/10` HT.	B&B	FULL & DENSE
TN2	T.B.D	Thuja occidentalis 'Nigra'	Black Arborvitae	6`/7` HT.	B&B	FULL & DENSE
TC	T.B.D	Thuja plicata 'Green Giant'	Green Giant Western Arborvitae	6`/7` HT.	B&B	FULL & DENSE

MEADOW AND SEED MIX SCHEDULE

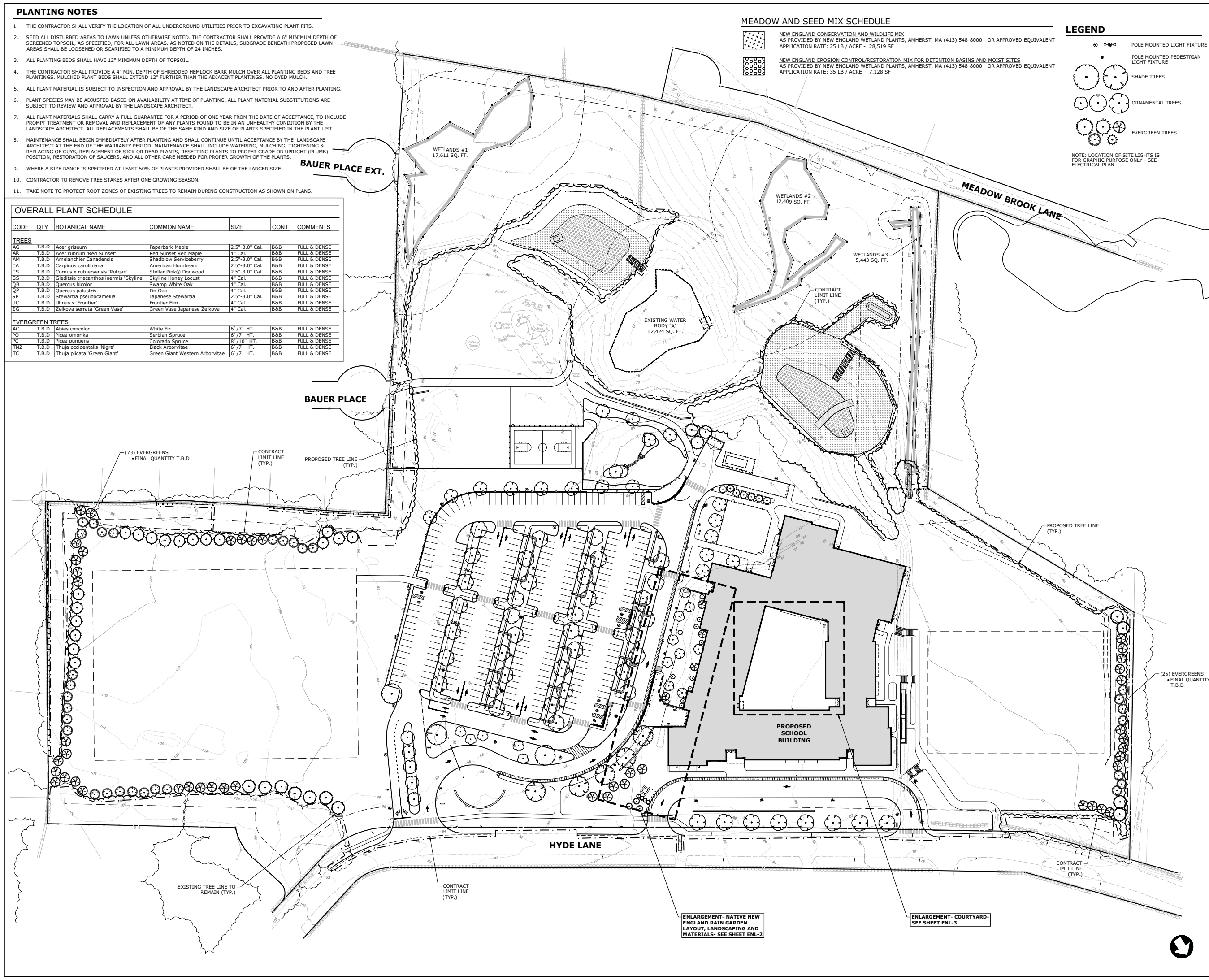
NEW ENGLAND CONSERVATION AND WILDLIFE MIX
AS PROVIDED BY NEW ENGLAND WETLAND PLANTS, AMHERST, MA (413) 548-8000 - OR APPROVED EQUIVALENT
APPLICATION RATE: 25 LB / ACRE - 28,519 SF

NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES
AS PROVIDED BY NEW ENGLAND WETLAND PLANTS, AMHERST, MA (413) 548-8000 - OR APPROVED EQUIVALENT
APPLICATION RATE: 35 LB / ACRE - 7,128 SF

LEGEND

POLE MOUNTED LIGHT FIXTURE
POLE MOUNTED PEDESTRIAN LIGHT FIXTURE
SHADE TREES
ORNAMENTAL TREES
EVERGREEN TREES

NOTE: LOCATION OF SITE LIGHTS IS FOR GRAPHIC PURPOSE ONLY - SEE ELECTRICAL PLAN



SVIGALS + PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

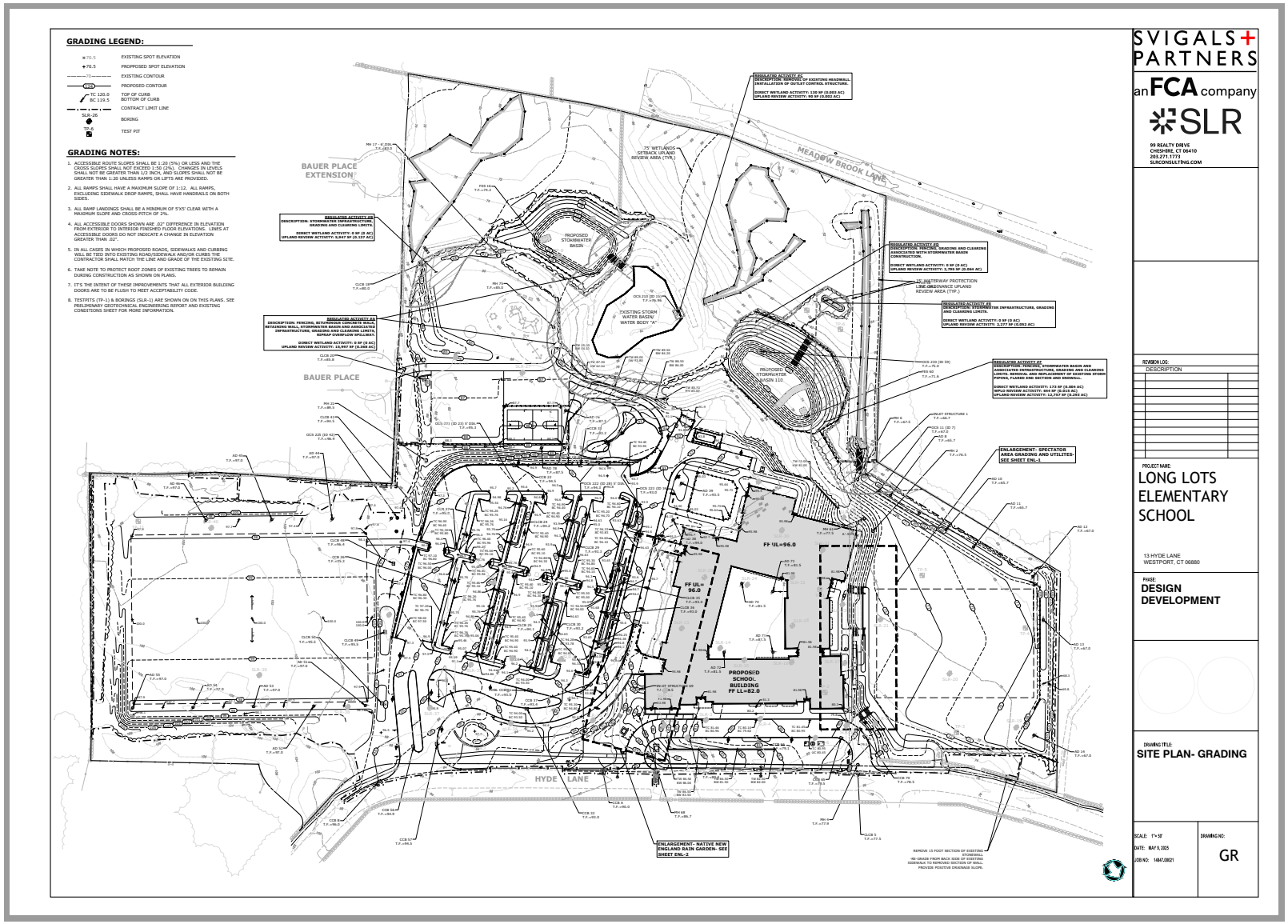
REVISION LOG:
DESCRIPTION

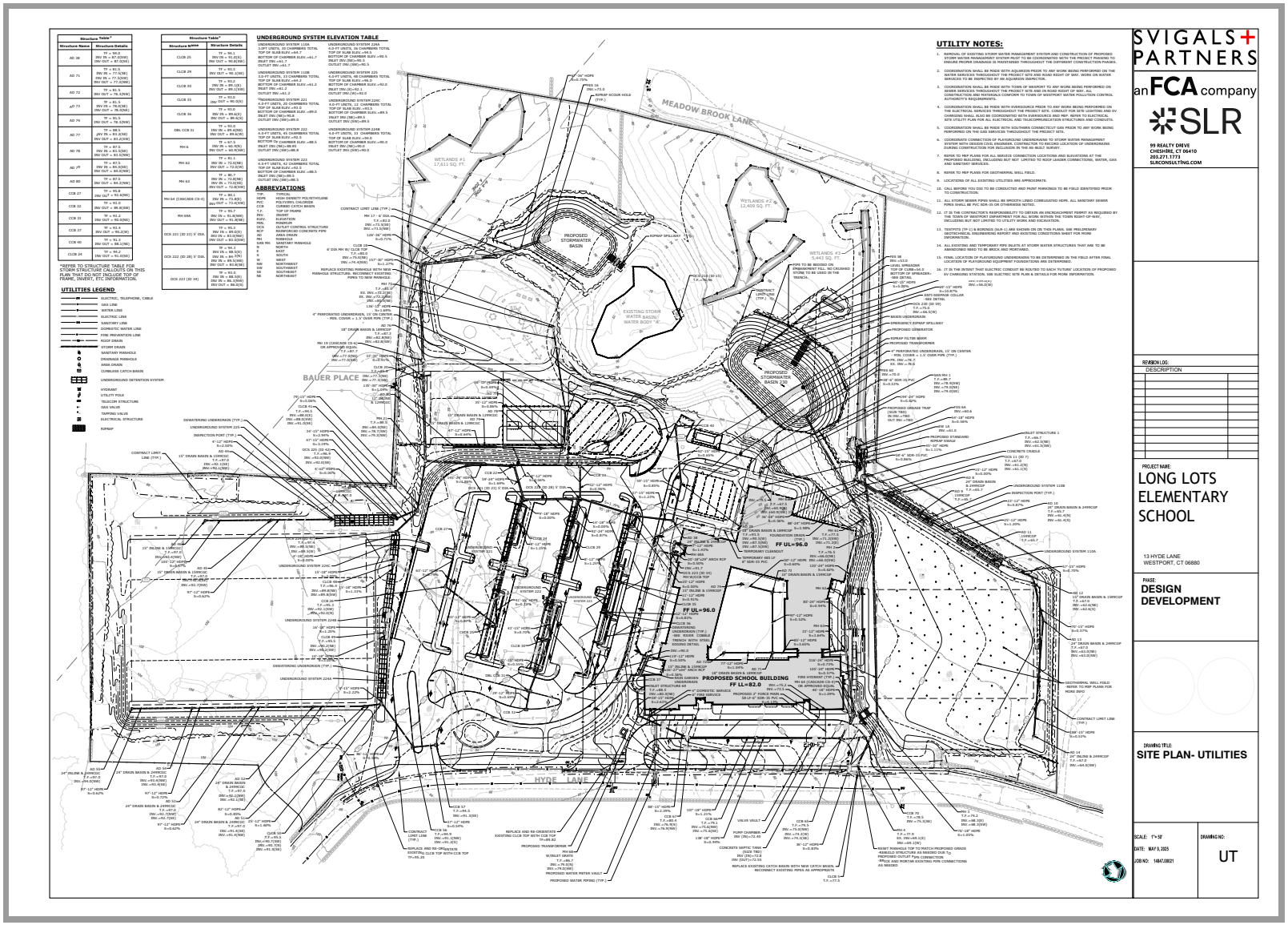
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880

PHASE:
REGULATORY PERMIT SUBMISSION

DRAWING TITLE:
SITE PLAN- LANDSCAPING

SCALE: 1"= 50'
DATE: MAY 14, 2025
JOB NO: 14847.00021
DRAWING NO: LS


GRADING LEGEND:
EXISTING SPOT ELEVATION
PROPOSED SPOT ELEVATION
EXISTING CONTOUR
PROPOSED CONTOUR
TOP OF CURB
BOTTOM OF CURB
CONTRACT LIMIT LINE
BORING
TEST PIT
GRADING NOTES:
1. ACCESSIBLE ROUTE SLOPES SHALL BE 1:20 (5%) OR LESS AND THE CROSS SLOPES SHALL NOT EXCEED 1:50 (2%). CHANGES IN LEVELS SHALL NOT BE GREATER THAN 1/2 INCH, AND SLOPES SHALL NOT BE GREATER THAN 1:20 UNLESS RAMPS OR LIFTS ARE PROVIDED.
2. ALL RAMPS SHALL HAVE A MAXIMUM SLOPE OF 1:12. ALL RAMPS, EXCLUDING SIDEWALK DROP RAMPS, SHALL HAVE HANDRAILS ON BOTH SIDES.
3. ALL RAMP LANDINGS SHALL BE A MINIMUM OF 5'X5' CLEAR WITH A MAXIMUM SLOPE AND CROSS-PITCH OF 2%.
4. ALL ACCESSIBLE DOORS SHOWN ARE .02" DIFFERENCE IN ELEVATION FROM EXTERIOR TO INTERIOR FINISHED FLOOR ELEVATIONS. LINES AT ACCESSIBLE DOORS DO NOT INDICATE A CHANGE IN ELEVATION GREATER THAN .02".
5. IN ALL CASES IN WHICH PROPOSED ROADS, SIDEWALKS AND CURBING MEET EXISTING, THE EXISTING ROAD/SIDEWALK AND/OR CURBS THE CONTRACTOR SHALL MATCH THE LINE AND GRADE OF THE EXISTING SITE.
6. TAKE NOTE TO PROTECT ROOT ZONES OF EXISTING TREES TO REMAIN DURING CONSTRUCTION AS SHOWN ON PLANS.
7. IT'S THE INTENT OF THESE IMPROVEMENTS THAT ALL EXTERIOR BUILDING DOORS ARE TO BE FLUSH TO MEET ACCEPTABILITY CODE.
8. TESTPITS (TP-1) & BORINGS (SLR-1) ARE SHOWN ON ON THIS PLANS. SEE PRELIMINARY GEOTECHNICAL ENGINEERING REPORT AND EXISTING CONDITIONS SHEET FOR MORE INFORMATION.
BAUER PLACE EXTENSION
BAUER PLACE
MEADOW BROOK LANE
HYDE LANE
PROPOSED STORMWATER BASIN
EXISTING STORM WATER BASIN/ WATER BODY "A"
PROPOSED STORMWATER BASIN 110
PROPOSED SCHOOL BUILDING FF LL=82.0
FF UL=96.0
FF UL= 96.0
75' WETLAND SETBACK UPLAND REVIEW AREA (TYP.)
ENLARGEMENT- NATIVE NEW ENGLAND RAIN GARDEN- SEE SHEET ENL-2
ENLARGEMENT- SPECTATOR AREA GRADING AND UTILITIES- SEE SHEET ENL-1
SVIGALS + PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM
REVISION LOG:
DESCRIPTION
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880
PHASE:
DESIGN DEVELOPMENT
DRAWING TITLE:
SITE PLAN- GRADING
SCALE: 1"= 50'
DATE: MAY 9, 2025
JOB NO: 10407.00021
DRAWING NO:
GR


UTILITY NOTES:
UNDERGROUND SYSTEM ELEVATION TABLE
ABBREVIATIONS
UTILITIES LEGEND
PROPOSED SCHOOL BUILDING
FF UL=96.0
FF LL=82.0
PROPOSED STORMWATER BASIN
EXISTING STORM WATER BASIN/ WATER BODY "A"
WETLANDS #1 17,611 SQ. FT.
WETLANDS #2 12,499 SQ. FT.
WETLANDS #3 5,443 SQ. FT.
MEADOW BROOK LANE
BAUER PLACE
HYDE LANE
SVIGALS + PARTNERS
an FCA company
SLR
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CHESHIRE, CT 06410
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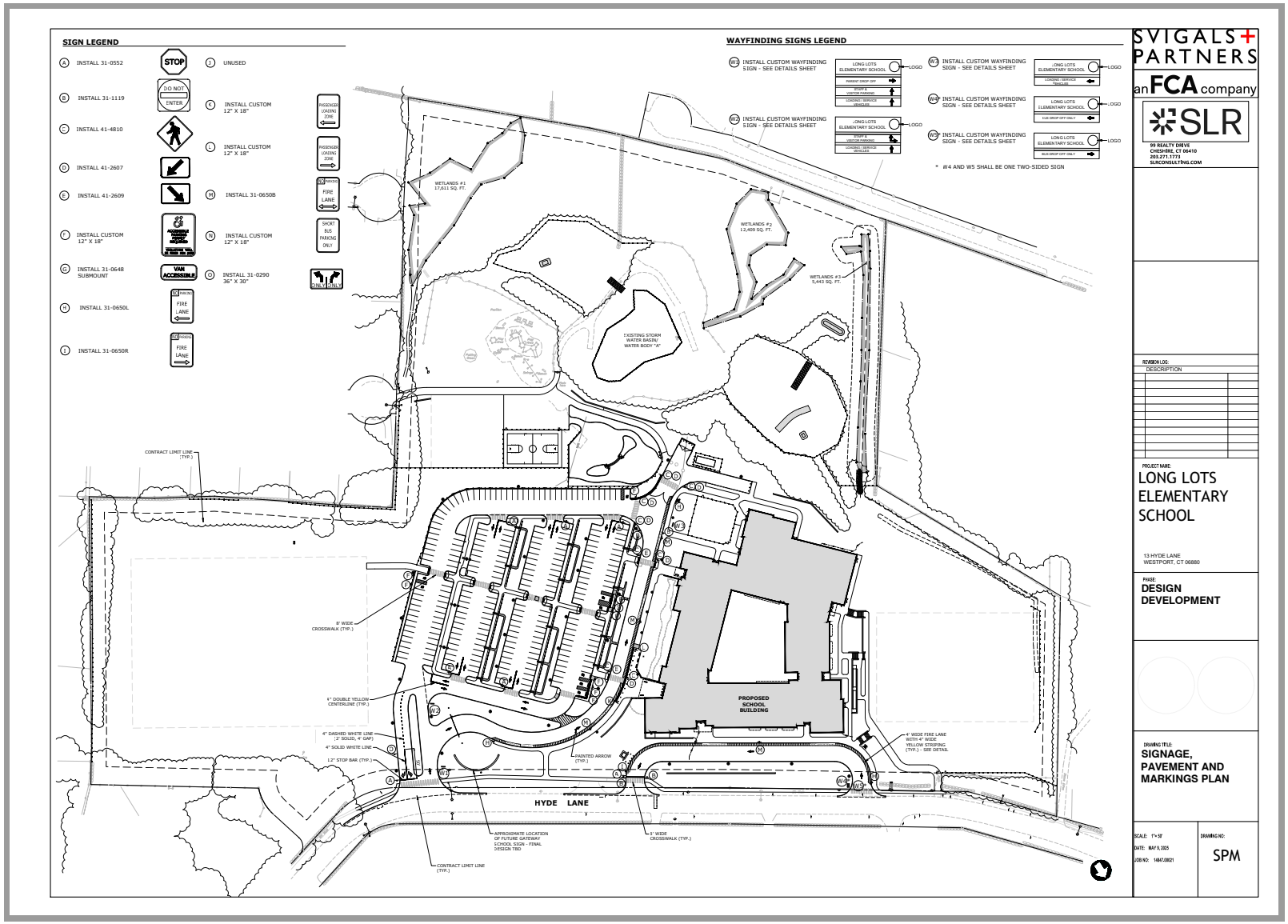
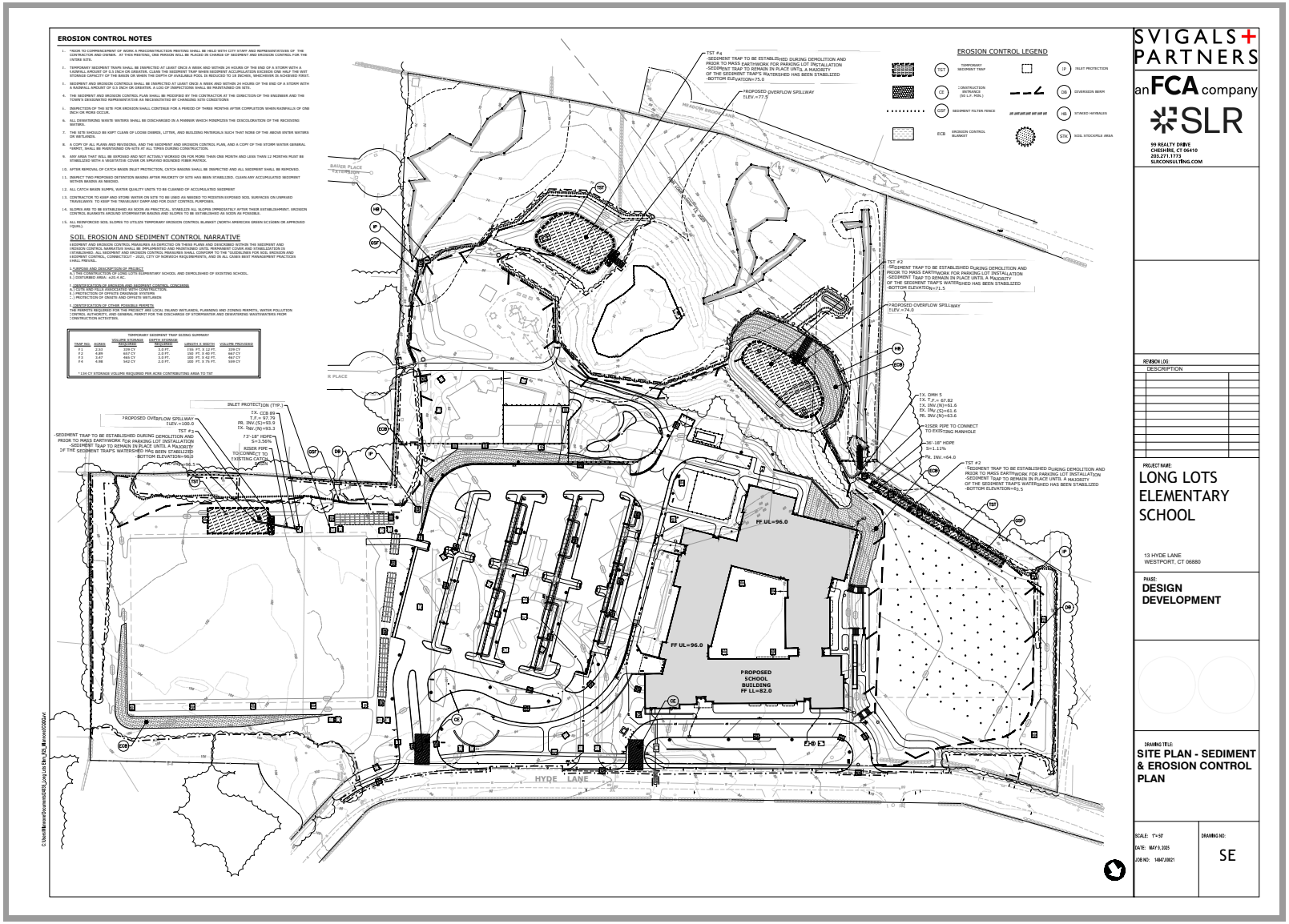
SLRCONSULTING.COM
REVISION LOG:
DESCRIPTION
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880
PHASE:
DESIGN DEVELOPMENT
DRAWING TITLE:
SITE PLAN- UTILITIES
SCALE: 1"= 50'
DATE: MAY 9, 2025
JOB NO: 10407.00021
DRAWING NO:
UT


SIGN LEGEND
A INSTALL 31-0552
B INSTALL 31-1119
C INSTALL 41-4810
D INSTALL 41-2607
E INSTALL 41-2609
F INSTALL CUSTOM 12" X 18"
G INSTALL 31-0648 SUBMOUNT
H INSTALL 31-0650L
I INSTALL 31-0650R
J UNUSED
K INSTALL CUSTOM 12" X 18"
L INSTALL CUSTOM 12" X 18"
M INSTALL 31-0650B
N INSTALL CUSTOM 12" X 18"
O INSTALL 31-0290 36" X 30"
WAYFINDING SIGNS LEGEND
W1 INSTALL CUSTOM WAYFINDING SIGN - SEE DETAILS SHEET
W2 INSTALL CUSTOM WAYFINDING SIGN - SEE DETAILS SHEET
W3 INSTALL CUSTOM WAYFINDING SIGN - SEE DETAILS SHEET
W4 INSTALL CUSTOM WAYFINDING SIGN - SEE DETAILS SHEET
W5 INSTALL CUSTOM WAYFINDING SIGN - SEE DETAILS SHEET
* W4 AND W5 SHALL BE ONE TWO-SIDED SIGN
WETLANDS #1 17,611 SQ. FT.
WETLANDS #2 12,409 SQ. FT.
WETLANDS #3 5,443 SQ. FT.
EXISTING STORM WATER BASIN/ WATER BODY "A"
CONTRACT LIMIT LINE (TYP.)
8' WIDE CROSSWALK (TYP.)
4" DOUBLE YELLOW CENTERLINE (TYP.)
4" DASHED WHITE LINE (2' SOLID, 4' GAP)
4" SOLID WHITE LINE
12" STOP BAR (TYP.)
PAINTED ARROW (TYP.)
PROPOSED SCHOOL BUILDING
4' WIDE FIRE LANE WITH 4" WIDE YELLOW STRIPING (TYP.) - SEE DETAIL
HYDE LANE
APPROXIMATE LOCATION OF FUTURE GATEWAY SCHOOL SIGN - FINAL DESIGN TBD
5' WIDE CROSSWALK (TYP.)
CONTRACT LIMIT LINE (TYP.)
SVIGALS + PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM
REVISION LOG:
DESCRIPTION
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880
PHASE:
DESIGN DEVELOPMENT
DRAWING TITLE:
SIGNAGE, PAVEMENT AND MARKINGS PLAN
SCALE: 1"= 50'
DATE: MAY 9, 2025
JOB NO: 10407.08021
DRAWING NO:
SPM


EROSION CONTROL NOTES
SOIL EROSION AND SEDIMENT CONTROL NARRATIVE
EROSION CONTROL LEGEND
TST #4
-SEDIMENT TRAP TO BE ESTABLISHED DURING DEMOLITION AND PRIOR TO MASS EARTHWORK FOR PARKING LOT INSTALLATION
-SEDIMENT TRAP TO REMAIN IN PLACE UNTIL A MAJORITY OF THE SEDIMENT TRAP'S WATERSHED HAS BEEN STABILIZED
-BOTTOM ELEVATION=75.0
PROPOSED OVERFLOW SPILLWAY ELEV.=77.3
TST #2
-SEDIMENT TRAP TO BE ESTABLISHED DURING DEMOLITION AND PRIOR TO MASS EARTHWORK FOR PARKING LOT INSTALLATION
-SEDIMENT TRAP TO REMAIN IN PLACE UNTIL A MAJORITY OF THE SEDIMENT TRAP'S WATERSHED HAS BEEN STABILIZED
-BOTTOM ELEVATION=71.5
PROPOSED OVERFLOW SPILLWAY ELEV.=74.0
TST #3
-SEDIMENT TRAP TO BE ESTABLISHED DURING DEMOLITION AND PRIOR TO MASS EARTHWORK FOR PARKING LOT INSTALLATION
-SEDIMENT TRAP TO REMAIN IN PLACE UNTIL A MAJORITY OF THE SEDIMENT TRAP'S WATERSHED HAS BEEN STABILIZED
-BOTTOM ELEVATION=96.0
PROPOSED OVERFLOW SPILLWAY ELEV.=100.0
INLET PROTECTION (TYP.)
TST #2
-SEDIMENT TRAP TO BE ESTABLISHED DURING DEMOLITION AND PRIOR TO MASS EARTHWORK FOR PARKING LOT INSTALLATION
-SEDIMENT TRAP TO REMAIN IN PLACE UNTIL A MAJORITY OF THE SEDIMENT TRAP'S WATERSHED HAS BEEN STABILIZED
-BOTTOM ELEVATION=91.5
FF UL=96.0
FF UL=96.0
PROPOSED SCHOOL BUILDING FF LL=82.0
HYDE LANE
BAUER PLACE EXTENSION
MEADOW ROAD
SVIGALS + PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
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SLRCONSULTING.COM
REVISION LOG:
DESCRIPTION
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880
PHASE:
DESIGN DEVELOPMENT
DRAWING TITLE:
SITE PLAN - SEDIMENT & EROSION CONTROL PLAN
SCALE: 1"=50'
DATE: MAY 9, 2025
JOB NO: 10447.00021
DRAWING NO:
SE

SEDIMENT & EROSION CONTROL SPECIFICATIONS

THESE GUIDELINES SHALL APPLY TO ALL WORK CONSISTING OF ANY AND ALL TEMPORARY AND/OR PERMANENT MEASURES TO CONTROL WATER POLLUTION AND SOIL EROSION, AS MAY BE REQUIRED, DURING THE CONSTRUCTION OF THE PROJECT

IN GENERAL, ALL CONSTRUCTION ACTIVITIES SHALL PROCEED IN SUCH A MANNER SO AS NOT TO POLLUTE ANY WETLANDS, WATERCOURSE, WATER BODY, AND CONDUIT CARRYING WATER, ETC. THE CONTRACTOR SHALL LIMIT, INSOFAR AS POSSIBLE, THE SURFACE AREA OF EARTH MATERIALS EXPOSED BY CONSTRUCTION METHODS AND IMMEDIATELY PROVIDE PERMANENT AND TEMPORARY POLLUTION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT WETLANDS, WATERCOURSES, AND WATER BODIES, AND TO PREVENT, INSOFAR AS POSSIBLE, EROSION ON THE SITE.

LAND GRADING

1. THE RESHAPING OF THE GROUND SURFACE BY EXCAVATION AND FILLING OR A COMBINATION OF BOTH, TO OBTAIN PLANNED GRADES, SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING CRITERIA:

   a. THE PERMANENT CUT FACE OF EARTH EXCAVATION SHALL NOT BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).

   b. THE PERMANENT EXPOSED FACES OF EARTHEN FILLS SHALL NOT BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).

   c. THE CUT FACE OF ROCK EXCAVATION SHALL NOT BE STEEPER THAN ONE HORIZONTAL TO FOUR VERTICAL (1:4).

   d. PROVISION SHOULD BE MADE TO CONDUCT SURFACE WATER SAFELY TO STORM DRAINS TO PREVENT SURFACE RUNOFF FROM DAMAGING CUT FACES AND FILL SLOPES.

   e. EXCAVATIONS SHOULD NOT BE MADE SO CLOSE TO PROPERTY LINES AS TO ENDANGER ADJOINING PROPERTY WITHOUT PROTECTING SUCH PROPERTY FROM EROSION, SLIDING, SETTLING, OR CRACKING.

   f. NO FILL SHOULD BE PLACED WHERE IT WILL SLIDE OR WASH UPON THE PREMISES OF ANOTHER OWNER OR UPON ADJACENT WETLANDS, WATERCOURSES, OR WATER BODIES BODIES.

   g. PRIOR TO ANY REGRADING, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PLACED AT THE ENTRANCE TO THE WORK AREA IN ORDER TO REDUCE MUD AND OTHER SEDIMENTS FROM LEAVING THE SITE.

TOPSOILING

GENERAL:

1. TOPSOIL SHALL BE SPREAD OVER ALL EXPOSED AREAS IN ORDER TO PROVIDE A SOIL MEDIUM HAVING FAVORABLE CHARACTERISTICS FOR THE ESTABLISHMENT, GROWTH, AND MAINTENANCE OF VEGETATION.
2. UPON ATTAINING FINAL UPGRADES, SCARIFY SURFACE TO PROVIDE A GOOD BOND WITH TOPSOIL.
3. REMOVE ALL LARGE STONES, TREE LIMBS, ROOTS AND CONSTRUCTION
4. APPLY LIME ACCORDING TO SOIL TEST OR AT THE RATE OF TWO (2) TONS PER ACRE.

MATERIAL:

1. TOPSOIL SHOULD HAVE PHYSICAL, CHEMICAL, AND BIOLOGICAL CHARACTERISTICS FAVORABLE TO THE GROWTH OF PLANTS.
2. TOPSOIL SHOULD HAVE A SANDY OR LOAMY TEXTURE.
3. TOPSOIL SHOULD BE RELATIVELY FREE OF SUBSOIL MATERIAL AND MUST BE FREE OF STONES (OVER 1" IN DIAMETER), LUMPS OF SOIL, ROOTS, TREE LIMBS, TRASH, OR CONSTRUCTION DEBRIS. IT SHOULD BE FREE OF ROOTS OR RHIZOMES SUCH AS THISTLE, KNOTGRASS, AND QUAKERS.
4. AN ORGANIC MATTER CONTENT OF SIX PERCENT (6%) IS REQUIRED. AVOID LIGHT COLORED SUBSOIL MATERIAL.
5. SOLUBLE SALT CONTENT OF OVER 500 PARTS PER MILLION (PM) IS LESS SUITABLE. AVOID TIDAL MARSH SOILS BECAUSE OF HIGH SALT CONTENT AND SULFUR ACIDITY.
6. THE pH SHOULD BE MORE THAN 6.0. IF LESS, ADD LIME TO INCREASE pH TO AN ACCEPTABLE LEVEL.

APPLICATION:

1. AVOID SPREADING WHEN TOPSOIL IS WET OR FROZEN.
2. SPREAD TOPSOIL UNIFORMLY TO A DEPTH OF AT LEAST SIX INCHES (6") OR TO THE DEPTH SHOWN ON THE LANDSCAPING PLANS.

TEMPORARY VEGETATIVE COVER

GENERAL:

1. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED ON ALL UNPROTECTED AREAS THAT PRODUCE SEDIMENT, AREAS WHERE FINAL GRADING HAS BEEN COMPLETED, AND AREAS WHERE THE ESTIMATED PERIOD OF BARE SOIL EXPOSURE IS MORE THAN 30 DAYS. AREAS TO BE LEFT EXPOSED FOR MORE THAN 30 DAYS SHALL BE SEEDED WITHIN 7 DAYS OF SUSPENSION OF CONSTRUCTION ACTIVITIES. TEMPORARY VEGETATIVE COVER SHALL BE APPLIED IF AREAS WILL NOT BE PERMANENTLY SEEDED BY SEPTEMBER 1.

SITE PREPARATION:

1. INSTALL REQUIRED SURFACE WATER CONTROL MEASURES.
2. REMOVE LOOSE ROCK, STONE, AND CONSTRUCTION DEBRIS FROM AREA.
3. APPLY LIME ACCORDING TO SOIL TEST OR AT A RATE OF ONE (1) TON OF GROUND DOLOMITIC LIMESTONE PER ACRE (5 LBS. PER 100 SQ. FT.).
4. APPLY FERTILIZER ACCORDING TO SOIL TEST OR AT THE RATE OF 300 LBS. OF 10-10-10 PER ACRE (7 LBS. PER 1,000 SQ. FT.) AND SECOND APPLICATION OF 200 LBS. OF 10-10-10- (5 LBS. PER 1,000 SQ. FT.) WHEN GRASS IS FOUR INCHES (4") TO SIX INCHES (6") HIGH. APPLY ONLY WHEN GRASS IS DRY.
5. UNLESS HYDROSEEDED, WORK IN LIME AND FERTILIZER TO A DEPTH OF FOUR (4") INCHES USING A DISK OR ANY SUITABLE EQUIPMENT.
6. TILLAGE SHOULD ACHIEVE A REASONABLY UNIFORM LOOSE SEEDBED. WORK ON CONTOUR IF SITE IS SLOPING.

ESTABLISHMENT:

1. SELECT APPROPRIATE SPECIES FOR THE SITUATION. NOTE RATES AND SEEDING DATES (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW).
2. APPLY SEED UNIFORMLY ACCORDING TO THE RATE INDICATED BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATION.
3. UNLESS HYDROSEEDED, COVER RYEGRASS SEEDS WITH NOT MORE THAN 1/4 INCH OF SOIL USING SUITABLE EQUIPMENT.
4. MULCH IMMEDIATELY AFTER SEEDING IF REQUIRED. (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW.) APPLY STRAW OR HAY MULCH AND ANCHOR TO SLOPES GREATER THAN 3% OR WHERE CONCENTRATED FLOW WILL OCCUR.

PERMANENT VEGETATIVE COVER

GENERAL:

1. PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED AS VARIOUS SECTIONS OF THE PROJECT ARE COMPLETED IN ORDER TO STABILIZE THE SOIL, REDUCE DOWNSTREAM DAMAGE FROM SEDIMENT AND RUNOFF, AND TO ENHANCE THE AESTHETIC NATURE OF THE SITE. IT WILL BE APPLIED TO ALL CONSTRUCTION AREAS SUBJECT TO EROSION WHERE FINAL GRADING HAS BEEN COMPLETED AND A PERMANENT COVER IS NEEDED SHALL BE SEEDED WITHIN 7 DAYS OF ESTABLISHMENT OF FINAL GRADES.

SITE PREPARATION:

1. INSTALL REQUIRED SURFACE WATER CONTROL MEASURES.
2. REMOVE LOOSE ROCK, STONE, AND CONSTRUCTION DEBRIS FROM AREA.
3. PERFORM ALL PLANTING OPERATIONS PARALLEL TO THE CONTOURS OF THE SLOPE.
4. APPLY TOPSOIL AS INDICATED ELSEWHERE HEREIN.
5. APPLY FERTILIZER ACCORDING TO SOIL TEST OR:
   - SPREAD SEEDING: WORK DEEPLY IN SOIL, BEFORE SEEDING, 300 LBS. OF 10-10-10 FERTILIZER PER ACRE (7 LBS. PER 1,000 SQ. FT.); THEN SIX (6) TO EIGHT (8) WEEKS LATER, APPLY ON THE SURFACE AN ADDITIONAL 300 LBS. OF 10-10-10 FERTILIZER PER ACRE. AFTER SEPTEMBER 1, TEMPORARY VEGETATIVE COVER SHALL BE APPLIED.
   - FALL SEEDING: WORK DEEPLY IN SOIL, BEFORE SEEDING, 600 LBS. OF 10-10-10 FERTILIZER PER ACRE (14 LBS. PER 1,000 SQ. FT.).

VEGETATIVE COVER SELECTION & MULCHING

TEMPORARY VEGETATIVE COVER:

PERENNIAL RYEGRASS 3 LBS./1,000 SQ.FT.
(LOLIUM PERENNE)

* PERMANENT VEGETATIVE COVER:

BARON KENTUCKY BLUEGRASS	60%
JAMESTOWN II CHEWINGS FESCUE	20%
PALMER PERENNIAL RYEGRASS	20%

* LOFTS - "TRIPLEX GENERAL" MIX OR APPROVED EQUAL.
RECOMMENDED TIME SEEDING. 5 LB./1000 S.F. SEEDING RATE.

SPRING SEEDING: 4/1 to 5/31

FALL SEEDING: 8/16 to 10/15

TEMPORARY MULCHING:

STRAY OR HAY 70-90 LBS./1,000 SQ.FT.
(TEMPORARY VEGETATIVE AREAS)

WOOD FIBER IN HYDROMULCH SLURRY 25-50 LBS./1,000 SQ. FT.

ESTABLISHMENT:

1. SMOOTH AND FIRM SEEDBED WITH CULTIPACKER OR OTHER SIMILAR EQUIPMENT PRIOR TO SEEDING (EXCEPT WHEN HYDROSEEDING).
2. SELECT ADAPTED SEED MIXTURE FOR THE SPECIFIC SITUATION. NOTE RATES AND THE SEEDING DATES (SEE VEGETATIVE COVER SELECTION & MULCHING SPEC. BELOW).
3. APPLY SEED UNIFORMLY ACCORDING TO RATE INDICATED, BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATION.
4. COVER GRASS AND LEGUME SEED WITH NOT MORE THAN 1/4 INCH OF SOIL WITH SUITABLE EQUIPMENT (EXCEPT WHEN HYDROSEEDING).
5. MULCH IMMEDIATELY AFTER SEEDING, IF REQUIRED, ACCORDING TO TEMPORARY MULCHING SPECIFICATIONS. (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW).
6. USE PROPER INOCULANT ON ALL LEGUME SEEDINGS, USE FOUR (4) TIMES NORMAL RATES WHEN HYDROSEEDING.
7. USE SOD WHERE THERE IS A HEAVY CONCENTRATION OF WATER AND IN CRITICAL AREAS WHERE IT IS IMPORTANT TO GET A QUICK VEGETATIVE COVER TO PREVENT EROSION.

MAINTENANCE:

1. TEST FOR SOIL ACIDITY LIME AS REQUIRED.
2. ON SITES WHERE GRASSES PREDOMINATE, BROADCAST ANNUALLY 500 POUNDS OF 10-10-10 FERTILIZER PER ACRE (12 LBS. PER 1,000 SQ. FT.) OR AS NEEDED ACCORDING TO ANNUAL SOIL TESTS.
3. ON SITES WHERE LEGUMES PREDOMINATE, BROADCAST AS INDICATED BY SOIL TEST 300 POUNDS OF 0-20-20 OR EQUIVALENT PER ACRE (8 LBS PER 1,000 SQ. FT.).

EROSION CHECKS

GENERAL:

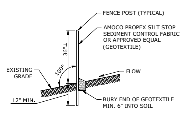
1. TEMPORARY PERVIOUS BARRIERS USING BALES OF HAY OR STRAW, HELD IN PLACE WITH STAKES DRIVEN THROUGH THE BALES AND INTO THE GROUND OR GEOTEXTILE FABRIC FASTENED TO A FENCE POST AND BURIED INTO THE GROUND, SHALL BE INSTALLED AND MAINTAINED AS REQUIRED TO CHECK EROSION AND REDUCE SEDIMENTATION.

CONSTRUCTION:

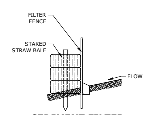
1. BALES SHOULD BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED INTO THE SOIL A MINIMUM OF FOUR (4") INCHES.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY WOOD STAKES OR REINFORCEMENT BARS DRIVEN THROUGH THE BALES AND INTO THE GROUND. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD THE PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. GEOTEXTILE FABRIC SHALL BE SECURELY ANCHORED AT THE TOP OF A THREE FOOT (3') HIGH FENCE AND BURIED A MINIMUM OF FOUR INCHES (4") TO THE SOIL. SEAMS BETWEEN SECTIONS OF FILTER FABRIC SHALL OVERLAP A MINIMUM OF TWO FEET (2').

INSTALLATION AND MAINTENANCE:

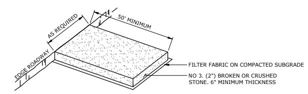
1. BALED HAY EROSION BARRIERS SHALL BE INSTALLED AT ALL STORM SEWER INLETS.
2. BALED HAY EROSION BARRIERS AND GEOTEXTILE FENCE SHALL BE INSTALLED AT THE LOCATION INDICATED ON THE PLAN AND IN ADDITIONAL AREAS AS MAY BE DEEMED APPROPRIATE DURING CONSTRUCTION.
3. ALL EROSION CHECKS SHALL BE MAINTAINED UNTIL ADJACENT AREAS ARE STABILIZED.
4. INSPECTION SHALL BE FREQUENT (AT MINIMUM MONTHLY AND BEFORE AND AFTER HEAVY RAIN) AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. EROSION CHECKS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM WATER FLOW OR DRAINAGE.



SEDIMENT FILTER FENCE
NOT TO SCALE



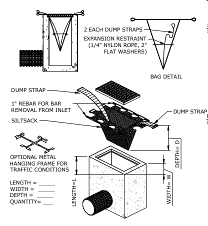
SEDIMENT FILTER FENCE AND HAY BALE
NOT TO SCALE



NOTES:

1. CONSTRUCTION ENTRANCE PAD SHALL BE INSTALLED AND MAINTAINED DURING OPERATIONS WHICH GENERATE VEHICULAR TRACKING OF MUD.

CONSTRUCTION ENTRANCE PAD
NOT TO SCALE



INLET SEDIMENT CONTROL DEVICE
NOT TO SCALE

SILTSACK
SPECIFICATIONS

NOTES:

1. THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.

REGULAR FLOW SILTSACK
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

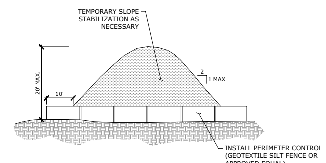
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80%
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC-1

HI-FLOW SILTSACK
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90%
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC-1

OIL- ABSORBANT SILTSACK
(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AND OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK, WITH A WOVEN PILLOW INSERT.



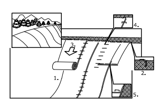
NOTES:

1. INSTALL A GEOTEXTILE SILT FENCE AND/OR HAY BALE BARRIER AROUND THE STOCKPILE AREA APPROXIMATELY 10 FEET FROM THE PROPOSED TOE OF SLOPE.

2. SIDE SLOPES SHALL NOT EXCEED A SLOPE OF 2:1. STOCKPILES THAT REMAIN INACTIVE FOR MORE THAN 30 DAYS SHALL BE SEEDED AND MULCHED IMMEDIATELY AFTER FORMATION

3. DISTANCE FROM WETLANDS, WATERCOURSES, DRAINAGE WAYS AND STEEP SLOPES SHALL BE MAXIMIZED. RUNOFF SHALL BE DIVERTED AWAY FROM STOCKPILE AREA

TEMPORARY SOIL STOCKPILE
NOT TO SCALE

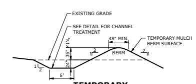


NOTES:

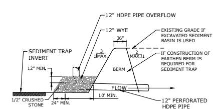
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING SCC225, DO NOT SEED PREPARED AREA. SCC225 MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS DOWN THE SLOPE IN THE DIRECTION OF THE WATER FLOW.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAP AREA, APPROXIMATELY 12" APART.

REFER TO GENERAL STAPLE PATTERN GUIDE IN NORTH AMERICAN GREEN CATALOG FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

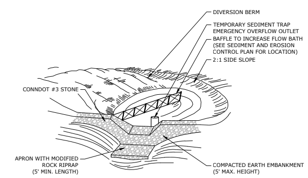
APPLICATION OF EROSION CONTROL BLANKET ON SLOPES
NOT TO SCALE



TEMPORARY DIVERSION BERM AND SWALE
NOT TO SCALE



TEMPORARY SEDIMENT TRAP OUTLET
NOT TO SCALE



NOTES:

1. REFER TO SEDIMENT & EROSION CONTROL PLAN FOR APPROXIMATE DIMENSIONS AND REQUIRED VOLUME.

TEMPORARY SEDIMENT TRAP
NOT TO SCALE

EROSION CONTROL MAINTENANCE INTERVALS

EROSION CONTROL MEASURE	CONTROL OBJECTIVE	INSPECTION/MAINTENANCE	FAILURE INDICATORS	REMOVAL
TEMPORARY SEDIMENT TRAP (TST)	- DETAIN SEDIMENT-LADEN RUNOFF FROM SMALL DISTURBED AREAS LONG ENOUGH TO ALLOW A MAJORITY OF THE SEDIMENT TO SETTLE OUT.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. STONE OUTLET SHOULD BE AT LEAST 1 FOOT BELOW CREST OF EMBANKMENT. SEDIMENT MUST BE REMOVED WHEN ACCUMULATION REACHES ½ OF THE REQUIRED WET STORAGE.	- TURBID WATER - EXCESSIVE SEDIMENT ACCUMULATION - OVERTOPPING EVIDENCE	TST MAY BE REMOVED ONCE THE CONTRIBUTING DRAINAGE AREA IS PERMANENTLY STABILIZED.
SILT FENCE (SF) (RELATED: IP, STK)	- INTERCEPT, AND REDIRECT/DETAIN SMALL AMOUNTS OF SEDIMENT FROM SMALL DISTURBED AREAS. - DECREASE VELOCITY OF SHEET FLOW. - PROTECT SENSITIVE SLOPES OR SOILS FROM EXCESSIVE WATER FLOW.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. ACCUMULATED SEDIMENT MUST BE REMOVED ONCE ITS DEPTH IS EQUAL TO ½ THE TRENCH HEIGHT. INSPECT FREQUENTLY DURING PUMPING OPERATIONS IF USED FOR DEWATERING OPERATIONS.	- PHYSICAL DAMAGE OR DECOMPOSITION - EVIDENCE OF OVERTOPPED OR UNDERCUT FENCE - EVIDENCE OF SIGNIFICANT FLOWS EVADING CAPTURE - REPETITIVE FAILURE	SILT FENCE MAY BE REMOVED AFTER UPHILL AND SENSITIVE AREAS HAVE BEEN PERMANENTLY STABILIZED.
HAY BALES (HB)	- INTERCEPT, AND REDIRECT/DETAIN SMALL AMOUNTS OF SEDIMENT FROM SMALL DISTURBED AREAS. - DECREASE VELOCITY OF SHEET FLOW. - PROTECT SENSITIVE SLOPES OR SOILS FROM EXCESSIVE WATER FLOW.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. ACCUMULATED SEDIMENT MUST BE REMOVED ONCE THE DEPTH OF SEDIMENT IS EQUAL TO ½ THE HEIGHT OF THE BARRIER. INSPECT FREQUENTLY DURING PUMPING OPERATIONS IF USED FOR DEWATERING OPERATIONS.	- PHYSICAL DAMAGE OR DECOMPOSITION - EVIDENCE OF OVERTOPPED OR UNDERCUT FENCE - EVIDENCE OF SIGNIFICANT FLOWS EVADING CAPTURE - REPETITIVE FAILURE	HAY BALES MAY BE REMOVED AFTER UPHILL AREAS HAVE BEEN PERMANENTLY STABILIZED.
TEMPORARY DIVERSION BERM/SWALE (TBS) OR TEMPORARY SWALE (TBS)	- MINIMIZE VELOCITY AND CONCENTRATION OF SHEET FLOW ACROSS CONSTRUCTION SITE TO A SEDIMENT TRAPPING FACILITY. - DIVERT WATER ORIGINATING FROM UNDISTURBED AREA AWAY FROM CONSTRUCTION.	WHEN LOCATED WITHIN CLOSE PROXIMITY TO ONGOING CONSTRUCTION ACTIVITIES, INSPECT AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. OTHERWISE INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. REPAIR THE TEMPORARY MEASURE AND ANY OTHER ASSOCIATED MEASURES WITHIN 24 HOURS.	- PHYSICAL DAMAGE - EXCESSIVE SCOURING/EROSION - REPETITIVE FAILURE	TEMPORARY DIVERSIONS MAY BE REMOVED ONCE CONSTRUCTION HAS CEASED AND THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED.
CONSTRUCTION ENTRANCE (CE)	- REDUCE THE TRACKING OF SEDIMENT OFF-SITE ONTO PAVED SURFACES.	INSPECT AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. PERIODIC ADDITION OF STONE, OR LENGTHENING OF ENTRANCE MAY BE REQUIRED AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES AS A RESULT OF INEFFICIENCY OF CONSTRUCTION ENTRANCE SHALL BE IMMEDIATELY REMOVED.	- SEDIMENT IN ROADWAY ADJACENT TO SITE	CONSTRUCTION ENTRANCE MAY BE REMOVED ONCE THE SITE HAS BEEN PERMANENTLY STABILIZED, AND ALL OTHER SECTIONS OF ROADWAY HAVE BEEN PERMANENTLY PAVED.
CATCH BASIN INLET PROTECTION (IP)	- PROHIBIT SILT IN CONSTRUCTION-RELATED RUNOFF FROM ENTERING STORM DRAINAGE SYSTEM.	INSPECT AFTER ANY RAIN EVENT. IF FILTER BAG INSIDE CATCH BASIN CONTAINS MORE THAN 6' OF SEDIMENT, REMOVE SEDIMENT FROM BAG. CHECK SURROUNDING SILT FENCE AND HAY BALES PER NOTED ABOVE.	- RIPPED BAG - FAILED HAY BALES / SILT FENCE - SIGNIFICANT SILT PRESENCE IN STORM DRAINAGE SYSTEM OUTFLOW.	INLET PROTECTION MAY BE REMOVED ONCE THE SITE HAS BEEN PERMANENTLY STABILIZED, AND ALL SECTIONS OF ROADWAY HAVE BEEN PERMANENTLY PAVED.
STOCKPILE PROTECTION (STK)	- RETAIN SOIL STOCKPILE IN LOCATIONS SPECIFIED, AND REDUCE WATER-TRANSPORT.	INSPECT SILT FENCE AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. PERIODIC REINFORCEMENT OF SILT FENCE, OR ADDITION OF HAY BALES MAY BE NECESSARY.	- EVIDENCE OF STOCK PILE DIMINISHING DUE TO RAIN EVENTS - FAILURE OF SILT FENCE	STOCKPILE PROTECTION MAY BE REMOVED ONCE THE STOCKPILE IS USED OR REMOVED.

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REVISION LOG:
DESCRIPTION

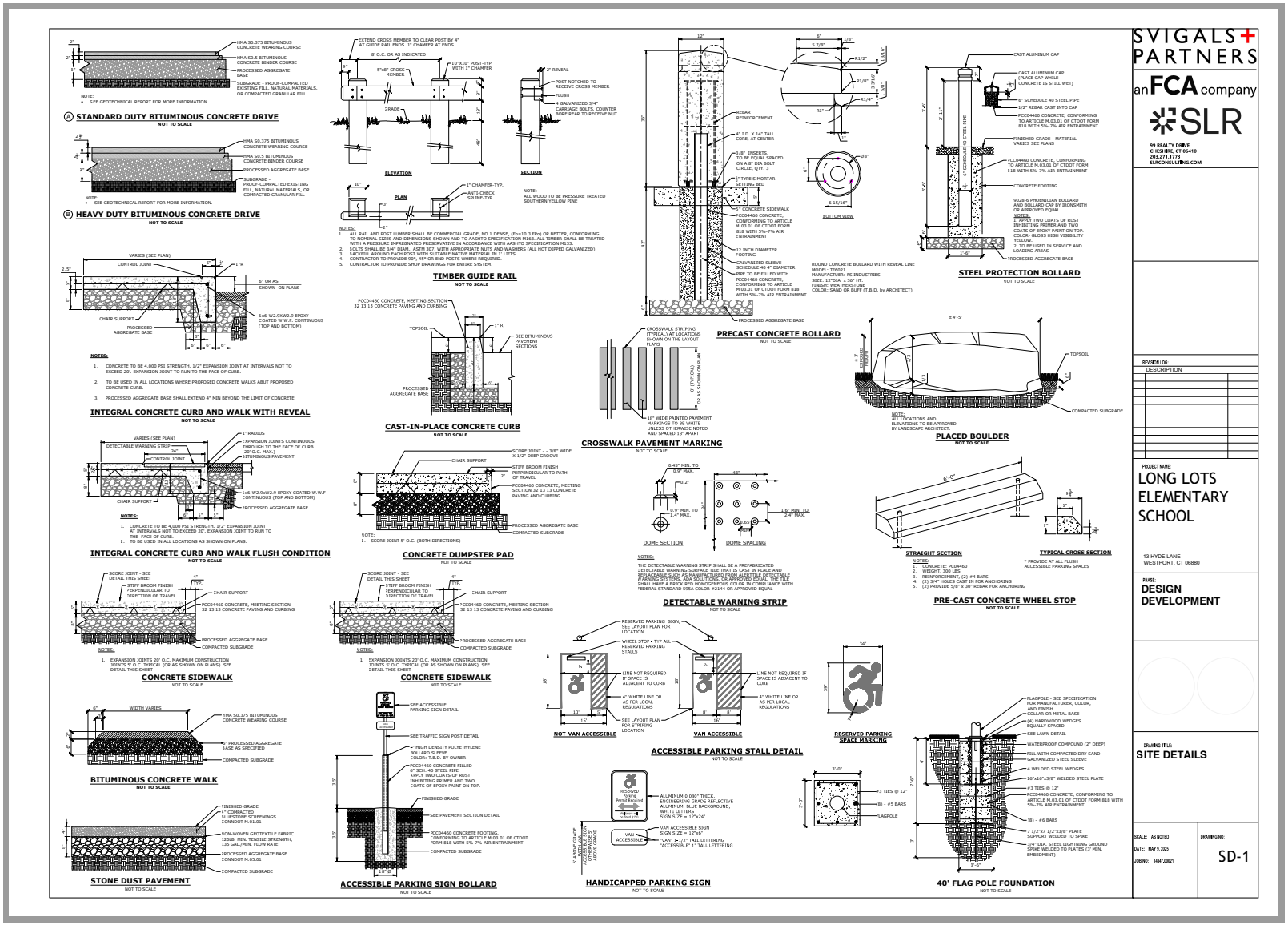
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL

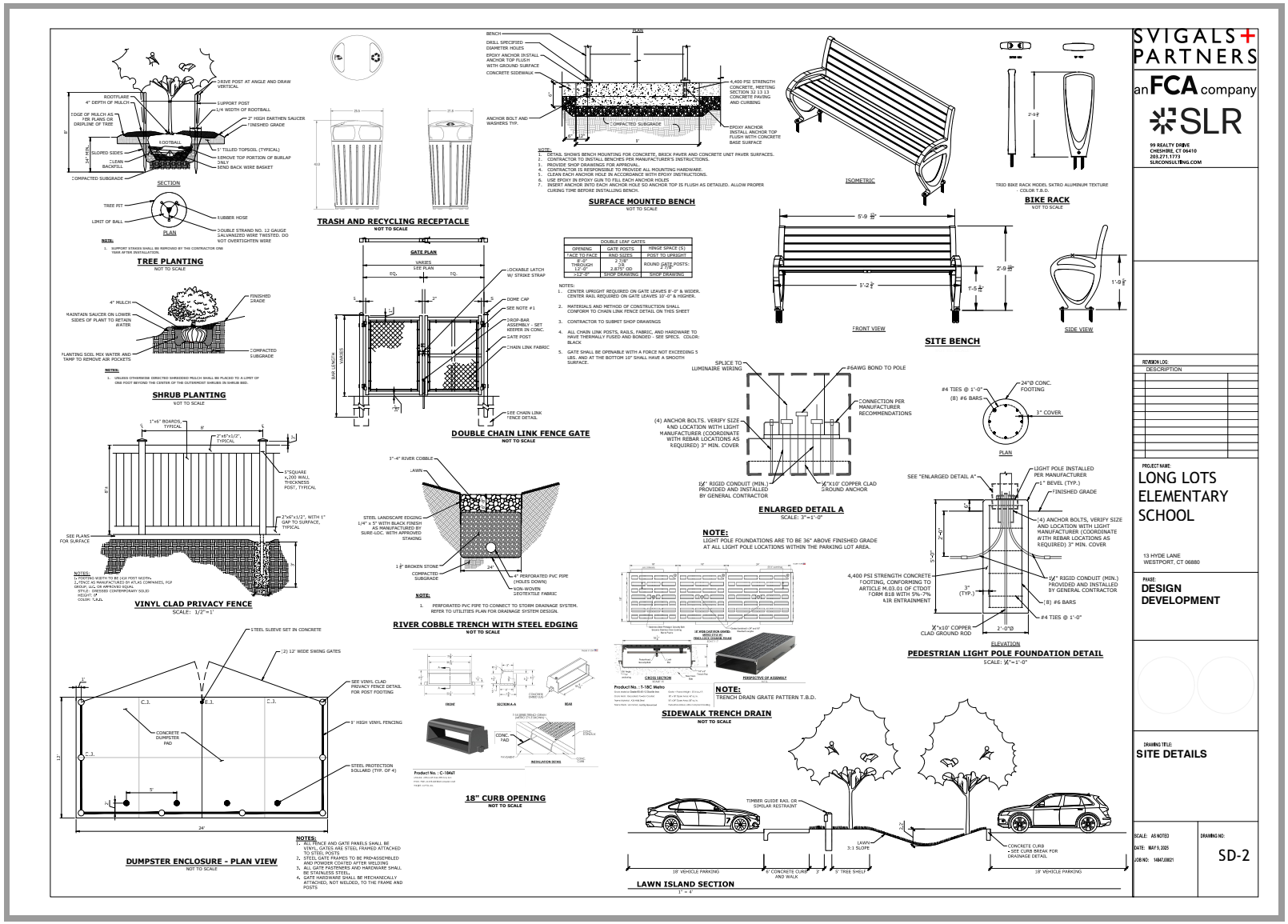
13 HYDE LANE
WESTPORT, CT 06880

PHASE:
DESIGN DEVELOPMENT

DRAWING TITLE:
SEDIMENT AND EROSION CONTROL DETAILS

SCALE: AS NOTED
DATE: MAY 9, 2025
JOB NO: 14847.00021
DRAWING NO:
SED


Ⓐ STANDARD DUTY BITUMINOUS CONCRETE DRIVE
NOT TO SCALE
HMA S0.375 BITUMINOUS CONCRETE WEARING COURSE
HMA S0.5 BITUMINOUS CONCRETE BINDER COURSE
PROCESSED AGGREGATE BASE
SUBGRADE - PROOF-COMPACTED EXISTING FILL, NATURAL MATERIALS, OR COMPACTED GRANULAR FILL
NOTE:
• SEE GEOTECHNICAL REPORT FOR MORE INFORMATION.
Ⓑ HEAVY DUTY BITUMINOUS CONCRETE DRIVE
NOT TO SCALE
HMA S0.375 BITUMINOUS CONCRETE WEARING COURSE
HMA S0.5 BITUMINOUS CONCRETE BINDER COURSE
PROCESSED AGGREGATE BASE
SUBGRADE - PROOF-COMPACTED EXISTING FILL, NATURAL MATERIALS, OR COMPACTED GRANULAR FILL
NOTE:
• SEE GEOTECHNICAL REPORT FOR MORE INFORMATION.
INTEGRAL CONCRETE CURB AND WALK WITH REVEAL
NOT TO SCALE
CONTROL JOINT
CHAIR SUPPORT
PROCESSED AGGREGATE BASE
6" OR AS SHOWN ON PLANS
1x6-W2.9XW2.9 EPOXY COATED W.W.F. CONTINUOUS (TOP AND BOTTOM)
NOTES:
1. CONCRETE TO BE 4,000 PSI STRENGTH. 1/2" EXPANSION JOINT AT INTERVALS NOT TO EXCEED 20'. EXPANSION JOINT TO RUN TO THE FACE OF CURB.
2. TO BE USED IN ALL LOCATIONS WHERE PROPOSED CONCRETE WALKS ABUT PROPOSED CONCRETE CURB.
3. PROCESSED AGGREGATE BASE SHALL EXTEND 4" MIN BEYOND THE LIMIT OF CONCRETE
INTEGRAL CONCRETE CURB AND WALK FLUSH CONDITION
NOT TO SCALE
DETECTABLE WARNING STRIP
CONTROL JOINT
1" RADIUS
EXPANSION JOINTS CONTINUOUS THROUGH TO THE FACE OF CURB (20' O.C. MAX.)
BITUMINOUS PAVEMENT
CHAIR SUPPORT
1x6-W2.9xW2.9 EPOXY COATED W.W.F CONTINUOUS (TOP AND BOTTOM)
PROCESSED AGGREGATE BASE
NOTES:
1. CONCRETE TO BE 4,000 PSI STRENGTH. 1/2" EXPANSION JOINT AT INTERVALS NOT TO EXCEED 20'. EXPANSION JOINT TO RUN TO THE FACE OF CURB.
2. TO BE USED IN ALL LOCATIONS AS SHOWN ON PLANS.
CONCRETE SIDEWALK
NOT TO SCALE
SCORE JOINT - SEE DETAIL THIS SHEET
STIFF BROOM FINISH PERPENDICULAR TO DIRECTION OF TRAVEL
CHAIR SUPPORT
PCC04460 CONCRETE, MEETING SECTION 32 13 13 CONCRETE PAVING AND CURBING
PROCESSED AGGREGATE BASE
COMPACTED SUBGRADE
NOTES:
1. EXPANSION JOINTS 20' O.C. MAXIMUM CONSTRUCTION JOINTS 5' O.C. TYPICAL (OR AS SHOWN ON PLANS). SEE DETAIL THIS SHEET
CONCRETE SIDEWALK
NOT TO SCALE
SCORE JOINT - SEE DETAIL THIS SHEET
STIFF BROOM FINISH PERPENDICULAR TO DIRECTION OF TRAVEL
CHAIR SUPPORT
PCC04460 CONCRETE, MEETING SECTION 32 13 13 CONCRETE PAVING AND CURBING
PROCESSED AGGREGATE BASE
COMPACTED SUBGRADE
NOTES:
1. EXPANSION JOINTS 20' O.C. MAXIMUM CONSTRUCTION JOINTS 5' O.C. TYPICAL (OR AS SHOWN ON PLANS). SEE DETAIL THIS SHEET
BITUMINOUS CONCRETE WALK
NOT TO SCALE
WIDTH VARIES
HMA S0.375 BITUMINOUS CONCRETE WEARING COURSE
6" PROCESSED AGGREGATE BASE AS SPECIFIED
COMPACTED SUBGRADE
STONE DUST PAVEMENT
NOT TO SCALE
FINISHED GRADE
1" COMPACTED BLUESTONE SCREENINGS CONNDOT M.01.01
NON-WOVEN GEOTEXTILE FABRIC 120LB. MIN. TENSILE STRENGTH, 135 GAL./MIN. FLOW RATE
PROCESSED AGGREGATE BASE CONNDOT M.05.01
COMPACTED SUBGRADE
ELEVATION
SECTION
PLAN
NOTES:
1. ALL RAIL AND POST LUMBER SHALL BE COMMERCIAL GRADE, NO.1 DENSE, (Fb=10.3 FPs) OR BETTER, CONFORMING TO NOMINAL SIZES AND DIMENSIONS SHOWN AND TO AASHTO SPECIFICATION M168. ALL TIMBER SHALL BE TREATED WITH PRESERVATIVE IN ACCORDANCE WITH AWPA STANDARDS AND AASHTO SPECIFICATION M133.
2. BOLTS SHALL BE 3/4" DIAM., ASTM 307, WITH APPROPRIATE NUTS AND WASHERS (ALL HOT DIPPED GALVANIZED)
3. BACKING AROUND EACH POST WITH SUITABLE NATIVE MATERIAL IN 1' LIFTS
4. CONTRACTOR TO PROVIDE 90°, 45° OR END POSTS WHERE REQUIRED.
5. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ENTIRE SYSTEM.
TIMBER GUIDE RAIL
NOT TO SCALE
ALL WOOD TO BE PRESSURE TREATED SOUTHERN YELLOW PINE
PCC04460 CONCRETE, MEETING SECTION 32 13 13 CONCRETE PAVING AND CURBING
TOPSOIL
SEE BITUMINOUS PAVEMENT SECTIONS
PROCESSED AGGREGATE BASE
CAST-IN-PLACE CONCRETE CURB
NOT TO SCALE
CHAIR SUPPORT
SCORE JOINT - 3/8" WIDE X 1/2" DEEP GROOVE
STIFF BROOM FINISH PERPENDICULAR TO PATH OF TRAVEL
PCC04460 CONCRETE, MEETING SECTION 32 13 13 CONCRETE PAVING AND CURBING
PROCESSED AGGREGATE BASE
COMPACTED SUBGRADE
NOTE:
1. SCORE JOINT 5' O.C. (BOTH DIRECTIONS)
CONCRETE DUMPSTER PAD
NOT TO SCALE
SEE ACCESSIBLE PARKING SIGN DETAIL
SEE TRAFFIC SIGN POST DETAIL
2" HIGH DENSITY POLYETHYLENE BOLLARD SLEEVE
COLOR: T.B.D. BY OWNER
PCC04460 CONCRETE FILLED BOLLARD. PAINT WITH APPLY TWO COATS OF RUST INHIBITING PRIMER AND TWO COATS OF EPOXY PAINT ON TOP.
FINISHED GRADE
SEE PAVEMENT SECTION DETAIL
PCC04460 CONCRETE FOOTING. CONFORMING TO ARTICLE M.03.01 OF CTDOT FORM 818 WITH 5%-7% AIR ENTRAINMENT
COMPACTED SUBGRADE
ACCESSIBLE PARKING SIGN BOLLARD
NOT TO SCALE
REBAR REINFORCEMENT
6" I.D. X 14" TALL CORE, AT CENTER
1/8" INSERTS, TO BE EQUAL SPACED ON A 8" DIA BOLT CIRCLE, QTY. 3
1" TYPE S MORTAR SETTING BED
1'-0" CONCRETE SIDEWALK
PCC04460 CONCRETE, CONFORMING TO ARTICLE M.03.01 OF CTDOT FORM 818 WITH 5%-7% AIR ENTRAINMENT
12 INCH DIAMETER FOOTING
GALVANIZED SLEEVE SCHEDULE 40 4" DIAMETER
PIPE TO BE FILLED WITH PCC04460 CONCRETE, CONFORMING TO ARTICLE M.03.01 OF CTDOT FORM 818 WITH 5%-7% AIR ENTRAINMENT
PROCESSED AGGREGATE BASE
BOTTOM VIEW
PRECAST CONCRETE BOLLARD
NOT TO SCALE
ROUND CONCRETE BOLLARD WITH REVEAL LINE
MODEL: TF6021
MANUFACTURER: FS INDUSTRIES
SIZE: 12"DIA. x 36" HT.
FINISH: WEATHERSTONE
COLOR: SAND OR BUFF (T.B.D. by ARCHITECT)
CAST ALUMINUM CAP
CAST ALUMINUM CAP (PLACE CAP WHILE CONCRETE IS STILL WET)
6" SCHEDULE 40 STEEL PIPE
1/2" REBAR CAST INTO CAP
PCC04460 CONCRETE, CONFORMING TO ARTICLE M.03.01 OF CTDOT FORM 818 WITH 5%-7% AIR ENTRAINMENT.
FINISHED GRADE - MATERIAL VARIES SEE PLANS
PCC04460 CONCRETE, CONFORMING TO ARTICLE M.03.01 OF CTDOT FORM 818 WITH 5%-7% AIR ENTRAINMENT
CONCRETE FOOTING
9028-6 PHOENICIAN BOLLARD AND BOLLARD CAP BY IRONSMITH OR APPROVED EQUAL.
1. PRIME WITH TWO COATS OF RUST INHIBITING PRIMER AND TWO COATS OF EPOXY PAINT ON TOP. COLOR: GLOSS HIGH VISIBILITY YELLOW.
2. TO BE USED IN SERVICE AND LOADING AREAS
PROCESSED AGGREGATE BASE
STEEL PROTECTION BOLLARD
NOT TO SCALE
CROSSWALK STRIPING (TYPICAL) AT LOCATIONS SHOWN ON THE LAYOUT PLANS
10" WIDE PAINTED PAVEMENT MARKINGS TO BE WHITE UNLESS OTHERWISE NOTED AND SPACED 10' APART
CROSSWALK PAVEMENT MARKING
NOT TO SCALE
TOPSOIL
COMPACTED SUBGRADE
NOTE:
ALL LOCATIONS AND ELEVATIONS TO BE APPROVED BY LANDSCAPE ARCHITECT
PLACED BOULDER
NOT TO SCALE
0.45" MIN. TO 0.9" MAX.
1.6" MIN. TO 2.4" MAX.
DOME SECTION
DOME SPACING
NOTES:
THE DETECTABLE WARNING STRIP SHALL BE A PREFABRICATED DETECTABLE WARNING SURFACE TILE THAT IS CAST IN PLACE AND REPLACEABLE SUCH AS MANUFACTURED FROM ALBERTILE DETECTABLE WARNING SURFACE TILE OR APPROVED EQUAL. THE COLOR OF THE TILE SHALL HAVE A BRICK RED HOMOGENEOUS COLOR IN COMPLIANCE WITH FEDERAL STANDARD 595A COLOR #21144 OR APPROVED EQUAL
DETECTABLE WARNING STRIP
NOT TO SCALE
STRAIGHT SECTION
TYPICAL CROSS SECTION
NOTES:
1. CONCRETE: PCD4460
2. WEIGHT, 300 LBS.
3. REINFORCEMENT, (2) #4 BARS
4. (2) 3/4" HOLES CAST IN FOR ANCHORING
5. (2) PROVIDE 5/8" x 30" REBAR FOR ANCHORING
* PROVIDE AT ALL FLUSH ACCESSIBLE PARKING SPACES
PRE-CAST CONCRETE WHEEL STOP
NOT TO SCALE
RESERVED PARKING SIGN, SEE LAYOUT PLAN FOR LOCATION
WHEEL STOP - TYP ALL RESERVED PARKING STALLS
LINE NOT REQUIRED IF SPACE IS ADJACENT TO CURB REGULATIONS
4" WHITE LINE OR AS PER LOCAL REGULATIONS
SEE LAYOUT PLAN FOR STRIPING LOCATION
NOT-VAN ACCESSIBLE
VAN ACCESSIBLE
ACCESSIBLE PARKING STALL DETAIL
NOT TO SCALE
RESERVED PARKING SPACE MARKING
RESERVED Parking Permit Required
VAN ACCESSIBLE
ALUMINUM 0.080" THICK, ENGINEERING GRADE REFLECTIVE ALUMINUM, BLUE BACKGROUND, WHITE LETTERS SIGN SIZE = 12"x24"
VAN ACCESSIBLE SIGN SIGN SIZE = 12"x6"
"VAN" 1=1/2" TALL LETTERING "ACCESSIBLE" 1" TALL LETTERING
HANDICAPPED PARKING SIGN
NOT TO SCALE
#3 TIES @ 12"
(8) - #5 BARS
FLAGPOLE
(8) - #6 BARS
7 1/2"x7 1/2"x3/8" PLATE SUPPORT WELDED TO SPIKE
3/4" DIA. STEEL LIGHTNING GROUND SPIKE WELDED TO PLATES (7' MIN. EMBEDMENT)
FLAGPOLE - SEE SPECIFICATION FOR MANUFACTURER, COLOR, AND FINISH
COLLAR OR METAL BASE
(4) HARDWOOD WEDGES EQUALLY SPACED
SEE LAWN DETAIL
WATERPROOF COMPOUND (2" DEEP)
FILL WITH COMPACTED DRY SAND
GALVANIZED STEEL SLEEVE
4 WELDED STEEL WEDGES
16"x16"x3/8" WELDED STEEL PLATE
#3 TIES @ 12"
PCC04460 CONCRETE, CONFORMING TO ARTICLE M.03.01 OF CTDOT FORM 818 WITH 5%-7% AIR ENTRAINMENT.
(8) - #6 BARS
7 1/2"x7 1/2"x3/8" PLATE SUPPORT WELDED TO SPIKE
3/4" DIA. STEEL LIGHTNING GROUND SPIKE WELDED TO PLATES (7' MIN. EMBEDMENT)
40' FLAG POLE FOUNDATION
NOT TO SCALE
SVIGALS + PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM
REVISION LOG:
DESCRIPTION
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880
PHASE:
DESIGN DEVELOPMENT
DRAWING TITLE:
SITE DETAILS
SCALE: AS NOTED
DATE: MAY 9, 2025
JOB NO: 10447.00021
DRAWING NO:
SD-1


TREE PLANTING
NOT TO SCALE
SHRUB PLANTING
NOT TO SCALE
TRASH AND RECYCLING RECEPTACLE
NOT TO SCALE
SURFACE MOUNTED BENCH
NOT TO SCALE
BIKE RACK
NOT TO SCALE
SITE BENCH
DOUBLE CHAIN LINK FENCE GATE
NOT TO SCALE
VINYL CLAD PRIVACY FENCE
SCALE: 1/2"=1'
RIVER COBBLE TRENCH WITH STEEL EDGING
NOT TO SCALE
ENLARGED DETAIL A
SCALE: 3"=1'-0"
PEDESTRIAN LIGHT POLE FOUNDATION DETAIL
SCALE: 1/2"=1'-0"
SIDEWALK TRENCH DRAIN
NOT TO SCALE
18" CURB OPENING
NOT TO SCALE
DUMPSTER ENCLOSURE - PLAN VIEW
NOT TO SCALE
LAWN ISLAND SECTION
1" = 4'
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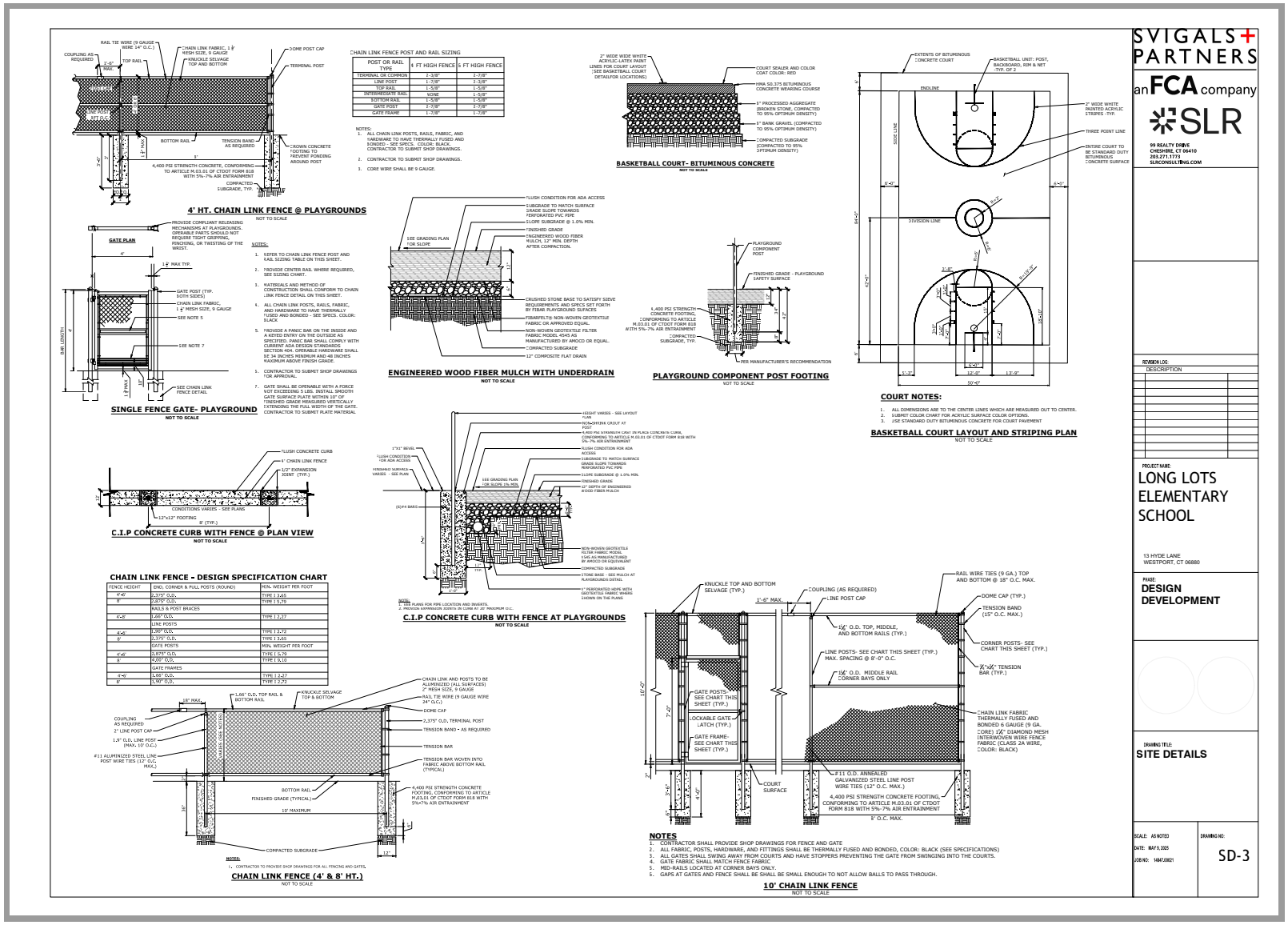
DESIGN DEVELOPMENT
SITE DETAILS
SD-2


4' HT. CHAIN LINK FENCE @ PLAYGROUNDS
NOT TO SCALE
CHAIN LINK FENCE POST AND RAIL SIZING
POST OR RAIL TYPE
4 FT HIGH FENCE
5 FT HIGH FENCE
TERMINAL OR CORNER
LINE POST
TOP RAIL
INTERMEDIATE RAIL
BOTTOM RAIL
GATE POST
GATE FRAME
NOTES:
1. ALL CHAIN LINK POSTS, RAILS, FABRIC, AND HARDWARE TO HAVE THERMALLY FUSED AND BONDED - SEE SPECS. COLOR: BLACK. CONTRACTOR TO SUBMIT SHOP DRAWINGS.
2. CONTRACTOR TO SUBMIT SHOP DRAWINGS.
1. CORE WIRE SHALL BE 9 GAUGE.
BASKETBALL COURT- BITUMINOUS CONCRETE
NOT TO SCALE
COURT SEALER AND COLOR COAT COLOR: RED
HMA S0.375 BITUMINOUS CONCRETE WEARING COURSE
1" PROCESSED AGGREGATE (BROKEN STONE, COMPACTED TO 95% OPTIMUM DENSITY)
4" BANK GRAVEL (COMPACTED TO 95% OPTIMUM DENSITY)
COMPACTED SUBGRADE (COMPACTED TO 95% OPTIMUM DENSITY)
SINGLE FENCE GATE- PLAYGROUND
NOT TO SCALE
GATE PLAN
NOTES:
1. REFER TO CHAIN LINK FENCE POST AND RAIL SIZING TABLE ON THIS SHEET.
2. PROVIDE CENTER RAIL WHERE REQUIRED, SEE SIZING CHART.
3. MATERIALS AND METHOD OF CONSTRUCTION SHALL CONFORM TO CHAIN LINK FENCE DETAIL ON THIS SHEET.
4. ALL CHAIN LINK POSTS, RAILS, FABRIC, AND HARDWARE TO HAVE THERMALLY FUSED AND BONDED - SEE SPECS. COLOR: BLACK
5. PROVIDE A PANIC BAR ON THE INSIDE AND A KEYED ENTRY ON THE OUTSIDE AS SPECIFIED. PANIC BAR SHALL COMPLY WITH CURRENT ADA DESIGN STANDARDS SECTION 404. OPERABLE HARDWARE SHALL BE 34 INCHES MINIMUM AND 48 INCHES MAXIMUM ABOVE FINISH GRADE.
6. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL.
7. GATE SHALL BE OPERABLE WITH A FORCE NOT EXCEEDING 5 LBS. INSTALL SMOOTH GATE SURFACE PLATE WITHIN 10" OF FINISHED GRADE MEASURED VERTICALLY EXTENDING THE FULL WIDTH OF THE GATE. CONTRACTOR TO SUBMIT PLATE MATERIAL
ENGINEERED WOOD FIBER MULCH WITH UNDERDRAIN
NOT TO SCALE
PLAYGROUND COMPONENT POST FOOTING
NOT TO SCALE
C.I.P CONCRETE CURB WITH FENCE @ PLAN VIEW
NOT TO SCALE
C.I.P CONCRETE CURB WITH FENCE AT PLAYGROUNDS
NOT TO SCALE
CHAIN LINK FENCE - DESIGN SPECIFICATION CHART
FENCE HEIGHT
END, CORNER & PULL POSTS (ROUND)
MIN. WEIGHT PER FOOT
LINE POSTS
RAILS & POST BRACES
GATE POSTS
GATE FRAMES
CHAIN LINK FENCE (4' & 8' HT.)
NOT TO SCALE
COURT NOTES:
1. ALL DIMENSIONS ARE TO THE CENTER LINES WHICH ARE MEASURED OUT TO CENTER.
2. SUBMIT COLOR CHART FOR ACRYLIC SURFACE COLOR OPTIONS.
3. USE STANDARD DUTY BITUMINOUS CONCRETE FOR COURT PAVEMENT
BASKETBALL COURT LAYOUT AND STRIPING PLAN
NOT TO SCALE
10' CHAIN LINK FENCE
NOT TO SCALE
NOTES
1. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR FENCE AND GATE
2. ALL FABRIC, POSTS, HARDWARE, AND FITTINGS SHALL BE THERMALLY FUSED AND BONDED, COLOR: BLACK (SEE SPECIFICATIONS)
3. ALL GATES SHALL SWING AWAY FROM COURTS AND HAVE STOPPERS PREVENTING THE GATE FROM SWINGING INTO THE COURTS.
4. GATE FABRIC SHALL MATCH FENCE FABRIC
5. MID-RAILS LOCATED AT CORNER BAYS ONLY.
6. GAPS AT GATES AND FENCE SHALL BE SHALL BE SMALL ENOUGH TO NOT ALLOW BALLS TO PASS THROUGH.
SVIGALS + PARTNERS
an FCA company
SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
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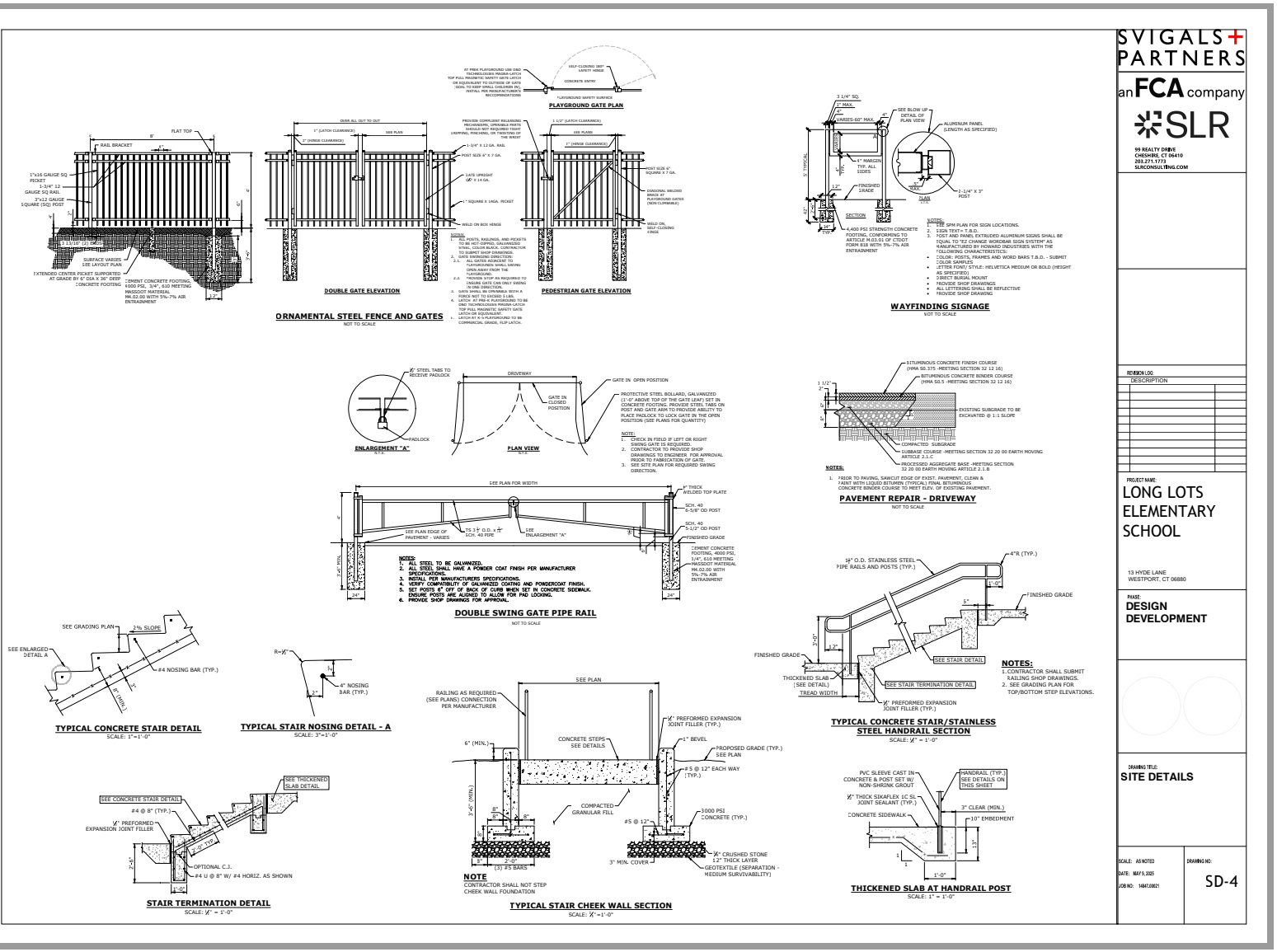
ORNAMENTAL STEEL FENCE AND GATES
NOT TO SCALE
DOUBLE GATE ELEVATION
PEDESTRIAN GATE ELEVATION
PLAYGROUND GATE PLAN
WAYFINDING SIGNAGE
NOT TO SCALE
ENLARGEMENT "A"
PLAN VIEW
DOUBLE SWING GATE PIPE RAIL
NOT TO SCALE
PAVEMENT REPAIR - DRIVEWAY
NOT TO SCALE
TYPICAL CONCRETE STAIR DETAIL
SCALE: 1"=1'-0"
TYPICAL STAIR NOSING DETAIL - A
SCALE: 3"=1'-0"
STAIR TERMINATION DETAIL
SCALE: ½" = 1'-0"
NOTE
CONTRACTOR SHALL NOT STEP CHEEK WALL FOUNDATION
TYPICAL STAIR CHEEK WALL SECTION
SCALE: ½"=1'-0"
TYPICAL CONCRETE STAIR/STAINLESS STEEL HANDRAIL SECTION
SCALE: ½" = 1'-0"
THICKENED SLAB AT HANDRAIL POST
SCALE: 1" = 1'-0"
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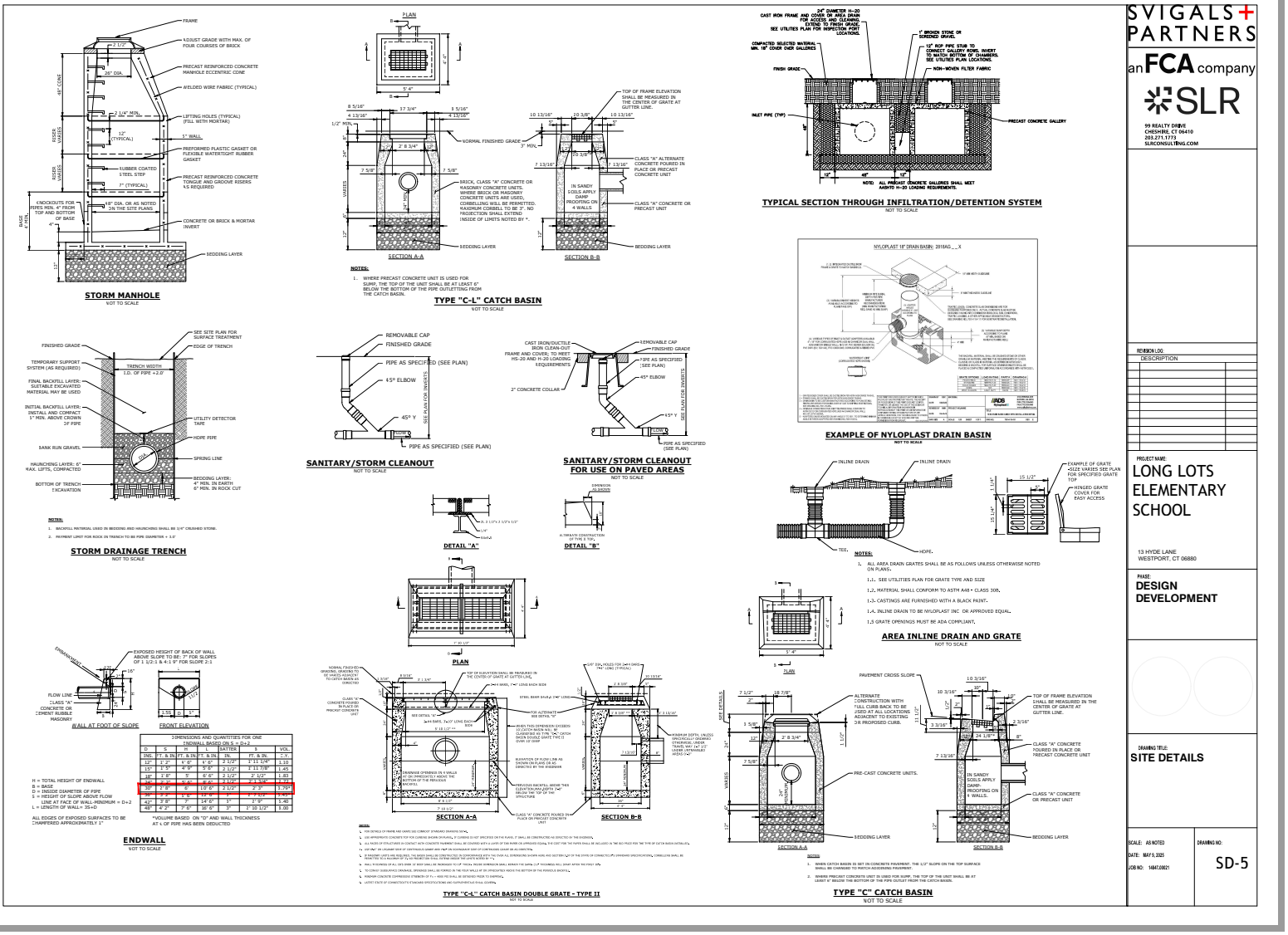
STORM MANHOLE
NOT TO SCALE
TYPE "C-L" CATCH BASIN
NOT TO SCALE
TYPICAL SECTION THROUGH INFILTRATION/DETENTION SYSTEM
NOT TO SCALE
EXAMPLE OF NYLOPLAST DRAIN BASIN
NOT TO SCALE
STORM DRAINAGE TRENCH
NOT TO SCALE
SANITARY/STORM CLEANOUT
NOT TO SCALE
SANITARY/STORM CLEANOUT FOR USE ON PAVED AREAS
NOT TO SCALE
AREA INLINE DRAIN AND GRATE
NOT TO SCALE
ENDWALL
NOT TO SCALE
TYPE "C-L" CATCH BASIN DOUBLE GRATE - TYPE II
NOT TO SCALE
TYPE "C" CATCH BASIN
NOT TO SCALE
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SLRCONSULTING.COM
LONG LOTS ELEMENTARY SCHOOL
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WESTPORT, CT 06880
DESIGN DEVELOPMENT
SITE DETAILS
SCALE: AS NOTED
DATE: MAY 9, 2025
SD-5

FORMATION OF EMBANKMENTS FOR STORMWATER BASINS

1. MATERIALS

ALL FILL MATERIALS SHALL BE OBTAINED FROM REQUIRED EXCAVATIONS OR DESIGNATED BORROW AREAS. FILL MATERIAL SHALL CONTAIN NO FROZEN MATERIAL, SOD, BRUSH, ROOTS, OR OTHER ORGANIC MATERIAL. EARTH EMBANKMENTS SHALL CONTAIN NO STONES OR ROCK PARTICLES OVER THREE INCHES IN DIAMETER.

THE MATERIAL USED IN THE CENTER PORTION OF THE EMBANKMENT SHALL BE THE MOST IMPERVIOUS MATERIAL OBTAINED FROM THE BORROW AREAS IF REQUIRED, THE MORE PERVIOUS MATERIALS SHALL BE USED IN THE OUTER PORTION OF THE EMBANKMENT AS SHOWN ON THE PLANS.

A. IMPERVIOUS FILL MATERIALS

IMPERVIOUS FILL SHALL BE A GLACIAL TILL, AND TO BE PROVIDED FROM AN OFFSITE SOURCE IN THE QUANTITIES REQUIRED FOR COMPLETION. FILL TO BE APPROVED BY THE ENGINEER, GLACIAL TILL SHALL CONSIST OF HARD AND DURABLE PARTICLES OR FRAGMENTS AND SHALL BE FREE FROM ORGANIC MATTER AND OTHER OBJECTIONABLE MATERIALS. GLACIAL TILL SHALL GENERALLY CONFORM TO THE FOLLOWING GRADATION LIMITS:

U.S. STANDARD SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT
3 INCH	100
NO. 4	50-95
NO. 10	40-85
NO. 40	30-75
NO. 100	20-40
NO. 200	10-40

2. EMBANKMENT FOUNDATION PREPARATION

AREAS WHERE EMBANKMENTS ARE TO BE PLACED SHALL BE CLEARED AND GRUBBED OF ALL TOPSOIL, TREES, BRUSH, ROOTS AND OTHER OBJECTIONABLE MATERIAL. AREAS DESIGNATED FOR FILL SHALL BE SHOWN ON THE DRAWINGS. FOUNDATION AREAS SHALL BE SCARIFIED TO A DEPTH OF THREE INCHES PRIOR TO PLACEMENT OF FILL MATERIAL.

3. PLACEMENT

NO FILL SHALL BE PLACED UNTIL THE FOUNDATION PREPARATION AND EXCAVATIONS IN THE FOUNDATION HAVE BEEN COMPLETED, NO FILL SHALL BE PLACED ON A FROZEN SURFACE NOR SHALL FROZEN MATERIAL BE INCORPORATED.

A. EMBANKMENT

MATERIAL SHALL BE PLACED IN HORIZONTAL LAYERS. THE THICKNESS OF LAYERS SHALL BE SIX INCHES. DURING CONSTRUCTION, THE SURFACE OF THE FILL SHALL HAVE A CROWN OR CROSS-SLOPE OF NOT LESS THAN TWO PERCENT, EACH LAYER OF LIFT SHALL EXTEND OVER THE ENTIRE AREA OF THE FILL.

THE FILL SHALL BE FREE FROM LENSES, POCKETS, STREAKS, OR LAYERS OF MATERIAL DIFFERING SUBSTANTIALLY IN TEXTURE OR GRADATION FROM THE SURROUNDING MATERIAL. THE MORE PERVIOUS MATERIAL SHALL BE PLACED IN THE OUTSIDE PORTION OF THE EMBANKMENT OR AS INDICATED ON THE DRAWINGS. THE FINISHED FILL SHALL BE SHAPED AND GRADED TO THE LINES AND GRADE SHOWN ON THE DRAWINGS.

B. BACKFILL AT THE PIPE OUTLET

BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED THREE INCHES IN THICKNESS AND SHALL BE BROUGHT UP UNIFORMLY AROUND THE OUTLET PIPE AND PLACED EVEN SECTION

4. MOISTURE CONTROL

THE MOISTURE CONTENT OF MATERIALS IN THE EMBANKMENT SHALL BE CONTROLLED TO MEET THE REQUIREMENTS OF SECTION 5. "COMPACTION OF EMBANKMENTS". WHEN NECESSARY, MOISTURE SHALL BE ADDED BY USE OF APPROVED SPRINKLING EQUIPMENT. WATER SHALL BE ADDED UNIFORMLY AND IN AMOUNTS NOT TO CAUSE RUNOFF OR SURFACE SATURATION. WHEN THE MOISTURE CONTENT IS FOUND TOO WET FOR PROPER COMPACTION, SHALL BE ALLOWED TO DRY BEFORE ROLLING. PLACING OR ROLLING OF MATERIAL ON EARTH FILLS WILL NOT BE PERMITTED DURING OR IMMEDIATELY AFTER RAINFALL WHICH INCREASE THE MOISTURE CONTENT BEYOND THE LIMIT OF SATISFACTORY COMPACTION. THE EARTH FILL SHALL BE BROUGHT UP UNIFORMLY AND ITS TOP SHALL BE KEPT APPROXIMATELY LEVEL. ALL RUTS, SHRINKAGE CRACKS, OR OTHER DEFECTS IN THE COMPACTED EARTH FILL DAMAGED BY WASHING SHALL BE ACCEPTABLY REPLACED BY THE CONTRACTOR.

5. COMPACTION

A. EMBANKMENT

EMBANKMENT MATERIAL SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698. THE NUMBER OF PASSES OF THE COMPACTION EQUIPMENT SHALL TRAVERSE THE ENTIRE SURFACE OF EACH LAYER OF FILL MATERIAL.

APPROVED TAMPING ROLLERS SHALL BE USED FOR COMPACTING ALL PARTS OF THE EMBANKMENTS UNLESS THEY CAN DEMONSTRATE HOWEVER, THAT COMPACTION BY OTHER MEANS THE EFFECTIVENESS OF THE ROLLER BY ACTUAL SOIL COMPACTION RESULTS AT THE SITE TO BE USED IN THE EMBANKMENT WITH LABORATORY WORK PERFORMED BY AN APPROVED SOIL TESTING LABORATORY.

B. BACKFILL AT OUTLET CONDUIT

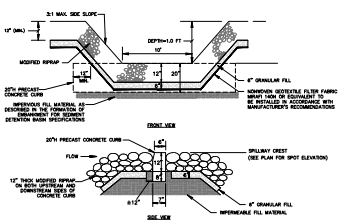
BACKFILL SHALL BE COMPACTED BY HAND TAMPING WITH MECHANICAL TAMPERS. HEAVY EQUIPMENT SHALL NOT BE OPERATED WITHIN TWO FEET OF ANY STRUCTURE, EQUIPMENT SHALL NOT BE ALLOWED TO OPERATE OVER THE OUTLET CONDUITS UNTIL THERE IS 24 INCHES OF FILL OVER THE PIPE CONDUITS.

6. FINISHING EMBANKMENTS

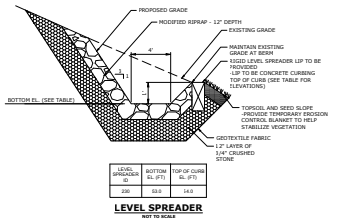
THE EMBANKMENTS SHALL BE CONSTRUCTED TO THE ELEVATIONS, LINES, GRADES AND CROSS-SECTIONS AS SHOWN ON THE DRAWINGS. THE EMBANKMENTS SHALL BE MAINTAINED IN A MANNER SATISFACTORY TO THE ENGINEER AND SURFACES SHALL BE COMPACT AND ACCURATELY GRADED BEFORE TOPSOIL IS PLACED ON THEM. THE CONTRACTOR SHALL CHECK THE EMBANKMENT FREQUENTLY DURING CONSTRUCTION TO BE SURE THAT IT CONFORMS TO THE SLOPES GIVEN ON THE PLANS AND ARE UNIFORM FOR THE ENTIRE LENGTH OF THE SLOPE.

7. CONTROL OF WATER

THE PROJECT SITE IS SUBJECT TO HIGH WATER TABLE. THE CONTRACTOR SHALL USE TEMPORARY PIPES OR PUMPS TO ASSURE PLACEMENT OF SELECT FILL IN DRY CONDITIONS.

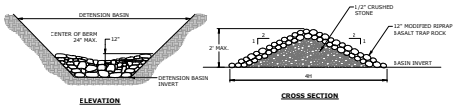


EMERGENCY RIPRAP SPILLWAY
NOT TO SCALE

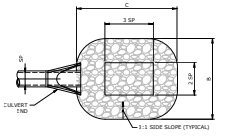


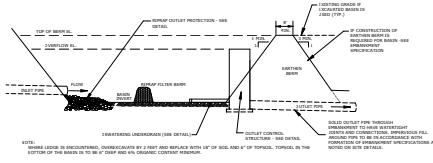
LEVEL SPREADER ID	BOTTOM EL. (FT)	TOP OF CURB EL. (FT)
230	53.0	54.0

LEVEL SPREADER
NOT TO SCALE



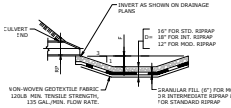
RIPRAP FILTER BERM
NOT TO SCALE



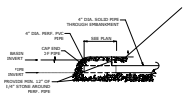


TYPICAL DETENTION BASIN
NOT TO SCALE

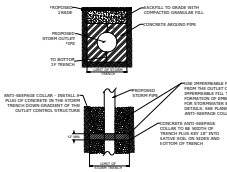
OUTLET PROTECTION ID	TYPE	DP (FT)	W (FT)	L (FT)	T (FT)	D (IN)
FES 16	MODIFIED TYPE 1	3.0	3.0	18.0	10.0	1.5	12
FES 60	MODIFIED TYPE 1	2.0	2.0	12	10	1.0	12



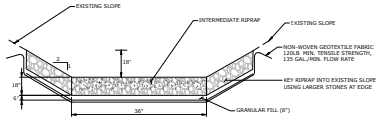
RIPRAP PREFORMED SCOUR HOLE
NOT TO SCALE



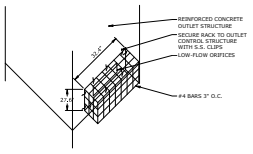
DEWATERING UNDERDRAIN -230
NOT TO SCALE



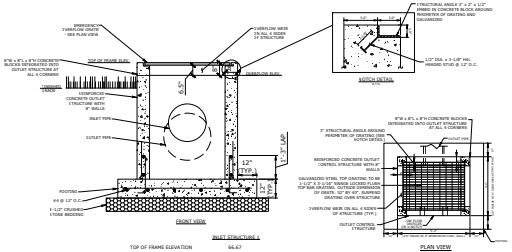
ANTI SEEPAGE COLLAR
NOT TO SCALE



RIPRAP SWALE
NOT TO SCALE

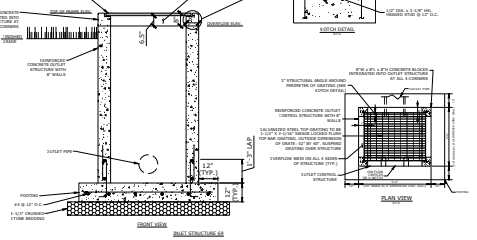


OUTLET STRUCTURE TRASH GRATE
NOT TO SCALE



TOP OF FRAME ELEVATION	66.67
OVERFLOW ELEVATION	66.00
INLET PIPE DIAMETER	14"
INLET PIPE INVERT	12.5
OUTLET PIPE DIAMETER	10"
OUTLET PIPE INVERT	11.5

INLET STRUCTURE 1
SCALE: 1"=2'



TOP OF FRAME ELEVATION	88.50
OVERFLOW ELEVATION	87.83
OUTLET PIPE DIAMETER	12"
OUTLET PIPE INVERT	81.00

INLET STRUCTURE 69
SCALE: 1"=2'

SVIGALS + PARTNERS
an FCA company
SLR
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203.271.1773
SLRCONSULTING.COM

REVISION LOG:
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PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880

PHASE:
DESIGN DEVELOPMENT

DRAWING TITLE:
SITE DETAILS

SCALE: AS NOTED
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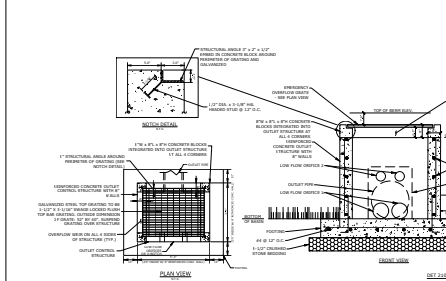
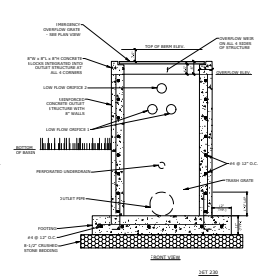
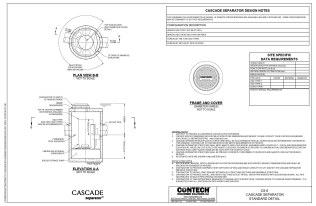
SD-6



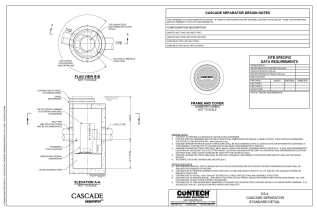


DET 210	
TOP OF BERM ELEVATION	77.6
OVERFLOW ELEVATION	76.2
100-YEAR WATER SURFACE ELEV.	74.2
LOW FLOW ORIFICE 1 DIAMETER	1'0" (2 ORIF.)
LOW FLOW ORIFICE 1 INVERT	72.0
LOW FLOW ORIFICE 2 DIAMETER	4" (2 ORIF.)
LOW FLOW ORIFICE 2 INVERT	74.0
2UTLET PIPE DIAMETER	24"
2UTLET PIPE INVERT	72.0
BASIN BOTTOM ELEVATION	72.0

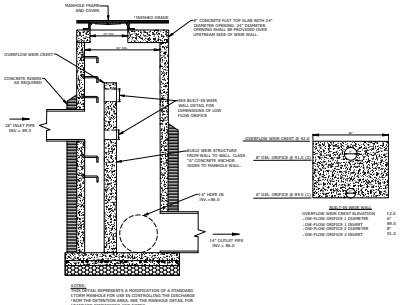
DET 230	
TOP OF BERM ELEVATION	76.0
OVERFLOW ELEVATION	74.0
100-YEAR WATER SURFACE ELEV.	74.4
LOW FLOW ORIFICE 1 DIAMETER	6" (2 ORIF.)
LOW FLOW ORIFICE 1 INVERT	71.9
LOW FLOW ORIFICE 2 DIAMETER	6"
LOW FLOW ORIFICE 2 INVERT	73.0
OUTLET PIPE DIAMETER	15"
OUTLET PIPE INVERT	66.5
BASIN BOTTOM ELEVATION	70.0
PERFORATED UNDERDRAIN DIAMETER	4"
PERFORATED UNDERDRAIN INVERT	69.0



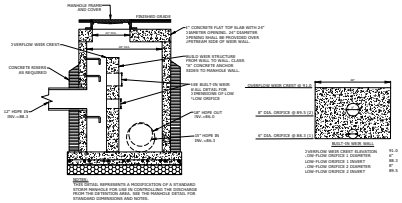
CONTECH CASCADE CS-6



CONTECH CASCADE CS-4



OUTLET CONTROL STRUCTURE - UNDERGROUND DETENTION 221
SCALE: 1" = 2'



OUTLET CONTROL STRUCTURE - UNDERGROUND DETENTION 223
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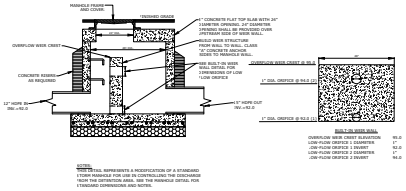

OUTLET CONTROL STRUCTURE - UNDERGROUND DETENTION 225
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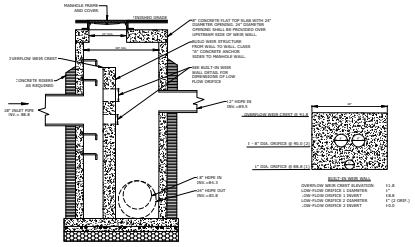

OUTLET CONTROL STRUCTURE - UNDERGROUND DETENTION 222
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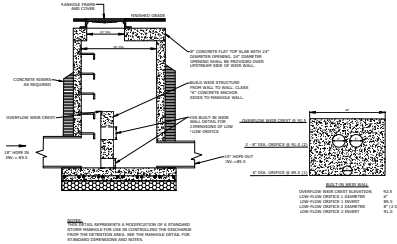

OUTLET CONTROL STRUCTURE - UNDERGROUND DETENTION 224
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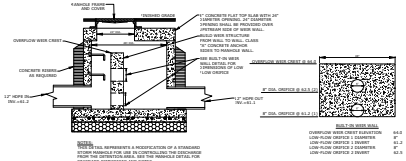

OUTLET CONTROL STRUCTURE - UNDERGROUND DETENTION 110
SCALE: 1" = 2'

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SLR
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CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

REVISION LOG:
DESCRIPTION

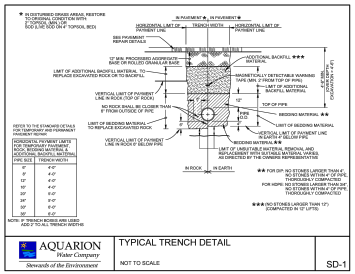
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880

PHASE:
DESIGN DEVELOPMENT

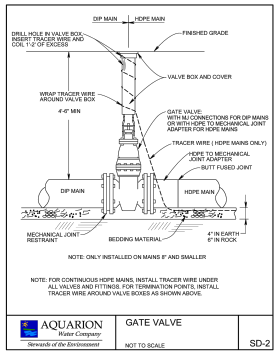
DRAWING TITLE:
SITE DETAILS

SCALE: AS NOTED
DATE: MAY 9, 2025
JOB NO: 10407.00021

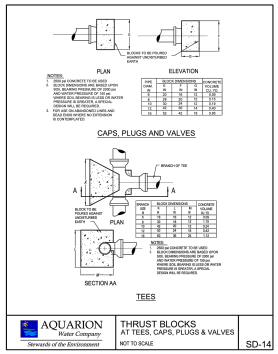
DRAWING NO:
SD-7



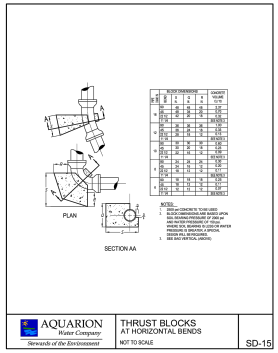
AQUARION Water Company — Stewards of the Environment | TYPICAL TRENCH DETAIL | NOT TO SCALE | SD-1



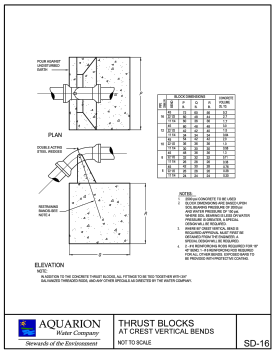
AQUARION Water Company — Stewards of the Environment | GATE VALVE | NOT TO SCALE | SD-2



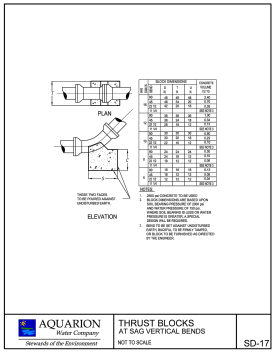
AQUARION Water Company — Stewards of the Environment | THRUST BLOCKS AT TEES, CAPS, PLUGS & VALVES | NOT TO SCALE | SD-14



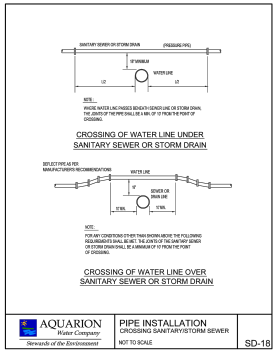
AQUARION Water Company — Stewards of the Environment | THRUST BLOCKS AT HORIZONTAL BENDS | NOT TO SCALE | SD-15



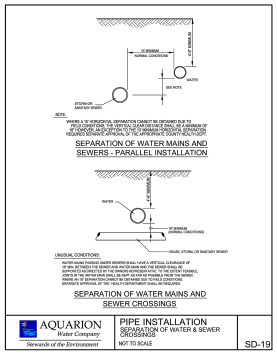
AQUARION Water Company — Stewards of the Environment | THRUST BLOCKS AT CREST VERTICAL BENDS | NOT TO SCALE | SD-16



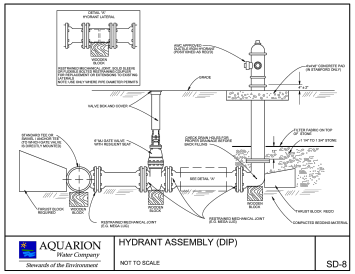
AQUARION Water Company — Stewards of the Environment | THRUST BLOCKS AT SAG VERTICAL BENDS | NOT TO SCALE | SD-17



AQUARION Water Company — Stewards of the Environment | PIPE INSTALLATION CROSSING SANITARY/STORM SEWER | NOT TO SCALE | SD-18



AQUARION Water Company — Stewards of the Environment | PIPE INSTALLATION SEPARATION OF WATER & SEWER CROSSINGS | NOT TO SCALE | SD-19



AQUARION Water Company — Stewards of the Environment | HYDRANT ASSEMBLY (DIP) | NOT TO SCALE | SD-8

NOTES (TO BE CONFIRMED WITH WESTPORT FIRE MARSHAL)
1. FIRE HYDRANT COLOR: VALDURA YELLOW WITH THE SILVER BONNET
2. VALVE DIRECTION OF OPENING - OPEN RIGHT
3. HYDRANT DIRECTION OF OPENING - OPEN LEFT
4. HYDRANT THREAD SPECIFICATION & DESIGN - SPEC 2 - PUMPER (STEAMER) & SIDE NOZZLES ARE ALL NST

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REVISION LOG:
DESCRIPTION

PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL

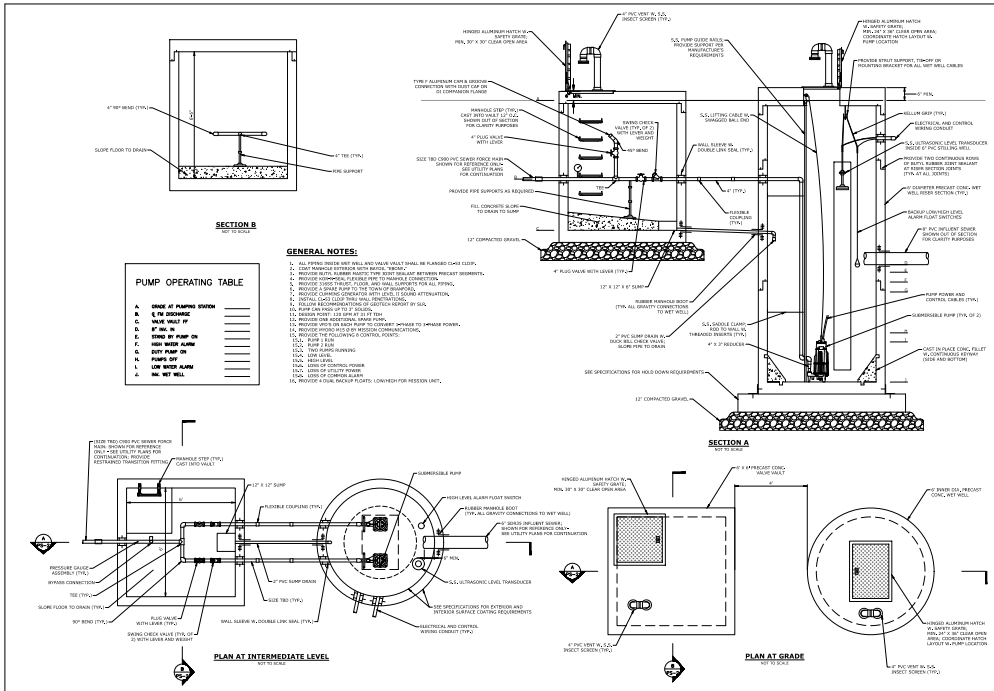
13 HYDE LANE
WESTPORT, CT 06880

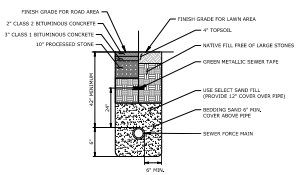
PHASE:
DESIGN DEVELOPMENT

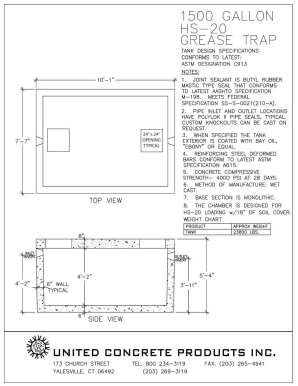
DRAWING TITLE:
SITE DETAILS

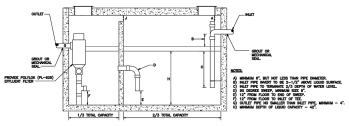
SCALE: AS NOTED
DATE: MAY 9, 2025
JOB NO: 16847.00021

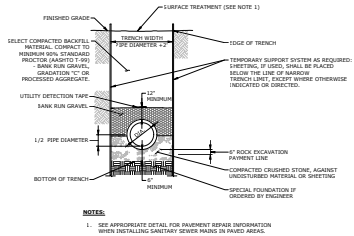
DRAWING NO:
SD-8

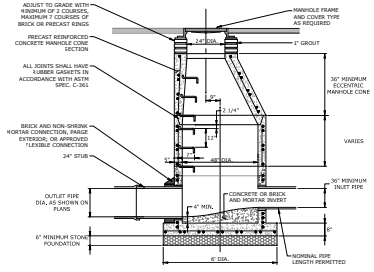












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REVISION LOG:
DESCRIPTION

PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL

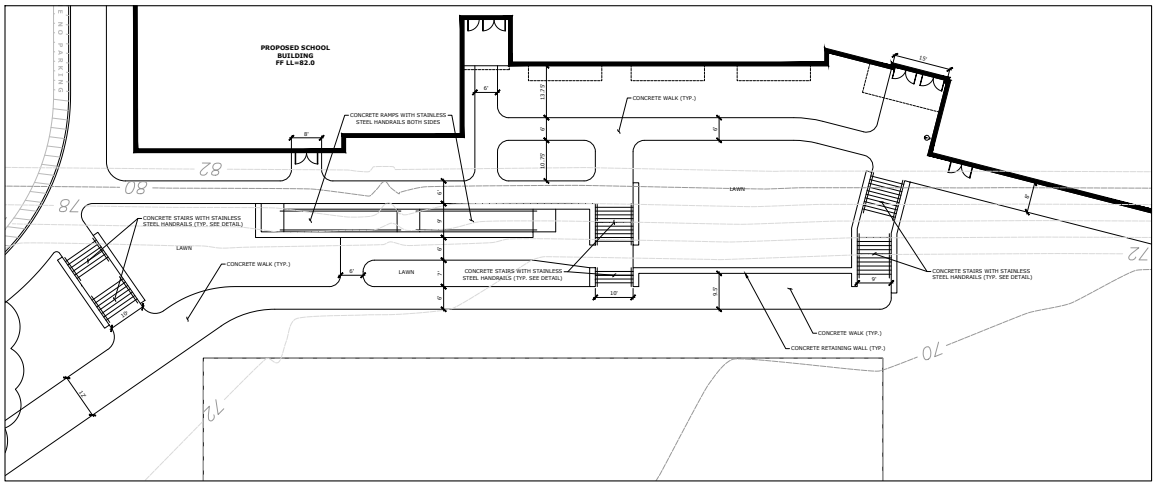
13 HYDE LANE
WESTPORT, CT 06880

PHASE:
DESIGN DEVELOPMENT

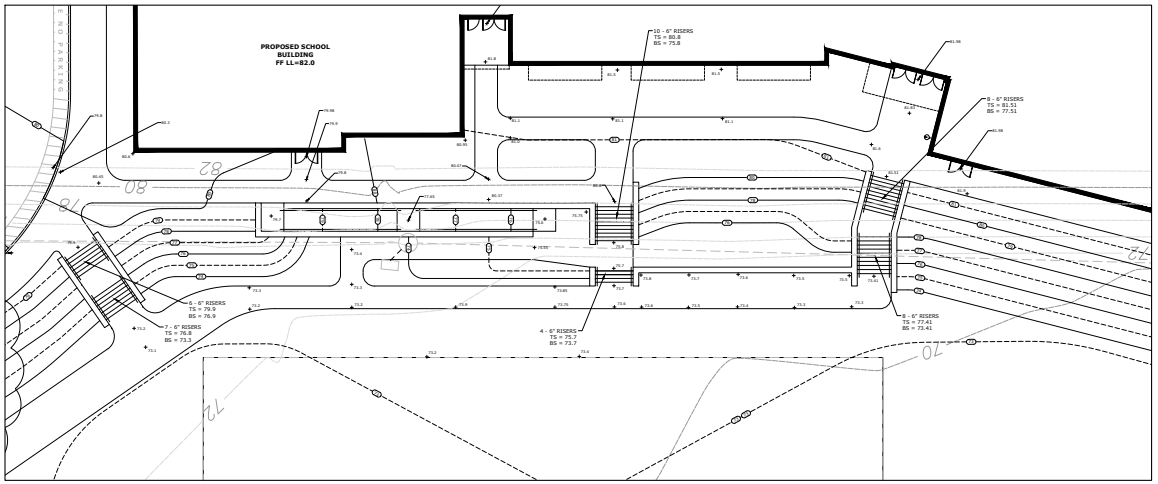
DRAWING TITLE:
SITE DETAILS

SCALE: AS NOTED
DATE: MAY 9, 2025
JOB NO: 10447.00021

DRAWING NO:
SD-9



ENLARGEMENT - SPECTATOR AREA LAYOUT AND MATERIALS
SCALE: 1" = 10'



ENLARGEMENT - SPECTATOR AREA GRADING AND UTILITIES
SCALE: 1" = 10'

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DESCRIPTION

PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL

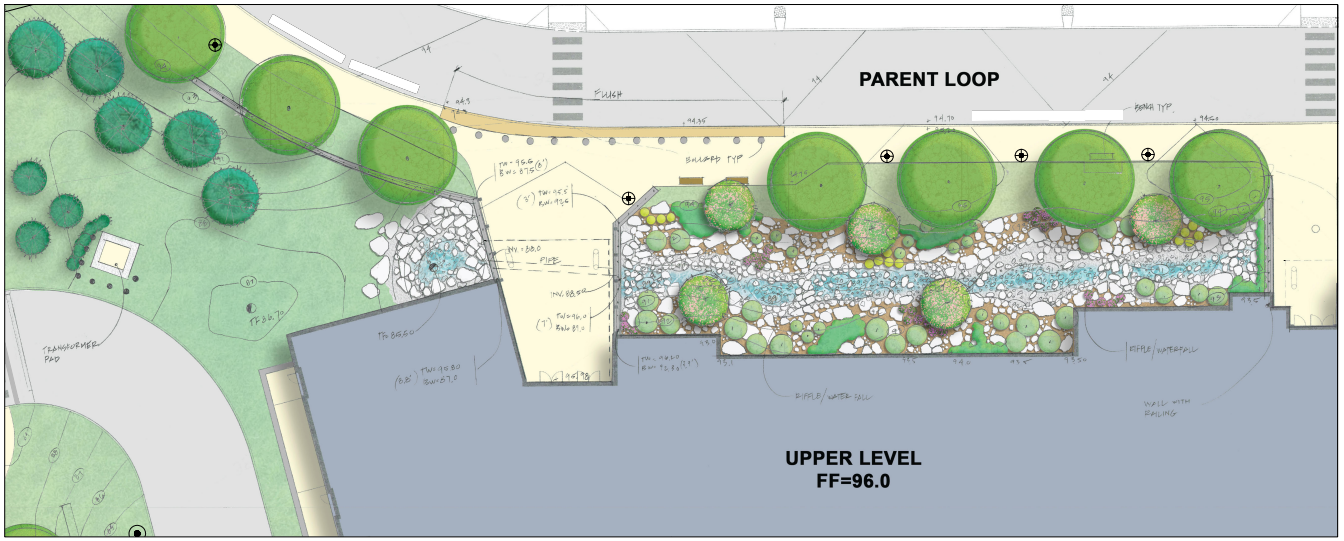
13 HYDE LANE
WESTPORT, CT 06880

PHASE:
DESIGN DEVELOPMENT

DRAWING TITLE:
ENLARGEMENT PLANS

SCALE: AS NOTED
DATE: MAY 9, 2025
JOB NO: 10407.08021

DRAWING NO:
ENL-1



ENLARGEMENT - NATIVE NEW ENGLAND RAIN GARDEN
SCALE: 1= 10'

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CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

DESCRIPTION

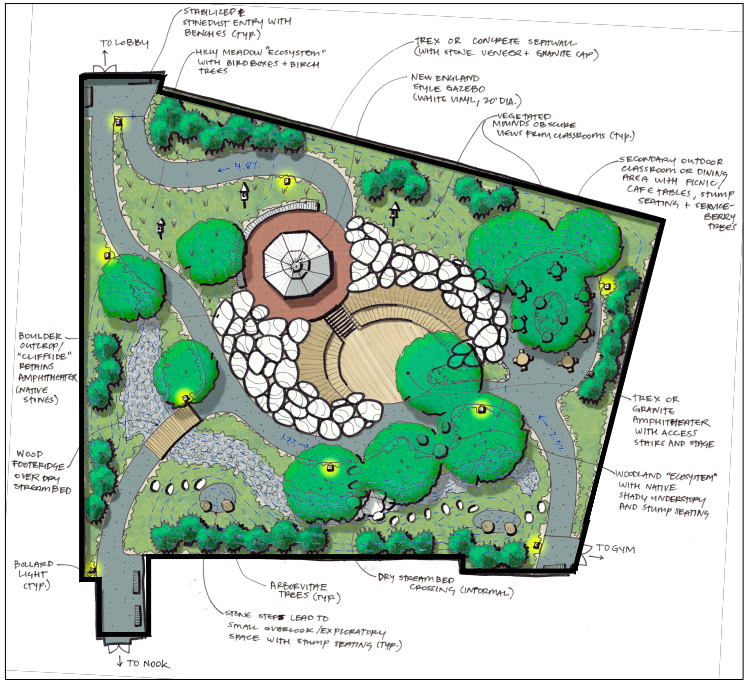
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880

PHASE:
DESIGN DEVELOPMENT

DRAWING TITLE:
ENLARGEMENT PLANS

SCALE: AS NOTED
DATE: MAY 9, 2025
JOB NO: 10447.00021

DRAWING NO:
ENL-2



ENLARGEMENT - COURTYARD

SCALE: 1" = 10'

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CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

DESCRIPTION

PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL

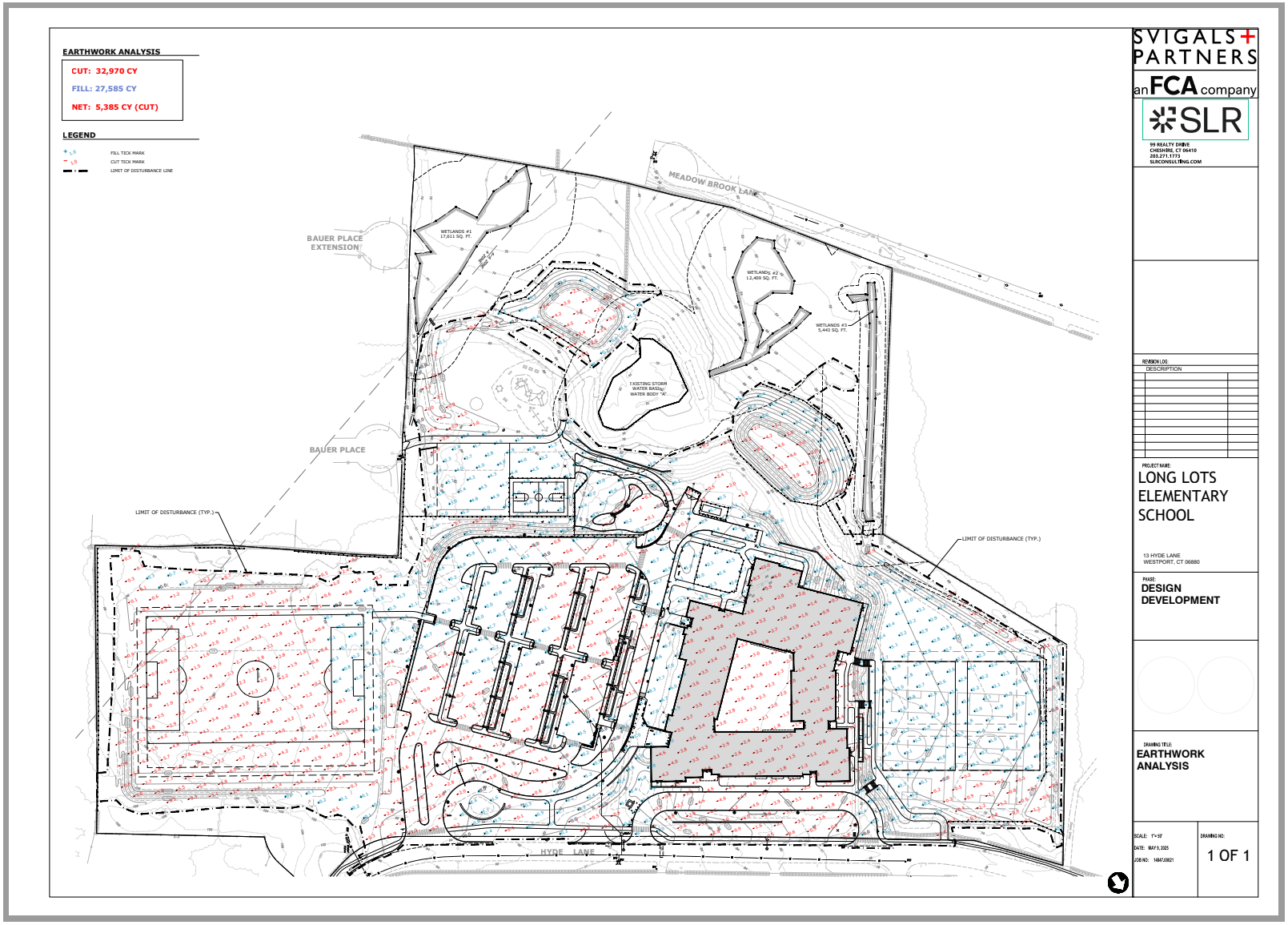
13 HYDE LANE
WESTPORT, CT 06880

PHASE:
DESIGN DEVELOPMENT

DRAWING TITLE:
ENLARGEMENT PLANS

SCALE: AS NOTED
DATE: MAY 9, 2025
JOB NO: 10447.00021

DRAWING NO:
ENL-3


EARTHWORK ANALYSIS
CUT: 32,970 CY
FILL: 27,585 CY
NET: 5,385 CY (CUT)
LEGEND
FILL TICK MARK
CUT TICK MARK
LIMIT OF DISTURBANCE LINE
MEADOW BROOK LANE
BAUER PLACE EXTENSION
BAUER PLACE
HYDE LANE
WETLANDS #1 17,611 SQ. FT.
WETLANDS #2 12,409 SQ. FT.
WETLANDS #3 5,443 SQ. FT.
EXISTING STORM WATER BASIN/ WATER BODY "A"
LIMIT OF DISTURBANCE (TYP.)
LIMIT OF DISTURBANCE (TYP.)
SVIGALS + PARTNERS
an FCA company
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CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM
REVISION LOG:
DESCRIPTION
PROJECT NAME:
LONG LOTS ELEMENTARY SCHOOL
13 HYDE LANE
WESTPORT, CT 06880
PHASE:
DESIGN DEVELOPMENT
DRAWING TITLE:
EARTHWORK ANALYSIS
SCALE: 1" = 50'
DATE: MAY 9, 2025
JOB NO: 10447.00821
DRAWING NO:
1 OF 1

Westport Conservation Department
Photographic Log

Date: 5/29/2025

Location: 13 Hyde Lane Long Lots School

Direction: South

Description: View of southern drainage ditch (Wetlands #1)

Photo 1 of 14

Date: 5/29/2025

Location: 13 Hyde Lane Long Lots School

Direction: East

Description: View of southern wetland (Wetlands #1) along the Bauer Place Ext.

Photo 2 of 14

Westport Conservation Department
Photographic Log

Date: 5/29/2025

Location: 13 Hyde Lane Long Lots School

Direction: Northwest

Description: View from top of slope toward the proposed southern stormwater basin

Photo 3 of 14

Date: 5/29/2025

Location: 13 Hyde Lane Long Lots School

Direction: North Northwest

Description: view from bottom of slope toward the proposed southern stormwater basin

Photo 4 of 14

Westport Conservation Department
Photographic Log

Date: 5/29/2025

Location: 13 Hyde Lane Long Lots School

Direction: North

Description: view of berm and drainage channel along the fence line at the existing stormwater basin (Wetlands #2).

Photo 5 of 14

Date: 5/29/2025

Location: 13 Hyde Lane Long Lots School

Direction: Southeast

Description: view from bottom of slope toward the proposed southern stormwater basin

Photo 6 of 14

Westport Conservation Department
Photographic Log

Date: 5/29/2025

Location: 13 Hyde Lane Long Lots School

Direction: West Northwest

Description: View from top of slope toward the proposed northern stormwater basin

Photo 7 of 14

Date: 5/29/2025

Location: 13 Hyde Lane Long Lots School

Direction: East Northeast

Description: View from middle of slope toward the proposed northern stormwater basin

Photo 8 of 14

Westport Conservation Department
Photographic Log

Date: 5/29/2025

Location:
13 Hyde Lane
Long Lots School

Direction:
West

Description:
View from top of slope toward the existing stormwater basin (Wetlands #2).

Photo 9 of 14

Date: 5/29/2025

Location:
13 Hyde Lane
Long Lots School

Direction:
South southeast

Description:
View of the existing stormwater basin discharge pipe and rip rap channel (Wetlands #2).

Photo 10 of 14

Westport Conservation Department
Photographic Log

Date: 5/29/2025

Location:
13 Hyde Lane
Long Lots School

Direction:
West Northwest

Description:
View of the existing stormwater discharge channel (Wetlands #2).

Photo 11 of 14

Date: 5/29/2025

Location:
13 Hyde Lane
Long Lots School

Direction:
Southeast

Description:
View of northwestern wetland (Wetlands #2) along Meadow Brook Lane.

Photo 12 of 25

Westport Conservation Department
Photographic Log

Date: 5/29/2025

Location:
13 Hyde Lane
Long Lots School

Direction:
West Southwest

Description:
View of drainage outlet (Wetlands #2) at the Meadow Brook Lane roadway.

Photo 13 of 14

Date: 5/29/2025

Location:
13 Hyde Lane
Long Lots School

Direction:
East Northeast

Description:
View of northern drainage channel (Wetlands #3) from Meadow Brook Lane.

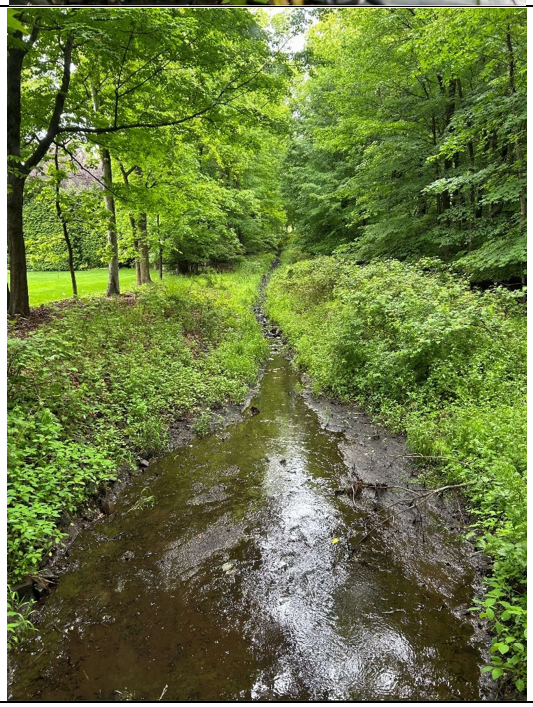

Photo 14 of 14

STAFF REPORT
Application # IWW, WPL-12151-25
13 Hyde Lane (aka Long Lots School
Assessor's Map: G10 Tax Lot: 058
Prepared May 28, 2025, and Last Revised May 30, 2025
Public Hearing: June 4, 2025

Application Request: To construct a new elementary school, parking lot, athletic fields, playgrounds, and associated site and utility work. Portions of the work are within the upland review area setbacks and the WPLO area of an unnamed tributary of Muddy Brook

Plans Reviewed:

a. **Wetland Delineation Report and Impact Assessment,** Long Lots Elementary School, 13 Hyde Lane, Westport, CT, prepared by SLR International Corporation, dated May 14, 2025.
b. **Property and Topographic Survey**, Town of Westport Long Lots Elementary School, 13 Hyde Lane, Westport, CT, prepared by Lindquist Surveying LLC, dated May 9, 2024, Scale 1"=40', 4 sheets.
c. **Long Lots Elementary School, Regulatory Permit Submission,** 13 Hyde Lane, Westport, CT, prepared b**y SLR** dated May 14, 2025, Scale: as noted, Sheets 0-24.
d. **Drainage Report,** Long Lots Elementary School, 13 Hyde Lane, Westport, CT, prepared by SLR dated May 14, 2025,
e. **Building Height Calculation,** Long Lots Elementary School, 13 Hyde Lane, Westport, CT, prepared by SLR dated April 22, 2025,

Past Permits:

- **1995:** Wall repair
- **AA-WPL/E-6511-01:** Playground equipment
- **IWW/M 7115-03,** Amend wetland map **#G-10, G-9, H-9, & H-10.**
- **IWW, WPL 7212-03:** Expansion and reconstruction of a parking lot, upgrade of the stormwater management system and associated improvements.
- **AA-WPL/E-7740-05**: Community Garden, 30 plots and storage shed
- **AA-WPL/E-8611-10:** Community Garden expansion from 30-58 plots
- **AA-WPL/E- 11148-20:** Covered pavilion
- **AA, WPL/E-11658-22:** Install a two-classroom modular building with covered walkway

IWW and WPLO Regulated Areas

The onsite wetlands are mostly found as part of the undeveloped western portion of the site. They are within a forested area dominated by red maple trees. Four regulated areas were identified onsite and are listed as: Wetland 1, Wetland 2, Wetland/Watercourse 3, and Stormwater Basin/Waterbody A. The Waterway Protection Line is associated with watercourses and waterbodies onsite. The site generally drains towards the west, with perennial watercourse Muddy Brook located ~80'to the from the western property line at its closest point.
The Inland Wetland and Watercourse Regulations (IWW) setbacks determined for regulated activities on this property include:

100’ upland review area for presence of steep slopes of 25% or greater,
75’ upland review area for a non-residential structure,
30’ upland review area for a parking lot and driveway,
25' upland review area for fence,
20’ upland review area for the proposed cut, fill, grading, and other alterations.

The proposed structure for the school is located ~130’ from the closest point to the onsite wetland/watercourse. The closest parking area and driveway are located ~47’ from the closest wetland. There are four locations with proposed grading changes located within the 20’ upland review areas. Three of these areas are proposed to be ~ 15’ from wetland areas on site and one area includes grading within ~10’ from the wetland areas. This grading is associated with the proposed stormwater management for the project and includes construction of two stormwater basins. These areas are proposed within the generally wooded area to the west of the school structure.

The application proposes two locations onsite with direct impacts to regulated wetland areas. This work totals 303 sq. ft. of direct impacts to wetland/watercourse areas, (171 sq. ft. and 132 sq. ft.). One area (171sq. ft.) is associated with work to repair and replace an existing deteriorated concreate headwall at the discharge outlet of existing drainpipes located on the northern portion of the site. This headwall represents the origin of the “Wetland/Watercourse 3” onsite and is noted as “Regulated Activity F” on the Site Plan – Grading sheet. The other area is an installation of an outlet control structure within the existing stormwater detention pond noted as “Stormwater Basin/Waterbody A” onsite and is noted as “Regulated Activity C” on the Site Plan – Grading sheet.

Staff notes that this plan denotes areas of sitework within the 75’ upland review areas associated with regulated areas onsite. These six (6) areas are highlighted and include various grading and drainage related activities that total ~ 39,360 sq. ft. (0.9 acres) of work area. These areas represent possible sources of indirect impacts to resources onsite.

Staff notes the location of the headwall at “Wetland/Watercourse 3” is the legacy discharge location of two pipes that are the existing drainage for the lower athletic field in the north of the site and the outlet from a pass-through drainage pipe that is leading from Trailing Rock Lane. This pipe carries stormwater and overflow from the collective properties to the east of Hyde Lane noted as “Watershed 12” in the “Drainage Report”. This represents an area that is 39.57 acres. Staff notes that this proposal maintains that connection to the east of the site and will remain as a “pass through” of that water. The existing pipe is an 18” reinforced concrete pipe, and the proposal includes a new pipe (24” HDPE) in a new path that is slightly adjusted to the north as it crosses the property but discharges to the same location. The pipe will maintain and carry the flow as it currently exists and is adjusted to allow for building siting and amenities from the northern side of the structure.

Staff notes all other proposed work lies within upland areas of the site.

The applicant provides a site-specific soil review for the property within the “Wetland Delineation Report and Impact Assessment” as part of the current application. These findings are reflected on the “Property and Topographic Survey”. Previously, the 2003 map amendment application was considered and approved by the Conservation Commission. The “Wetland Delineation Report” identifies wetlands and watercourses in their current state, after the last site improvements were completed. Staff

acknowledge that the current surveyed line changes slightly on the plans, however we feel they represent an insignificant difference from the 2003 map amendment application. A review of the current line indicated on the plans and after conducting an onsite inspection in the field, we note this current line is representative of the existing regulated areas onsite. Therefore, we did not deem another map amendment necessary for this application. We also acknowledge that the existing mapping incorporates the site conditions from the last significant work onsite and provides an appropriate level of mapping for the Commission to make any determination of any impacts to wetlands for the current application. This mapping includes and incorporates the changes to the improved water detention facility that was modified by the 2003 permit. The current application provides a report indicating field investigation that identifies soil units listed as described below.

Wetland soils *found on the properties*

Aquents: This soil unit is found disturbed areas that generally have less than two (2) feet of fill over naturally occurring poorly or very poorly drained soils, or are located where the naturally occurring wetland soils are no longer identifiable, or the original soil materials have been excavated to the ground water table within twenty (20) inches of the soil surface, have an aquatic moisture regime and can be expected to support hydrophytic vegetation.

Non-wetland *soils found on the properties*

Agawam fine sandy loam, 3-8% slopes (29B) – Well drained
Sutton fine sandy loam, 3-8% slopes (50B) – Moderately well drained
Canton and Charlton fine sandy loams, 8-15% slopes (60C) – Well drained
Sutton-Urban land complex, 0-8% slopes (250B) – Moderately well drained
Charlton-Urban land complex, 3-8% slopes (260B) – Well drained
Urban land (307) – Variable
Udorthents, smoothed (308) – Moderately well drained

Property Description and Relative Facts:

1. The existing property contains an elementary school building that was built in 1954. It also includes parking, playgrounds, athletic fields and other auxiliary uses. It is served by sewer.
2. The property is **28.076 acres** (1,223,013 sq. ft.) in size.
3. The property is located mostly in Residential Zone AA with portions of the southern area within Zone A.
4. The parcel is located within the Muddy Brook Watershed.
5. The property is situated in Flood Zone X as shown on F.I.R.M. Panel 09001C0414G Map revised to July 8, 2013.
6. FEMA maps
7. The property is **not** within the Coastal Area Management Zone.
8. The property is not within the Aquifer Protection Overlay Zone.
9. The Waterway Protection Line is established 15' from the wetland line.
10. The proposed school building is **127,945 sq. ft**. (*existing school building is **152,795 sq. ft.***)
11. Parking lot: **250 spaces. (***existing: **196** spaces***)**
12. **Amenities include:** 2 multipurpose natural turf athletic fields, 2 playgrounds, basketball court, and play area

CRITERIA TO BE CONSIDERED BY THE COMMISSION

In carrying out the purposes and policies of the IWW regulations for the Town of Westport Section 5.0 and Sections 22a-36 to 22a-45(a,) inclusive, of the Connecticut General Statutes, including matters relating to regulating, permitting and enforcing of the provisions thereof, the Commission shall take into consideration all relevant facts and circumstances, including, but not limited to:

(a) The environmental impact of the proposed regulated activity on wetlands or watercourses;
(b) The applicant's purpose for, and any feasible and prudent alternatives to, the proposed regulated activity which alternatives would cause less or no environmental impact to wetlands or watercourses;
(c) The relationship between the **short-term** and **long-term impacts** of the proposed regulated activity on wetland or watercourses and the maintenance and enhancement of long-term productivity of such wetlands or watercourses.
(d) Irreversible and irretrievable loss of wetland or watercourse resources which would be caused by the proposed regulated activity, including the extent to which such activity **would foreclose a future ability to protect**, enhance or restore such resource and any mitigation measures which may be considered as a condition of issuing a permit for such activity
(e) The character and degree of injury to, or interference with, safety, health or reasonable use of property which is caused or threatened by the proposed regulated activity
(f) Impacts of the proposed regulated activity on wetlands or watercourses outside the area for which the activity is proposed and **future activities** associated with, or reasonably related to, the proposed regulated activity **which are made inevitable** by the proposed regulated activity and which may have an impact on wetlands or watercourses. ; and
(g) The degree to which the proposed activity is consistent with all applicable goals and policies set forth in Section 1.3 and 1.4 of these Regulations and Section 22a-36 of the Connecticut General Statutes, as amended.

Conformance to Section 6 of the Inland Wetlands and Watercourses Regulations:

6.1 GENERAL STANDARDS

a) disturbance and pollution are minimized;
b) minimize height, width, length of structures are limited to the minimum; dimension to accomplish the intended function;
c) loss of fish, other beneficial organisms, wildlife and vegetation are prevented;
d) potable fresh water supplies are protected from dangers of drought, overdraft, pollution, misuse and mismanagement;
e) maintain conservation, economic, recreational and aesthetic qualities;
f) consider historical sites

Discussion:

Staff notes in previous Commission reviews Application # IWW, WPL 7212-03 (for the expansion and reconstruction of a parking lot, upgrade of the stormwater management system and associated improvements). A consultant provided It is REMA's opinion that from a functional perspective the wetland areas on the site would not be considered significant. Overall, Wetlands A through C were evaluated as providing low quality functions and values. Some of the reasons that these wetlands did not score higher included their relatively small size, disturbance from residential activities for many

years, low vegetative and wetland class and subclass diversity, presence of invasive species and influence by human activities, such as stormwater runoff discharge to and from Wetland A."
(The staff report from 2004 is added as an addendum to this report -Addendum A.)

As part of this current proposal, SLR prepared a "Wetland Delineation Report and Impact Assessment" that includes a thorough wetland investigation, narrative of work, wetland impact review, sediment and erosion control, and stormwater management. This review concludes with the following statement:

> *"Existing structures within the project area will be demolished, and a new school and necessary appurtenances will be constructed. Direct wetland impacts are limited to 303 SF, which are necessary to improve stormwater quality and flow conditions.*
>
> *The proposed stormwater management system will provide protections for water quality and ensure no increase in the peak rate of discharge from the property. A comprehensive S&E Control Plan has been designed and will be used through the construction period. Direct wetland impacts and work in the URA have been minimized to the maximum extent practicable.*
>
> *Through the avoidance of direct and indirect impacts to the maximum extent possible, the use of S&E controls and stormwater management measures are being implemented to avoid short term and long-term impacts. It is SLR's professional opinion that the proposed project will not result in any significant adverse impacts or effect on regulated wetland/watercourse/waterbody resources."*

Trees are proposed as landscape features for the building and as a property line buffer in the developed portions of the site. These trees are a mixture of native and non-native species. There are two general areas of vegetation within the upland review areas that will be disturbed onsite. These areas are associated with the installation of the two stormwater basins as part of this proposal. The removal of mature trees is limited to areas of required grading/excavation for the proposed footprint. Staff notes vegetation removal will total ~ 53,000 sq. ft. (~1.22 acres) of area. The remaining forest canopy will remain intact. The restoration plans provided "Site Plan – Landscaping" identifies several larger trees as part of the selections for restoration, The area of the proposed drainage basins are proposed to be planted with appropriate seed mixtures to provide stabilization and functionality of the drainage feature.

Habitat within the nearby watercourse corridor will be left undisturbed. Staff notes that disturbed conditions are temporary and do not pose any long-term adverse impacts to wildlife, vegetative communities, and or fish habitat which are limited onsite..

Staff notes the application includes the installation of an array of geothermal wells located in the northern athletic field. Staff assumes this is done as a means to reduce energy consumption for the building. Staff recommends that the applicant provide information on any additional reserve or "back-up" system that may be required. If required, would this be conventional heating sources (oil or gas) for the proposed structure?

6.2 WATER QUALITY

a) flushing rates, freshwater sources, existing basin characteristics and channel contours will not be adversely altered;
b) water stagnation will neither be contributed nor caused;

c) water pollution will not affect fauna, flora, physical or chemical nature of a regulated area, or the propagation and habitats of fish and wildlife, will not result;
d) pollution of groundwater or a significant aquifer will not result (*groundwater recharge area or Aquifer Protection Overlay Zone*);
e) all applicable state and local health codes shall be met;
f) water quality will be maintained or improved in accordance with the standards set by federal, state, and local authority including section 25-54(e) of the Connecticut General Statutes
g) prevents pollution of surface water

Discussion:
To the west of the property lies Muddy Brook (State Waterbody ID: CT7000-16_01 (Connecticut Environmental Conditions Online, http://www.cteco.uconn.edu/) It is listed as a Class A water for Inland Surface Water Class. The Class A designation indicates that the water is suitable habitat for fish other aquatic life and wildlife and recreation.

Staff referenced UConn's CLEAR Local Watershed Assessment Tool. The local watershed basin for Muddy Brook has a combined condition index (CCI) score of 0.19. A CCI score of less than 0.43 indicates the watershed basin may be significantly impaired. The Tool defines Pussy Willow Brook's Recovery Status as "Mitigation", identifying that the watershed condition can be improved with mitigation efforts such as restoring naturalized riparian zones.

Staff does not feel the surface water quality of Muddy Brook, located offsite, will be impacted from the proposed activity across the subject property. The project proposes limited areas of temporary, direct impacts to a watercourse (303 sq. ft. of direct impacts) that can be managed and mitigated onsite during excavation. Due to the nature of these actions, Staff recommends the Commission require that the Department is notified 48 hours to the start of work. Conservation technical Staff should be present for oversite of the work within the stream.

Staff notes that the design engineers incorporated Low Impact Development (LID) features onsite to reduce stormwater runoff volume and provide treatment of pollutants in the water. This concept is achieved by incorporating raingardens, bio-filtration swales within the parking islands, hydrodynamic separators, and other considerations. LID was already in use onsite, as the existing parking areas included sunken islands in the 2003 permit to act as bio-filtration swales. The collective sum of this work allows for the capture of the "first flush" of stormwater runoff from the first 1.3" of rain. This is Water Quality Volume that is calculated and held within the proposed drainage to provide the treatment of pollutants.

6.3 EROSION AND SEDIMENT
a) temporary erosion control measures shall be utilized during construction and for the stabilization period following construction;
b) permanent erosion control measures shall be utilized using nonstructural alternatives whenever possible and structural alternatives when avoidable;
c) existing circulation patterns, water velocity, or exposure to storm and flood conditions shall not be adversely altered;
d) formation of deposits harmful to aquatic life and or wetlands habitat will not occur;
e) applicable state, federal and local guidelines shall be met.

Discussion:
Due to the size of the proposed project and the necessary amount of excavation across the subject property, assessing potential adverse impacts should focus on the site utilizing the adequate type and amount of erosion and sediment controls to prevent a large-scale release of loose sediment during storm conditions. The potential for sedimentation into the wetlands will be related to E&S inadequacies or failures.

The applicant has provided sediment and erosion controls in the project "Site Plan - Sediment & Erosion control Plan" and the "Wetland Delineation Report and Impact Assessment" which specifies the use of a multitude of controls to limit migration of soil onsite. This included the use of geotextile silt fence, staked hay bales, diversion berms, temporary sediment traps, stockpile areas, erosion blankets, construction entrances, and inlet protections. The sediment traps will be converted to stormwater infiltration basins at the end of construction. The SLR plan states:

> "*All S&E controls provided are in accordance with the Town of Westport regulations as well as the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control."*

Staff feels the proposal provides sufficient controls as stated above, however we note that the size, scope, and length of time to construct this project will place a burden on these controls if not properly maintained and monitored. Staff notes the plan recommends monitoring be utilized to complete a weekly check of all erosion controls and after 0.5 inch storms to be maintained in records onsite. Staff recommends the monitor provide those weekly reports directly to the Conservation Department throughout projects exterior sitework phases until the site is suitably stable.

Staff also notes the "Site Plan" requires a final report on stabilization of the completed site for erosion for three most post construction. Staff would recommend the Commission consider a review of the stormwater basins one year after the completed construction.

Staff feels proper installation and continued maintenance of the above listed Sediment & Erosion controls should be adequate to contain sediments onsite and prevent impacts due to sedimentation.

6.4 NATURAL HABITAT STANDARDS

a) critical habitats areas,
b) the existing biological productivity of any Wetland and Watercourse shall be maintained or improved;
c) breeding, nesting and or feeding habitats of wildlife will not be significantly altered;
d) movements and lifestyles of fish and wildlife (plant and aquatic life)will not be significantly affected;
e) periods of seasonal fish runs and bird migrations shall not be impeded;
f) conservation or open space easements will be deeded whenever appropriate to protect these natural habitats.

Discussion:
The applicant's review of current data maintained by the CT DEEP for the Natural Diversity Database (NDDB) demonstrated that no populations of State listed species or critical habitats have been documented within or in close proximity to the project area. The Commission finds there will be no impacts to state listed species or critical habitat as a result of the proposed project.

Staff notes the project narrative states the areas of disturbed ground surface will be seeded when left untouched for one month or longer according to the "Sediment and Erosion Control Plan" or at the completions of the project. Staff finds this as a suitable solution to stabilize the loose soils. Staff recommends any disturbance within areas of constructed slopes should be seeded as soon as practicable with proposed mixes to promote stabilization.

Staff notes that the on-site wetlands will remain generally unchanged. The capacity of the wetlands and watercourses to provide wildlife habitat will most likely not show improvement with the proposed landscaping buffer. Staff has a policy that supports selecting native plantings for any projects that include new vegetation. Native plants provide general benefits to wildlife that would utilize the adjacent wetlands. Thes plants provide beneficial habitat opportunities and food sources. The areas of raingardens and sunken parking islands provide an opportunity for this opportunity. This could provide some benefit to habitat restoration to offset the removal of vegetation associated with the drainage basins. However, staff acknowledges the buffer plantings along the property lines will likely have less benefit. Staff recommends the Commission consider a requirement for a portion of the plantings be native, non-invasive species.

6.5 DISCHARGE AND RUNOFF

a) the potential for flood damage on adjacent or adjoining properties will not be increased;
b) the velocity or volume of flood waters both into and out of Wetlands and Watercourses will not be adversely altered;
c) the capacity of any wetland or watercourse to transmit or absorb flood waters will not be significantly reduced;
d) flooding upstream or downstream of the location site will not be significantly increased;
e) the activity is acceptable to the Flood & Erosion Control Board and or the Town Engineer of the municipality of Westport.

Discussion:

Staff notes the stormwater from the impervious areas of the site will be managed by several different methods in accordance with the 2024 Connecticut Stormwater Quality Manual. This includes a "treatment train" methodology as part of the design. This is a Best Management Practice for stormwater where multiple structural components are combined in series to meet water quality improvements. The SLR "Wetland Delineation Report and Impact Assessment" details this here:

> *The system design and components employ standard engineering practices that are regularly used throughout the Town and the Northeast to prevent stormwater pollution. The stormwater management system includes water quantity and water quality protections. The proposed stormwater treatment train consists of two additional stormwater basins, catch basins with 2-foot sumps, underground detention systems, and hydrodynamic separators. The existing stormwater basin near the center of the site will remain in place, with outlet structure improvements as previously described. In addition, two new basins will be constructed, both of which will be seeded with native seed mixes.*
>
> *The southern basin will primarily receive stormwater from the parking lot and larger athletic field. Stormwater will be conveyed through a series of seven underground detention systems*

followed by a hydrodynamic separator to receive valuable retention time and sediment removal prior to reaching the basin. A riprap spillway will convey any excess stormwater into the existing central stormwater basin.

The northern basin will collect runoff from the school's roof and internal courtyard as well as the bus loop, the latter of which will first be routed through a hydrodynamic separator. The basin will include a sediment forebay and discharge via a level spreader to uplands adjacent to Wetland/Watercourse 3. A riprap-lined spillway will provide secondary overflow routing in the same direction.

Runoff from the northern athletic field will continue to be directed to the man-made channel of Wetland/Watercourse 3 through two new underground detention systems, offering additional peak flow control, and a new outfall with flared end section.

Hydrologic analysis demonstrates no increases in peak-flow rates from the proposed development (drainage report prepared by SLR under separate cover). The proposed stormwater management system provides sufficient water quality protection and water volume retention to comply with regulations. No impacts to the hydrology of wetlands or watercourses resulting from the proposed stormwater management measures are anticipated.

Ted Gill of the Town Engineering Department provided an application review for the project and determined the project, as proposed, meets the minimum drainage standards for the Town of Westport. His comment:

The proposed drainage consist of facilities to manage on-site runoff and mitigate impacts from development, as well as conveyance of a watercourse through the property. Each set of designs has been prepared in accordance with the recommendations of the Engineering Department, meets the minimum drainage standards of the Town of Westport, and meets the more restrictive design standards that the applicant determined to set to address neighbors concerns.."

As stated above, Staff notes the location of the headwall at "Wetland/Watercourse 3" is the legacy discharge location of two pipes that are the existing drainage for the lower athletic field in the north of the site and the outlet from a pass-through drainage pipe that is leading from Trailing Rock Lane to the east of the subject property. This includes properties located on Trailing Rock Lane, portions of Long Lots Road, portions of Maple Avenue North and Hyde Lane which roughly measures ~35 acres. This area is known to our office to contain wetlands, watercourses, and relic drainage components that have been poorly mapped and/or documented over the years. Staff feels the application maintains the stormwater discharge and runoff patterns for this neighborhood and should not realize any notable changes from current conditions.

Staff does not anticipate this project will diminish the capacity of existing wetlands or watercourses onsite to transmit or absorb waters from its current function.

6.6 RECREATIONAL AND PUBLIC USES

a) access to and use of public recreational and open space facilities, both existing and planned, will not be prevented;

b) navigable channels and or small craft navigation will not be obstructed;
c) open space, recreational or other easements will be deeded whenever appropriate to protect these existing or potential recreational or public uses;
d) wetlands and watercourses held in public trust will not be adversely affected.

Discussion:
Staff feel that the proposed development will have a positive impact/enhancement of the recreational and public uses on through the use of athletic fields. The wetlands and watercourses onsite will not have a significant impact on recreation or public use.

Waterway Protection Line Ordinance (WPLO)

Section 148-9 of the Waterway Protection Line Ordinance states that the applicant shall submit information to the Conservation Commission showing that such activity will not cause water pollution, erosion and/or environmentally related hazards to life and property and will not have an adverse impact on the preservation of the natural resources and ecosystem of the waterway, including but not limited to impact on ground and surface water, aquifers, plant and aquatic life, nutrient exchange and supply, thermal energy flow, natural pollution filtration and decomposition, habitat diversity, viability and productivity and the natural rates and processes of erosion and sedimentation.

The WPLO boundary is located 15' from the wetland boundary associated with any watercourse onsite. A portion of the proposed activity will occur within the WPLO boundary. With the proper installation, monitoring, and maintenance of the E&S as well as the immediate stabilization of disturbed soils within the wetland and upland, Staff feels impacts to water quality and natural resources will be mitigated.

Alternatives for reduction of impacts:
1. No build alternative.
2. Approve Application with the following modifications to plans listed above and special conditions to ensure wetland and waterway protection:

a) All disturbed ground surfaces shall be stabilized and restored before final sign off.
b) The Conservation Department shall be notified 48 hours prior to the work within "Wetland/Watercourse 3". Staff shall be onsite to monitor dewatering and excavation activities.
c) A site monitor shall provide sediment and erosion control reports weekly and after 0.5 inch storm events to the Conservation Department.
d) A review of the stormwater basins shall be complete one year after the completed construction and a report shall be provided to the Conservation Deparment
e) The Landscape Plan be amended to show native, non-invasive species of trees within parking islands, rain gardens, and other landscape features of the site.

Addendum A: Application #IWW, WPL 7212-03, Second Staff Report, 11-13 Hyde Lane, Public Hearing January 21, 2004

SECOND STAFF REPORT
Application #IWW, WPL 7212-03
11-13 Hyde Lane
Public Hearing January 21, 2004
Prepared January 14, 2004

Application Request:
Application by the Town of Westport School Building Committee for the expansion and reconstruction of a parking lot, upgrade of the stormwater management system and associated improvements. This work includes redesign of the existing parking lot and expansion to create 196 parking spaces, replacement of a concrete swale with earthen swales and plunge pools along Meadow Brook Lane. The project also includes enlargement of an existing detention basin that will also require approval from the Connecticut DEP. Though the parking lot itself is not within the regulated areas, drainage work is located within IWW setbacks and the WPLO area.

Background
The applicant has submitted a revised plan on December 16, 2003. These plans were distributed to the Commission on the evening of the public hearing on December 17, 2003. The hearing was opened and the applicant presented their application. Staff did not offer any comments as review of the plan was not completed at that time. Staff had submitted a letter, dated November 19, 2003 requesting additional information needed to assess activities. Staff offered preliminary comments in its December 12, 2003 staff report.

The primary revision on this plan included drainage islands within the proposed parking lot and a redesign of the parking lot. These revisions were included in an effort to improve water quality in stormwater prior to discharge into the stormwater system. The applicant has revised calculations to include this revision so that sediment removal rates have increased prior to discharge into proposed forebays adjacent to wetland A. As indicated in the preliminary staff report, prepared December 11, 2003, "*Staff is supportive, in concept, of the proposed application. Details relating to* ***maintaining vegetation within wetlands***, ***biofiltration areas within proposed parking areas***, ***detailed grading design, sediment removal, prior to discharge into wetland areas*** *still need to be worked out."* The revised plans addressed some of these above issues.

As previously stated, staff is supportive in concept of directing stormwater to the existing wetland system, however, assessment of environmental impact is still necessary. Excavation is indicated on the plans in order to increase the volume of water detained in wetland A. Through the process of excavation extensive clearing is proposed around Wetland A (man-made created detention basin but has evolved into a wetland that supports wetland vegetative communities/habitat and functions). In staff's letter dated November 19, 2003, it was requested that the applicant survey trees over 8" dbh within the regulated areas to further clarify the extent of clearing so that there may be some effort to protect vegetation where feasible in all regulated areas. At this time surveying in the vicinity of the concrete watercourse is being conducted. Staff has asked the project engineer to consider an alternative where clearing could be reduced within the regulated area around Wetland A. Two options for this scenario would be to 1) reduce the volume of water entering Wetland A and 2) raise the berm where the dam exists in order to compensate for a portion of existing trees to remain.

A plan indicating this concept was submitted to staff on January 14, 2004. The Commission is to determine whether the recent alternative presents more or less of an environmental impact than the present design. Existing wetlands physically impacted by this proposed design are the following: Wetland A, B & C.

General Description –Wetland A
Vegetation identified and documented in a report prepared by Rema Ecological Consultants consists of red maples, spice bush, sensitive fern, jewel weed, skunk cabbage, canary reed grass, golden rods, pondweed, multiflora rose and barberry. Wildlife observed included green frogs, eastern toad, Carolina wren, house sparrow, grackle, raccoon and deer. Additional species commonly associated with suburban areas can also be expected here. This wetland was created when a dam and detention basin was installed. The wetland soil is identified as Aquents, or recently developed wetland soil. The wetland is evolving and as this occurs also improves in function over time.

General Description – Wetland B
Vegetation identified and documented in a report prepared by Rema Ecological Consultants consists of red maples, hickory, ash, spice bush, winterberry, honeysuckle and multiflora rose. Also existent is jewel weed, jack in the pulpit, clearweed, sedges, enchanters nighshade and skunk cabbage. The wetland can be described as a woodland swamp that is fed by surface water and groundwater. Wildlife observed includes green frog, spring peeper, raccoon, cardinal, robin, red eyed vireo, and deer. Additional species commonly associated with suburban areas can also be expected here.

General Description- Wetland C
Vegetation observed is typical to the above wetland and dominated as spicebush and red maple.

Rema Ecological Consultants indicates the following in report dated August 11, 2003.

"It is REMA's opinion that from a functional perspective the wetland areas on the site would not be considered significant. Overall, Wetlands A through C were evaluated as providing low quality functions and values. Some of the reasons that these wetlands did not score higher included their relatively small size, disturbance from residential activities for many years, low vegetative and wetland class and subclass diversity, presence of invasive species and influence by human activities, such as stormwater runoff discharge to and from Wetland A."

Plans Reviewed

1. Property Survey prepared for The Town of Westport Long Lots School Hyde Lane, Westport, Connecticut, prepared by F. A. Hesketh & Associates, Inc., date 8/4/97, revision date 10/13/03, Scale 1" = 40' prepared by F.A. Hesketh & Associates, Inc. sheets 1-3, revision date 12/16/03
2. Long Lots Elementary School-Parking and Circulation Improvement, 13 Hyde Lane, Conservation Commission Documents, Location Map, General Notes and Abbreviations, Drawing Index, Site Demolition, Site Layout, Site Grading and Drainage Plan, scale 1"=40'-0", sheets C.01-C.05B, date 11/13/03, prepared by Diversified Technology Consultants revision date 12/16/03
3. Long Lots Elementary School-Parking and Circulation Improvement, 13 Hyde Lane, Conservation Commission Documents, Detention Basin Plan and Details, Soil & Sedimentation Control Plan, Soil Erosion and Sedimentation Control Narrative, Site Construction Drainage

Details, Drainage Details, Site Construction Details, scale :as noted, sheets C.06-C.12, date 11/13/03, prepared by Diversified Technology Consultants revision date 12/16/03

4. Long Lots Elementary School-Parking and Circulation Improvement, 13 Hyde Lane, Conservation Commission Documents, Planting Plan, scale :1"=40'-0", sheets L.01A-L.01B, date 11/13/03, prepared by Diversified Technology Consultants revision date 12/16/03
5. Conceptual Plan for heightened berm dated submitted 1/14/04.

Conformance to Section 6 of the Inland Wetlands and Watercourses Regulations
6.1 GENERAL STANDARDS

a) disturbance and pollution are minimized;
b) minimize height, width, length of structures are limited to the minimum; dimension to accomplish the intended function;
g) loss of fish, other beneficial organisms, wildlife and vegetation are prevented;
h) potable fresh water supplies are protected from dangers of drought, overdraft, pollution, misuse and mismanagement;
i) maintain conservation, economic, recreational and aesthetic qualities;
j) consider historical sites

Discussion
Alternative submitted December 16, 2003
The application indicates improvements to stormwater design so that sediment removal rates are improved prior to discharge into Wetland A. These include the water quality swales within the proposed parking areas and a sediment forebay located near wetland A. Secondary stormwater treatment includes the vortechnics system, deep sumps and hoods in the catch basins. In this scenario extensive clearing is proposed adjacent to wetland A limits.

Alternative submitted January 14, 2004
In this scenario, all the above improvements are proposed with the reduction of clearing within Wetland A. Approximately, an additional 5,400 sf of existing vegetation is maintained near wetland A with this concept. On the other hand additional clearing is proposed on the north side of the proposed berm in the direction of wetland B. An additional twenty feet is proposed to be cleared in the vicinity of the intermittent watercourse connecting wetland A and Wetland B. Also included is an extension of pipe in this vicinity to make up for the increase in berm height. As per a conversation with the project engineer it appears feasible to reduce the extension of the pipe by increasing the height of the head wall in order to maintain the extent of disturbance where the intermittent watercourse is located. This would maintain the existing disturbance limit in this area as the first alternative. As per our conversation clearing limits in this scenario are very similar to the limits proposed in the first alternative.

The Commission is to determine whether this alternative presents less or more of an environmental impact than the first scenario. It is staff opinion that the Alternative submitted on January 14th presents less of an environmental impact than plans submitted previously. The previous impact associated with wetland A is decreased by allowing a portion of existing vegetation to remain in the uplands directly around the existing wetland area. This provides a combination of different habitats that are directly associated with this isolated wetland. In this scenario a diversity of canopy, midstory, groundcover vegetative types remain immediately post construction. Established vegetative cover provides functions

of filtration, absorption, adsorption, sediment removal etc to occur immediately while the rest of the detention basin will need time for the newly installed plants to establish. Surface runoff from this direction will be filtered and sediment and erosion will be reduced within wetland limits by maintaining existing vegetation in this area. By allowing more existing vegetation to remain near the wetland allows additional area to perform these functions without a waiting period for establishment.

6.2 WATER QUALITY

h) flushing rates, freshwater sources, existing basin characteristics and channel contours will not be adversely altered;
i) water stagnation will neither be contributed nor caused;
j) water pollution will not affect fauna, flora, physical or chemical nature of a regulated area, or the propagation and habitats of fish and wildlife, will not result;
k) pollution of groundwater or a significant aquifer will not result (*groundwater recharge area or Aquifer Protection Overlay Zone*);
l) all applicable state and local health codes shall be met;
m) water quality will be maintained or improved in accordance with the standards set by federal, state, and local authority including section 25-54(e) of the Connecticut General Statutes
n) prevents pollution of surface water

Discussion
The applicant has submitted revised calculations that include water quality swales within the parking lot area. This change along with the proposed forebay, micropool, secondary stormwater treatment BMPs such as the deep sumps and vortechnics will decrease sediment deposits entering wetland A. Proposed calculations indicate sediment removals 95.4% TSS. Once stormwater reaches the stormwater system by Meadow Brook Lane 98% TSS is expected prior to discharge into Muddy Brook.

The concrete channel will be removed near Meadow Brook Lane and replaced with an earthen swale will be installed. Trees over 8" dbh will be maintained where feasible along this corridor. A grass swale is proposed along the ball fields. Staff recommends that this area be planted with native plantings as well as to improve filtration and absorption functions.

6.3 EROSION AND SEDIMENT

f) temporary erosion control measures shall be utilized during construction and for the stabilization period following construction;
g) permanent erosion control measures shall be utilized using nonstructural alternatives whenever possible and structural alternatives when avoidable;
h) existing circulation patterns, water velocity, or exposure to storm and flood conditions shall not be adversely altered;
i) formation of deposits harmful to aquatic life and or wetlands habitat will not occur;
j) applicable state, federal and local guidelines shall be met.

Discussion:
Additional erosion controlsuch as silt fence is recommended to be installed directly around Wetland A and around the existing vegetation to remain near wetland A. Existing vegetation larger than 8" dbh should be surveyed along the perimeter to ensure its protection during and post construction. The

Erosion control plan should be revised to include controls at the stormwater discharge outlets to reduce sediment load into wetland A and around the micropool.

6.4 NATURAL HABITAT STANDARDS

g) critical habitats areas,
h) the existing biological productivity of any Wetland and Watercourse shall be maintained or improved;
i) breeding, nesting and or feeding habitats of wildlife will not be significantly altered;
j) movements and lifestyles of fish and wildlife (plant and aquatic life)will not be significantly affected;
k) periods of seasonal fish runs and bird migrations shall not be impeded;
l) conservation or open space easements will be deeded whenever appropriate to protect these natural habitats.

Discussion
Staff recommends additional native plantings within all proposed water quality swales located within the parking lot, loop road, and swale along the ballfields within contract limit lines. Lawn is not recommended in these areas and should be removed from the plans in these areas. The plants planned for these areas should be designed with the intent that maintenance is not necessary. The exception to this is the removal of litter that may present an obstacle near drainage outlets. But plant maintenance for reasons of fertilizing or regular mowing is to be avoided. The intent is to present a vegetative island that acts as a biofiltration area. The only way these areas will function efficiently is if the area is allowed to establish naturally. If appearance is of particular concern then a planting plan with specific plant types and quantities should be completed for these areas and hydroseed avoided. Hydroseed that utilizes a native plant mix will utilize many varieties and creates diversity which is positive from an environmental standpoint, however, this may result in a weedy appearance in parking lot islands. The idea is to allow the area to establish itself naturally after plant installation. If the result requires maintenance by mowing then this is in opposition of the design intent. Landscape plans are to be revised to remove lawn at minimum in these areas. Staff recommends that the applicant reconsider plant types for design intent and maintenance aspect. If the applicant is agreeable to allowing hydroseeded areas to establish themselves naturally and unmowed then staff is also agreeable to using the seed mix.

The Commission may also consider requiring the applicant to monitor the wetland post construction to determine whether stormwater management practices are working efficiently. During this process management of invasives may be considered in effort to improve overall wetland functions on the property.

6.5 DISCHARGE AND RUNOFF

f) the potential for flood damage on adjacent or adjoining properties will not be increased;
g) the velocity or volume of flood waters both into and out of Wetlands and Watercourses will not be adversely altered;
h) the capacity of any wetland or watercourse to transmit or absorb flood waters will not be significantly reduced;
i) flooding upstream or downstream of the location site will not be significantly increased;
j) the activity is acceptable to the Flood & Erosion Control Board and or the Town Engineer of the municipality of Westport

Discussion
The proposed water quality swales will reduce water velocities prior to discharge into wetlands and the stormwater system in Meadowbrook Lane. By reducing water velocities more pollutant removal is expected throughout the design. The F&ECB has approved this application on December 3, 2003 with conditions. Staff has reviewed the proposed alternative with the Deputy Engineer who is agreeable to this concept.

6.6 RECREATIONAL AND PUBLIC USES

e) access to and use of public recreational and open space facilities, both existing and planned, will not be prevented;
f) navigable channels and or small craft navigation will not be obstructed;
g) open space, recreational or other easements will be deeded whenever appropriate to protect these existing or potential recreational or public uses;
h) wetlands and watercourses held in public trust will not be adversely affected.

Discussion
The proposed activities will help to improve recreational and public uses as drainage swales along the edge of the ball fields will help to dry the field more readily.

Waterway Protection Line Ordinance

Section 148-9 of the WPLO ordinance states the following: An applicant shall submit information to the Conservation Commission showing that such activity will not cause water pollution, erosion and or environmentally related hazards to life and property and will not have an adverse impact on the preservation of the natural resources and ecosystems of the waterway, including but not limited to, impact on ground and surface waters, aquifers, plant and aquatic life, nutrient exchange and supply, thermal energy flow, natural pollution filtration and decomposition, habitat diversity, viability and productivity and the natural rates and processes of erosion and sedimentation.

The Flood & Erosion Control Board approved application on December 3, 2003 with conditions.

It is the opinion of staff that provided additional native plantings are included within water quality treatment areas, lawn is removed from areas where water quality swales are proposed, trees are surveyed as recommended, tree protection devices are installed prior to construction and erosion controls are installed as recommended and the alternative that is considered to minimize disturbance within regulated area the most is utilized the proposed activities will not adversely impact resources as protected by the Waterway Protection Line Ordinance.

Possible Commission Decisions

1. Approve with conditions the conceptual plan protecting a portion of existing trees over 8" dbh near wetland A with the following conditions:
   a) Revise landscape plans to remove lawn from water quality swales.
   b) Include native plantings within all water quality swales.

c) Consider the relocating the plunge pool slightly near Meadowbrook Lane or further east to avoid disturbance in wetland C.
d) Revise Erosion Control Plan to incorporate additional erosion controls near wetland A and a stormwater outlet structures near wetland A. Plan to also include tree protection measures on trees to remain.
e) Revised grading plan to indicate existing trees to remain near the proposed swale near Meadowbrook Lane and within the perimeter of vegetation to remain directly west of wetland A. Proposed spot elevations to be shown within proposed channel after overflow from micropool to existing outlet at dam.
f) Locate disturbance line in the field by orange fencing prior to construction activities and erosion controls to be installed for wetland protection prior to construction commencement for Conservation Department inspection.
g) Revise maintenance plan to include water quality swales and stormwater wetland A specifically. Remove garbage litter throughout the area. Remove sediments and debris that is causing an obstacle to discharge outlet only. All removal is to be conducted by hand, not by machinery. Plan must also include specific maintenance for vortechnics. Sediment removal by machine is acceptable at plunge pool areas only (ie first forebay prior to discharge into micropool, and both plunge pools at Meadowbrook Lane.
h) Site monitor to be retained during construction project. Said monitor to submit reports to Conservation Department on weekly basis regarding erosion control maintenance.
i) Monitoring reports to be submitted on an annual basis post plant installation for three years. Monitoring to include water quality testing and management of invasive plants.
j) Low flow channel around wetland A to be conducted by hand and shovel, not machinery. Spot elevations in low flow channel to be shown on final plans.
k) Reduce temporary square footage within wetland A to include disturbance for low flow channel and placement of 10”orifice only.
l) Relocate plunge pool to reduce disturbance in wetland C.
m) Conformance to FECB 12/3/03 conditions of approval.

2. Approve plans as submitted on 12/16/03 with all applicable conditions as identified in item 1.

3. Continue Application for the applicant to submit additional information in order for Commission consider alternative submitted January 14, 2004.