TOWN OF NEW LONDON, NH
375 Main St., New London, NH 03257
(603) 526-4821 | Email zoning@nl-nh.com

Permit #_____
Payment rec'd: $50
CR # 15915

Stormwater Management, Erosion & Sedimentation Control Plans Application

$50 APPLICATION FEE

Reason for applying (check all that apply). This parcel is located in the:

- ☐ Wetlands Conservation Overlay District – COMPLETE PAGES 1 & 2
- ☐ Steep Slope Overlay District – COMPLETE PAGES 1 & 3
- ☒ Shore Land Overlay District – COMPLETE PAGES 1 & 4
- ☐ Streams Conservation Overlay District – COMPLETE PAGES 1 & 5

☐ 10/17/2018 8:30am Conservation Commission Mtg
☐ 10/23/2018 6:30pm Planning Bd Mtg

Physical (site) Address: 61 LIGHTHOUSE VIEW ROAD

Tax Map and Lot Number: 126 - 8

Description of proposed activity: DEMO EXISTING HOUSE - CONSTRUCT NEW HOME. NEW SEPTIC SYSTEM, DRAINAGE IMPROVEMENTS, GRADING, AND SMALLER DRIVEWAY.

Type of activity proposed (check all that apply):

- ☑ Excavation
- ☑ Earth moving
- ☑ Construction (new or modified structure)
- ☑ Filling
- ☑ Grading
- ☐ Dredging
- ☑ Land Disturbance
- ☐ Other (please describe)

Contact Information:

Property Owner(s): Michelle Gibbs and Marc Giguere
Phone Number(s): 917-445-4504
Mailing Address: 92 De Vere Gdns Toronto, ON M5M 3G2
Email Address: gibbs158@gmail.com

Name of Authorized Agent: Fuss & O'Neill: Dan Monette
Name of Business:
Phone Number(s): 802-698-0370
Mailing Address: dmonette@fando.com

per Jay Tucker he will be the point of contact for us

NOTE: Your plan may need to be reviewed by the New London Conservation Commission. See PAGES 2-5 for the specific requirements of each Overlay District. The Commission typically meets the 3rd Wednesday of the month at 8:30 a.m. at 375 Main Street. If this plan must be presented to the Commission, it is important that the property owner (or their designee) attend the meeting to present the plan. In addition, the Town may require a bond or other security to assure conformance with the plan. The Town may also require an inspection of the erosion control installation prior to any demolition, excavation or construction.

Applicant agrees that the proposed project described within this application and the materials submitted with the application conform to the New London Zoning Ordinance, as amended, and with all other requirements of law of the Town of New London and the State of New Hampshire. Further, the signer certifies that all information provided in support of this application is true and complete and authorizes inspection by town officials for purposes of this permit.

Signature of Property Owner(s): See attached letter for Jay Tucker Date:

TOWN OF NEW LONDON
SELECTMEN'S OFFICE
OCT 01 2018
RECEIVED

Shore Land Overlay District

DEFINITION: The Shore Land Overlay District extends to a line 250 feet inland from the Reference Line on all of the following lakes and ponds: Clark Pond, Goose Hole Pond, Little Lake Sunapee, Lake Sunapee, Messer Pond, Murray Pond, Otter Pond and Pleasant Lake. (per New London Zoning Ordinance XVI. B)

1. **Does the proposed project involve construction of new roads, bridges, bridge approaches or access ways for firefighting equipment and boat launching?** __ YES ✓ NO
   (If yes, see New London Zoning Ordinance, XVI.D.1 for more info)

2. **IMPERVIOUS SURFACE: What percentage of the lot is covered with impervious surface?** Please only count the area within the 250-feet Shore Land Overlay district. (See New London Zoning Ordinance, XVI, H.1-2 for more info).

   Current 28.57 % **Proposed (based on attached plans)** 28.55 %

3. ✓ **Attach two (2) full-size plans to the application.** Plans must be legible. The plans should be developed in accordance with the requirements and guidelines listed below for the Shore Land Overlay District.

Per Article XVI – Shore Land Overlay District
Section D - Stormwater & Erosion Control for Construction:

- ☑ All new Structures, modifications to existing Structures and excavation or earth moving within the Shore Land Overlay District shall be designed and constructed in accordance with the Stormwater & Erosion Control Design Standards contained in the New London Land Subdivision Control Regulations and in compliance with all rules adopted by the New Hampshire Department of Environmental Services for terrain alteration under RSA 485-A:17 to manage stormwater, control erosion and sediment, during and after construction. The design of Stormwater management systems shall ensure that the post-development total runoff volume does not exceed the pre-development total runoff volume consistent with the New London Land Subdivision Control Regulations.
- ☑ New Structures and all modifications to existing Structures within the protected Shore Land Overlay District shall be designed and constructed to prevent the release of surface runoff across exposed mineral surfaces.
- ☑ Erosion and sedimentation control plans shall describe the nature and purpose of the land disturbing activity; the amount of grading involved; and a description of the soils, topography, vegetation, and drainage at the site; and a complete site plan illustrating erosion control devices, stormwater management structures and other measures intended to manage stormwater and erosion during and after construction. For minor land disturbances such as stairway and pathway construction, the Board of Selectmen may reduce the amount of detail needed in an erosion control plan. The Board of Selectmen shall review and decide to approve or deny all plans before issuing a Building permit, and may require the applicant to post a bond or other security to assure conformance with approved plans. The security shall not be released until the Board of Selectmen has certified the completion of the required improvements in accordance with the plan. The Board of Selectmen may request the Conservation Commission to review the plan and make recommendations.
- ☑ Erosion and sedimentation control plans shall be developed in conformity with the guidelines of the U.S.D.A. Natural Resources Conservation Service (NRCS) and with guidelines of the N.H. Department of Environmental Services under RSA 485-A:17. Erosion control measures shall be installed and subsequently inspected by the Board of Selectmen or its designee, as described in ARTICLE XXVIII Enforcement of this Ordinance, before construction and grading begin.

4. **Comments**: See attached Stormwater O&M and Calculations

FOR OFFICE USE ONLY:

- ☑ Conservation Commission review requested 10/17/18 mtg
- ☑ Planning Board review required for exceeding 20% lot coverage, Art. XVI, Section H, 10/23 Mtg
- ☐ Bond / Security required
- ☑ Inspection required yes
- ☐ Other

Reviewed by Zoning Administrator

APPROVED / DENIED Signature: Date:

TOWN OF NEW LONDON SELECTMEN'S OFFICE
OCT 01 2018
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Old Hampshire Designs, Inc.
263 Main Street, P.O. Box 746
New London, NH 03257-0746
Bus. (603) 526-6945
Fax (603) 526-2945
Email: ohdesigns@oldhampshiredesigns.com
Website: www.oldhampshiredesigns.com

Old Hampshire Designs

BUILDING PERMIT

LETTER OF AUTHORIZATION

I Marc Giguere & Michelle Gibbs do hereby grant permission to
Owner's Name

Jay Tucker to act as my agent in all aspects in
Agent's Name

order to obtain a building permit for property located at Map 126, Lot 008 in New London, NH. This will allow my agent to answer any and all questions on my behalf and to sign any and all documents for me. However, I accept full responsibility to ensure that my project meets all zoning and building code compliance.

Owner's Signature

Sept 5 2018
Date

Michelle Gibbs
Owner's Signature

TOWN OF NEW LONDON
SELECTMEN'S OFFICE
SEP 24 2018
RECEIVED

✓ PB copy
✓ ConCom copy

Nicole Gage

From: Nicole Gage
Sent: Tuesday, October 2, 2018 10:04 AM
To: 'Robert Brown'; 'Mike Gelcius'
Subject: FW: 61 Lighthouse View Road

Hi Bob & Mike.

Can you please put on your 10/17 Conservation agenda:

61 Lighthouse View Road

Jay Tucker of Old Hampshire Design, and Fuss & O'Neill/Dan Monette will be there to present a Stormwater Management plan that involves building a new house. They are going for a demolition permit now, and the Stormwater Plan is related to rebuilding a new single-family home and lot improvements.

I will leave the paperwork in your mailbox.

Nicole Gage
Zoning Administrator
Town of New London, NH
Email zoning@nl-nh.com / Web www.nl-nh.com
Direct (603) 526-1246 / Town Office (603) 526-4821

From: Nicole Gage
Sent: Tuesday, October 2, 2018 9:59 AM
To: Daniel Monette <DMonette@fando.com>; Jay Tucker <jay@oldhampshiredesigns.com>
Cc: Adam Ricker <planning@nl-nh.com>
Subject: RE: 61 Lighthouse View Road

Hi Dan & Jay:

I am confirming that we received your Stormwater Plan and Tree Cut plan by October 2nd, which was the deadline for the Planning Board's October 23rd meeting. The Planning Board typically meets at 6:30 PM in the upstairs meeting room at 375 Main Street. I am copying Adam, the Town Planner, on this. Adam takes care of all application for the Planning Board and he will review your materials when he is back in the office later this week.

As for the Stormwater Plan for the October 17th Conservation Commission – that meeting will be at 8:30 am in the same upstairs meeting room. I will leave a copy of your materials with the Conservation Commission for that meeting, and I will email the chair to make sure he puts you on his agenda for October 17th.

CC: Adam Ricker, Town Planner

Nicole Gage
Zoning Administrator
Town of New London, NH
Email zoning@nl-nh.com / Web www.nl-nh.com
Direct (603) 526-1246 / Town Office (603) 526-4821

From: Daniel Monette <DMonette@fando.com>
Sent: Friday, September 28, 2018 5:32 PM
To: Nicole Gage <zoning@nl-nh.com>
Cc: Wendy Parker <wendy@oldhampshiredesigns.com>; Jay Tucker <jay@oldhampshiredesigns.com>
Subject: 61 Lighthouse View Road

Nicole,

Someone from our office will be stopping by your office on Monday morning to drop off two full size copies of the plans and stormwater management and sediment control documentation and a tree cutting application as well as the stormwater application.

Just wanted to give you a heads up.

I will be in Concord on Monday and Tuesday for a IECA conference.

Best,

Dan

Daniel Monette, PE
Project Engineer
Fuss & O'Neill, Inc | 205 Billings Farm Rd - Suite 6B | White River Junction, VT 05001
802.698.0370 x2215 | dmonette@fando.com | cell: 802.356.9156
www.fando.com | twitter | facebook | linkedin

The State of New Hampshire

Department of Environmental Services

Robert R. Scott, Commissioner

SHORELAND IMPACT PERMIT 2018-02188

NOTE CONDITIONS

PERMITTEE:	MARC-ANDRE GIGUERE MICHELLE GIBBS 92 DE VERE GARDENS TORONTO ON M5M 3G2
PROJECT LOCATION:	61 LIGHTHOUSE VIEW RD., NEW LONDON TAX MAP #126, LOT #008
WATERBODY:	SUNAPEE LAKE
APPROVAL DATE:	AUGUST 16, 2018
EXPIRATION DATE:	AUGUST 16, 2023

Based upon review of the above referenced application, in accordance with RSA 483-B, a Shoreland Impact Permit was issued by the New Hampshire Department of Environmental Services (NHDES). This permit shall not be considered valid unless signed as specified below.

PERMIT DESCRIPTION: Impact 21,420 square feet (SF) of protected shoreland in order to remove a primary structure; construct a new primary structure with an attached garage; remove and replace a detached garage; replace the septic systems; reconfigure the driveway; add stone walls; construct a pervious patio; add a stepping stone path to the water; and add stormwater management systems.

THIS APPROVAL IS SUBJECT TO THE FOLLOWING PROJECT SPECIFIC CONDITIONS:

1. All work shall be in accordance with plans by Fuss & O'Neill, dated June 1, 2018, and received by the NH Department of Environmental Services (NHDES) on July 23, 2018.
2. Neither the new primary structure nor the proposed septic system may be constructed until the system is approved by the NHDES Subsurface Systems Bureau.
3. Orange construction fencing shall be installed at the limits of the temporary impact area as shown on the approved plans prior to the start of work and shall be maintained throughout the project in order to prevent accidental encroachment into areas in which impacts have not been approved.
4. No more than 28.6% of the area of the lot within the protected shoreland shall be covered by impervious surfaces unless additional approval is obtained from NHDES.
5. Native vegetation within an area of at least 1,713 SF within the Woodland Buffer located between 50 and 150 feet landward of the reference line shall be retained in an unaltered state in order to comply with RSA 483-B:9, V, (b), (2).
6. Erosion and siltation control measures shall be installed prior to the start of work, be maintained throughout the project, and remain in place until all disturbed surfaces are stabilized.
7. Erosion and siltation controls shall be appropriate to the size and nature of the project and to the physical characteristics of the site, including slope, soil type, vegetative cover, and proximity to wetlands or surface waters.

www.des.nh.gov
29 Hazen Drive • PO Box 95 • Concord, NH 03302-0095
NHDES Main Line: (603) 271-3503 • Subsurface Fax: (603) 271-6683 • Wetlands Fax: (603) 271-6588
TDD Access: Relay NH 1 (800) 735-2964

8. No person undertaking any activity in the protected shoreland shall cause or contribute to, or allow the activity to cause or contribute to, any violations of the surface water quality standards established in Env-Wq 1700.
9. Any fill used shall be clean sand, gravel, rock, or other suitable material.
10. All pervious technologies used shall be installed and maintained to effectively absorb and infiltrate stormwater.
11. Within three days of final grading or temporary suspension of work in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1.
12. The individual responsible for completion of the work shall utilize techniques described in the New Hampshire Stormwater Manual, Volume 3, Erosion and Sediment Controls During Construction (December 2008).
13. This permit shall not be interpreted as acceptance or approval of any impact that will occur within wetlands jurisdiction regulated under RSA 482-A including all wetlands, surface waters and their banks, the tidal-buffer zone, and sand dunes. The owner is responsible for maintaining compliance with RSA 482-A and Administrative Rules Env-Wt 100 - 900 and obtaining any Wetland Impact Permit that may be required prior to construction, excavation or fill that will occur within Wetlands jurisdiction.
14. This permit shall not preclude the NHDES from taking any enforcement or revocation action if the NHDES later determines that any of the structures depicted as "existing" on the plans submitted by the applicant were not previously permitted or grandfathered.

GENERAL CONDITIONS THAT APPLY TO ALL NHDES SHORELAND IMPACT PERMITS:

1. A copy of this permit shall be posted on site during construction in a prominent location visible to inspecting personnel;
2. This permit does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others;
3. The NHDES Wetlands Bureau shall be notified upon completion of work;
4. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits, and/or consult with other agencies as may be required (including US EPA, US Army Corps of Engineers, NH Department of Transportation, NH Division of Historical Resources (NH Department of Cultural Resources), NHDES Alteration of Terrain, etc.);
5. Transfer of this permit to a new owner shall require notification to and approval by NHDES;
6. This permit shall not be extended beyond the current expiration date;
7. This project has been screened for potential impacts to known occurrences of protected species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or have only received cursory inventories, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species.

APPROVED:

Marie-Eve Jacques
Shoreland Program
Land Resources Management

BY SIGNING BELOW I HEREBY CERTIFY THAT I HAVE FULLY READ THIS PERMIT AND AGREE TO ABIDE BY ALL PERMIT CONDITIONS.

OWNER'S SIGNATURE (required)

CONTRACTOR'S SIGNATURE (required)

FUSS & O'NEILL

☐146 Hartford Road, Manchester, CT 06040
TEL: (860) 646-2469 FAX: (860) 533-5143

☐56 Quarry Road, Trumbull, CT 06611
TEL: (203) 374-3748 FAX: (203) 374-4391

☐1550 Main Street Suite 400, Springfield, MA 01103
TEL: (413) 452-0445 FAX: (413) 846-0497

☐ 5 Fletcher Street, Suite 1, Libby House,
Kennebunk, ME 04043
TEL: (207) 363-0669

☒205 Billings Farm Road, Suite 6B,
White River Junction, VT 05001
TEL: (802) 698-0370

☐108 Myrtle Street, Suite 502, Quincy, MA 02171
TEL: (617) 282-4675 FAX: (617) 481-5885

☐317 Iron Horse Way, Ste. 204, Providence, RI 02908
TEL: (401) 861-3070 FAX: (401) 861-3076

☐540 North Commercial Street, Manchester, NH 03101
TEL: (603) 668-8223 FAX: (603) 668-8802

☐276 Newport Road, New London, NH 03257
TEL: (603) 873-4039

Letter of Transmittal

To:

Nicole Gage - New London Zoning

Date: 9/28/18

Project No: 20180190 Task No.:

Re: Giguere & Gibbs

61 Lighthouse View Road

Telephone No:

We are sending you: ☒ Attached ☐ Under Separate Cover ☐ via 1st Class Mail

☐ Shop Drawings ☐ Prints ☒ Plans ☐ Specifications
☐ Copy of Letter ☐ Change Order ☒ Reports ☐ Other

Copies	Date	No.	Description
2	9/28/18		2 sets of stormwater and erosion control plans & APPLICATION
1	9/28/18		1 tree cutting form and plan
1	9/28/18		stormwater O&M and Narrative

☐ For approval ☐ Returned loaned prints ☐ Furnish as submitted
☐ As requested ☐ Return signed original ☐ Furnish as noted
☒ For your use ☐ For bids due ☐ Rejected
☐ For review & comment ☐ Submit _____ copies for distribution ☐ resubmit _____ copies for approval

c:

Signed: David MA

F:\P2018\0190\A10\Admin\Stormwater Management & Erosion Control\lot.docx

PB original (color)
Conservation (B/W)
Zoning Admin (B/W)

TOWN OF NEW LONDON

STORM WATER & EROSION CONTROL PLAN

September 2018

Prepared for

Marc Giguere & Michelle Gibbs

61 Lighthouse View Road
New London, New Hampshire
F&O Reference No. 20180190

Prepared by

FUSS & O'NEILL

205 Billings Farm Road –Suite 6B
White River Junction, VT 05001
(802) 698-0370

Overview:

The Giguere & Gibbs project is an earthwork and house construction project located on a residential site along Lighthouse View Road in New London that includes the demolition of the existing home to be re-built as a new home with attached garage. The site is located within the 250 foot shoreland protection overlay district of Lake Sunapee.

The driveway is proposed to be reduced and reconfigured to match the new garage entrance and there is also a new proposed onsite septic system. The site is relatively flat with gradual slopes in the proposed work areas. The proposed design and implementation of erosion controls and stormwater management features is intended to enhance the site and mitigate drainage and erosion issues. The site total drainage area or catchment area was analyzed and evaluated. It was determined that the roadway (Lighthouse View Road) acts as a cut off or diversion, preventing stormwater sourced upland from entering the site. Due to this fact the stormwater flow, based on the evaluated design storm events, was minimal for the 0.9 acre site. Fuss & O'Neill evaluated the existing site soils based on Natural Resources Conservation Service (NRCS) soil survey online data. The soils are identified as 77% Becket Fine Sandy Loam and 23% Skerry fine sandy loam both having a Saturated Hydraulic Conductivity (Ksat) of 10 micrometers per second (42 minutes per inch) and a hydrologic soil group rating of "C."

This published Ksat number was divided by two for design purposes following NH DES Alteration of Terrain (AoT) procedures for stormwater design to be more conservative in design.

Fuss & O'Neill created an existing conditions stormwater model and a proposed conditions model utilizing HydroCAD hydraulic modeling software. Rainfall amounts were determined using Cornell University published extreme precipitation estimates for New London. Due to the fact that the proposed design is a net reduction and does not increase impervious surfaces, the pre-development flow and volume was calculated as more than the post-development totals prior to even beginning the stormwater management design. All additional stormwater best management practices and retention/treatment areas would not technically be required per New London Zoning regulations but were designed to improve the existing condition of the site and promote water quality of the Lake based on engineering due diligence and environmentally conscience design goals.

Below is a list of more detailed information for each stormwater management and erosion control feature. Included at the end of this list is a schedule for inspection and maintenance to be performed by the landowner.

Best Management Practices:

Temporary Erosion Controls:

(Once seed has taken root and grass is established, temporary erosion controls may be removed. Prior to removal, check to make sure that erosion is not occurring at any place on site.)

- Silt Fence/Straw Wattles – Silt Fence and straw wattles should be installed downslope of intended soil disturbance but prior to any actual excavation, dredging, filling or stockpiling. Silt Fence is intended to prevent the migration of sediment off of the construction site and into undisturbed land, water or other protected areas.

- Temporary Seeding – Seed and mulch with hay any disturbed area that is to be left unworked for more than 30 days to stabilize the soil and prevent sediment migration.

- Erosion matting - should be installed in all proposed vegetated swales and exposed slopes over 4:1. Matting is intended to prevent the migration of sediment off of the construction site and into undisturbed land, water or other protected areas. Matting will biodegrade and allow for germination of grass seed.

Permanent Erosion Controls & Stormwater Management Best Management Practices (BMPs):
(These features will stay in place and should not be removed.)

- Grass Lined Swale – This feature is intended to create a protected swale that catches, slows and diverts stormwater away from where it can cause damage. After excavating the swale, line the swale with compacted loam, seed and erosion matting as specified on the construction plans.
- Stone Plunge Pool/Riprap Outlet Protection – This feature is intended to reduce the exit velocity of stormwater leaving culverts or drainage pipes. It will also act as a preliminary settling area for first flush rain events and smaller storm events.

- Stone Roof Dripedges – The dripedges are designed to promote infiltration and treatment of runoff from the impervious roof surfaces onsite. Stormwater is collected in the dripedges, stored, filtered, and treated stormwater eventually infiltrates into the surrounding soils or is conveyed through the foundation perimeter drains to stabilized outlet locations.

- Pervious Patio – The pervious patio area will act as storage and treatment for stormwater that directly falls on the patio area or is discharged from roof surface above and piped into the stone below the patio pavers via gutters.

- Bioretention Basin/Rain Garden – The majority of site stormwater is conveyed to bioretention basins planted with native vegetation capable of nutrient uptake and filtration. The fill media within the bioretention basins will allow for microbial growth and effective treatment of stormwater.

Inspection & Maintenance:

Temporary Erosion Controls:

- Silt Fence - Inspect weekly or after any major rain event for rips in or holes under Silt Fence. Repair promptly by patching or replacing ripped sections and plugging holes under the fence. If erosion spots are found under the silt fence, pile some backfill material in the area and attempt to divert the stormwater elsewhere until that spot is stabilized again. If sediment is found to be building up behind the silt fence, excavate the sediment down to a reasonable level and place in a protected stockpile area. After removal of the Silt Fence, regrade the disturbed soil to conform to the existing topography and vegetate with an appropriate material.

- Temporary Seeding – Inspect weekly or after any major rain event for erosion rills and sediment movement down slopes or in grassed swales. Repair by regrading, filling in any erosion rills or ditches and seeding and mulching. Heavier mulching may be necessary to prevent migration and erosion.

Permanent Erosion Controls & Stormwater Management Best Management Practices (BMPs):

- Grass Lined Swale – Inspect after any major rain event for erosion or loss of vegetation. Repair promptly by patching or replacing topsoil and re-seeding swale. If erosion continues, place stone check dams along the swale or stake straw wattles in place along swale until vegetation has fully stabilized. If sediment is found to be building up within swales, clean the sediment out down to a vegetated level and re-stabilize.

- Stone Plunge Pool/Riprap Outlet Protection – Inspect after any major rain event for large sediment deposits or displaced stone. Clean out sediment and replace stones as required.

- Stone Roof Dripedges – Inspect the dripedges after any major rain event. The dripedges are designed to allow for routine maintenance. There is a 6" layer of stone above a layer of filter fabric which can be removed and replaced with clean new stone and clean fabric if signs of clogging or organics (leaves, grass clippings, bark mulch) and weed growth begins to develop within the dripedge stone.

- Pervious Patio – The pervious patio should be inspected annually and after major storm events. The patio shall be kept clean on leaves and debris. Do not pressure wash as water jet can drive residue into the bed and base below. Remove snow and used deicing sand or chemicals sparingly. Replenish stone within joints as needed and remove weeds or vegetation. Replace broken pavers as needed.

- Bioretention Basin/Rain Garden – Inspect bi-annually and after major storm events. Vegetation shall be healthy and thriving. Replace diseased or dead plants promptly to maintain a dense planting bed. Replace media and grass surface as needed if signs of

erosion are evident. If ponding is observed for longer than 72 hours the perforated underdrain within bioretention area shall be inspected and flushed if needed. Bioretention media may need to be replaced within 10 years if showing signs of degradation and poor absorption.

- Culverts, Headwalls & Underdrain – Inspect annually and after major storm events. Remove any debris or sediment that has collected in and/or around the ends of culverts. Visually check the structures for characteristics which may indicate deterioration. Underdrain lines shall be flushed if, upon inspection at cleanouts, that water is not visibly draining or there is a standing water level measured within the cleanout risers for longer than 72 hours. Hardware cloth screen may be installed on outlets if rodent nests are observed after flushing.

JOB#: 20180190
NAME: Giguere/Gibbs
TOWN: New London

NEW LONDON STORMWATER CALCULATIONS

INCREASE IN IMPERVIOUS AREA (sf): -6
VOLUME TO RECHARGE (Rev)(cf): -0.3

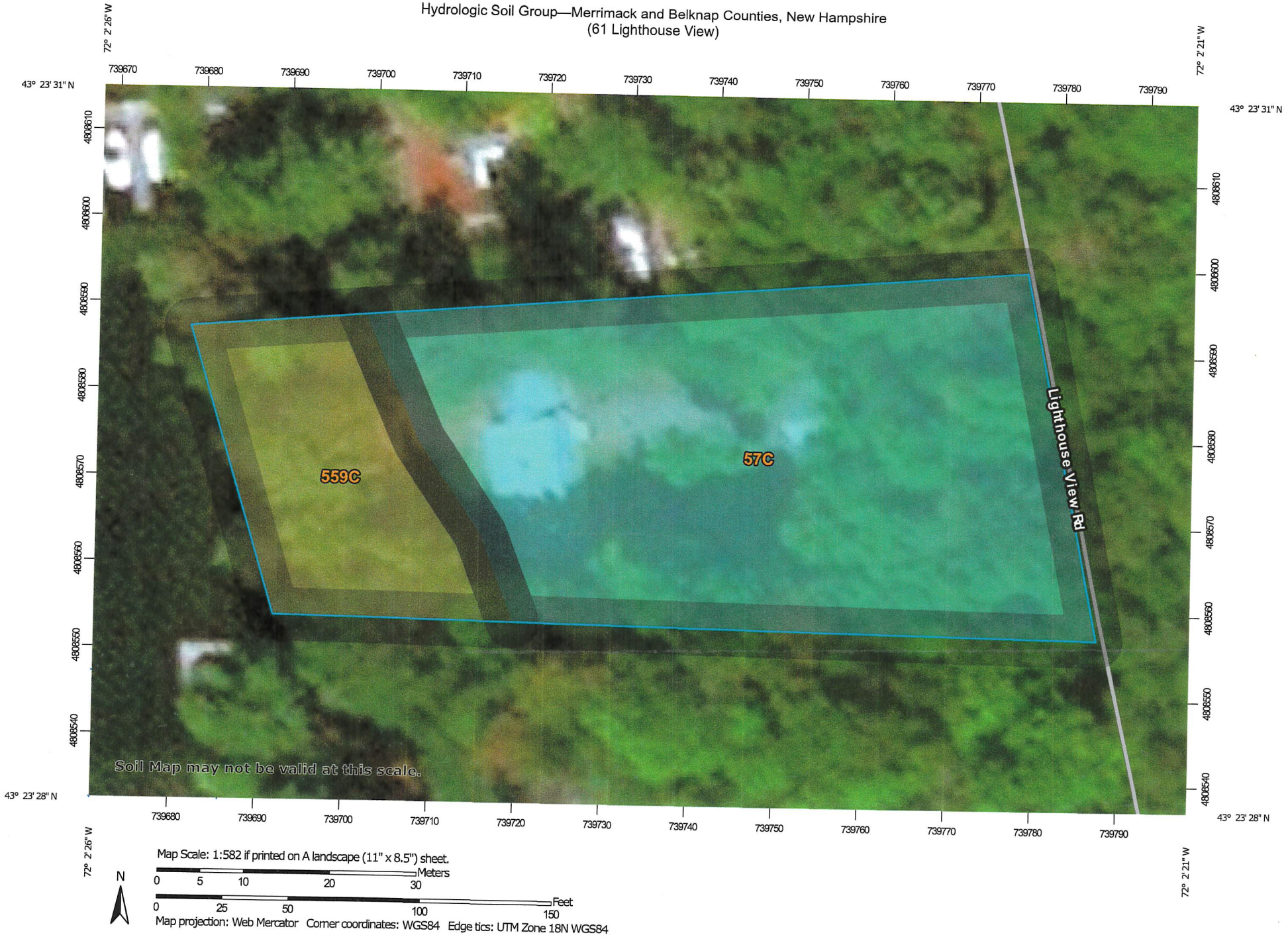
FEATURE		R.G. 1	Patio	D.E.	R.G. 2	TOTAL WQv
SUB WATERSHED AREA (sf):	AWS	9874	2460	4750	4075	
%IMPERVIOUS:	%I	6%	45%	95%	61%	
Rv:	Rv	0.104	0.46	0.91	0.60	
WQv:	WQv	85.6	93.3	358.2	203.4	740.5
PROPOSED RAIN GARDEN AREA (sf):	APRG	1471	992	683	481	
DEPTH OF SOIL FILTER (ft):	DSF	1	0	0	1	
DEPTH OF DRAINAGE LAYER (ft):	DDL	1	1.5	2	1	
DEPTH OF PONDING (ft):	DP	0.5	0	0.1	0.5	
POROSITY OF SOIL FILTER:	PSF	0.2	0.2	0.2	0.2	
POROSITY OF DRAINAGE LAYER:	PDL	0.4	0.4	0.4	0.4	
VOLUME OF SOIL FILTER (cf):	VSF	294.2	0	0	96.2	
VOLUME OF DRAINAGE LAYER (cf):	VDL	588.4	595.2	546.4	192.4	
VOLUME OF PONDING (cf):	VP	735.5	0	68.3	240.5	
CAPACITY OF RAIN GARDEN (cf):	VRG	1618.1	595.2	614.7	529.1	3357.1
MIN. AREA REQ'D FOR INFILTRATION (sf):		67	121	335	160	
ACTUAL RAIN GARDEN AREA (sf):	AARG	**1471**	**992**	**683**	**481**	
	CHECK	OK	OK	OK	OK	

TOTAL AREA TO REMAIN UNTREATED
12401 | S.F.

link this into dwg:

DRAINAGE FEATURE SCHEDULE:	R.G. 1	Patio	D.E.	R.G. 2
DEPTH OF SOIL FILTER (ft)	1.0	0.0	0.0	1.0
DEPTH OF DRAINAGE LAYER (ft)	1.0	1.5	2.0	1.0
TOTAL SURFACE AREA (sf)	1471.0	992.0	683.0	481.0
CAPACITY OF RAIN GARDEN (cf)	1618.1	595.2	614.7	529.1
ESTIMATED WQv CAPACITY NEEDED (cf)	85.6	93.3	358.2	203.4

Hydrologic Soil Group—Merrimack and Belknap Counties, New Hampshire
(61 Lighthouse View)



USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

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 1:24,000.

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: Merrimack and Belknap Counties, New Hampshire
Survey Area Data: Version 23, Sep 7, 2018

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

Date(s) aerial images were photographed: Jul 11, 2014—Apr 13, 2016

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
57C	Becket fine sandy loam, 8 to 15 percent slopes, very stony	C	0.7	77.4%
559C	Skerry fine sandy loam, 8 to 15 percent slopes, very stony	C/D	0.2	22.6%
Totals for Area of Interest			**0.9**	**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

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	72.039 degrees West
Latitude	43.392 degrees North
Elevation	0 feet
Date/Time	Fri, 28 Sep 2018 11:13:25 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.66	0.82	1.02	**1yr**	0.71	0.94	1.18	1.46	1.81	2.24	2.54	**1yr**	1.98	2.44	2.83	3.49	4.03	**1yr**
2yr	0.31	0.48	0.59	0.78	0.99	1.23	**2yr**	0.85	1.12	1.42	1.75	2.15	2.63	2.98	**2yr**	2.33	2.87	3.34	3.99	4.57	**2yr**
5yr	0.37	0.57	0.72	0.97	1.24	1.56	**5yr**	1.07	1.41	1.79	2.20	2.69	3.26	3.74	**5yr**	2.88	3.60	4.17	4.91	5.57	**5yr**
10yr	0.42	0.66	0.83	1.13	1.47	1.86	**10yr**	1.27	1.69	2.14	2.63	3.18	3.83	4.44	**10yr**	3.39	4.27	4.94	5.75	6.47	**10yr**
25yr	0.50	0.79	1.01	1.39	1.84	2.35	**25yr**	1.59	2.13	2.70	3.31	3.99	4.74	5.56	**25yr**	4.19	5.35	6.18	7.09	7.90	**25yr**
50yr	0.57	0.91	1.17	1.63	2.19	2.80	**50yr**	1.89	2.55	3.24	3.94	4.72	5.57	6.61	**50yr**	4.93	6.35	7.33	8.31	9.18	**50yr**
100yr	0.65	1.04	1.35	1.91	2.60	3.35	**100yr**	2.25	3.05	3.87	4.70	5.59	6.56	7.85	**100yr**	5.81	7.54	8.69	9.75	10.68	**100yr**
200yr	0.75	1.21	1.57	2.25	3.10	4.00	**200yr**	2.67	3.65	4.62	5.60	6.63	7.72	9.33	**200yr**	6.83	8.97	10.31	11.44	12.42	**200yr**
500yr	0.90	1.48	1.92	2.79	3.90	5.05	**500yr**	3.37	4.63	5.83	7.04	8.29	9.59	11.72	**500yr**	8.48	11.27	12.92	14.15	15.18	**500yr**

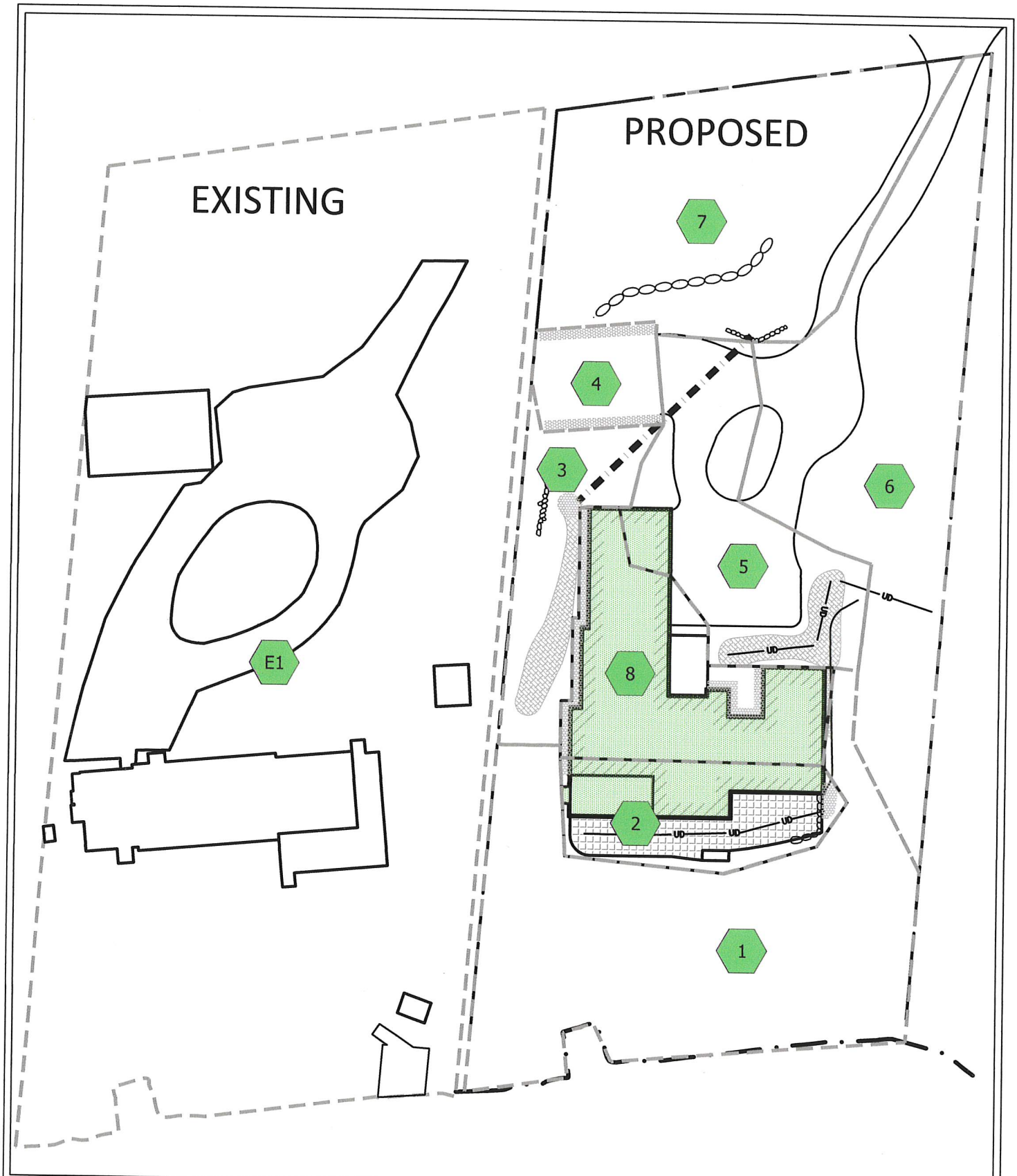
Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.20	0.31	0.38	0.51	0.63	0.79	1yr	0.54	0.77	0.94	1.26	1.64	1.93	2.28	1yr	1.71	2.19	2.51	3.05	3.34	1yr
2yr	0.30	0.46	0.57	0.77	0.95	1.12	2yr	0.82	1.09	1.29	1.67	2.14	2.55	2.88	2yr	2.26	2.77	3.23	3.86	4.43	2yr
5yr	0.34	0.52	0.65	0.89	1.14	1.33	5yr	0.98	1.30	1.51	1.96	2.46	3.03	3.41	5yr	2.68	3.28	3.80	4.51	5.10	5yr
10yr	0.37	0.58	0.71	1.00	1.29	1.48	10yr	1.11	1.45	1.70	2.19	2.72	3.43	3.88	10yr	3.04	3.73	4.28	5.04	5.67	10yr
25yr	0.42	0.64	0.79	1.13	1.48	1.68	25yr	1.28	1.65	1.99	2.53	3.12	4.06	4.58	25yr	3.59	4.41	5.00	5.81	6.50	25yr
50yr	0.44	0.67	0.83	1.20	1.61	1.84	50yr	1.39	1.80	2.24	2.82	3.44	4.62	5.20	50yr	4.09	5.00	5.62	6.40	7.19	50yr
100yr	0.46	0.69	0.87	1.25	1.72	2.00	100yr	1.48	1.96	2.52	3.20	3.82	5.27	5.89	100yr	4.66	5.66	6.29	7.03	7.93	100yr
200yr	0.47	0.71	0.90	1.30	1.81	2.17	200yr	1.57	2.12	2.83	3.58	4.24	6.04	6.65	200yr	5.34	6.39	7.02	7.70	8.73	200yr
500yr	0.49	0.73	0.94	1.37	1.95	2.37	500yr	1.68	2.32	3.31	4.17	4.86	7.24	7.84	500yr	6.41	7.54	8.07	8.60	9.85	500yr

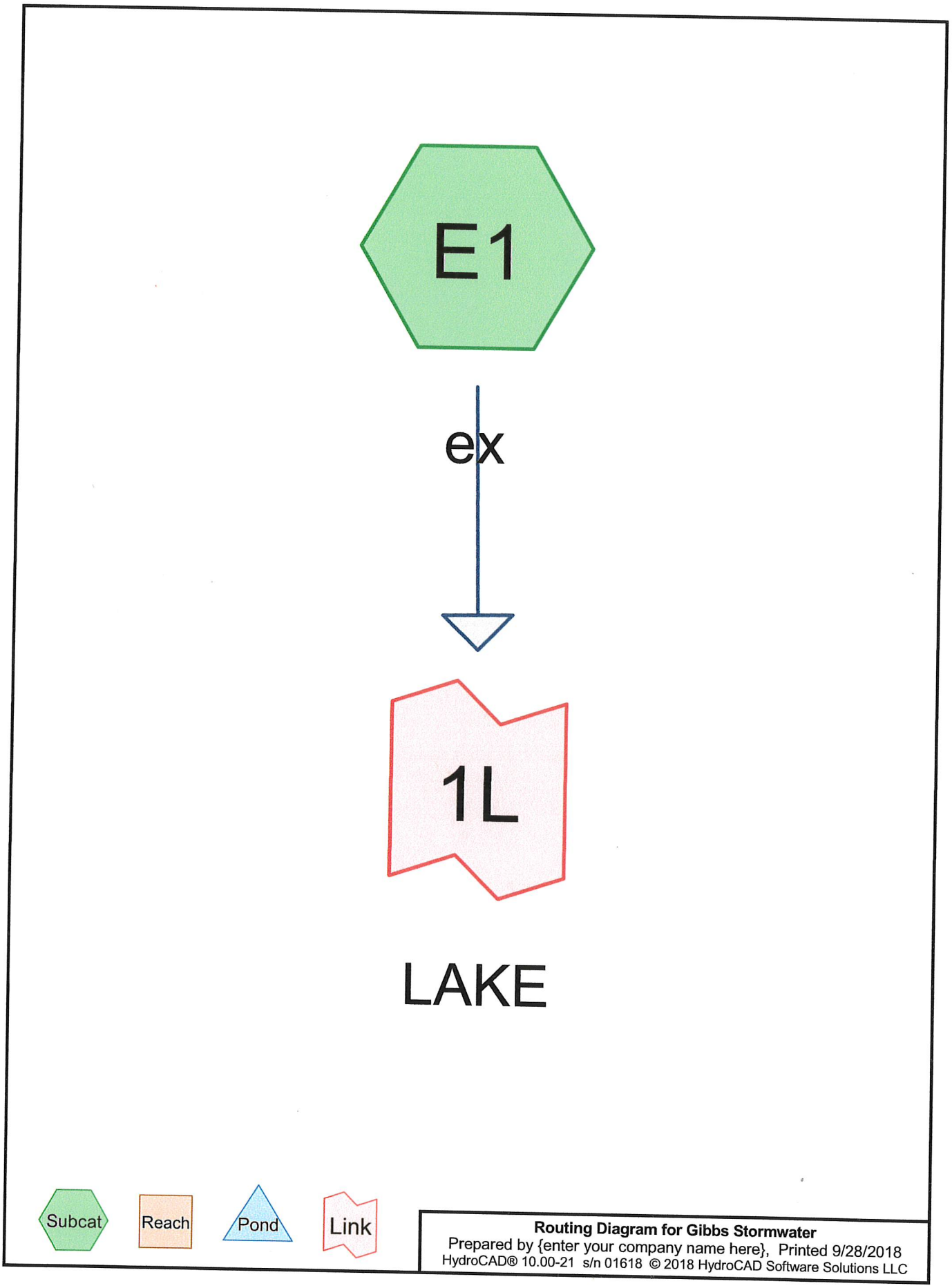
Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.45	0.55	0.75	0.92	1.09	1yr	0.79	1.06	1.21	1.58	1.94	2.46	2.81	1yr	2.18	2.70	3.20	3.79	4.44	1yr
2yr	0.34	0.53	0.65	0.88	1.09	1.23	2yr	0.94	1.21	1.39	1.80	2.28	2.75	3.11	2yr	2.43	2.99	3.49	4.16	4.73	2yr
5yr	0.40	0.62	0.77	1.06	1.35	1.57	5yr	1.17	1.54	1.79	2.27	2.88	3.52	4.09	5yr	3.11	3.93	4.59	5.31	6.04	5yr
10yr	0.48	0.74	0.92	1.29	1.66	1.94	10yr	1.43	1.90	2.20	2.72	3.43	4.26	5.05	10yr	3.77	4.86	5.64	6.45	7.29	10yr
25yr	0.62	0.94	1.17	1.68	2.20	2.58	25yr	1.90	2.52	2.90	3.51	4.38	5.47	6.67	25yr	4.85	6.41	7.49	8.35	9.37	25yr
50yr	0.75	1.14	1.42	2.04	2.74	3.20	50yr	2.37	3.13	3.57	4.25	5.27	6.62	8.23	50yr	5.86	7.92	9.29	10.20	11.35	50yr
100yr	0.91	1.38	1.73	2.50	3.43	3.99	100yr	2.96	3.90	4.41	5.25	6.35	8.01	10.17	100yr	7.09	9.78	11.49	12.50	13.74	100yr
200yr	1.11	1.67	2.12	3.07	4.28	4.99	200yr	3.69	4.88	5.44	6.36	7.87	9.69	12.59	200yr	8.57	12.11	14.25	15.35	16.68	200yr
500yr	1.45	2.16	2.78	4.04	5.75	6.71	500yr	4.96	6.56	7.19	8.24	10.13	12.44	16.73	500yr	11.01	16.08	19.01	20.18	21.60	500yr

Powered by ACIS Northeast Regional Climate Center



PROJECT #:	DATE:	Drainage Areas MapS	FUSS & O'NEILL	OWNER:
20180190	June 2018		205 BILLINGS FARM ROAD - SUITE 6B *WHITE RIVER JUNCTION, VT 05001* 802.698.0370 www.cldengineers.com | www.fando.com	Giguere & Gibbs
DWG. NO.: DRN	SCALE: 1"=40'	61 Lighthouse View Road New London, NH		



Routing Diagram for Gibbs Stormwater
Prepared by {enter your company name here}, Printed 9/28/2018
HydroCAD® 10.00-21 s/n 01618 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.220	98	Roofs, HSG C (E1)
0.657	72	Woods/grass comb., Good, HSG C (E1)
0.878	**79**	**TOTAL AREA**

Summary for Subcatchment E1: ex

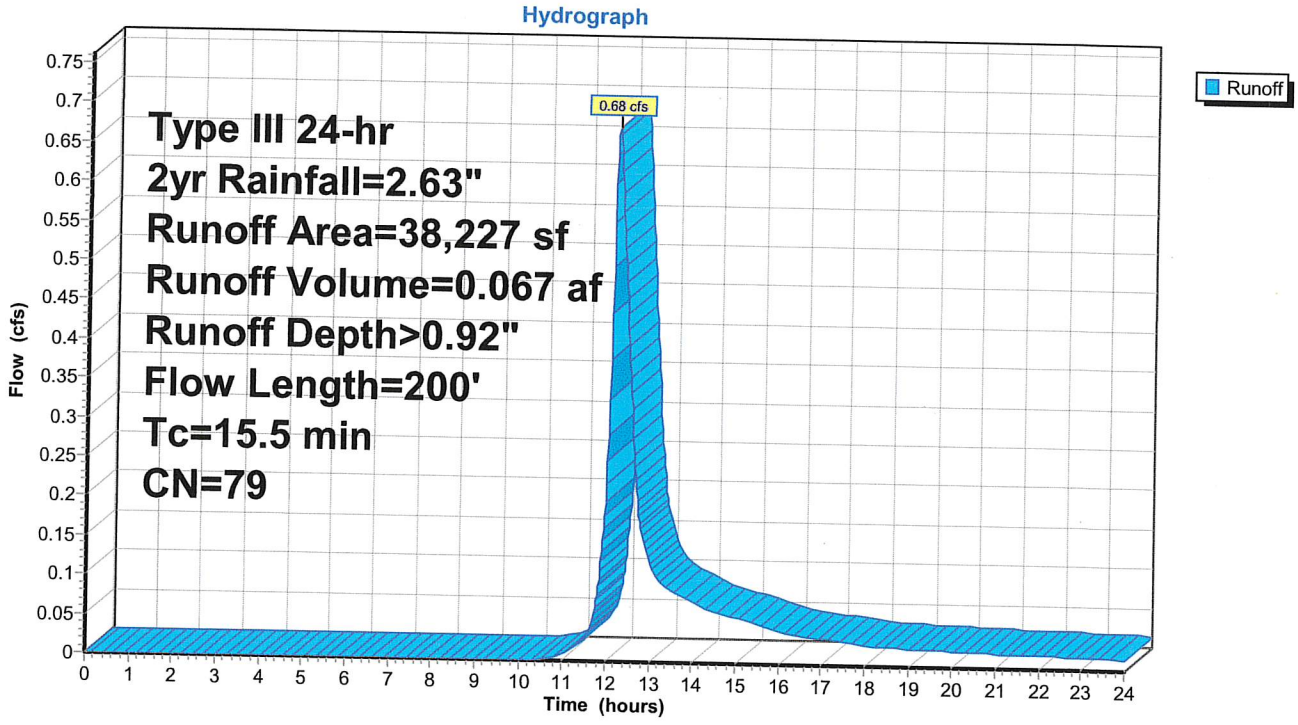
Runoff = 0.68 cfs @ 12.23 hrs, Volume= 0.067 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=2.63"

Area (sf)	CN	Description
28,639	72	Woods/grass comb., Good, HSG C
9,588	98	Roofs, HSG C
38,227	79	Weighted Average
28,639		74.92% Pervious Area
9,588		25.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0700	0.12		**Sheet Flow, existing site** Woods: Light underbrush n= 0.400 P2= 2.63"
1.1	100	0.0500	1.57		**Shallow Concentrated Flow, lake front** Short Grass Pasture Kv= 7.0 fps
15.5	200	Total			

Subcatchment E1: ex

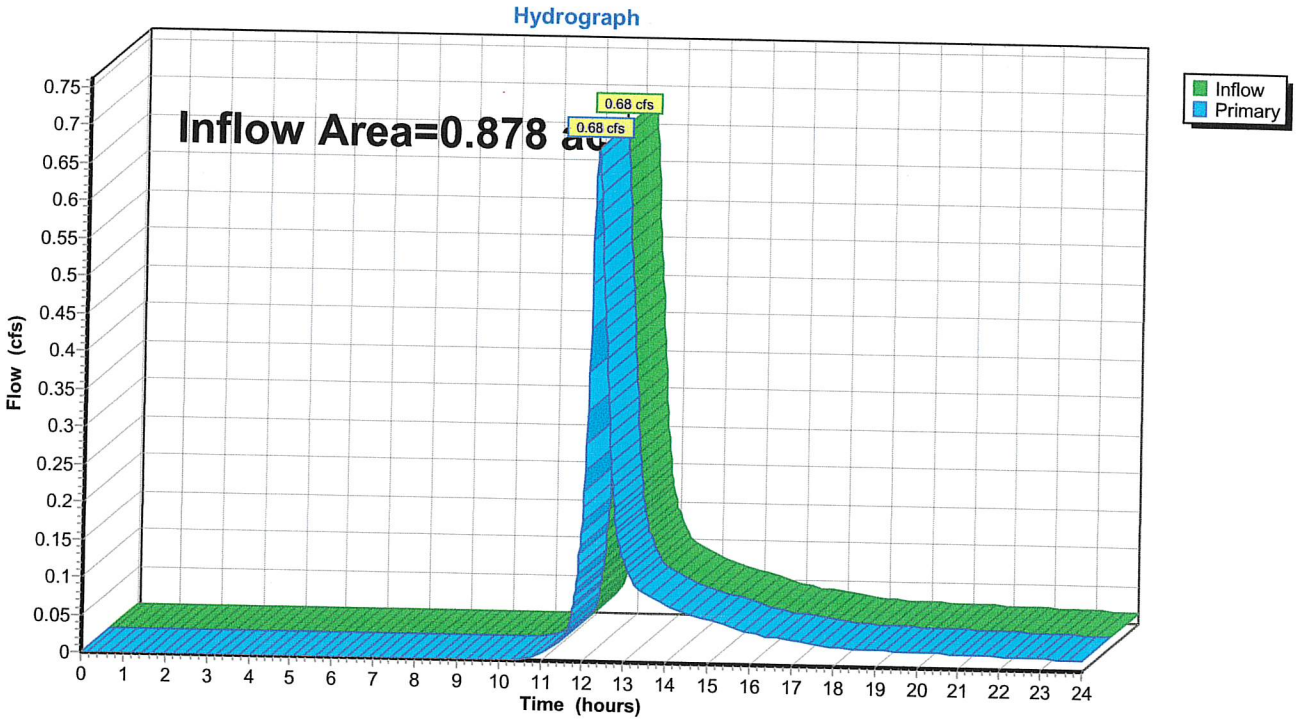


Summary for Link 1L: LAKE

Inflow Area = 0.878 ac, 25.08% Impervious, Inflow Depth > 0.92" for 2yr event
Inflow = 0.68 cfs @ 12.23 hrs, Volume= 0.067 af
Primary = 0.68 cfs @ 12.23 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link 1L: LAKE



Summary for Subcatchment E1: ex

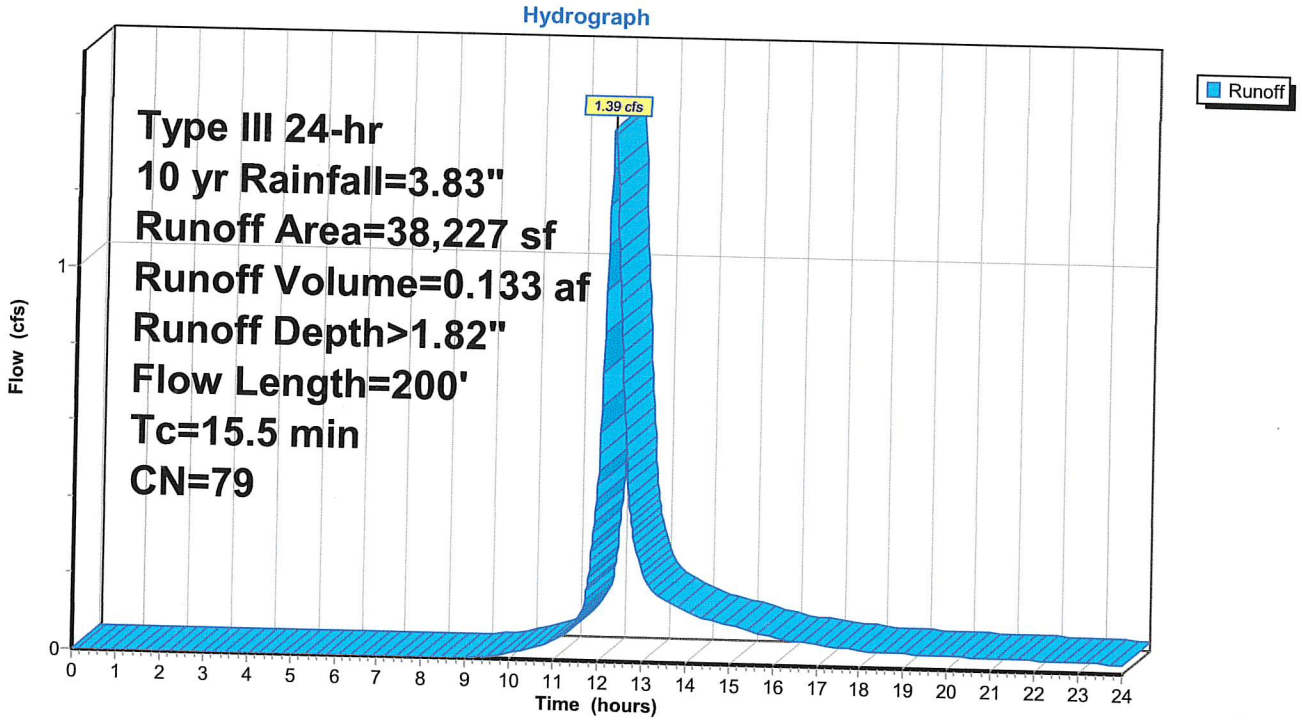
Runoff = 1.39 cfs @ 12.22 hrs, Volume= 0.133 af, Depth> 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 yr Rainfall=3.83"

Area (sf)	CN	Description
28,639	72	Woods/grass comb., Good, HSG C
9,588	98	Roofs, HSG C
38,227	79	Weighted Average
28,639		74.92% Pervious Area
9,588		25.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0700	0.12		**Sheet Flow, existing site** Woods: Light underbrush n= 0.400 P2= 2.63"
1.1	100	0.0500	1.57		**Shallow Concentrated Flow, lake front** Short Grass Pasture Kv= 7.0 fps
15.5	200	Total			

Subcatchment E1: ex

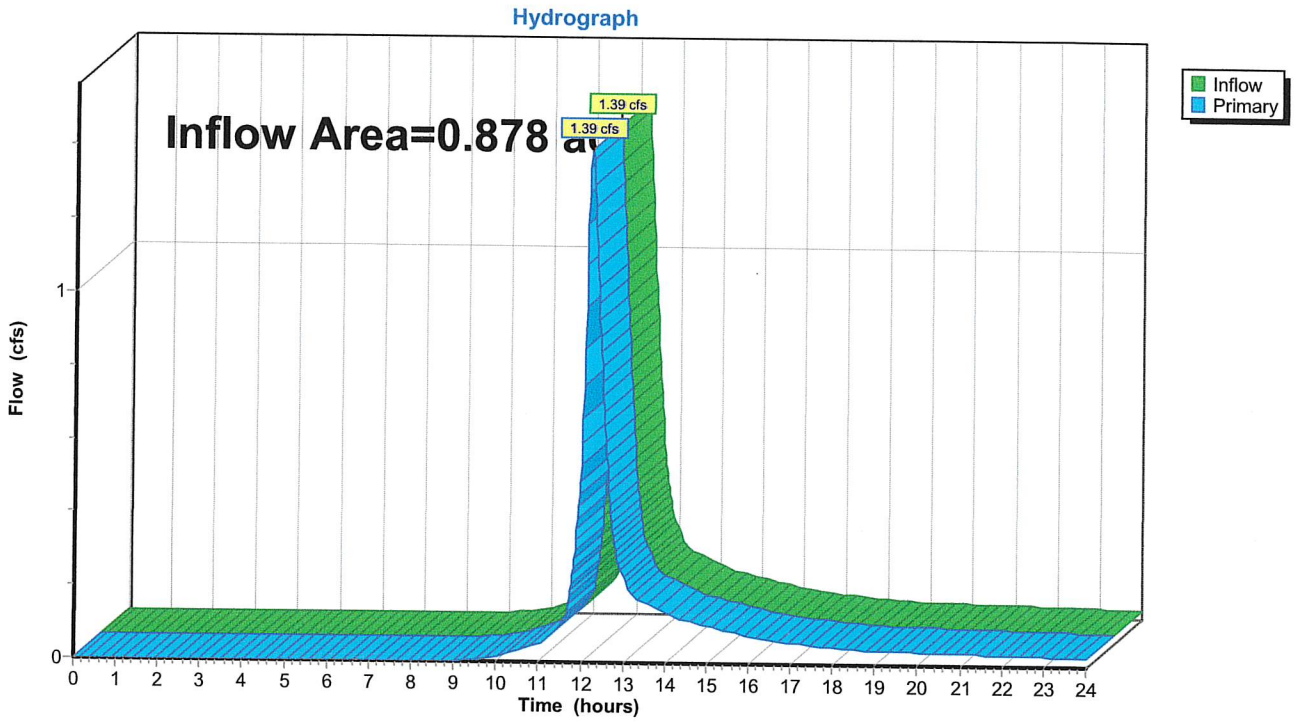


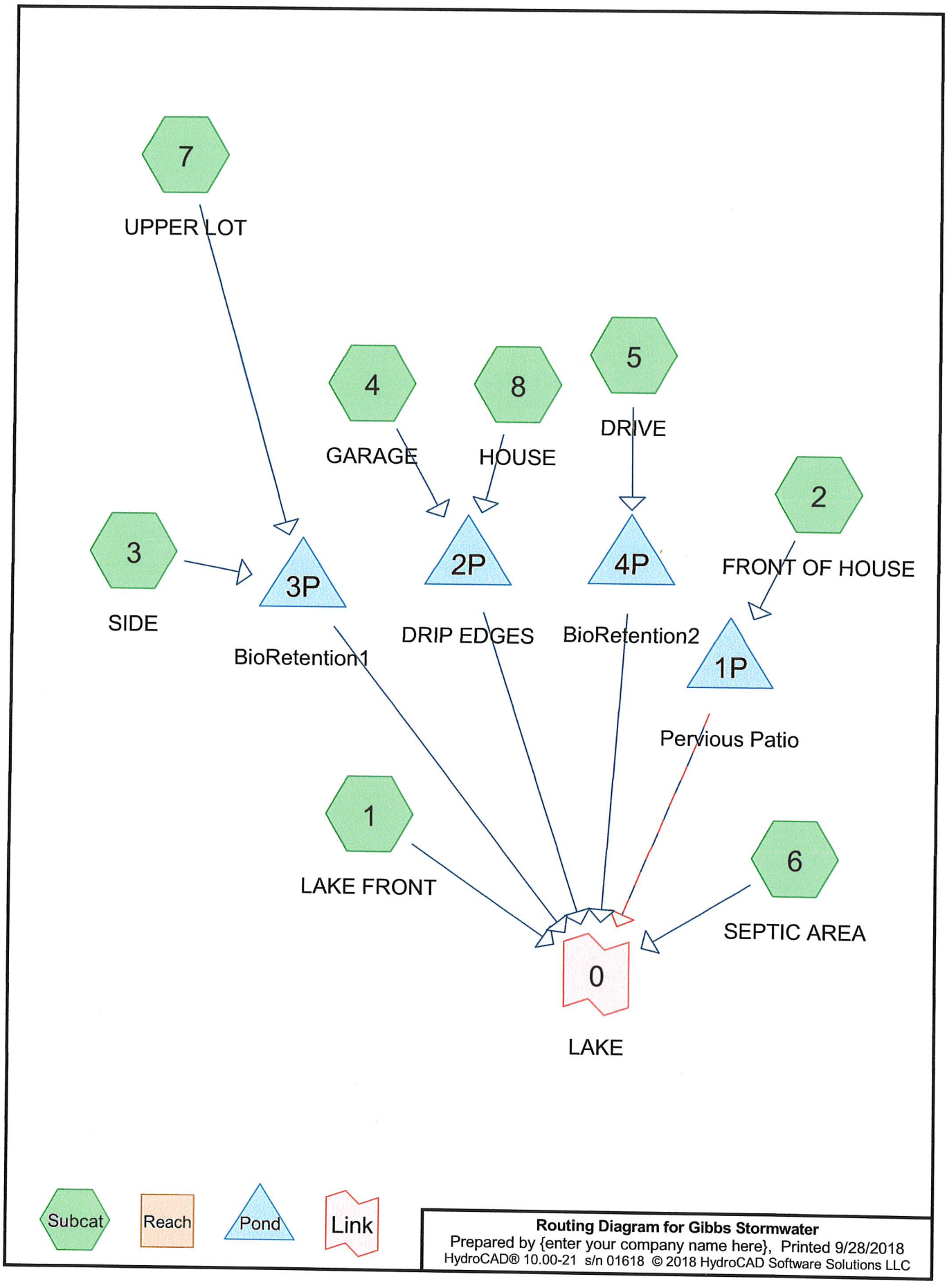
Summary for Link 1L: LAKE

Inflow Area = 0.878 ac, 25.08% Impervious, Inflow Depth > 1.82" for 10 yr event
Inflow = 1.39 cfs @ 12.22 hrs, Volume= 0.133 af
Primary = 1.39 cfs @ 12.22 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link 1L: LAKE




7
UPPER LOT
4
GARAGE
8
HOUSE
5
DRIVE
2
FRONT OF HOUSE
3
SIDE
3P
BioRetention1
2P
DRIP EDGES
4P
BioRetention2
1P
Pervious Patio
1
LAKE FRONT
6
SEPTIC AREA
0
LAKE
Subcat
Reach
Pond
Link
Routing Diagram for Gibbs Stormwater
Prepared by {enter your company name here}, Printed 9/28/2018
HydroCAD® 10.00-21 s/n 01618 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.036	74	>75% Grass cover, Good, HSG C (5)
0.057	98	DRIVE, HSG C (5)
0.135	98	Roofs, HSG C (2, 4, 8)
0.030	98	Water Surface, 0% imp, HSG C (2)
0.175	70	Woods, Good, HSG C (7)
0.444	72	Woods/grass comb., Good, HSG C (1, 3, 6)
0.878	**78**	**TOTAL AREA**

Summary for Subcatchment 1: LAKE FRONT

[49] Hint: Tc<2dt may require smaller dt

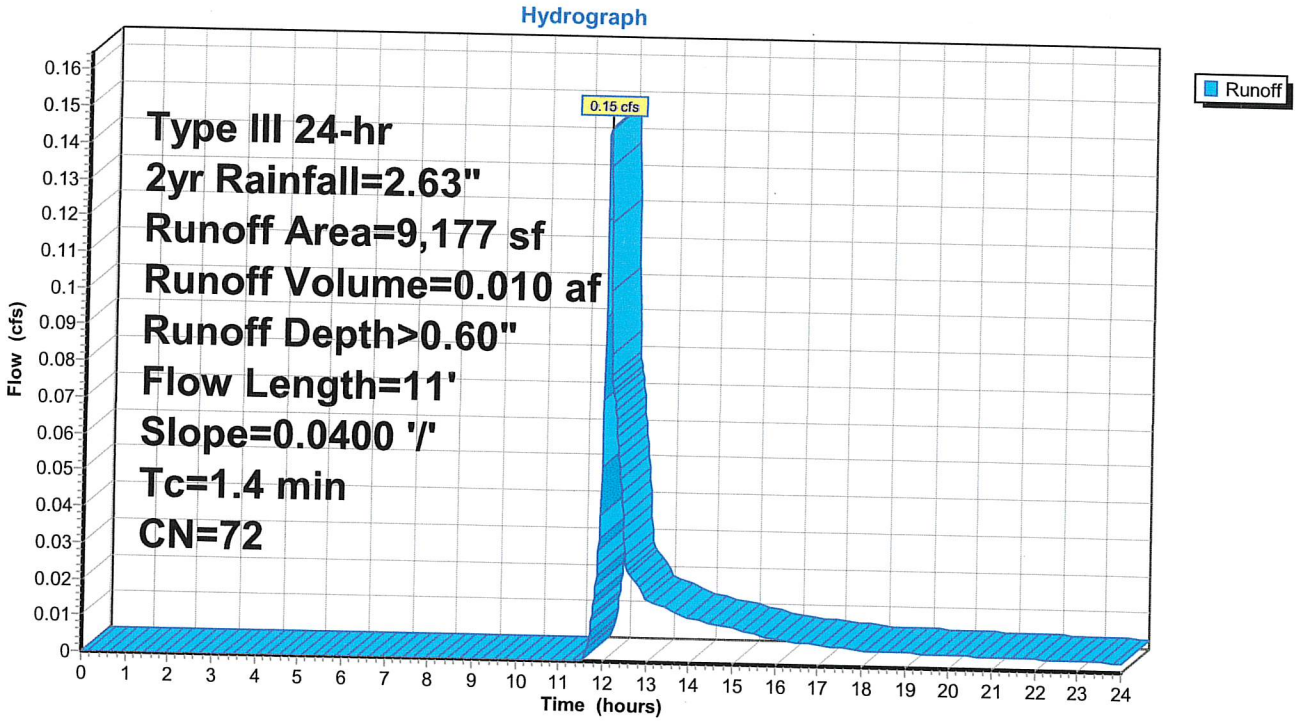
Runoff = 0.15 cfs @ 12.03 hrs, Volume= 0.010 af, Depth> 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=2.63"

Area (sf)	CN	Description
9,177	72	Woods/grass comb., Good, HSG C
9,177		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	11	0.0400	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"

Subcatchment 1: LAKE FRONT



Summary for Subcatchment 2: FRONT OF HOUSE

[49] Hint: Tc<2dt may require smaller dt

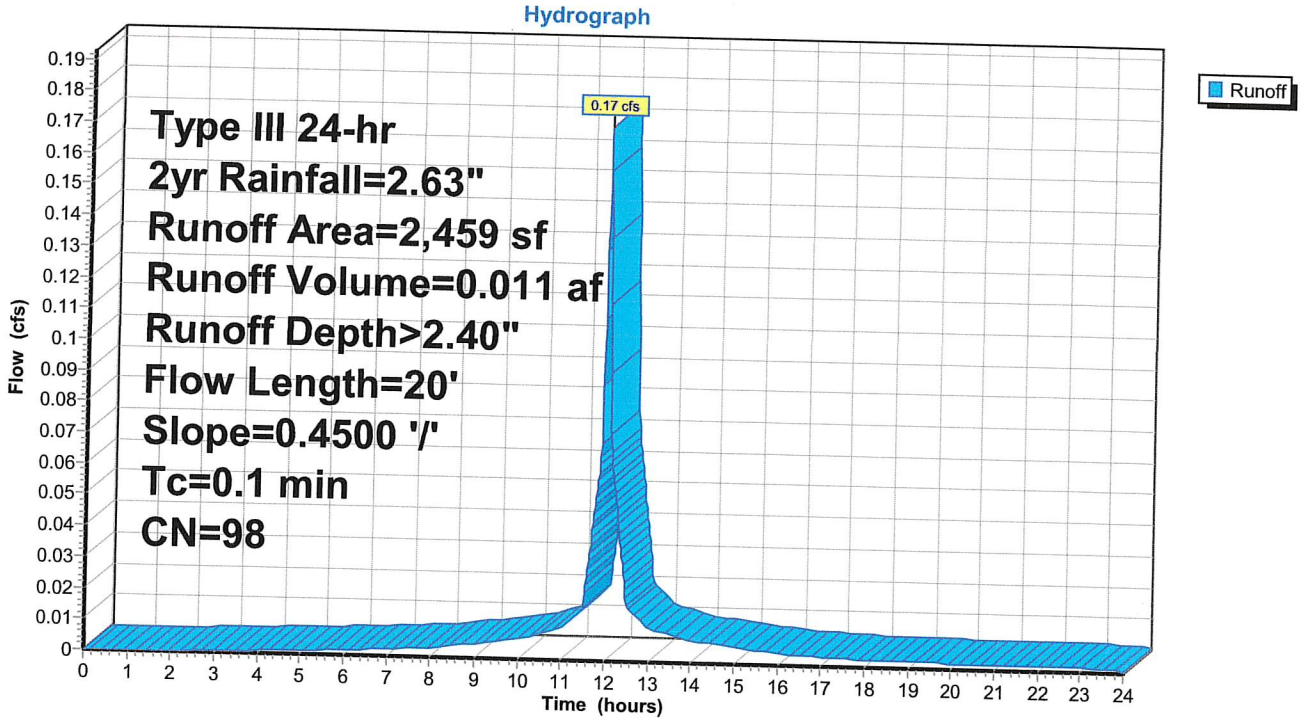
Runoff = 0.17 cfs @ 12.00 hrs, Volume= 0.011 af, Depth> 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=2.63"

Area (sf)	CN	Description
1,137	98	Roofs, HSG C
1,322	98	Water Surface, 0% imp, HSG C
2,459	98	Weighted Average
1,322		53.76% Pervious Area
1,137		46.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	0.4500	3.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.63"

Subcatchment 2: FRONT OF HOUSE



Summary for Subcatchment 3: SIDE

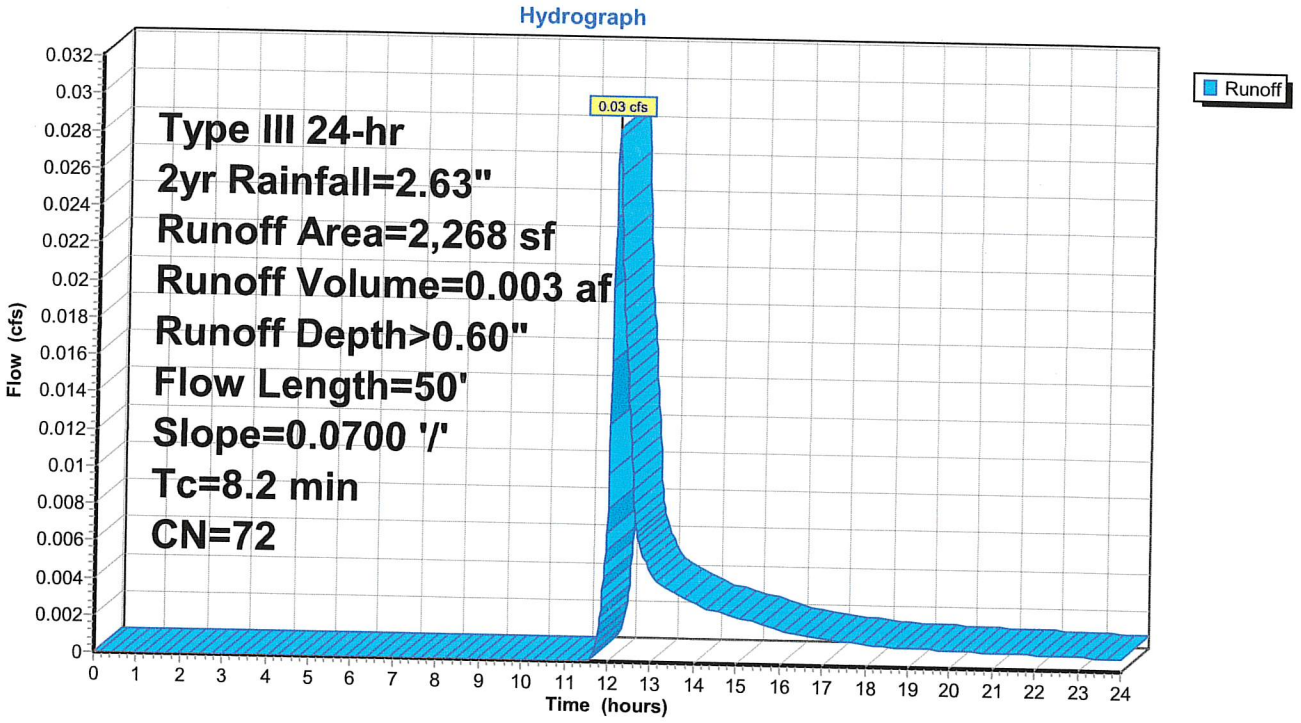
Runoff = 0.03 cfs @ 12.13 hrs, Volume= 0.003 af, Depth> 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=2.63"

Area (sf)	CN	Description
2,268	72	Woods/grass comb., Good, HSG C
2,268		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0700	0.10		**Sheet Flow, existing site** Woods: Light underbrush n= 0.400 P2= 2.63"

Subcatchment 3: SIDE



Summary for Subcatchment 4: GARAGE

[49] Hint: Tc<2dt may require smaller dt

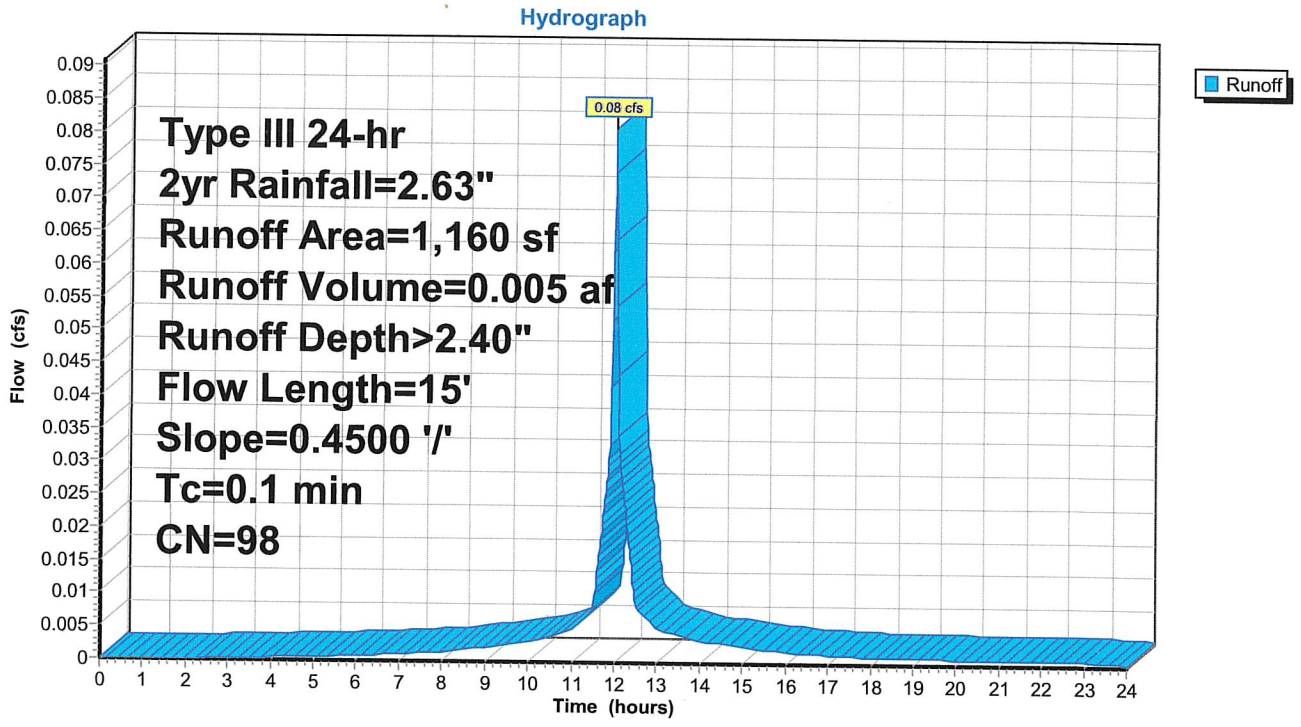
Runoff = 0.08 cfs @ 12.00 hrs, Volume= 0.005 af, Depth> 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=2.63"

Area (sf)	CN	Description
1,160	98	Roofs, HSG C
1,160		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	15	0.4500	2.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.63"

Subcatchment 4: GARAGE



Summary for Subcatchment 5: DRIVE

[49] Hint: Tc<2dt may require smaller dt

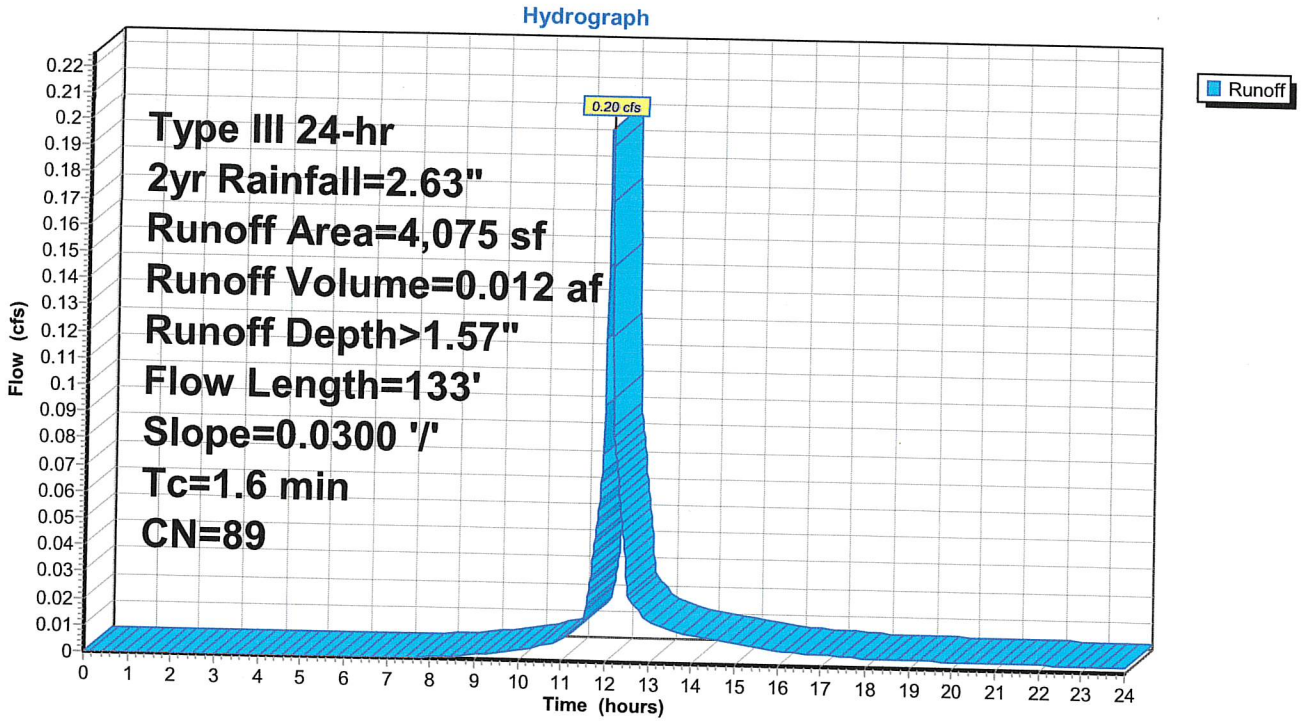
Runoff = 0.20 cfs @ 12.03 hrs, Volume= 0.012 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=2.63"

	Area (sf)	CN	Description
*	2,500	98	DRIVE, HSG C
	1,575	74	>75% Grass cover, Good, HSG C
	4,075	89	Weighted Average
	1,575		38.65% Pervious Area
	2,500		61.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0300	1.47		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.63"
0.5	33	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	133	Total			

Subcatchment 5: DRIVE



Summary for Subcatchment 6: SEPTIC AREA

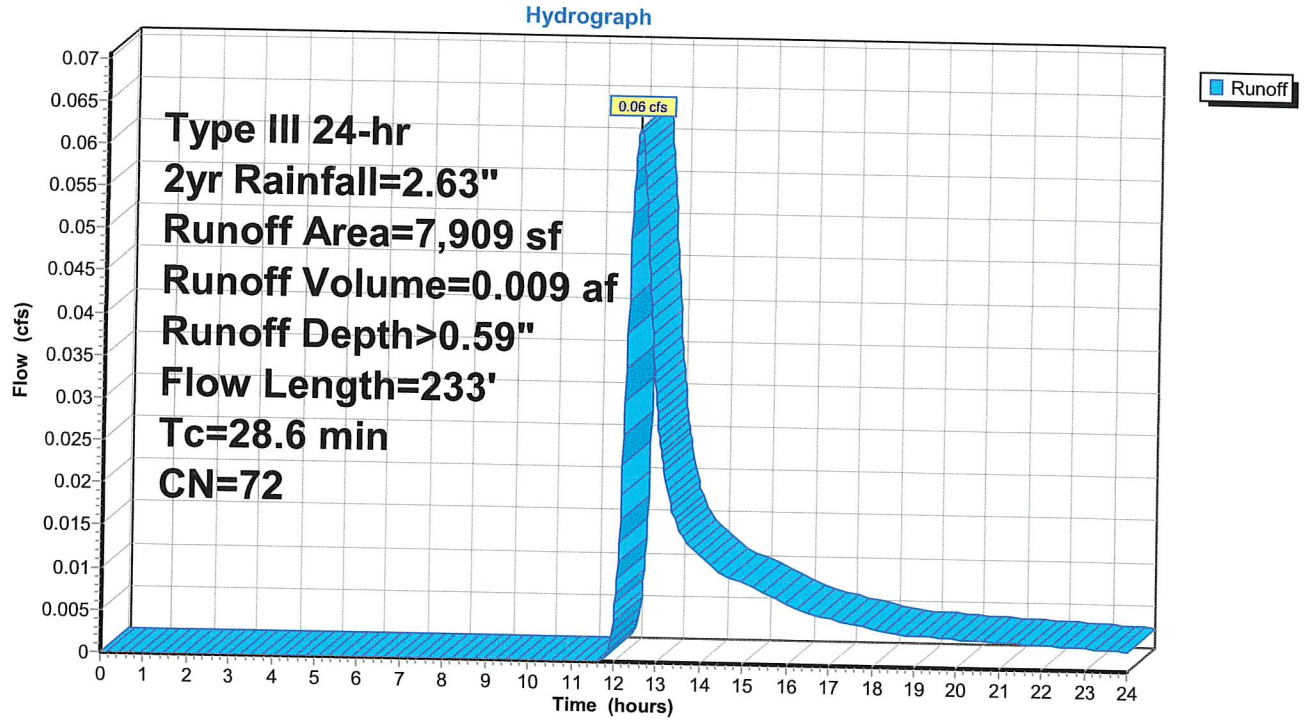
Runoff = 0.06 cfs @ 12.47 hrs, Volume= 0.009 af, Depth> 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=2.63"

Area (sf)	CN	Description
7,909	72	Woods/grass comb., Good, HSG C
7,909		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	100	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.63"
2.0	133	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
28.6	233	Total			

Subcatchment 6: SEPTIC AREA



Summary for Subcatchment 7: UPPER LOT

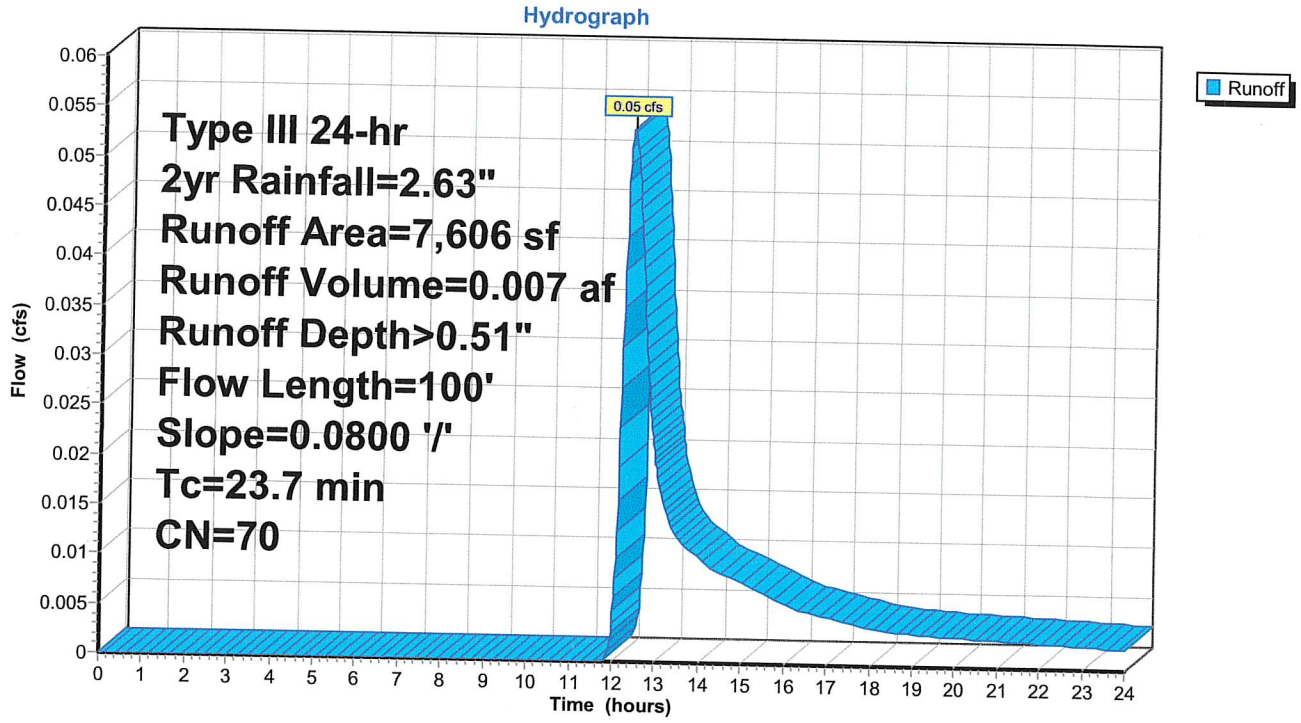
Runoff = 0.05 cfs @ 12.40 hrs, Volume= 0.007 af, Depth> 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=2.63"

Area (sf)	CN	Description
7,606	70	Woods, Good, HSG C
7,606		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0800	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.63"

Subcatchment 7: UPPER LOT



Summary for Subcatchment 8: HOUSE

[49] Hint: Tc<2dt may require smaller dt

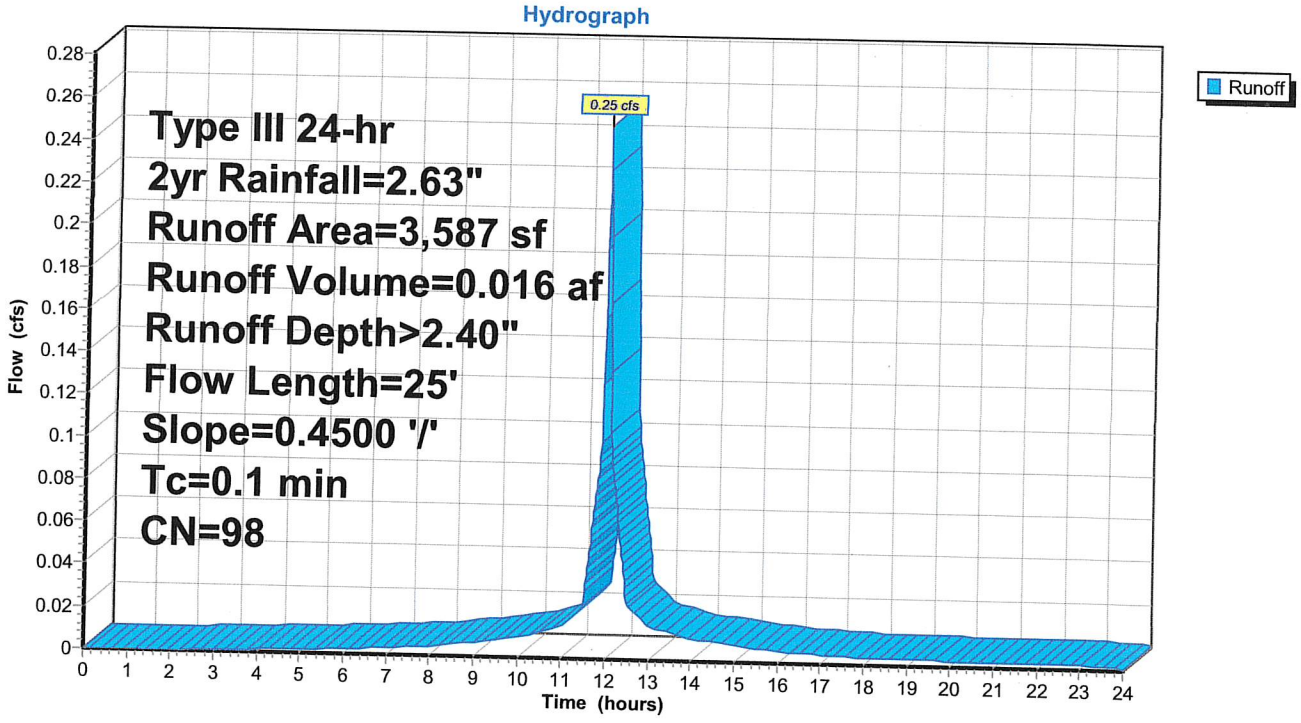
Runoff = 0.25 cfs @ 12.00 hrs, Volume= 0.016 af, Depth> 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=2.63"

Area (sf)	CN	Description
3,587	98	Roofs, HSG C
3,587		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.4500	3.28		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.63"

Subcatchment 8: HOUSE



Summary for Pond 1P: Pervious Patio

Inflow Area = 0.056 ac, 46.24% Impervious, Inflow Depth > 2.40" for 2yr event
Inflow = 0.17 cfs @ 12.00 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.39 hrs, Volume= 0.011 af, Atten= 95%, Lag= 83.5 min
Discarded = 0.01 cfs @ 13.39 hrs, Volume= 0.011 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 0.53' @ 13.39 hrs Surf.Area= 991 sf Storage= 209 cf

Plug-Flow detention time= 188.5 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 186.6 min (941.9 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	595 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,487 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	991	0	0
1.00	991	991	991
1.50	991	496	1,487

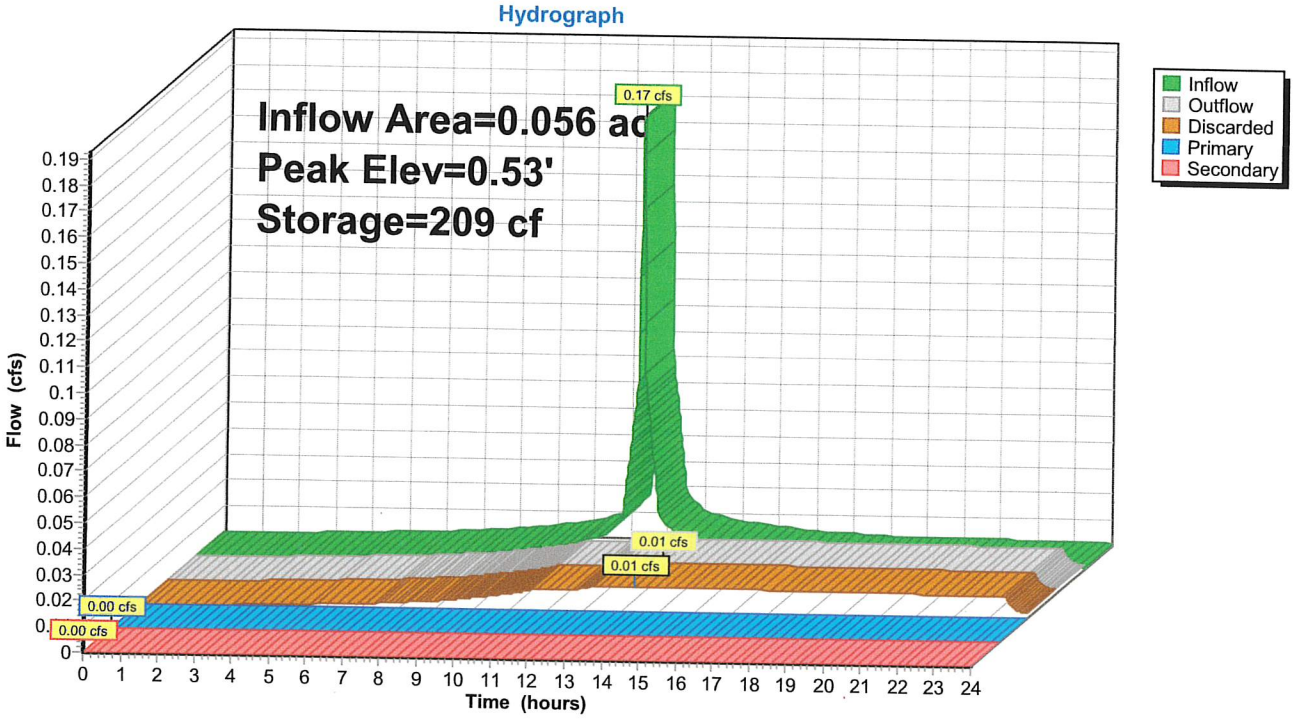
Device	Routing	Invert	Outlet Devices
#1	Primary	1.00'	**4.0" Round Culvert** L= 4.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1.00' / 0.90' S= 0.0250 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Discarded	0.00'	**0.350 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -3.00'
#3	Secondary	1.25'	**60.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.01 cfs @ 13.39 hrs HW=0.53' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Pervious Patio



Summary for Pond 2P: DRIP EDGES

Inflow Area =	0.109 ac,100.00% Impervious,	Inflow Depth >	2.40"	for 2yr event
Inflow =	0.33 cfs @	12.00 hrs, Volume=	0.022 af	
Outflow =	0.33 cfs @	12.00 hrs, Volume=	0.022 af,	Atten= 1%, Lag= 0.1 min
Discarded =	0.33 cfs @	12.00 hrs, Volume=	0.022 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 0.00' @ 12.00 hrs Surf.Area= 683.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.1 min calculated for 0.022 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (755.4 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	4.098 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,024.500 af Overall x 0.4% Voids

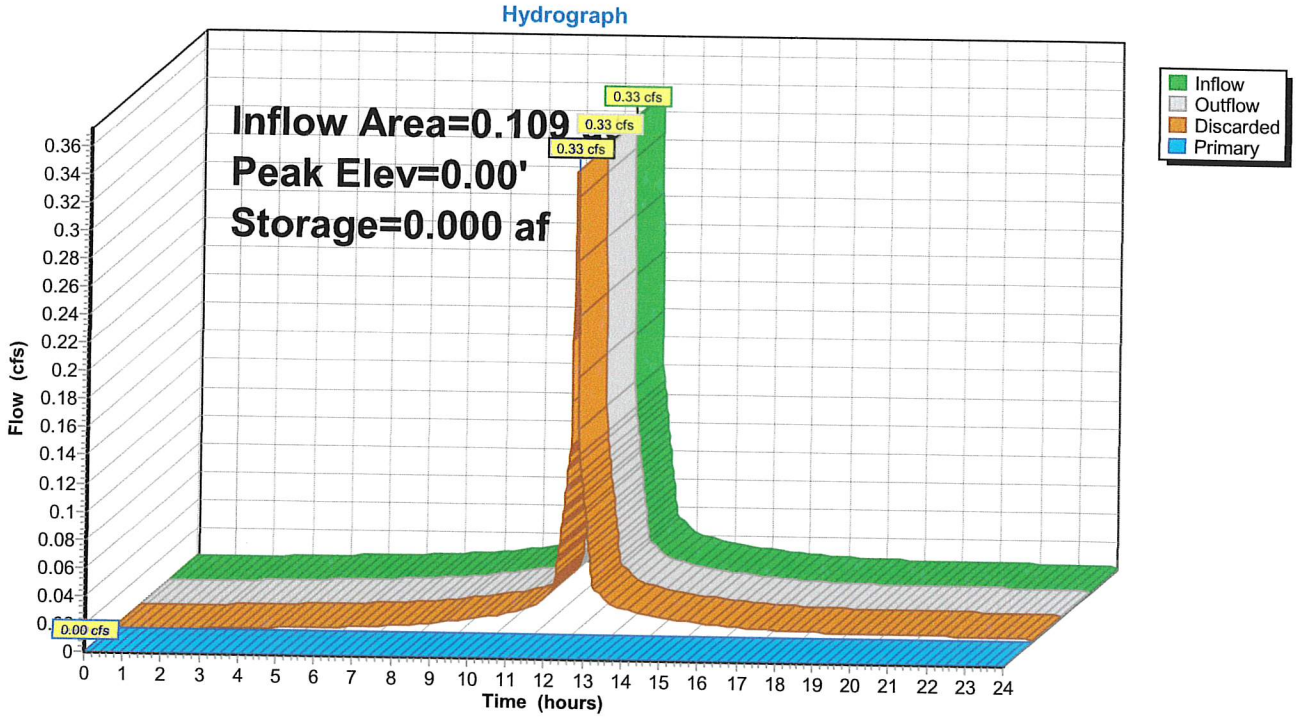
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
0.00	683.000	0.000	0.000
1.50	683.000	1,024.500	1,024.500

Device	Routing	Invert	Outlet Devices
#1	Primary	1.40'	**100.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	0.00'	**0.350 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -3.00'

Discarded OutFlow Max=241.04 cfs @ 12.00 hrs HW=0.00' (Free Discharge)
↑**2=Exfiltration** (Controls 241.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: DRIP EDGES



Summary for Pond 3P: BioRetention1

Inflow Area =	0.227 ac,	0.00% Impervious,	Inflow Depth >	0.53" for 2yr event
Inflow =	0.07 cfs @	12.37 hrs, Volume=	0.010 af	
Outflow =	0.07 cfs @	12.36 hrs, Volume=	0.010 af,	Atten= 0%, Lag= 0.0 min
Discarded =	0.02 cfs @	12.36 hrs, Volume=	0.007 af	
Primary =	0.05 cfs @	12.36 hrs, Volume=	0.003 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 0.91' @ 12.36 hrs Surf.Area= 1,471 sf Storage= 5 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (900.1 - 899.2)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	6 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,471 cf Overall x 0.4% Voids

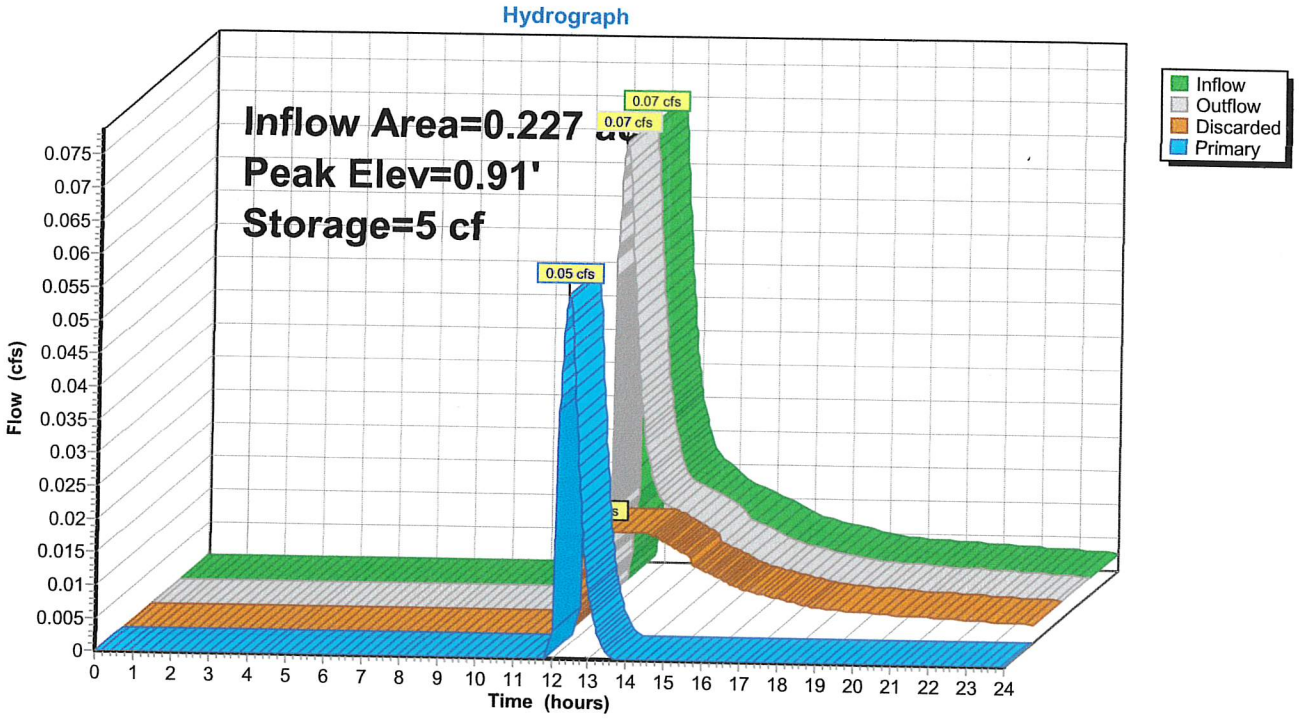
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	1,471	0	0
1.00	1,471	1,471	1,471

Device	Routing	Invert	Outlet Devices
#1	Primary	0.90'	**30.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	0.00'	**0.350 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -3.00'

Discarded OutFlow Max=0.02 cfs @ 12.36 hrs HW=0.91' (Free Discharge)
↑**2=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.05 cfs @ 12.36 hrs HW=0.91' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.05 cfs @ 0.21 fps)

Pond 3P: BioRetention1



Summary for Pond 4P: BioRetention2

Inflow Area = 0.094 ac, 61.35% Impervious, Inflow Depth > 1.57" for 2yr event
Inflow = 0.20 cfs @ 12.03 hrs, Volume= 0.012 af
Outflow = 0.20 cfs @ 12.03 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.03 hrs, Volume= 0.005 af
Primary = 0.20 cfs @ 12.03 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 0.92' @ 12.03 hrs Surf.Area= 481 sf Storage= 2 cf

Plug-Flow detention time= 2.8 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (816.6 - 814.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 481 cf Overall x 0.4% Voids

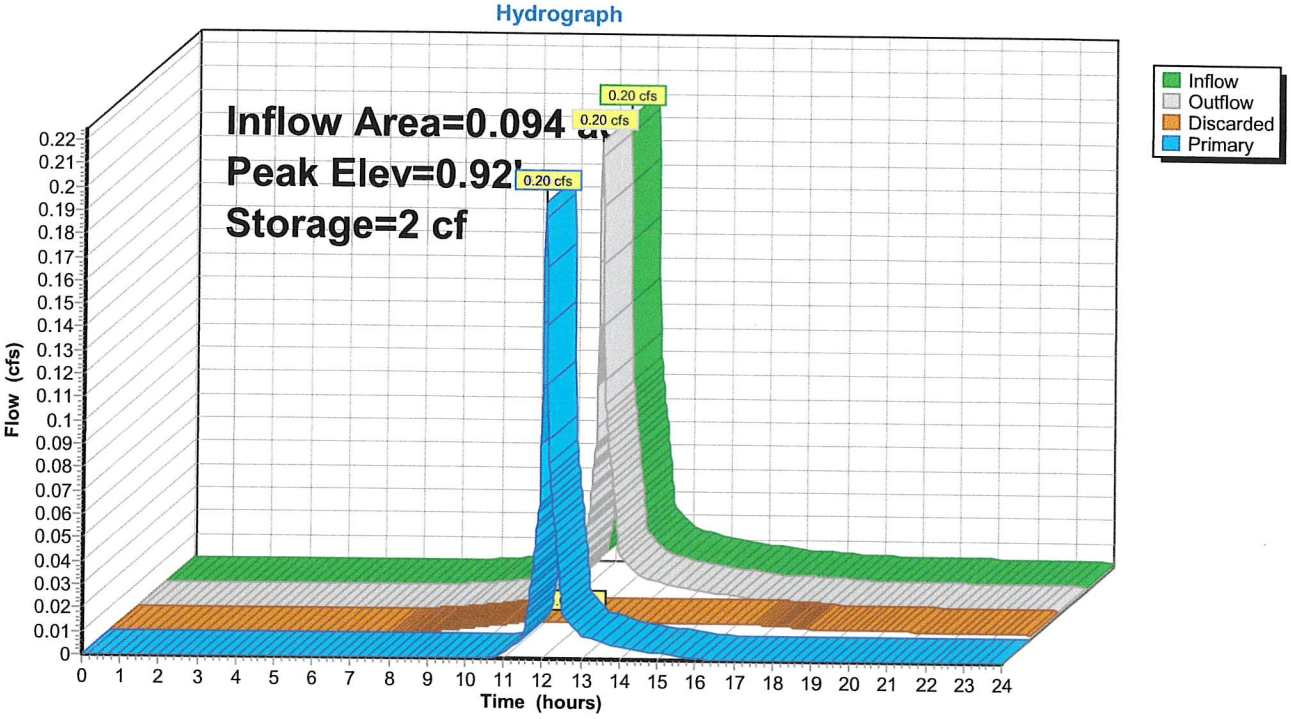
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	481	0	0
1.00	481	481	481

Device	Routing	Invert	Outlet Devices
#1	Primary	0.90'	**25.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	0.00'	**0.350 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -3.00'

Discarded OutFlow Max=0.01 cfs @ 12.03 hrs HW=0.92' (Free Discharge)
↑**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.19 cfs @ 12.03 hrs HW=0.92' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.19 cfs @ 0.35 fps)

Pond 4P: BioRetention2

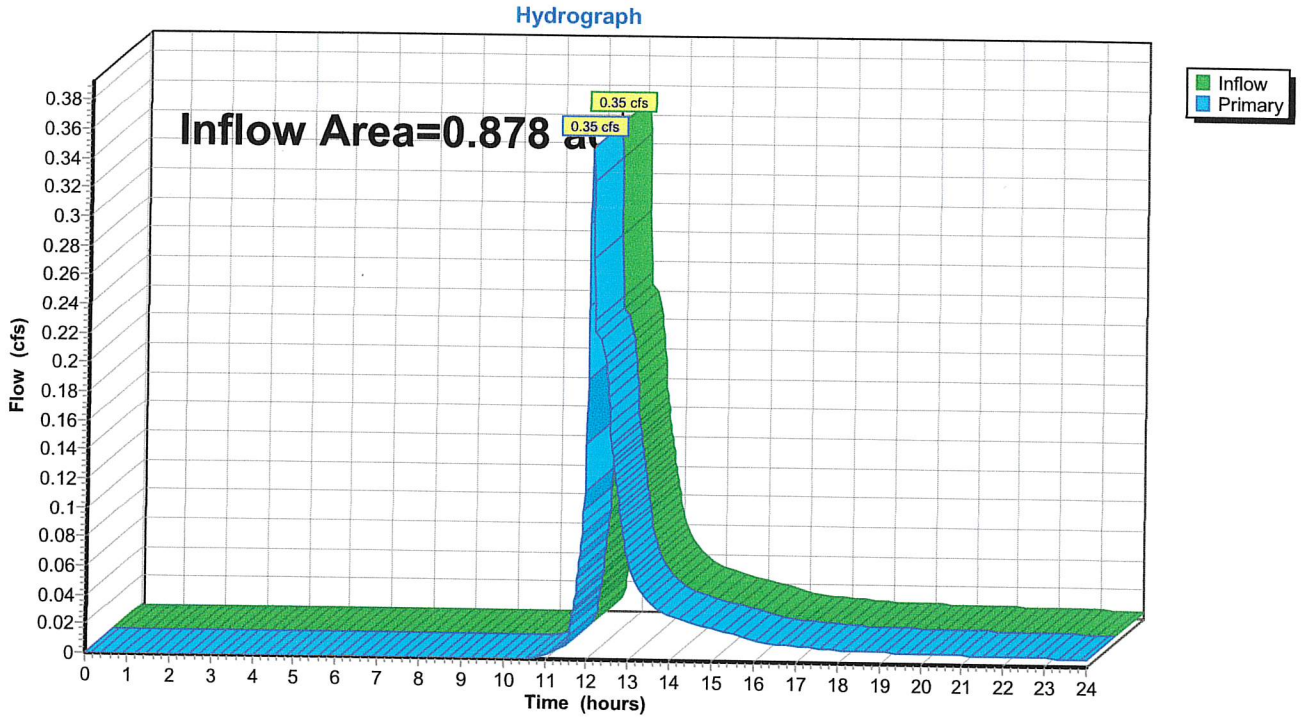


Summary for Link 0: LAKE

Inflow Area = 0.878 ac, 21.92% Impervious, Inflow Depth > 0.40" for 2yr event
Inflow = 0.35 cfs @ 12.03 hrs, Volume= 0.030 af
Primary = 0.35 cfs @ 12.03 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link 0: LAKE



Summary for Subcatchment 1: LAKE FRONT

[49] Hint: Tc<2dt may require smaller dt

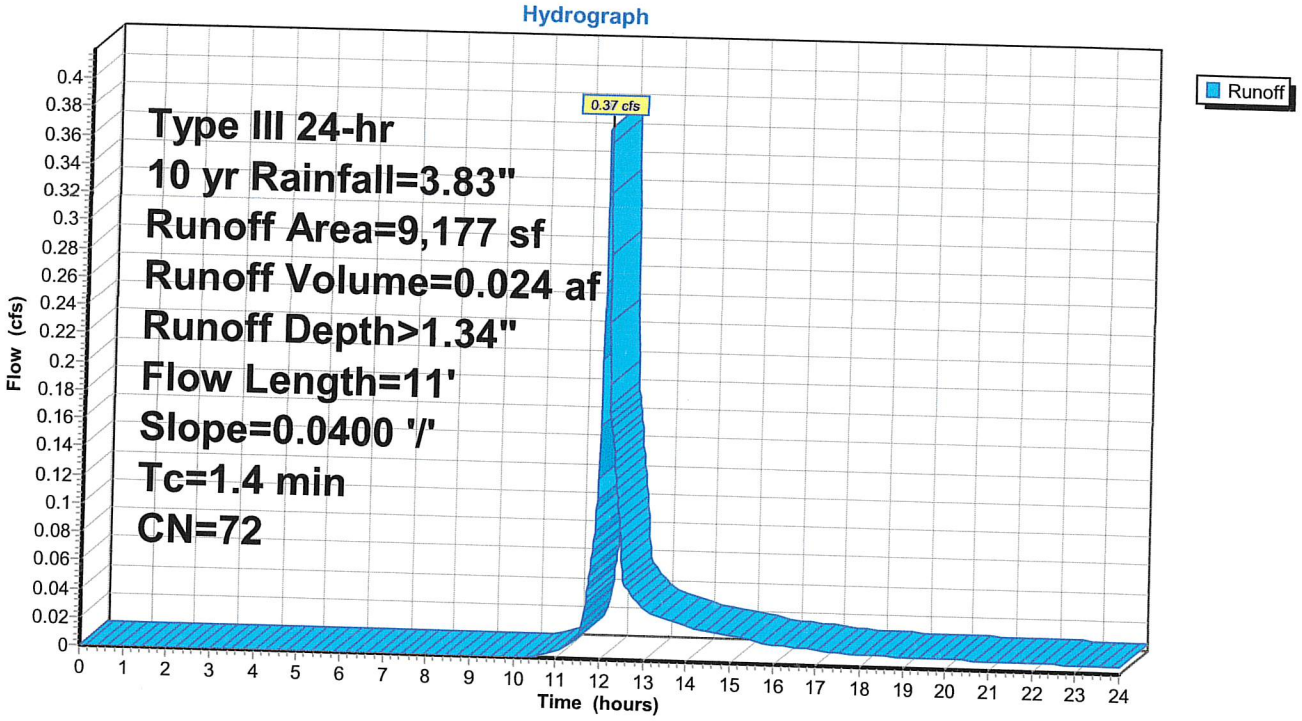
Runoff = 0.37 cfs @ 12.03 hrs, Volume= 0.024 af, Depth> 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 yr Rainfall=3.83"

Area (sf)	CN	Description
9,177	72	Woods/grass comb., Good, HSG C
9,177		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	11	0.0400	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"

Subcatchment 1: LAKE FRONT



Summary for Subcatchment 2: FRONT OF HOUSE

[49] Hint: Tc<2dt may require smaller dt

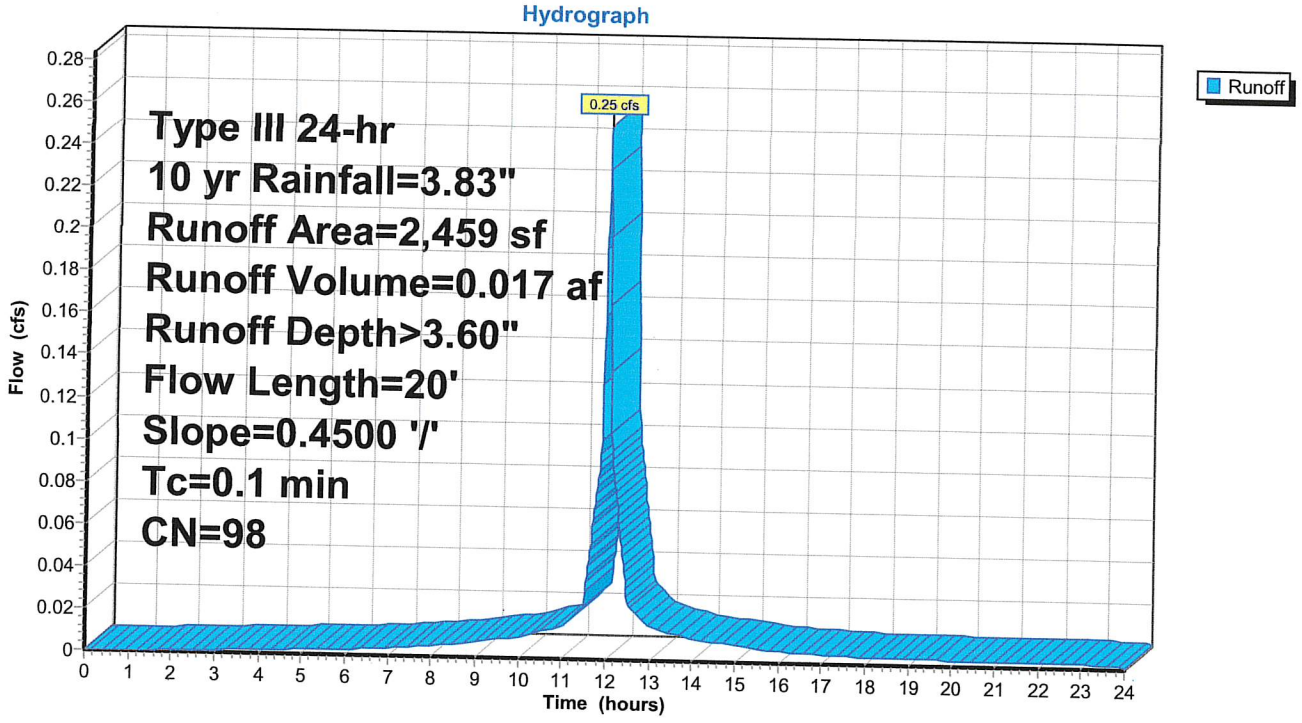
Runoff = 0.25 cfs @ 12.00 hrs, Volume= 0.017 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 yr Rainfall=3.83"

Area (sf)	CN	Description
1,137	98	Roofs, HSG C
1,322	98	Water Surface, 0% imp, HSG C
2,459	98	Weighted Average
1,322		53.76% Pervious Area
1,137		46.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	0.4500	3.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.63"

Subcatchment 2: FRONT OF HOUSE



Summary for Subcatchment 3: SIDE

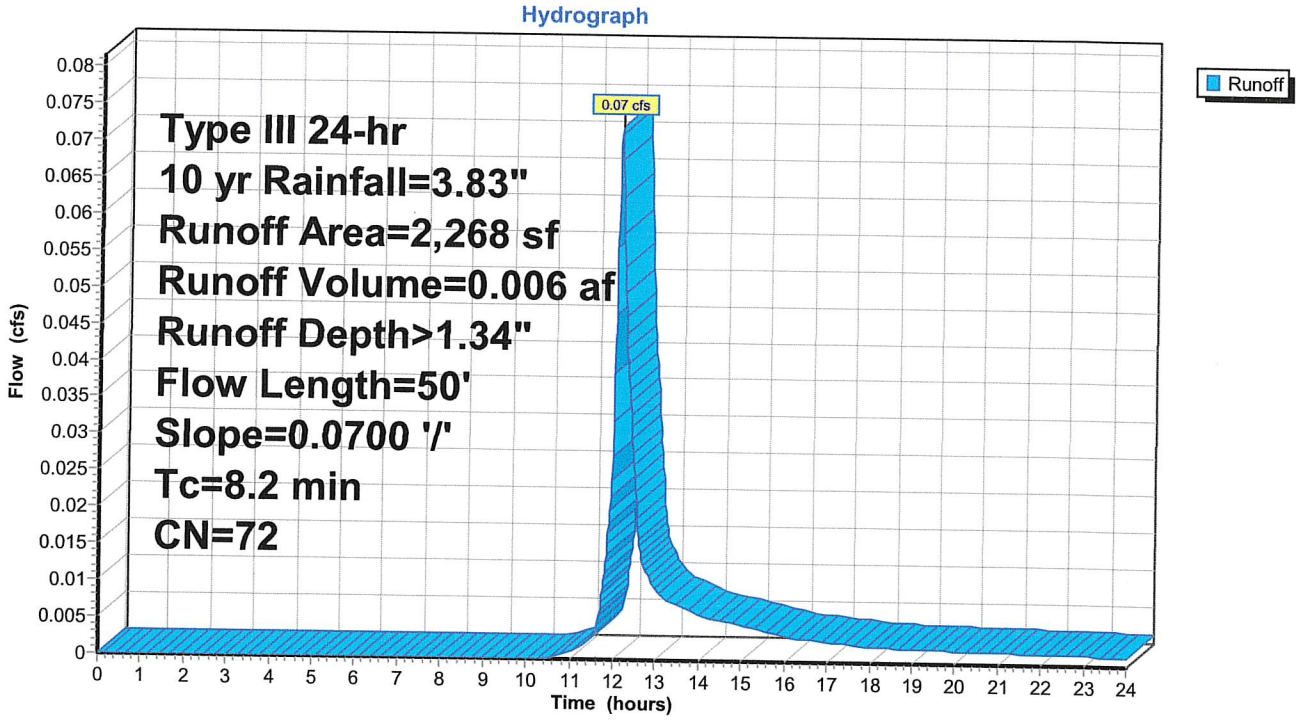
Runoff = 0.07 cfs @ 12.12 hrs, Volume= 0.006 af, Depth> 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 yr Rainfall=3.83"

Area (sf)	CN	Description
2,268	72	Woods/grass comb., Good, HSG C
2,268		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0700	0.10		**Sheet Flow, existing site** Woods: Light underbrush n= 0.400 P2= 2.63"

Subcatchment 3: SIDE



Summary for Subcatchment 4: GARAGE

[49] Hint: Tc<2dt may require smaller dt

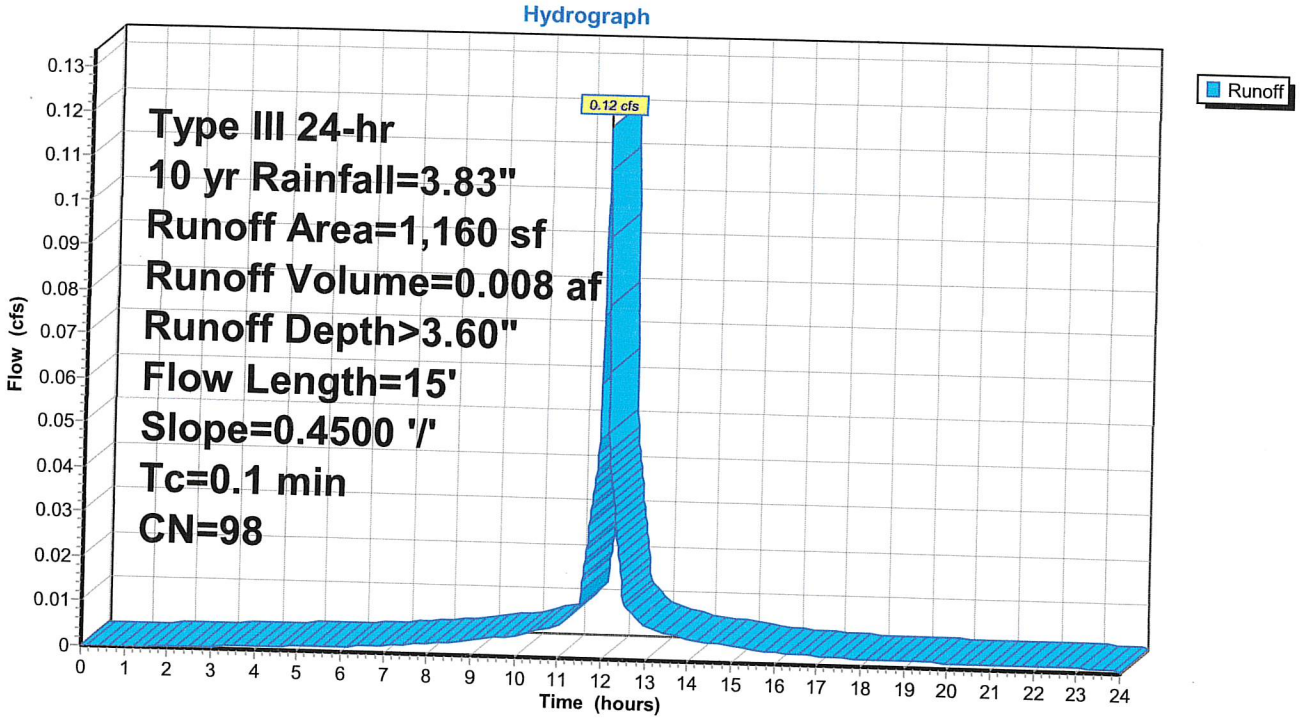
Runoff = 0.12 cfs @ 12.00 hrs, Volume= 0.008 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 yr Rainfall=3.83"

Area (sf)	CN	Description
1,160	98	Roofs, HSG C
1,160		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	15	0.4500	2.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.63"

Subcatchment 4: GARAGE



Summary for Subcatchment 5: DRIVE

[49] Hint: Tc<2dt may require smaller dt

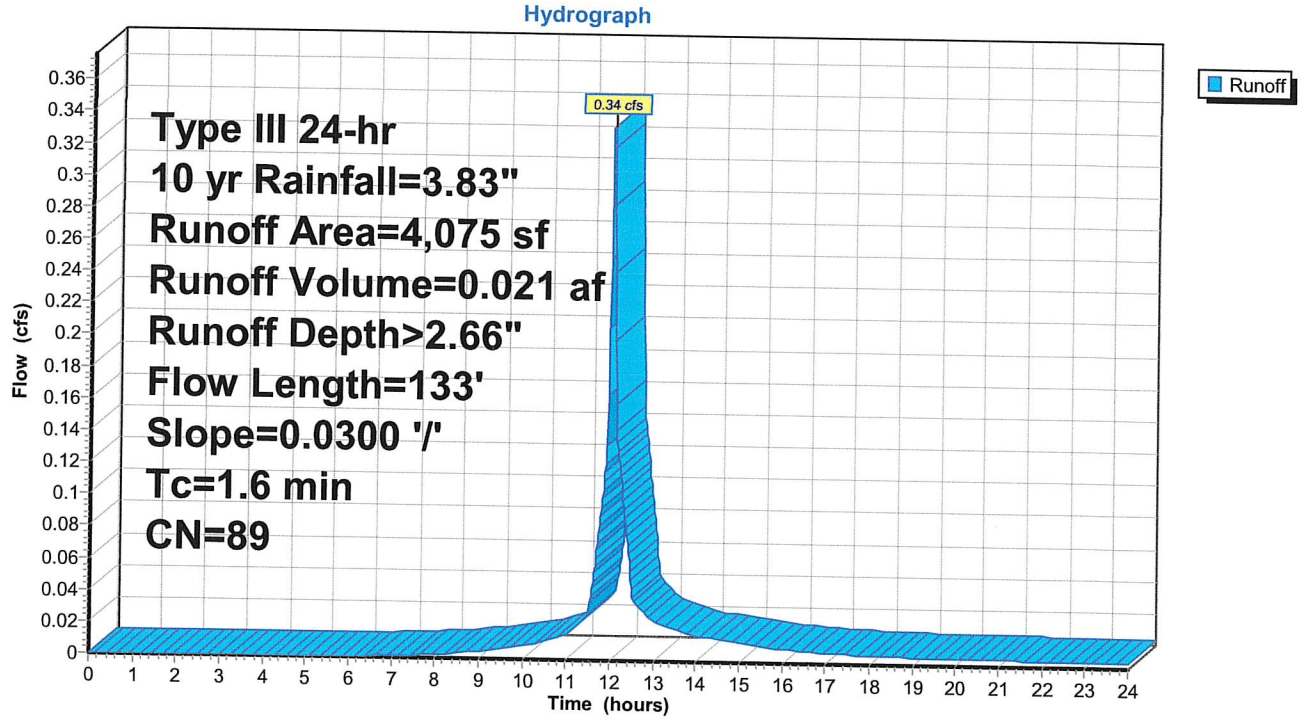
Runoff = 0.34 cfs @ 12.02 hrs, Volume= 0.021 af, Depth> 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 yr Rainfall=3.83"

	Area (sf)	CN	Description
*	2,500	98	DRIVE, HSG C
	1,575	74	>75% Grass cover, Good, HSG C
	4,075	89	Weighted Average
	1,575		38.65% Pervious Area
	2,500		61.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0300	1.47		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.63"
0.5	33	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	133	Total			

Subcatchment 5: DRIVE



Summary for Subcatchment 6: SEPTIC AREA

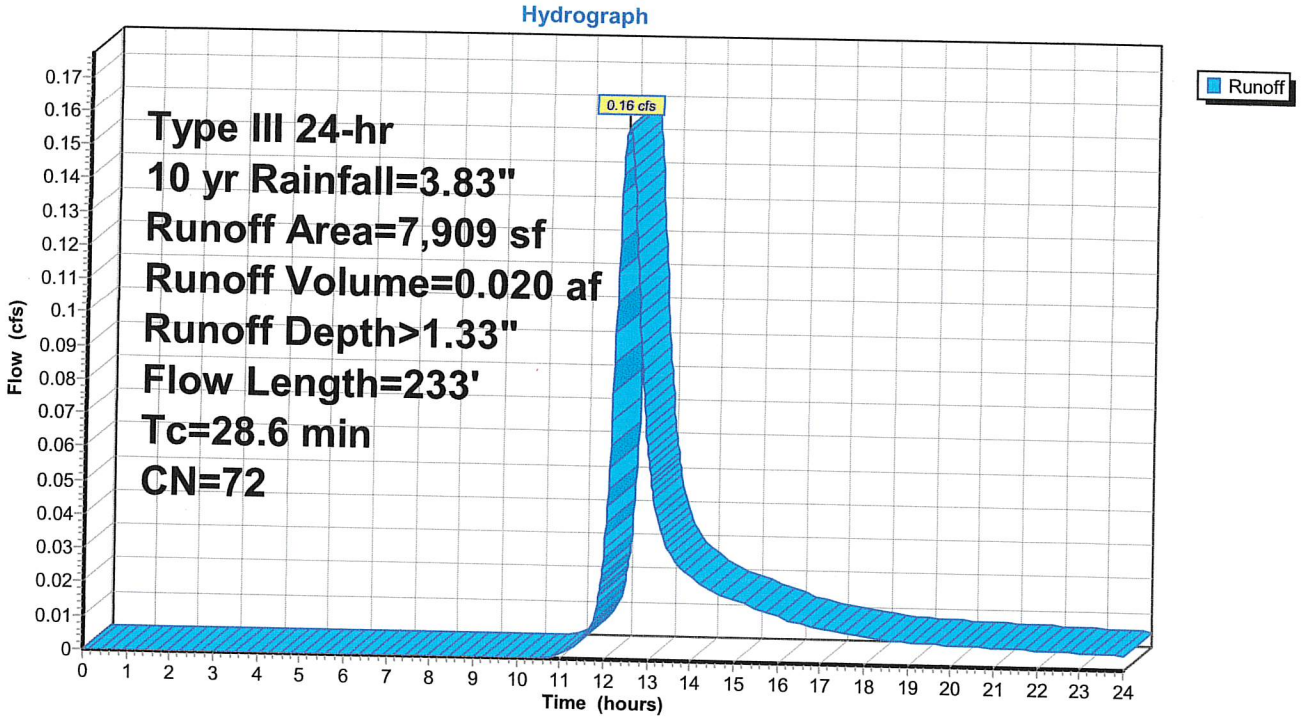
Runoff = 0.16 cfs @ 12.43 hrs, Volume= 0.020 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 yr Rainfall=3.83"

Area (sf)	CN	Description
7,909	72	Woods/grass comb., Good, HSG C
7,909		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	100	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.63"
2.0	133	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
28.6	233	Total			

Subcatchment 6: SEPTIC AREA



Summary for Subcatchment 7: UPPER LOT

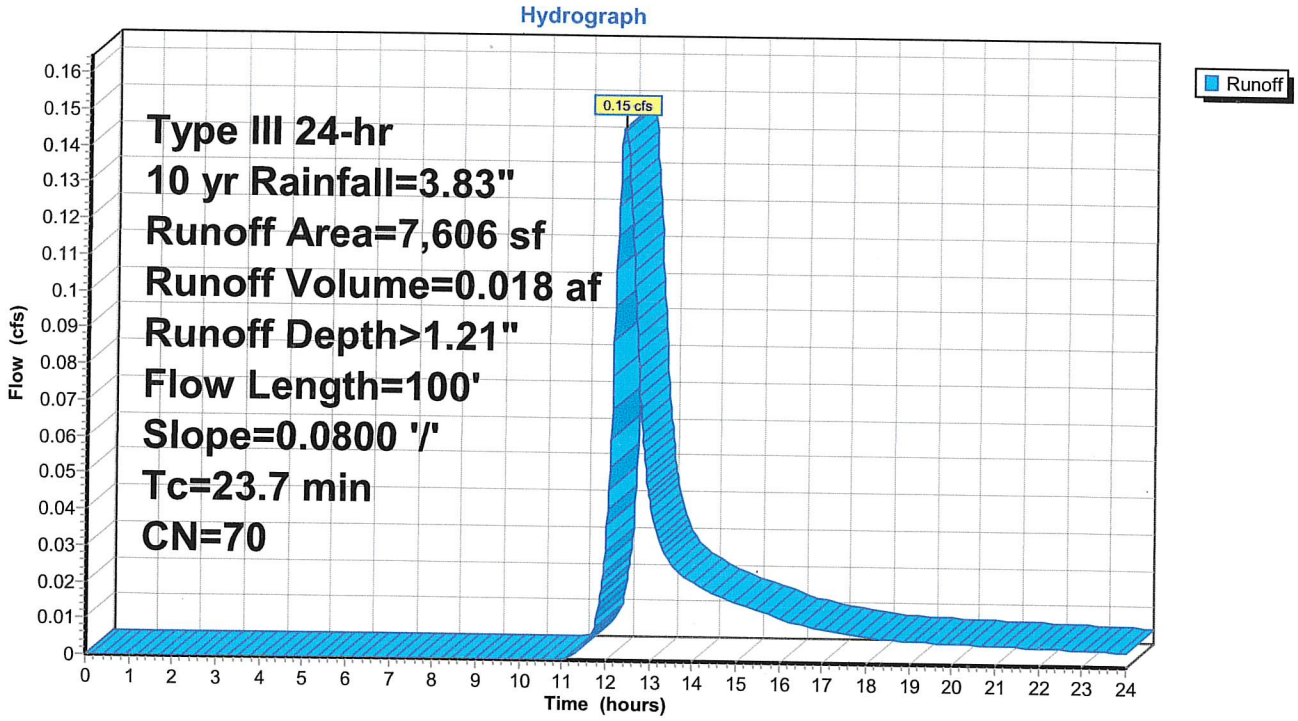
Runoff = 0.15 cfs @ 12.36 hrs, Volume= 0.018 af, Depth> 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 yr Rainfall=3.83"

Area (sf)	CN	Description
7,606	70	Woods, Good, HSG C
7,606		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0800	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.63"

Subcatchment 7: UPPER LOT



Summary for Subcatchment 8: HOUSE

[49] Hint: Tc<2dt may require smaller dt

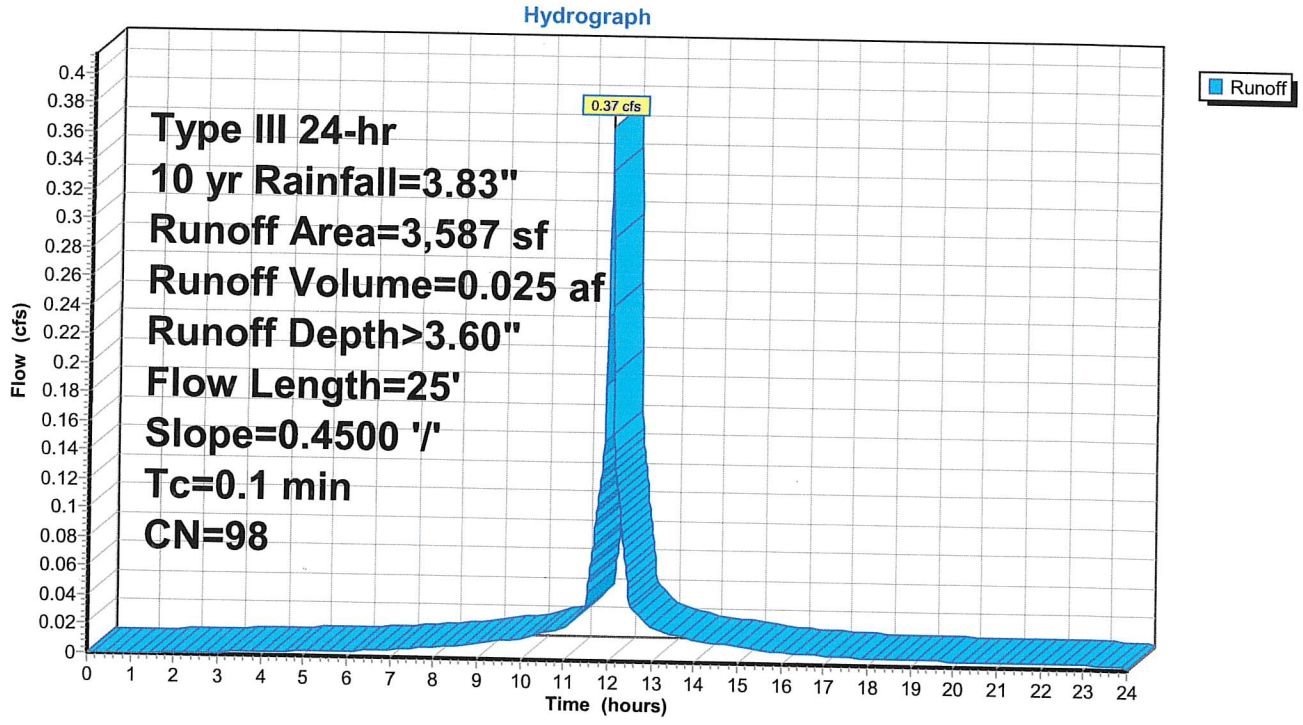
Runoff = 0.37 cfs @ 12.00 hrs, Volume= 0.025 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 yr Rainfall=3.83"

Area (sf)	CN	Description
3,587	98	Roofs, HSG C
3,587		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.4500	3.28		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.63"

Subcatchment 8: HOUSE



Summary for Pond 1P: Pervious Patio

Inflow Area =	0.056 ac,	46.24% Impervious,	Inflow Depth >	3.60"	for 10 yr event
Inflow =	0.25 cfs @	12.00 hrs, Volume=	0.017 af		
Outflow =	0.01 cfs @	14.08 hrs, Volume=	0.013 af,	Atten= 96%,	Lag= 125.0 min
Discarded =	0.01 cfs @	14.08 hrs, Volume=	0.013 af		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 0.90' @ 14.08 hrs Surf.Area= 991 sf Storage= 356 cf

Plug-Flow detention time= 254.3 min calculated for 0.013 af (80% of inflow)
Center-of-Mass det. time= 177.3 min (924.6 - 747.3)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	595 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,487 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	991	0	0
1.00	991	991	991
1.50	991	496	1,487

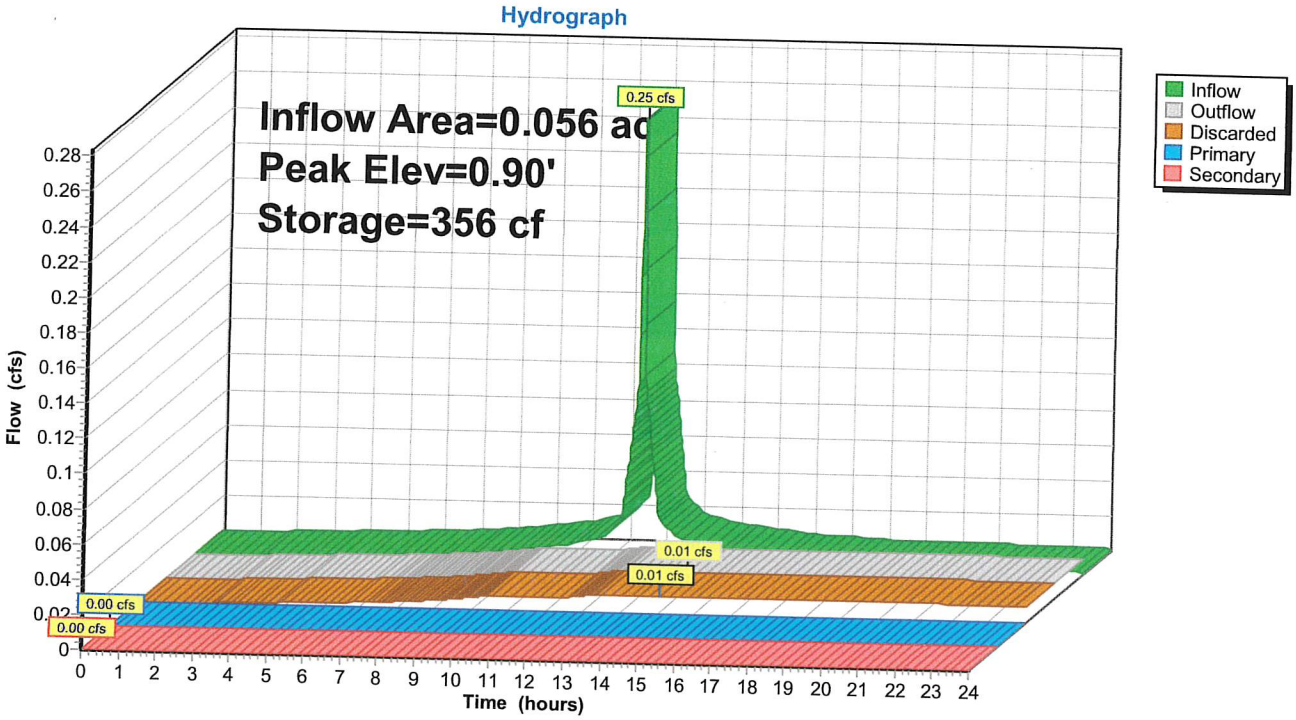
Device	Routing	Invert	Outlet Devices
#1	Primary	1.00'	**4.0" Round Culvert** L= 4.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1.00' / 0.90' S= 0.0250 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Discarded	0.00'	**0.350 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -3.00'
#3	Secondary	1.25'	**60.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.01 cfs @ 14.08 hrs HW=0.90' (Free Discharge)
↑**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Pervious Patio



Summary for Pond 2P: DRIP EDGES

Inflow Area = 0.109 ac,100.00% Impervious, Inflow Depth > 3.60" for 10 yr event
Inflow = 0.49 cfs @ 12.00 hrs, Volume= 0.033 af
Outflow = 0.48 cfs @ 12.00 hrs, Volume= 0.033 af, Atten= 1%, Lag= 0.1 min
Discarded = 0.48 cfs @ 12.00 hrs, Volume= 0.033 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 0.00' @ 12.00 hrs Surf.Area= 683.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.1 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (747.4 - 747.3)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	4.098 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,024.500 af Overall x 0.4% Voids

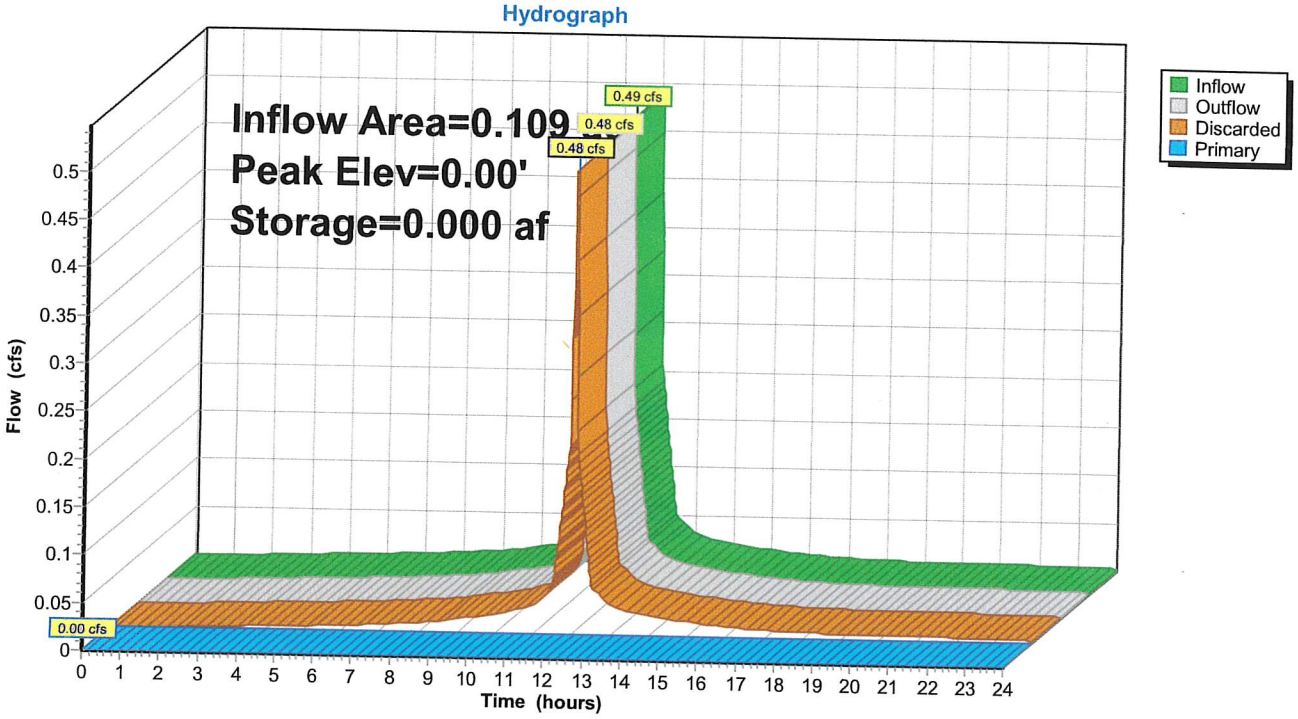
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
0.00	683.000	0.000	0.000
1.50	683.000	1,024.500	1,024.500

Device	Routing	Invert	Outlet Devices
#1	Primary	1.40'	**100.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	0.00'	**0.350 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -3.00'

Discarded OutFlow Max=241.04 cfs @ 12.00 hrs HW=0.00' (Free Discharge)
↑—**2=Exfiltration** (Controls 241.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: DRIP EDGES



Summary for Pond 3P: BioRetention1

Inflow Area = 0.227 ac, 0.00% Impervious, Inflow Depth > 1.24" for 10 yr event
Inflow = 0.18 cfs @ 12.33 hrs, Volume= 0.023 af
Outflow = 0.18 cfs @ 12.33 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.1 min
Discarded = 0.02 cfs @ 12.33 hrs, Volume= 0.011 af
Primary = 0.17 cfs @ 12.33 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 0.92' @ 12.33 hrs Surf.Area= 1,471 sf Storage= 5 cf

Plug-Flow detention time= 4.9 min calculated for 0.023 af (99% of inflow)
Center-of-Mass det. time= 2.3 min (873.9 - 871.6)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	6 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,471 cf Overall x 0.4% Voids

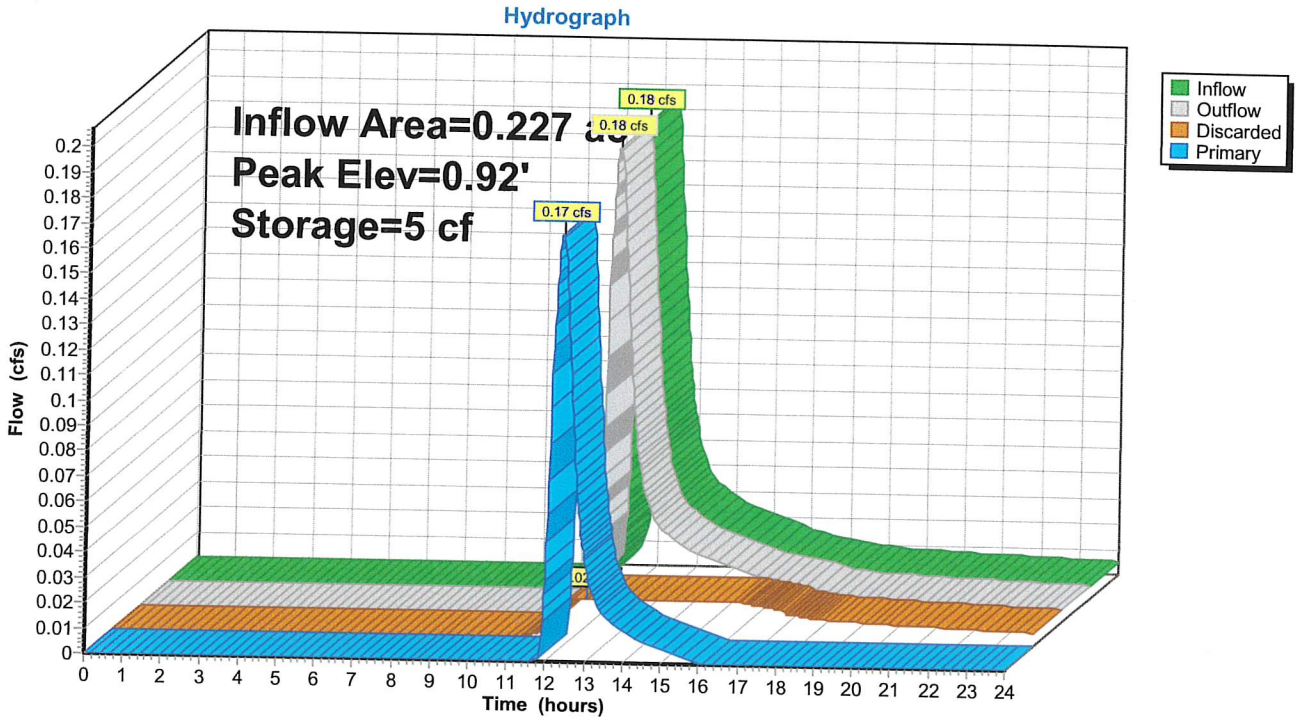
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	1,471	0	0
1.00	1,471	1,471	1,471

Device	Routing	Invert	Outlet Devices
#1	Primary	0.90'	**30.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	0.00'	**0.350 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -3.00'

Discarded OutFlow Max=0.02 cfs @ 12.33 hrs HW=0.92' (Free Discharge)
↑**2=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.17 cfs @ 12.33 hrs HW=0.92' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.31 fps)

Pond 3P: BioRetention1



Summary for Pond 4P: BioRetention2

Inflow Area =	0.094 ac, 61.35% Impervious,	Inflow Depth >	2.66"	for 10 yr event
Inflow =	0.34 cfs @ 12.02 hrs,	Volume=	0.021 af	
Outflow =	0.34 cfs @ 12.02 hrs,	Volume=	0.021 af,	Atten= 0%, Lag= 0.0 min
Discarded =	0.01 cfs @ 12.03 hrs,	Volume=	0.006 af	
Primary =	0.33 cfs @ 12.02 hrs,	Volume=	0.015 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 0.93' @ 12.03 hrs Surf.Area= 481 sf Storage= 2 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.1 min (801.0 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 481 cf Overall x 0.4% Voids

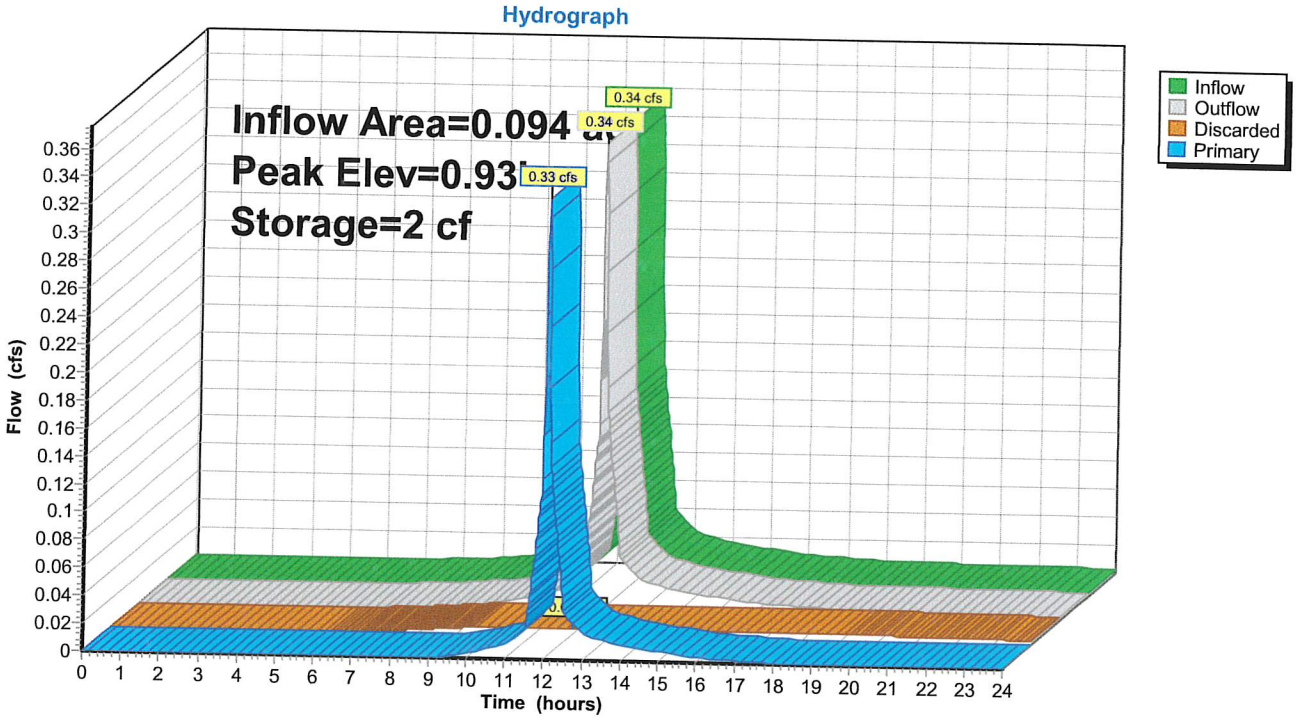
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	481	0	0
1.00	481	481	481

Device	Routing	Invert	Outlet Devices
#1	Primary	0.90'	**25.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	0.00'	**0.350 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -3.00'

Discarded OutFlow Max=0.01 cfs @ 12.03 hrs HW=0.93' (Free Discharge)
↑**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.32 cfs @ 12.02 hrs HW=0.93' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.32 cfs @ 0.41 fps)

Pond 4P: BioRetention2



Summary for Link 0: LAKE

Inflow Area = 0.878 ac, 21.92% Impervious, Inflow Depth > 0.96" for 10 yr event
Inflow = 0.81 cfs @ 12.03 hrs, Volume= 0.070 af
Primary = 0.81 cfs @ 12.03 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link 0: LAKE