DRAINAGE ANALYSIS
&
EROSION AND SEDIMENT
CONTROL PLAN

The Village at Barrington Square
Tax Map 235, Lot 1-1 & Lot 3
Including Tax Map 235, Lot 1 & Tax Map 239, Lot 2

Prepared for:

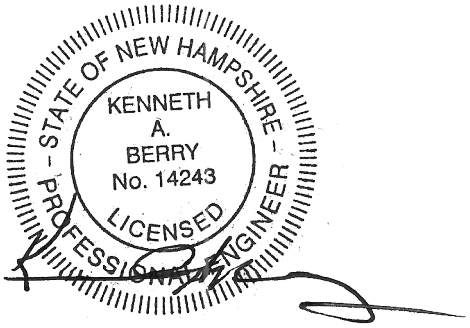
Dove Development Group, LLC
242 Central Avenue
Dover, NH 03820

Land of

Dove Development Group LLC

Prepared by:

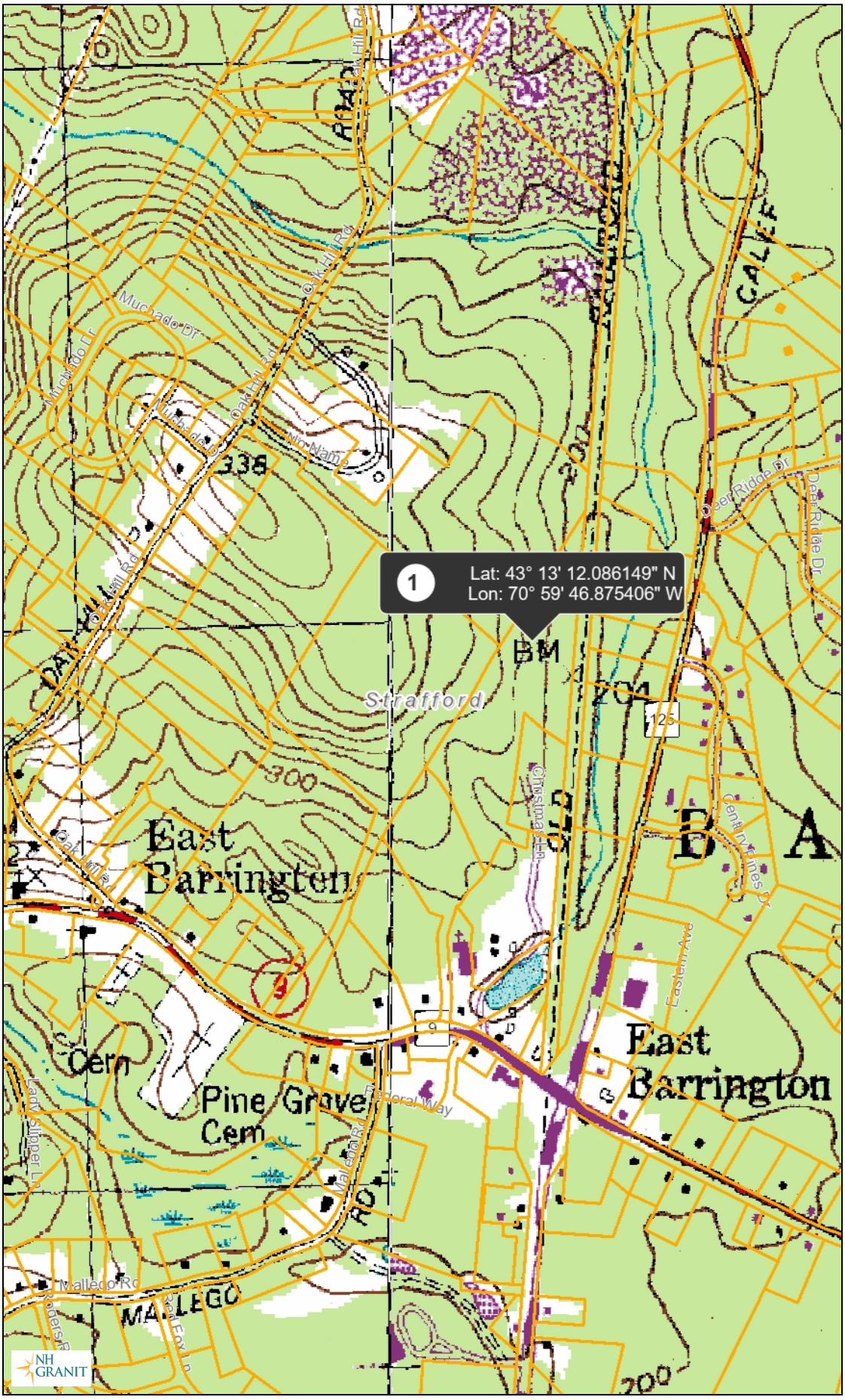
Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825



Project Number:
DB 2020-097

June 14, 2021
Revised October 12, 2021

Map by NH GRANIT



Legend

- Polygons
- State
- County
- City/Town

Map Scale

1: 10,000

Map Generated: 3/8/2021

Notes

Map by NH GRANIT

Legend

- Polygons
- State
- County
- City/Town

Map Scale

1: 24,000

Map Generated: 3/8/2021

Notes

Table of Contents

DESIGN METHOD OBJECTIVES

2019 Construction

The owners of Tax Map 235, Lot 1 John and Linda Svenson, in conjunction with the land owners of Tax Map 239, Lot 2, 1962 Real Estate LLC, re-developed Christmas Lane (now Community Way) to provide proper access to the Christmas Dove and the land owned by 1962 Real Estate LLC. A portion of the project is conceptual in nature at this time and contains the future branch location of Holy Rosary Credit Union. The project plans call out areas that have been constructed on that project site so as to ensure the proper drainage design is implemented as part of this project path.

Current Proposal

The current owners of Tax Map 235, Lot 1-1 and Lot 3, Dove Development Group, LLC. are proposing to develop the land behind the Christmas Dove to include a mixed use building as well as 25 residential units. This development would include the construction of two roads including two cul-de-sac's as well as the associated parking area required for the mixed use building.

A Pre-Existing and Proposed Conditions analysis was conducted for the purpose of estimating the peak rate of stormwater run-off and to subsequently design adequate mitigation of drainage. There are five existing discharge points analyzed on the project site, noted as Final Reaches #100, #200, #300, #400, and #800. Final Reaches #100, #200, #300, and #400 are all different cross culverts along the Svenson driveway and edge of the existing trail that runs alongside a portion of the parcel. Final Reach #800 is the existing pond located on the Svenson property. Designing two watershed models we have compared the differences in these rates of peak run-off and surface water volume. Sheets W-1 outline the characteristics of the site in its existing or pre-construction conditions. The second analysis displays the proposed (post-construction) conditions (See Sheets W-2). The analysis was conducted using data for the 2 Yr-24 Hr (3.08"), 10 Yr-24 Hr (4.64"), 25 Yr-24 Hr (5.86"), 50 Yr-24 Hr (7.00"), and 100 YR-24 Hr (8.37") storm events. Storm event analysis was accomplished using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment and rainfall quantities are based on the Extreme Precipitation Table for this location from the Northeast Regional Climate Center / Cornell University (http://precip.eas.cornell.edu), (Attached in Appendix 3).

The area constructed in 2019, described above, is modeled in the original condition of the land. Therefore identified as pre-existing analysis.

1.0 Pre-Existing Analysis:

Reference: W-1 Sheets - Existing Conditions Watershed Plan (Enclosed)
Sheet 2 Existing Conditions Plan

The Existing parcels under consideration, consist of vacant land which total 7.42 acres and 17.07 acres respectively (Tax Map 235 Lots 1-1 and Lot 3. These two parcels will be merged in the process of development.

During the spring and summer of 2019, Community Way, then Christmas Lane, was reconstructed based on a Site Plan Review entitled Christmas Lane Reconstruction for 1962 Real Estate, LLC and John & Linda Svenson, Franklin Pierce Highway, Barrington, NH, as revised through October 28, 2018. This site plan was reviewed and approved by the Town of Barrington and peer reviewed by their engineering consultant. After the construction of the infrastructure, John & Linda Svenson sold the two locus parcels, TM 235, Lot 1-1 & TM 239, Lot 3, to the applicant, Dove Development Group, LLC.

For the completion of this application, due to the size and requirement that the design be approved by NHDES Alteration of Terrain Bureau, and the look back period of this bureau being ten years, the comparative analysis was conducted as a Pre-existing Analysis. The original topography from the site in 2018 was utilized for the Pre-Existing Analysis and the As-Built Grades, from 2019, imported into the Proposed Conditions Analysis for the current application.

In addition to the locus parcels, there is a substantial off-site component where surface water runoff runs across the locus parcel(s) and through the infrastructure constructed as stated above.

Existing Topography was derived from the Existing Conditions Survey conducted for the locus parcels and for land owned by 1962 Real Estate, LLC from previous work, to include test holes previously conducted. Off-site topography was determined by USGS Contours and by Google Tin. On-site soils and wetlands were mapped by John P. Hayes, III, CSS, CWS and off-site soils were evaluated by USDA / NRCS Websoil. A large component of the off-site soils are Hollis – Charlton Very Rocky soil which has a Hydrological Soil Group rating of B – C. The site specific soils survey was limited in extent to the two parcels owned by the Dove Development Group, LLC.

The parcels of land total 24.49 acres and the analysis involves 79.08 acres of land. The runoff is all part of the Greenhill Brook watershed and flows north roughly parallel with the abutting privately owned rail road grade. The original analysis completed for 1962 Real Estate, LLC and the Svenson's culminated with Final Reach #800 at a box culvert under the R.R. grade. Final Reach #100 is an existing culvert under a private driveway on land of Garth & Elizabeth Svenson. Final Reach #200 is a point on the driveway know to seasonally flood but no culvert currently exists. Final Reaches #300 and #400 are existing box culverts under the R.R. Grade.

Final Reach #800:

There are eleven subcatchments that contribute runoff to Final Reach #800. Final Reach #800 is the inlet to the pond which is located on Svenson land and is labeled on the Watershed Sheets as "Svenson Pond". The subcatchments are divided by the various inlet sumps, catch basis, and driveway cross culverts. The pond is not evaluated nor is all of the land directly abutting the pond.

Final Reach #100:

One subcatchment (Subcatchment #16) contributes runoff to a 12" CMP cross culvert (Pond #16) under the existing driveway which provides access to Kimberly B. and Rondi M. Boyer over land of Garth and Elizabeth Svenson.

Final Reach #200:

One Subcatchment (Subcatchment #17) contributes runoff to a point in the above referenced driveway where it is known there is seasonal / periodic flooding. (Pond #17)

Final Reach #300:

One Subcatchment (Subcatchment #18) contributes runoff to an existing box culvert under the rail road grade. (Pond #18)

Final Reach #400:

One Subcatchment (Subcatchment #19) contributes runoff to a third box culvert under the rail road grade. (Pond #19)

2.0 Proposed Analysis:

Reference: W-2 Sheets - Proposed Conditions Watershed Plan (Enclosed)
Proposed Site Plan
Proposed Grading & Drainage Overview Plan
Plan and Profile Sheets

The 2019 construction consists of re-construction a roadway to the Town of Barrington Standards for approximately 550 linear feet. Through its development proper access is provided to the 1962 Real Estate LLC lot. As noted above, a future branch for Holy Rosary Credit Union is contemplated at this location. As such, this site has been conceptually designed with an adequate grading plan which includes the installation of rain garden #101 to handle and treat the flow from the future bank as well as the revised Christmas Lane. (Infrastructure that is now built.)

The four following paragraphs represent construction that is now built. There is an infiltration feature on this project site, on land of 1962 Real Estate, which was constructed as part of the conceptual site plan for a branch bank location. These areas are Subcatchments 13S and 15S and are routed to Pond 101P for treatment. The infiltration features are modeled as Pond 13P. These ponds provide the adequate separation to the seasonal high water table (3') to provide treatment through the infiltrating process. Pond 101P is routed to the new cross culvert discussed below, 2P.

The runoff from the abutting property to the west, and limit of the Greenland Brook Watershed bisects the 1962 Real Estate Property. The crossing is proposed as an 18" HDPE N-12 culvert which is oversized hydraulically. Though this area isn't a wetland, it provides a connection to a downstream wetlands, and in keeping with best management practices for migration, we have opted to oversize the device. This devise is modeled as Pond 21P and receives flow from the modified Subcatchments 2S & 3S. Flow from this crossing is routed to the downstream driveway crossing and then to the Svenson Pond.

There is a sidewalk constructed on the eastern side of the roadway with a 6" vertical granite curb. This curb and gutter system is routed to a series of basins along the roadway. These basins also provide for better drainage practices within the existing Christmas Dove project site. 15" HDPE N-12 pipe was chosen to flow from one basin to another so as to provide adequate capacity for future connections. Applicants moving forward would be expected to adequately mitigate flows and volumes prior to entering this closed system. These areas are modeled as Subcatchments 1S, 6S, 4S and 12S, and are routed to the respective ponds modeled as Pond 10P, 13P, 40P and 12P.

The closed systems and the Dove project site are routed to rain garden #102. This rain garden provides full treatment of the revised roadway as well as the existing project site which was untreated in the existing condition. Subcatchment 5S also contributes flow to this pond (102P). The pond is then routed to the existing driveway cross culvert, draining to Final Reach 800, inlet to Svenson Pond. The pond is not included in the analysis nor all of the land directly adjacent to the pond.

The proposed analysis is evaluated at the same five locations as the existing analysis.

Final Reach #800: (2019 Christmas Lane Construction)

Flow areas to this final reach remain the same, with a minor increase in the total watershed area curve number. This increase in the curve number is offset by the installation of the Low Impact Development Best Management Practices (BMPs) rain gardens #101 & 102, as well as the infiltration area. This mitigation provided by these BMPs allows for the peak rates from this site to be reduced to the inlet to Svenson Pond. The volume conforms to the channel protection standards.

In addition to the infrastructure from Christmas Lane, now Community Way, the discharge from Subsurface Gravel Wetland #103 is intercepted at a culvert entrance prior to existing Catch basin #10 (Pond #10). The network hydraulically upslope of the gravel wetland

routes runoff from a part of the mixed-use building for treatment. A small section of the proposed roadway extension is also intercepted by proposed catch basin #30 and existing catch basin #10. The constructed infrastructure is represented best on Sheet 10 of 14 and the proposed infrastructure is on Sheet 11 of 14.

Final Reach #100:

The components of the project that contribute runoff to this final reach include the northern portion of the mixed-use building, the back half of seven residential units, collection system, and subsurface gravel wetlands (SGW) #104, #105, and Stormtech Detention Pond #109. The infrastructure collecting the runoff consists of ten catch basins (Ponds C31, C32, C35, C36, C37, C38, C39, C40, C43, & C56) and one drain manhole (Pond D2). From the level spreader it travels overland in the natural course (Reach 65) to the existing CMP Culvert. (Pond 16) The Subcatchment associated include nine from the catch basins, two associated with the SGW (Pond #64 & #65), and one associated with the pond around the level spreader. (Subcatchment & Pond #51) This portion of the design is best represented on Sheet 11 of 14

Final Reach #200:

The components of the project that contribute runoff to this final reach include the balance of the residential units, collection system, and Rain Gardens #106, #107, & #108. The infrastructure collecting the runoff consists of five catch basins (Ponds C41, C42, C44, C45, & C46), two drain manholes (Pond D3 & D4), three culvert sumps (Pond 47, 48, & 49), two of which are the inside of the cul-de-sacs and the other collecting runoff from off-site a subcatchment. The subcatchments associated include the five catch basins, four rain gardens, drainage sumps which includes Subcatchment #47 from primarily off-site. This portion of the design is best represented on Sheet 12 of 14.

Final Reach #300:

The components of the project that contribute runoff to this final reach include the access road to the wells, the pump house, and detention infrastructure. In addition to Detention Pond #110, there are two culverts (Pond #52 and #53) where the well access road crosses a jurisdictional wetland in two places because of branching in the wetlands.

Final Reach #400:

Subcatchment is altered in shape due to the placement of the well field and required fill. There is no additional alteration to this subcatchment or final reach.

Summary:

The peak rates of run off from the analyzed areas are reduced at the 2, 10, 25, 50, 100 Yr. 24Hr. storm events. Volumes are reduced during the 2 Yr. 24Hr. storm events with minor increases at the 10, 25, 50 Yr. 24Hr. storm events in some locations.

Stormwater Treatment:

Surface water runoff from the development area is being treated by bio-detention rain gardens which are low impact development methods (LID) Storm flow is to sheet off from the proposed paved areas into pre-treatment forebay cells prior to entering either the pre-treatment bio cell or rain gardens; and treated by Subsurface Gravel Wetlands, also a LID method. Water Quality Volume calculations based on the Alteration of Terrain model are included along with Pond Storage Tables are included in Appendix 3 for all seven modeled rain gardens and two Subsurface Gravel Wetlands. This LID design allows for full treatment while maintaining flows and volumes.

The receiving waters for the project are known as Svenson Pond locally but as Unnamed Brook – Fire Pond (NHIMP600030607-05) which discharges into Green Hill Brook (NHRIV600030607-09). The pond is impaired by Mercury, as is the assumption with all New Hampshire waters, and covered by the NE Regional Mercury TMDL #33883. The brook is also impaired by pH which does not have a TMDL, is considered low priority and not considered an Outstanding Resource Water. Due to the lack of sediment or turbidity as an impairment, the pond and brook are considered Tier 2 Waters by NHDES and construction will be subject to E&SC inspections at an increased frequency, i.e. once every seven days and after a rain event of 0.25 inches or more.

Infiltration Practices:

Infiltration takes place in Ponds 13P & 107P.

Please see attached Infiltration Feasibility Study for further detail.

3.0 FULL COMPARATIVE ANALYSIS

ANALYSIS	COMPONENT	PEAK RATE DISCHARGE (Cubic Feet / Second)			
		2 Yr.	10 Yr.	25 Yr.	50 Yr.
Final Reach #800	Existing	2.76	11.57	21.24	33.70
	Proposed	2.42	11.51	19.39	29.64
Final Reach #100	Existing	0.24	1.88	2.61	7.03
	Proposed	0.17	1.38	2.41	6.19
Final Reach #200	Existing	0.79	5.69	10.71	16.07
	Proposed	0.75	4.43	9.98	15.61
Final Reach #300	Existing	1.62	6.95	12.51	18.32
	Proposed	1.62	6.17	10.76	15.52
Final Reach #400	Existing	1.91	8.06	14.51	21.29
	Proposed	1.90	8.03	14.45	21.21

ANALYSIS	COMPONENT	VOLUME (ACRE FEET)			
		2 Yr.	10 Yr.	25 Yr.	50 Yr.
Final Reach #800	Existing	0.941	2.771	4.652	6.661
	Proposed	0.965	2.752	4.633	6.629
Final Reach #100	Existing	0.093	0.391	0.721	1.086
	Proposed	0.170	0.494	0.815	1.149
Final Reach #200	Existing	0.232	0.868	1.522	2.220
	Proposed	0.302	1.175	2.051	2.946
Final Reach #300	Existing	0.325	0.987	1.649	2.347
	Proposed	0.379	1.096	1.739	2.425
Final Reach #400	Existing	0.470	1.428	2.388	3.400
	Proposed	0.468	1.422	2.379	3.386

4.0 EROSION & SEDIMENT CONTROL PLANS BEST MANAGEMENT PRACTICES (BMP's)

Reference: Proposed Site Plan and Grading Plan
Erosion & Sediment Control Plan
Erosion & Sediment Control Details, E-101 & E-102

The proposed site development is protected from erosion and the abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA). Any area disturbed by construction will be re-stabilized within 30 days and abutting properties will not be adversely affected by this development. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them. Reference is also made to the Stormwater System Operation and Maintenance Plan / Inspection & Maintenance Manual which has been written specifically for this project and available to the owner.

Silt Fence / Perimeter Control

The plan set demonstrates the location of silt fence for sediment control. The Erosion and Sediment Control Details, Sheet E-101, has the specifications for installation and maintenance of the silt fence. Silt fence is rated to be effective for 100 linear feet of fence to capture runoff from one-quarter acre or basically 100 feet of land area sloping toward the fence. Filtrexx silt soxx have a variable area and depth, see Filtrexx supporting documents. The NHDES Stormwater Manual requires that the maximum spacing for support stakes is six-feet.

Filtrexx Silt Soxx, or approve equal, has been specified in numerous locations within the plan set and silt fence is not a substitution for silt soxx. Multiple sizes of this product have been specified for use.

EPA CGP 2012: "You must install sediment control along those perimeter areas of your site that will receive stormwater from earth disturbing activity."

In accordance with EPA CGP 2.1.2.1, Provide Natural Buffers or Equivalent Sediment Controls, and CGP Appendix G, Table G-3, and Table G-7, slopes between 3% and 6% with soils that are Fine Sandy Loams, there is a High Risk Factor and it is required to Double Perimeter Control and 7-Day Site Stabilization.

Erosion Control Mix Berm

As an alternative to the Silt Fence, an Erosion Control Mix Berm can be utilized as a perimeter control. The specifications can be found on Sheet E-101, Detail E6.

Bioretention System (Rain Garden)

Description: Rain Gardens, or bioretention areas are located close to the source of runoff. They are intended to integrate with the site landscaping and become an aesthetically attractive opportunity to provide highly effective stormwater treatment. The rain gardens associated with this proposed development contribute toward recharge of surface water run-off into the ground. It is important that sediment be removed from run-off prior to discharge into the bioretention area to preserve the mulch and soil mix ratio. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 4c Bio-retention System.

Construction Considerations:

After the stone and bio-media has been installed, Filtrexx Silt Soxx or approved equal, will be installed at the toe of slope intersection between the berm and bio-media and will remain until the slopes of the berm are stable.

See the Stormwater Management Inspection and Maintenance Manual for more details.

Subsurface Gravel Wetland

Description: A Gravel Wetland (NHDES SWM 4-3 Treatment Practice 2D) or Subsurface Gravel Wetland consists of a forebay and multiple flow-through treatment cells. During smaller rain events, the surface water runoff is intended to pass from the forebay, into the gravel media through perforated pipes and structures where it passes through an anaerobic environment where the Water Quality Volume will have 24-72 hours of contact time. The forebay is required to contain 10% of the WQV and each of the two cell must contain 45% of the WQV. During larger storm events, the system works as a detention pond. The design of a Subsurface Gravel Wetland will be constructed in accordance with the most current version of the Design Specifications provided by the UNH Stormwater Center and SWM Volume 2, Section 4-3 Treatment Practices, 2d Gravel Wetlands.

See the Stormwater Management Inspection and Maintenance Manual for more details

Rip Rap Outlet Protection, Level Spreaders, & Emergency Spillways

Description: Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the conduit and apron. Level spreaders are intended to provide a level lip where surface water runoff is allowed to continue downhill closer to sheet flow. The level lip is to be

constructed as level as possible for the entire length. Emergency Spillways are rip rap reinforced outlets near the top of the berm that allow runoff to leave a practice during periods of very high flow. Ref.: NHDES SWM Volume 2, Section 4-6 Conveyance Practices, 6. Outlet Protection and 1. Detention Ponds, Note 3, Page 158.

Maintenance Considerations: The riprap outlet protection will be inspected annually for damage, which must be corrected immediately. Any sediment buildup will be removed and disposed of correctly. Sediment and subsequent vegetation will build up in the Level Spreader. This material will be cleaned out along with any gross solids and disposed of properly. (See invasive species below) Any rip rap that has been displaced from the original construction will be repaired, especially recreating the level lip.

Description: Infiltration Basins and the Infiltration component of some Rain Gardens, are constructed ponds that are intended to detain surface water runoff and during the detention to infiltrate runoff into the ground. Detention Ponds are also constructed ponds with the purpose of detaining runoff but not necessarily for infiltration purposes. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 3B, In-ground Infiltration Basin and Section 4-6, Conveyance Pracitces, 2. Detention Basins.

Maintenance Considerations:
Infiltration Basins and Detention Ponds should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

On an annual basis the infiltration capabilities need to be confirmed by evaluation the drawdown time. If the infiltration system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the basin to determine measures required to restore the infiltration function. This is normally the direct result of sediment accumulation which will be removed to restore the filter media ratio.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

Rolled Erosion Control Blanket

Description: Rolled Erosion Control Blankets, such as American Excelsior Company Curlex II, Curlex III, (or equal) or turf reinforcement such as North American Green V-Max C-350 (or equal) consist of interlocking fiber mesh, bio-degradable or permanent,

used to stabilize sloping earth while vegetation is being established. The product comes in rolls that are laid out over the earth, normally over-lapped, and secured to the soil by the use of anchors or staples. The RECB may be anchored in the earth at the top of the slope to prevent wash-out. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 3, 4-1 Erosion Control Practices, Temporary Erosion Control Blanket

Construction Considerations: It is recommended that the blanket be installed in the same direction as the water flow or perpendicular to the slope. The manufacturer will recommend the amount of over-lap from one row to the next and on longer slopes between sections. Care must be taken that the RECB is laid directly on the earth / topsoil and that any existing vegetation not cause tenting as this will cause an issue with the blanket not staying in place. The staples or stakes are to be placed according to the manufacturer based on the slope of the receiving soil and forces that may be encountered. Care must be taken to utilize the correct product as specified. The choice of product are all different and in most cases are not interchangeable. NHDES or NH F&G may specify that some RECBs not be used in some applications.

Maintenance Considerations: RECBs will be inspected during the regular inspection schedule and any construction corrections made if the blanket is compromised.

Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-102 using seeding mixture C, as follows:

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Conservation Mix

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	15	0.35
Creeping Red Fescue	15	0.35
Annual Ryegrass	5	0.12
Perennial Ryegrass	5	0.12
Kentucky Bluegrass	15	0.35
White Clover	7	0.16
Total	**62**	**1.45**

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer. As the site is to be stabilized with erosion control mix as a mulch, the vegetation should be established with a high percentage of white clover for growth to be established.

Rain Garden Mix:

The grass that is planted within a rain garden bio-filtration system within the bio-media must consist of a combination of warm season grass seed and cold season grass seed in order for the grass to start growing for stabilization and continue growing in the sandy well-drained environment. Planting specification will meet the requirements as outlined in 'Vegetation New Hampshire Sand and Gravel Pits' mix 1 (warm season grasses) (15 lbs/ac) and include annual and perennial rye grass seed (15 lbs/ac); the New England native warm season grass mix (23 lbs/ac) by New England Wetland Plants, Inc.; rain garden mix 180 (15 lbs/ac & 15 lbs/ac of rye) / rain garden grass mix 180-1 (20 lbs/ac & 10 lbs/ac of rye) by Ernst Conservation Seeds; or approved equal.

Detention Pond Mix:

The grass that is planted within a Detention Pond will be a mix designed for both inundation and dry conditions such as Ernst Seeds, Retention Basin Floor Mix ERNMX-126.

Subsurface Gravel Wetland Mix:

The grass that is planted within a Subsurface Gravel Wetland will be a diverse mix of species to provide food and cover as well as erosion control in the seasonally flooded conditions such as Ernst Seeds Seasonally Flooded Wildlife Mix ERNMX-128.

Stabilization:

See winter construction specifications, detail E22, sheet E-102. Under some conditions, E.G. winter construction or rain event saturation, area intended for vegetation stabilization may require hay mulch or R.E.C.B. stabilization.

Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be 3-inch coarse aggregate, and the pad itself constructed to a minimum length of 75’ for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E-102- Erosion and Sediment Control Detail Plan. Alternatives to the length and berm are demonstrated on the detail.

The grass that is planted within a Detention Pond will be a mix designed for both inundation and dry conditions such as Ernst Seeds, Retention Basin Floor Mix ERNMX-126

Environmental Dust Control

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

Drainage Swales / Stormwater Conveyance Channels

Drainage swales will be stabilized with vegetation for long term cover as outlined below, and on Sheet E-102 using seed mixture C. As a general rule, velocities in the swale should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions.

Outlet Protection

Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the conduit and apron. See sheet E-102 for details.

Rip Rap Level Spreader / Stone Berm Level Spreader

The purpose of the level spreader is to convert concentrated flow into sheet flow, for example from a rip rap outlet protection at the end of a culvert discharge pipe prior to discharge overland through a filter strip or buffer. Each level spreader is specifically designed based on the amount of flow and specified on the grading plan. Details for the level spreader can be found on Sheet E-102, detail E12 and page 162 in the referenced NH Stormwater Manual, Volume 2. The level spreader should be inspected after it is installed and stabilized for the deposit of sediment. Any sediment build-up will be removed and transported to a suitable location.

Stockpiled Sediment or Soil

Stockpiled materials including topsoil, excavated materials, borrow materials imported onto the site, construction aggregates, and sediment removed from temporary sediment traps will be located in designated areas at least 50 feet away form concentrated flows. All stockpiles will have erosion protection in the form of silt fence and diversion swales will be applied to protect the material and surrounding areas. Inactive stockpiles

will be seeded for temporary stabilization. Erosion control measures will be inspected in accordance with the schedule for all other activities on site.

At a minimum, you must comply with following (EPA 2012 CGP Part 2.1.2.4d) "Do no hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance (unless connected to a sediment basin, sediment trap, or similar effective control,) storm drain inlet, or surface water."

Dewatering Practices

Dewatering practices are not known to be required on this site. If during construction this becomes required, an addendum will be published specific for the requirements. As a general rule, ground water that needs to be removed from an excavation will be pumped to a sediment basin or a storm drain inlet prior to discharge from the site.

At a minimum, you must comply with following (EPA 2012 CGP Part 2.1.3.4) "With backwash water, either haul it away for disposal or return it to the beginning of the treatment process; and replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications."

Regarding dewatering practices in the State of New Hampshire, specifically see Construction General Permit Section 9.1.1 NHR12000 State of New Hampshire and "Clarification of Section 9.1.1 … and other New Hampshire specific information for the U.S. EPA 2012 NPDES Construction General Permit (CGP), January 20, 2017"

Construction Sequence

1. Cut and remove trees in construction areas as directed or required.

2. Install Silt Fence and construct and/or install temporary and permanent sediment erosion and detention control facilities (Vegetated swales, level spreaders, and constructed filter strips), as required. Erosion, sediment and facilities shall be installed and stabilized prior to any earth moving operation, and prior to directing run-off to them.

3. Clear, grub, and dispose of debris in approved facilities.

4. Excavate and stockpile topsoil / loam. All disturbed areas shall be stabilized immediately after grading.

5. Construct the roadway and its associated drainage structures.

6. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded and mulched as required, or directed.

7. Daily, or as required, construct temporary berms, drainage ditches, sediment traps, etc. to prevent erosion on the site and prevent any siltation of abutting waters or property.

8. Inspect and maintain all erosion and sediment control measures during construction.

9. Complete permanent seeding and landscaping.

10. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete. Smooth and re-vegetate all disturbed areas.

11. All swales and drainage structures will be constructed and stabilized prior to having run-off being directed to them.

12. Finish paving all roadways/parking.

Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time.

2. Erosion, sediment control measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.

3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4" of loam and seeded with not less than 1.10 pound of seed per 1,000 square feet (48 pounds per acre) of area.

4. Silt fences and other barriers shall be inspected periodically and after every rainstorm during the life of the project. All damaged areas shall be repaired, sediment deposits shall periodically be removed and properly disposed of.

5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and re-vegetated.
6. Areas must be seeded and mulched within 5 days of final grading, permanently stabilized within 15 days of final grading, or temporarily stabilized within 30 days of initial disturbance of soil.

Inspection and Maintenance Schedule

Perimeter control will be inspected during and after storm events to ensure that the fence still has integrity and is not allowing sediment to pass. Depending on SWPPP criteria, all controls will be inspected once every 7 days and after storm events. Inspection reports must be submitted to Town of Barrington Planning Office. Sediment build-up in swales and level spreaders will be removed if it is deeper than six inches. See also Stormwater System Operation & Maintenance Plan and Inspection & Maintenance Manual published separately also by Berry Surveying & Engineering. See also Storm Water Pollution Prevention Plan (SWPPP) developed in accordance with EPA NPDES requirements.

Corrective Action measures will be made in accordance with SWPPP requirements and records maintained on site by the Contractor.

5.0 CONCLUSION

Peak rates of runoff are reduced in the model in the post-construction analysis / condition, as compared to the pre-construction peak rates of runoff flow at the final analysis point, with the exception noted in Final Reach 800, the permanent Svenson Pond which discharges into a stream that is perennial. The volume of runoff through the analysis conforms to the channel protection standards.

A Site Specific, Terrain Alteration Permit (RSA 485: A-17) is required for this site plan due to the area of disturbance being greater than 100,000 SF. Due to the nature of the cuts and fills associated with this proposed development, the owner is proposing to complete the project in four phases. An environmental monitor is required to be responsible for weekly inspections due to steep slope disturbance on site. An EPA Notice of Intent will also be required for the construction process.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT 567
Principal, President

Kenneth A. Berry PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP - Technical Operations

Kevin R. Poulin, EIT
Project Engineer

DEIDRA BENJAMIN, CWS #295

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1 & TAX MAP 239, LOT 2 WERE DELINEATED BY DEIDRA BENJAMIN, IN MAY OF 2017 AND CONFIRMED IN JUNE OF 2021 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

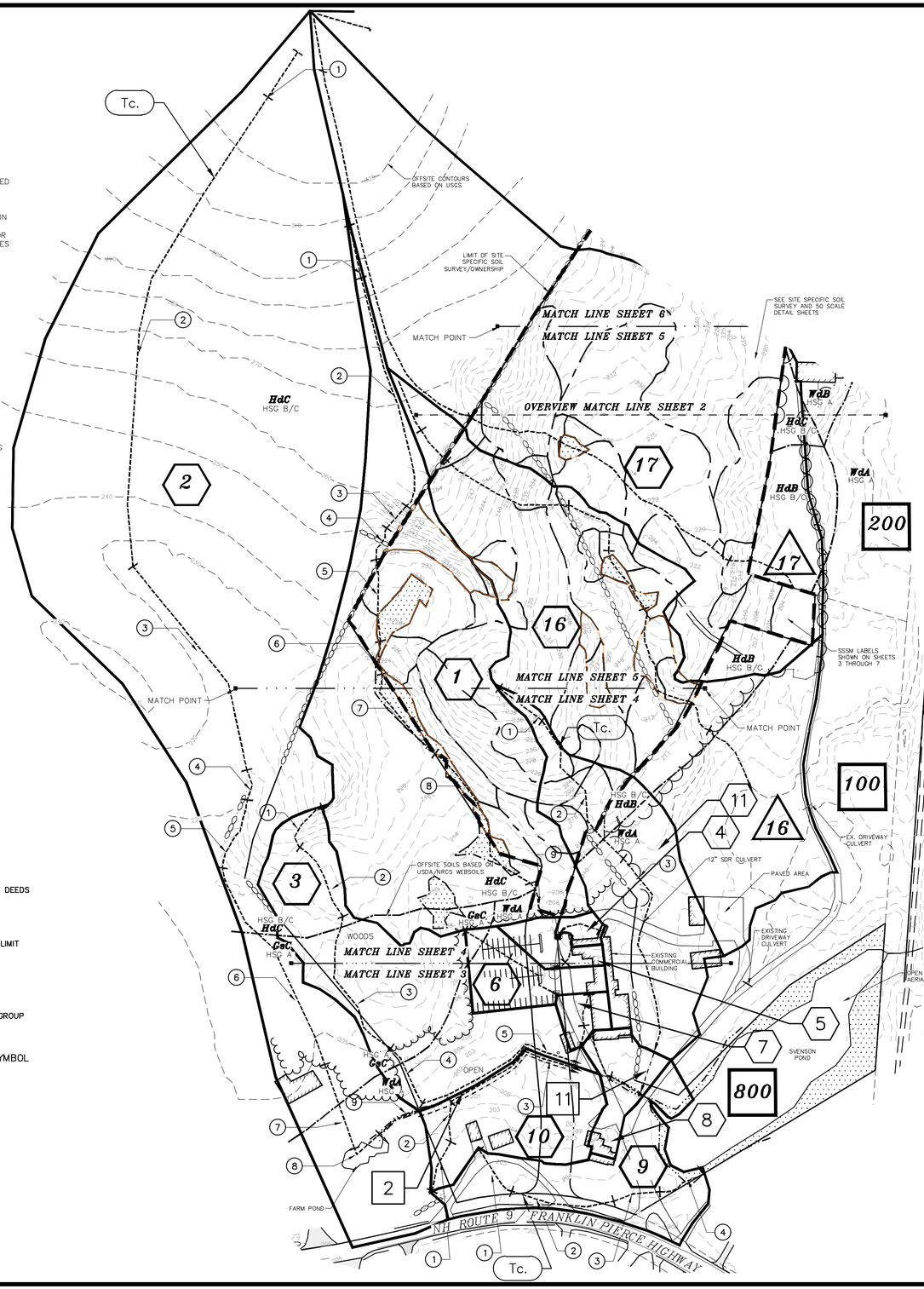
WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

LEGEND:

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOIL SURVEY SOIL LIMIT
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A SOIL LABEL / HYDROLOGIC SOIL GROUP
- # SUBCATCHMENT AREA SYMBOL
- # FLOW REACH SYMBOL
- # POND DEVICE SYMBOL
- Tc. Tc SEGMENT



NOTES:

1.) OWNER & APPLICANT:
- A.) DOVE DEVELOPMENT GROUP, LLC 242 CENTRAL AVE DOVER, NH 03820
- B.) DOVE DEVELOPMENT GROUP, LLC 242 CENTRAL AVE DOVER, NH 03820

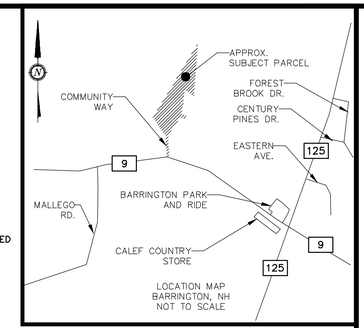
2.) LOT OF RECORD:
- A.) TAX MAP 235, LOT 1-1
- B.) TAX MAP 235, LOT 3

3.) LOT AREA:
- A.) 323,215 Sq. Ft., 7.42 Ac.
- B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.:
- A.) BOOK 4816, PAGE 500
- B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE PRE-EXISTING CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1-1 AND TAX MAP 235 LOT 3.



SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
CsB	CHARLTON (VERY STONY)	B
CsC	CHARLTON (VERY STONY)	B
CsD	CHARLTON (VERY STONY)	B
CsE	CHARLTON (VERY STONY)	B
HcC	HOLLIS (VERY STONY)	C/D
HcD	HOLLIS (VERY STONY)	C/D
HcE	HOLLIS (VERY STONY)	C/D
HdD	HOLLIS CHARLTON COMPLEX (VERY STONY)	C/D
HdE	HOLLIS CHARLTON COMPLEX (VERY STONY)	C/D
LeB	LEICESTER (VERY STONY)	C
LeC	LEICESTER (VERY STONY)	C
LeD	LEICESTER (VERY STONY)	C
SuB	SUTTON	B
SuC	SUTTON	B
SuD	SUTTON	B

SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

NRCS SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
HdB	HOLLIS-CHARLTON (VERY ROCKY)	B/C
HdC	HOLLIS-CHARLTON (VERY ROCKY)	B/C
MI	MIXED ALLUVIAL LAND	D
WdA	WINDSOR	A
WdB	WINDSOR	A

SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

16± MAGNETIC NORTH

SUBCATCHMENTS 1 THROUGH 11, REACHES AND PONDS ASSOCIATED WITH FINAL REACH 800 WERE PREVIOUSLY SUBMITTED TO BARRINGTON FOR 1962 REAL ESTATE, LLC AND JOHN & LINDA SVENSON (CHRISTMAS DOVE)

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)
1 inch = 120 ft.

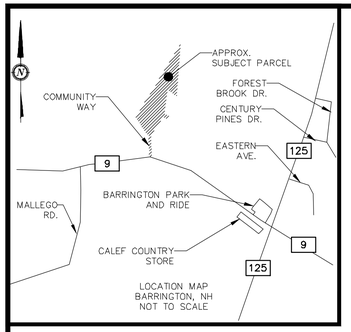
REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

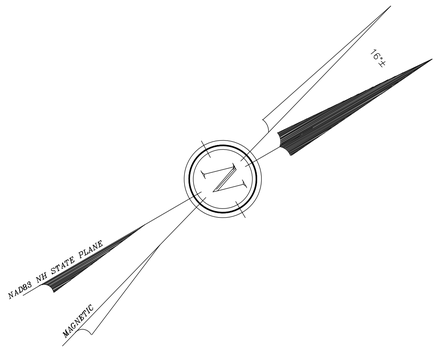
W-1 PRE-EXISTING CONDITIONS WATERSHED OVERVIEW PLAN
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 120 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

KENNETH A. BERRY NO. 14240 LICENSED PROFESSIONAL ENGINEER





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

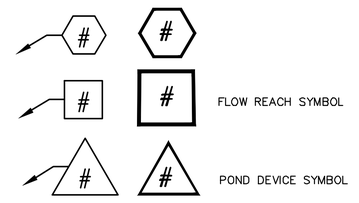
2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

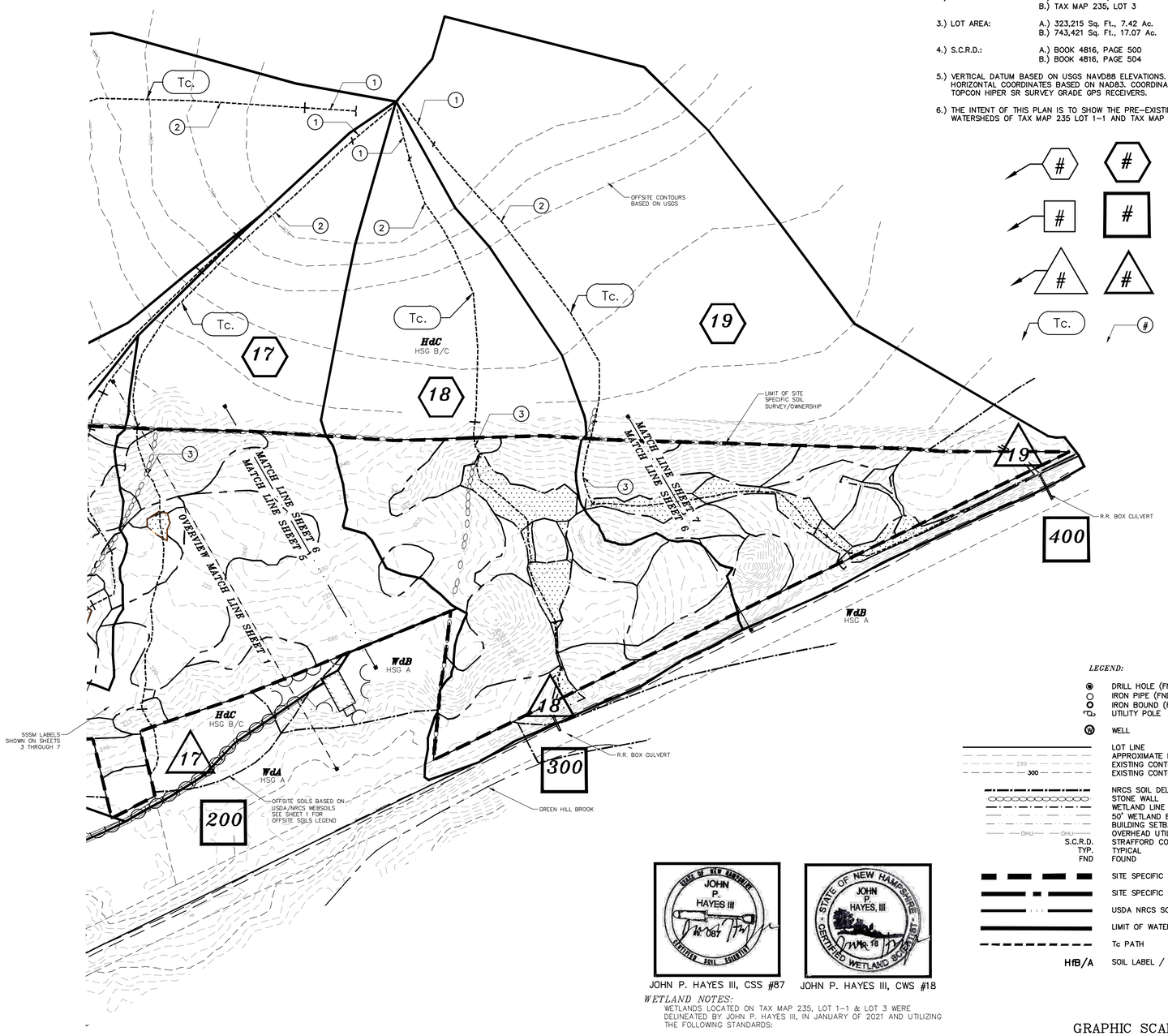
3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS.
HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE PRE–EXISTING CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1–1 AND TAX MAP 235 LOT 3..





JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1–1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

LEGEND:

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- EXISTING CONTOUR MINOR (230)
- EXISTING CONTOUR MAJOR (300)
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OHU — OHU — OVERHEAD UTILITIES LINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOILS
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A SOIL LABEL / HYDROLOGIC SOIL GROUP

GRAPHIC SCALE

120 0 60 120 240 480

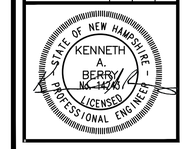
(IN FEET)
1 inch = 120 ft.

REVISION	DATE	DESCRIPTION
#2	10–12–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08–30–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W–1 PRE–EXISTING CONDITIONS WATERSHED OVERVIEW PLAN
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 120 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097



DEIDRA BENJAMIN, CWS #295

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1 & TAX MAP 239, LOT 2 WERE DELINEATED BY DEIDRA BENJAMIN, IN MAY OF 2017 AND CONFIRMED IN JUNE OF 2021 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

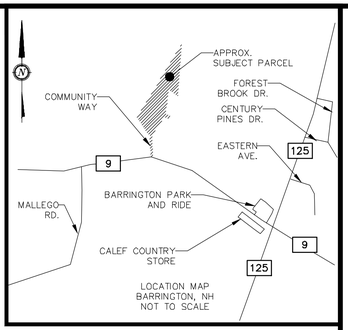
WETLAND NOTES:

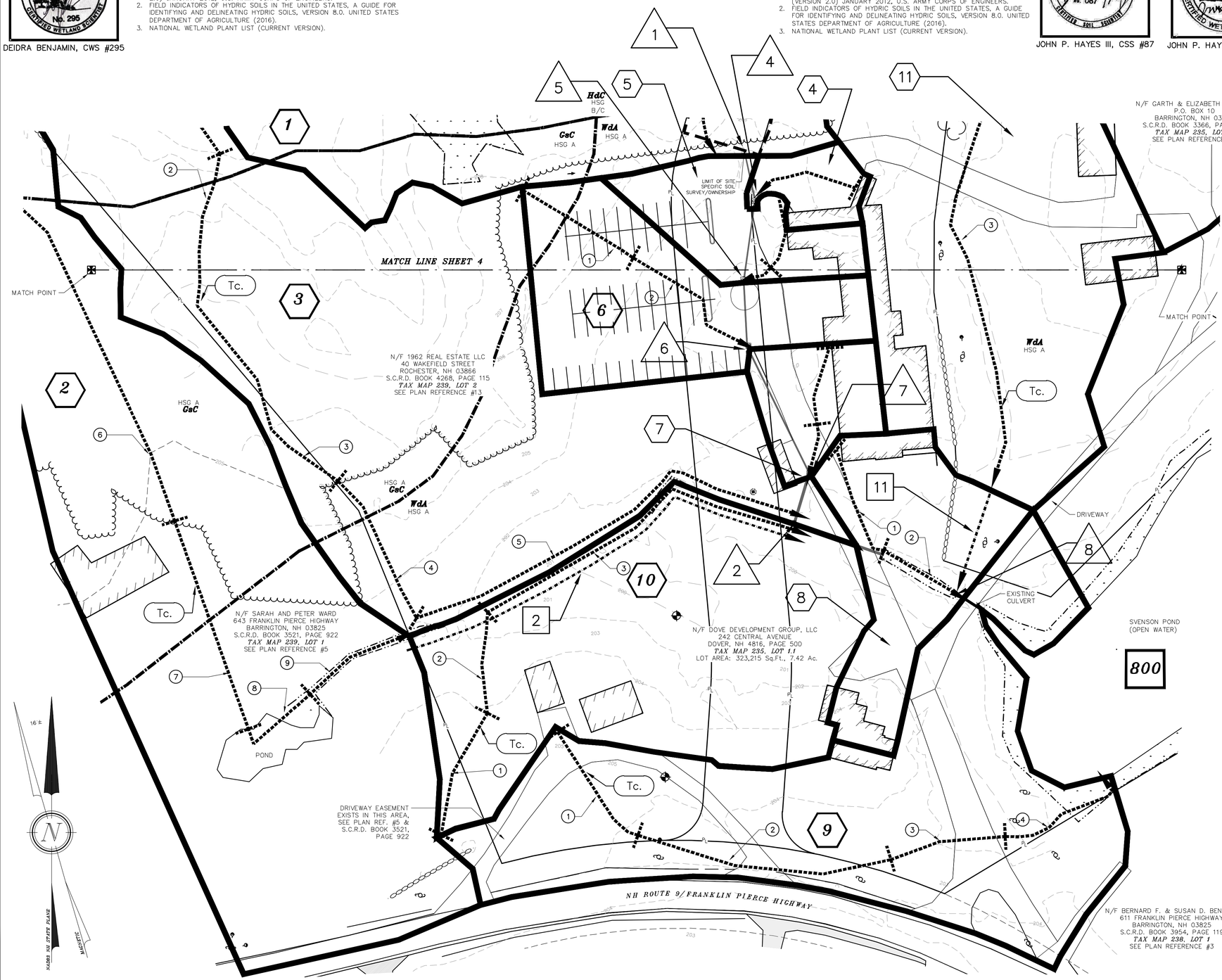
WETLANDS LOCATED ON TAX MAP 235, LOT 1–1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1–1 AND TAX MAP 235 LOT 3.

LEGEND:

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- 299 EXISTING CONTOUR MINOR
- 300 EXISTING CONTOUR MAJOR
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OHU OVERHEAD UTILITIES LINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOIL SURVEY SOIL LIMIT
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A SOIL LABEL / HYDROLOGIC SOIL GROUP
- # SUBCATCHMENT AREA SYMBOL
- # FLOW REACH SYMBOL
- # POND DEVICE SYMBOL
- Tc. # Tc SEGMENT

SUBCATCHMENTS 1 THROUGH 11, REACHES AND PONDS ASSOCIATED WITH FINAL REACH 800 WERE PREVIOUSLY SUBMITTED TO BARRINGTON FOR 1962 REAL ESTATE, LLC AND JOHN & LINDA SVENSON (CHRISTMAS DOVE)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

REVISION	DATE	DESCRIPTION
#2	10–12–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08–30–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W–1 PRE–EXISTING WATERSHED DETAIL (SOUTH)
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097

KENNETH A. BERRY NO. 14245 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

N/F DAVID R. & GLENDA J. HERDERSON
UND INT LIV REV TRUST 1/2
1272 WINGED FOOT LANE
DENVER, NC 28037-6520
S.C.R.D. BOOK 897, PAGE 121
TAX MAP 235, LOT 1
SEE PLAN REFERENCE #5

MATCH POINT

MATCH LINE SHEET 5

N/F 1962 REAL ESTATE LLC
40 WAKEFIELD STREET
ROCHESTER, NH 03866
S.C.R.D. BOOK 4268, PAGE 115
TAX MAP 239, LOT 2
SEE PLAN REFERENCE #11 & #13

N/F GARTH & ELIZABETH SVENSON
P.O. BOX 10
BARRINGTON, NH 03825
S.C.R.D. BOOK 3366, PAGE 451
TAX MAP 235, LOT 2
SEE PLAN REFERENCE #4

FUTURE ROADWAY 60 FEET WIDE

MATCH POINT

MATCH LINE SHEET 3

MATCH POINT

DRIVEWAY
CULVERT

SVENSON POND

EX. CULVERT

Tc.

HSG B/C
HdB

WdA
HSG A

HSG B/C
HdC

HdC
HSG B/C

GsC
HSG A

HSG B/C
HdC

GsC
HSG A

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

16±

NAD83 NH STATE PLANE

NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1-1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS.
HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1-1 AND TAX MAP 235 LOT 3.

WETLAND NOTES:
WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

STATE OF NEW HAMPSHIRE
JOHN P. HAYES III
No. 087
CERTIFIED SOIL SCIENTIST

JOHN P. HAYES III, CSS #87

STATE OF NEW HAMPSHIRE
JOHN P. HAYES, III
No. 18
CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES III, CWS #18

WETLAND NOTES:
WETLANDS LOCATED ON TAX MAP 235, LOT 1 & TAX MAP 239, LOT 2 WERE DELINEATED BY DEIDRA BENJAMIN, IN MAY OF 2017 AND CONFIRMED IN JUNE OF 2021 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

STATE OF NEW HAMPSHIRE
DEIDRA L. BENJAMIN
No. 295
CERTIFIED WETLAND SCIENTIST

DEIDRA BENJAMIN, CWS #295

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W-1 PRE-EXISTING WATERSHED DETAIL (MID)
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14240
LICENSED PROFESSIONAL ENGINEER

MATCH LINE SHEET 6

MATCH LINE SHEET 4

MATCH POINT

N/F DAVID R. & GLENDA J. HERDERSON
UND INT LIV REV TRUST 1/2
1272 WINGED FOOT LANE
DENVER, NC 28037-6520
S.C.R.D. BOOK 897, PAGE 121
TAX MAP 235, LOT 1
SEE PLAN REFERENCE #5

EXISTING DRIVEWAY

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

STATE OF NEW HAMPSHIRE
JOHN P. HAYES III
No. 087
CERTIFIED SOIL SCIENTIST

JOHN P. HAYES III, CSS #87

STATE OF NEW HAMPSHIRE
JOHN P. HAYES, III
No. 18
CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES III, CWS #18

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W-1 PRE-EXISTING WATERSHED DETAIL (NORTH)
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

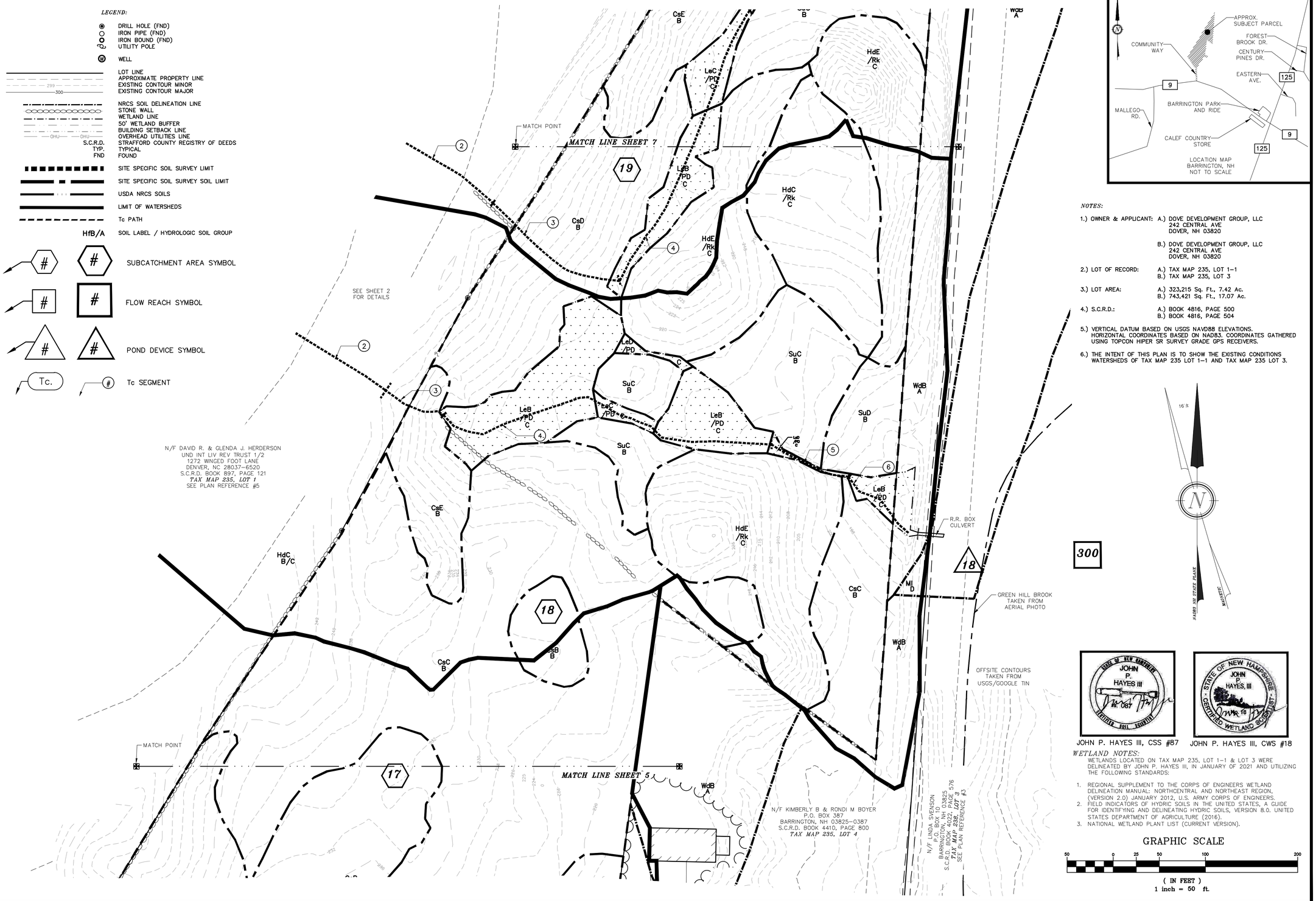
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

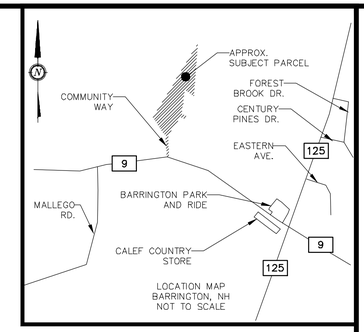
SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14240
LICENSED PROFESSIONAL ENGINEER

LEGEND:

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOIL SURVEY SOIL LIMIT
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A SOIL LABEL / HYDROLOGIC SOIL GROUP
- SUBCATCHMENT AREA SYMBOL
- FLOW REACH SYMBOL
- POND DEVICE SYMBOL
- Tc SEGMENT





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1-1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1-1 AND TAX MAP 235 LOT 3.

JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W-1 PRE-EXISTING WATERSHED DETAIL (NORTH)
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14246
LICENSED PROFESSIONAL ENGINEER

LEGEND:

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- EXISTING CONTOUR MINOR (299)
- EXISTING CONTOUR MAJOR (300)
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE (OHU)
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOIL SURVEY SOIL LIMIT
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A — SOIL LABEL / HYDROLOGIC SOIL GROUP
- # — SUBCATCHMENT AREA SYMBOL
- # — FLOW REACH SYMBOL
- # — POND DEVICE SYMBOL
- Tc. / (#) — Tc SEGMENT

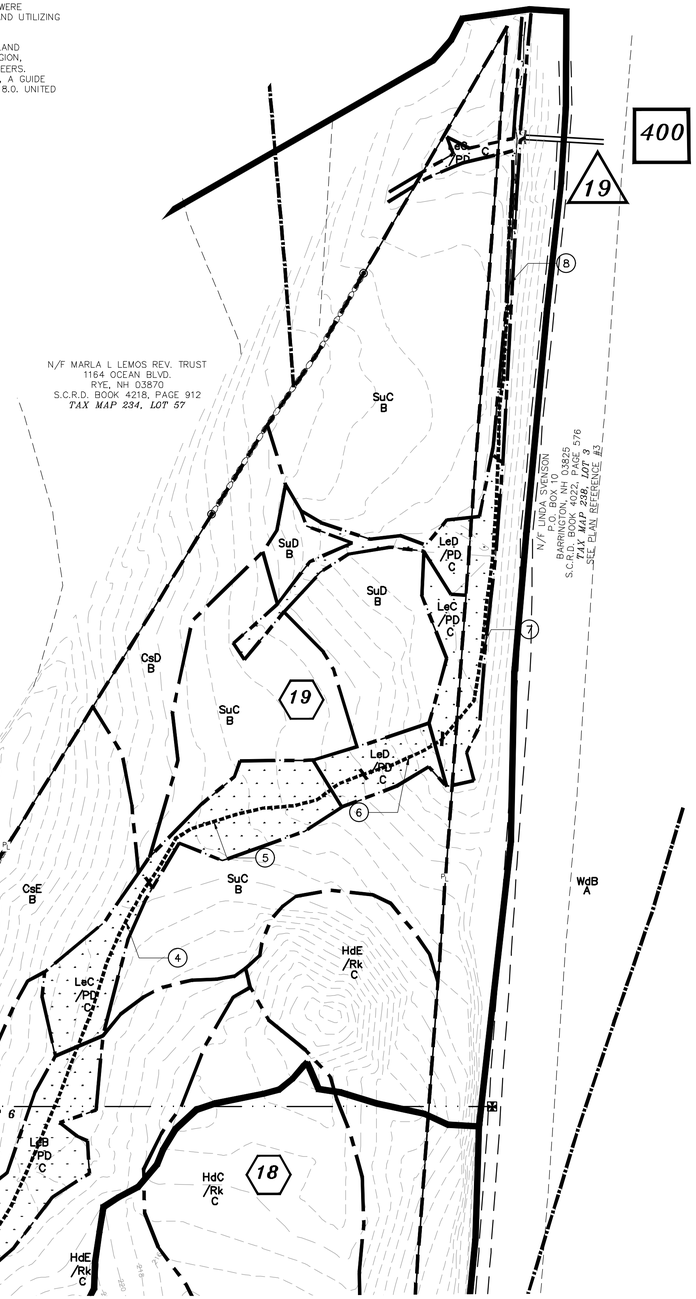
JOHN P. HAYES III, CSS #87

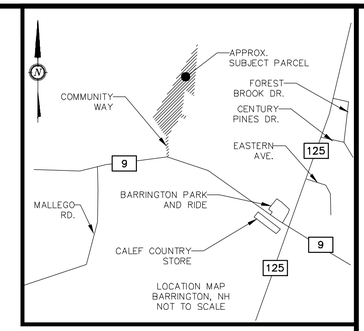
JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1–1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1–1 TAX MAP 235 LOT 3.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION
#2	10–12–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08–30–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W–1 PRE–EXISTING WATERSHED DETAILED DETAIL (NORTH)
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14745
LICENSED PROFESSIONAL ENGINEER

DEIDRA BENJAMIN, CWS #295

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1 & TAX MAP 239, LOT 2 WERE DELINEATED BY DEIDRA BENJAMIN, IN MAY OF 2017 AND CONFIRMED IN JUNE OF 2021 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

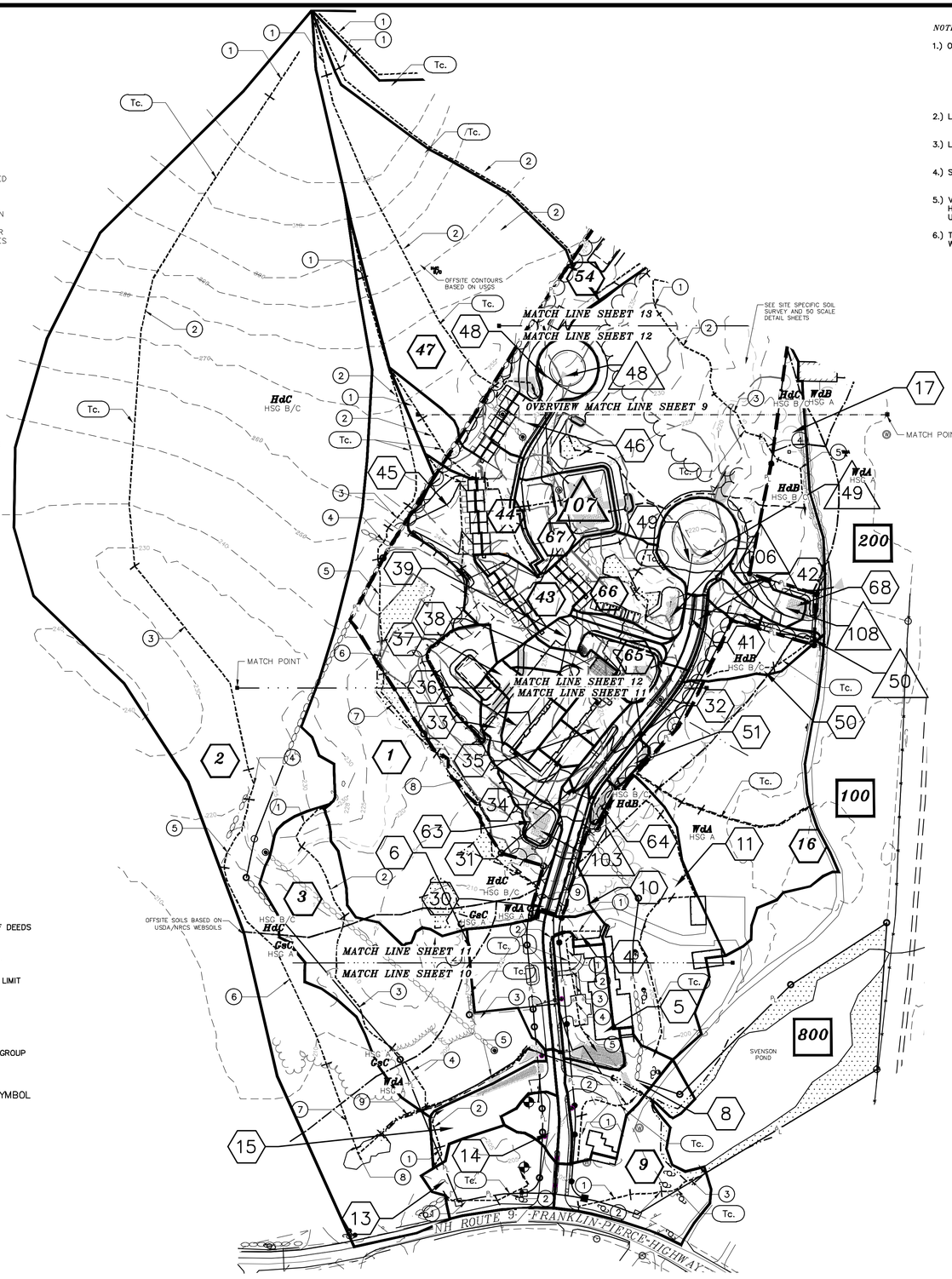
WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

LEGEND:

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOIL SURVEY SOIL LIMIT
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A SOIL LABEL / HYDROLOGIC SOIL GROUP
- SUBCATCHMENT AREA SYMBOL
- FLOW REACH SYMBOL
- POND DEVICE SYMBOL
- Tc SEGMENT



NOTES:

1.) OWNER & APPLICANT:
- A.) DOVE DEVELOPMENT GROUP, LLC, 242 CENTRAL AVE, DOVER, NH 03820
- B.) DOVE DEVELOPMENT GROUP, LLC, 242 CENTRAL AVE, DOVER, NH 03820

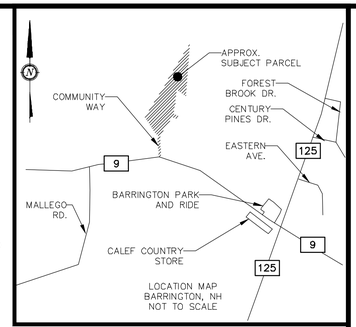
2.) LOT OF RECORD:
- A.) TAX MAP 235, LOT 1-1
- B.) TAX MAP 235, LOT 3

3.) LOT AREA:
- A.) 323,215 Sq. Ft., 7.42 Ac.
- B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.:
- A.) BOOK 4816, PAGE 500
- B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1-1 TAX MAP 235 LOT 3.



SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
CsB	CHARLTON (VERY STONY)	B
CsC	CHARLTON (VERY STONY)	B
CsD	CHARLTON (VERY STONY)	B
CsE	CHARLTON (VERY STONY)	B
HcC	HOLLIS (VERY STONY)	C/D
HcD	HOLLIS (VERY STONY)	C/D
HcE	HOLLIS (VERY STONY)	C/D
HdD	HOLLIS CHARLTON COMPLEX (VERY STONY)	C/D
HdE	HOLLIS CHARLTON COMPLEX (VERY STONY)	C/D
LeB	LEICESTER (VERY STONY)	C
LeC	LEICESTER (VERY STONY)	C
LeD	LEICESTER (VERY STONY)	C
SuB	SUTTON	B
	SUTTON	B
SuD	SUTTON	B

SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

NRCS SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
HdB	HOLLIS-CHARLTON (VERY ROCKY)	B/C
HdC	HOLLIS-CHARLTON (VERY ROCKY)	B/C
MI	MIXED ALLUVIAL LAND	D
WdA	WINDSOR	A
WdB	WINDSOR	A

SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

16° ± MAGNETIC

NAD83 NH STATE PLANE

SUBCATCHMENTS 1 THROUGH 11, REACHES AND PONDS ASSOCIATED WITH FINAL REACH 800 WERE PREVIOUSLY SUBMITTED TO BARRINGTON FOR 1962 REAL ESTATE, LLC AND JOHN & LINDA SVENSON (CHRISTMAS DOVE)

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)
1 inch = 120 ft.

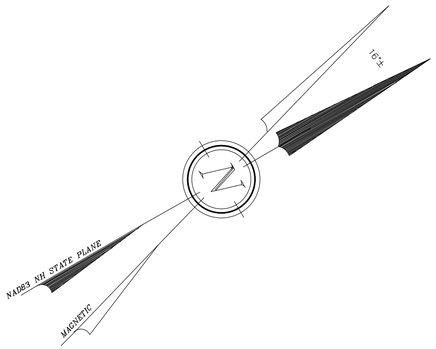
#	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

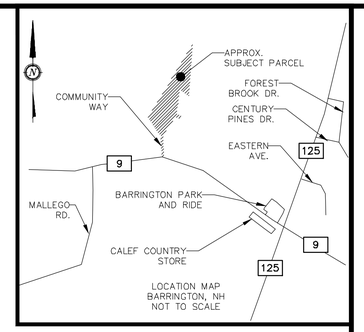
W-2 PROPOSED CONDITIONS WATERSHED OVERVIEW PLAN - SOUTH
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 120 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

KENNETH A. BERRY LLS 14545 LICENSED PROFESSIONAL ENGINEER





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

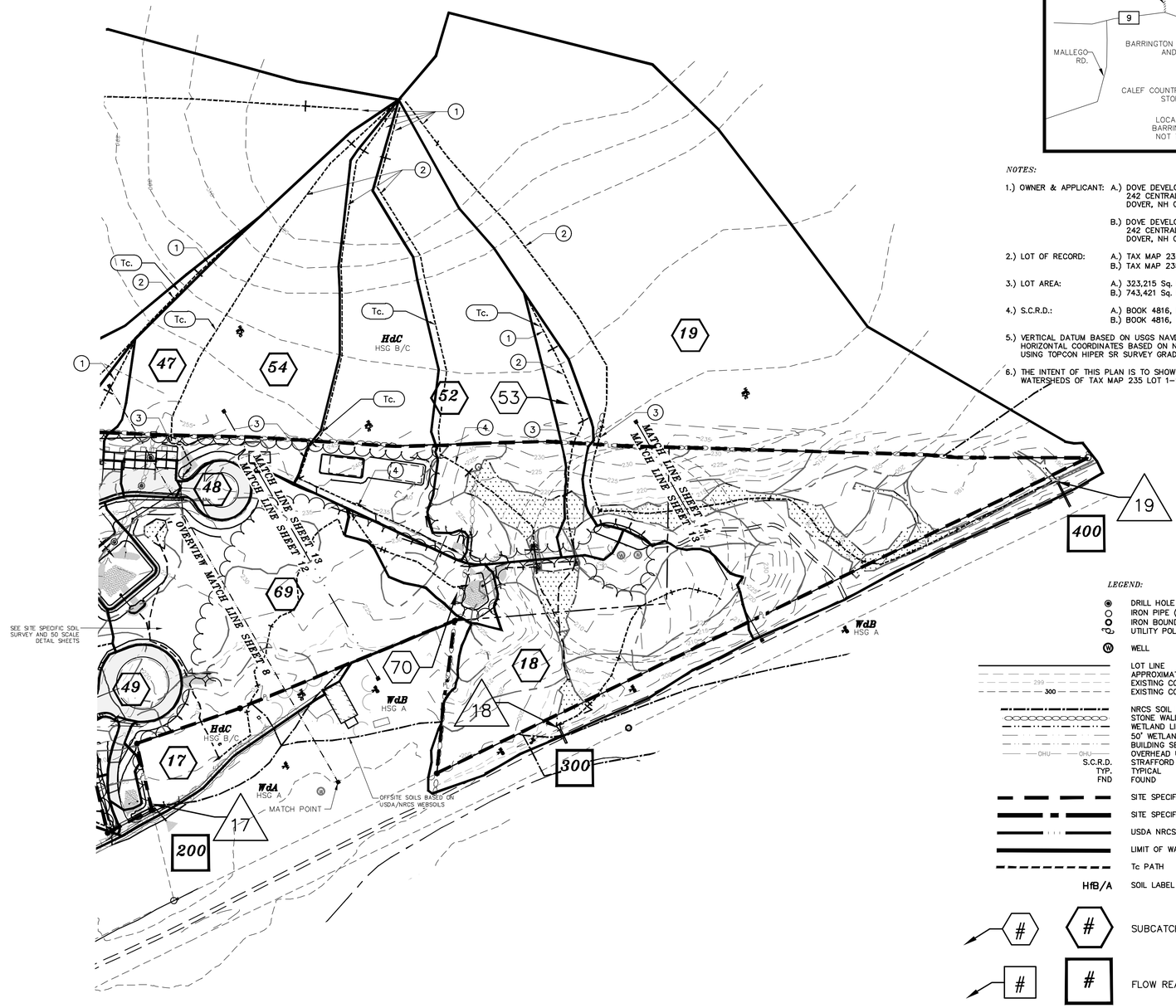
2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1–1 AND TAX MAP 235 LOT 3.



LEGEND:

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOILS
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A SOIL LABEL / HYDROLOGIC SOIL GROUP
- SUBCATCHMENT AREA SYMBOL
- FLOW REACH SYMBOL
- POND DEVICE SYMBOL
- Tc SEGMENT

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)
1 inch = 120 ft.

JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1–1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

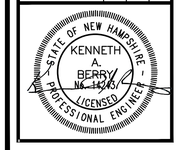
1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W-2 PROPOSED CONDITIONS WATERSHED OVERVIEW PLAN – NORTH
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 120 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097



JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

DEIDRA BENJAMIN, CWS #295

WETLAND NOTES:

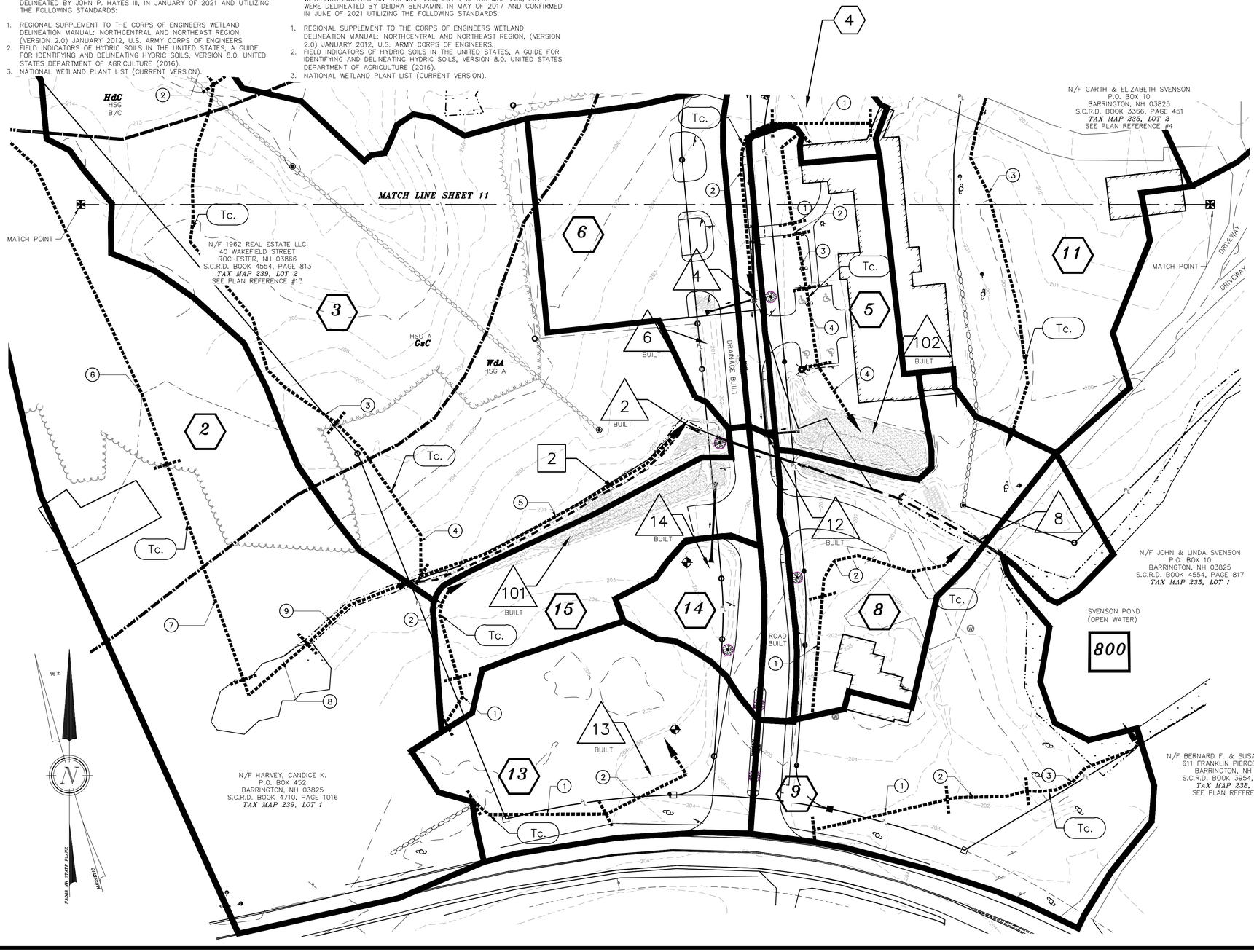
WETLANDS LOCATED ON TAX MAP 235, LOT 1–1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

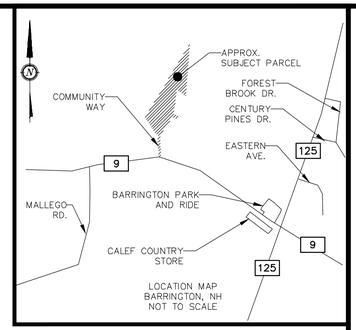
1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1 & TAX MAP 239, LOT 2 WERE DELINEATED BY DEIDRA BENJAMIN, IN MAY OF 2017 AND CONFIRMED IN JUNE OF 2021 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1–1 AND TAX MAP 235 LOT 3.

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OHU — OHU — OVERHEAD UTILITIES LINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOIL SURVEY SOIL LIMIT
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A SOIL LABEL / HYDROLOGIC SOIL GROUP
- # SUBCATCHMENT AREA SYMBOL
- # FLOW REACH SYMBOL
- # POND DEVICE SYMBOL
- Tc. Tc SEGMENT

SUBCATCHMENTS 1 THROUGH 11, REACHES AND PONDS ASSOCIATED WITH FINAL REACH 800 WERE PREVIOUSLY SUBMITTED TO BARRINGTON FOR 1962 REAL ESTATE, LLC AND JOHN & LINDA SVENSON (CHRISTMAS DOVE)

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

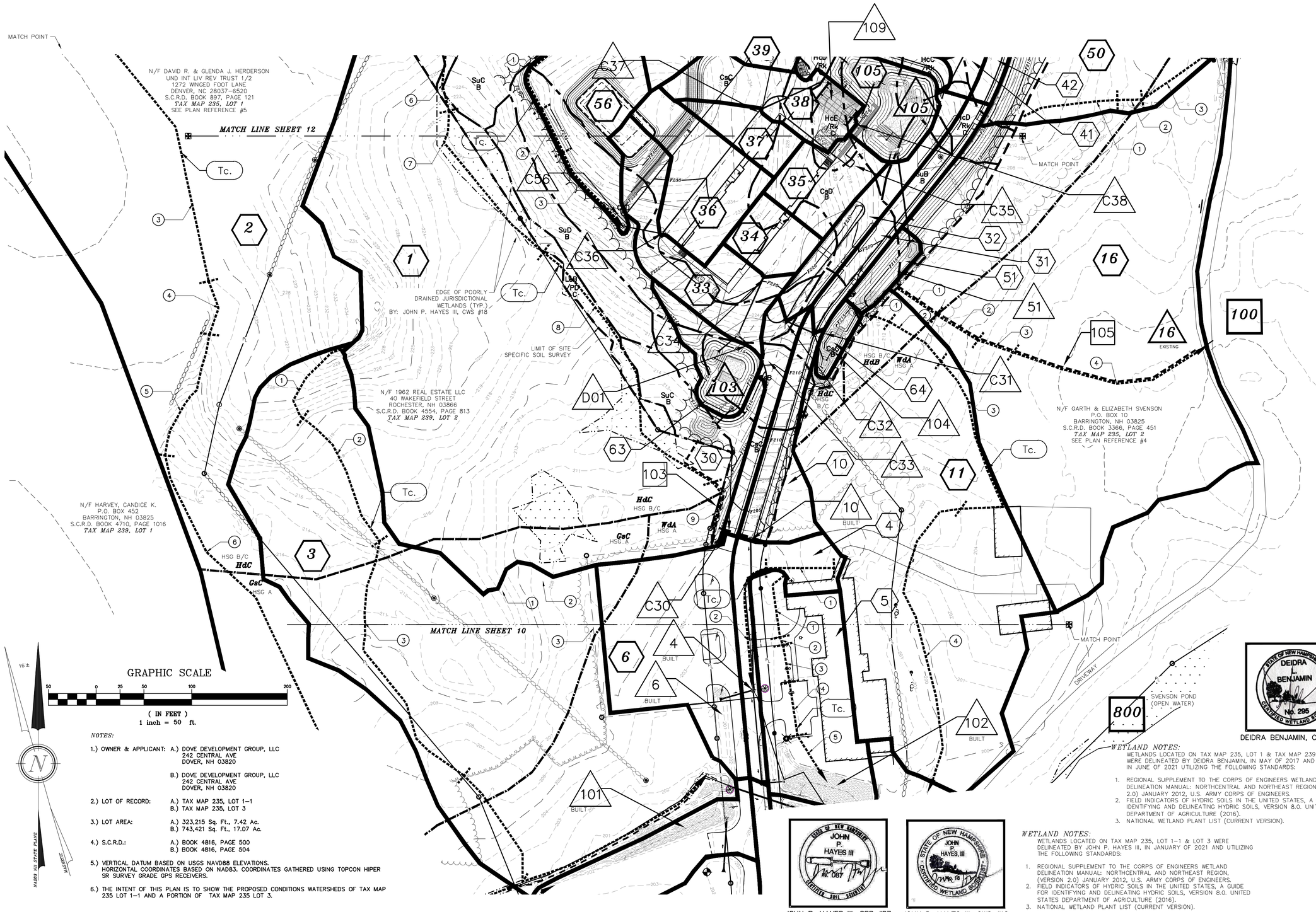
REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W-2 PROPOSED WATERSHED DETAIL
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097

KENNETH A. BERRY NH 14545 LICENSED PROFESSIONAL ENGINEER



NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS.
HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1–1 AND A PORTION OF TAX MAP 235 LOT 3.

JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

WETLAND NOTES:
WETLANDS LOCATED ON TAX MAP 235, LOT 1–1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

DEIDRA BENJAMIN, CWS #295

WETLAND NOTES:
WETLANDS LOCATED ON TAX MAP 235, LOT 1 & TAX MAP 239, LOT 2 WERE DELINEATED BY DEIDRA BENJAMIN, IN MAY OF 2017 AND CONFIRMED IN JUNE OF 2021 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

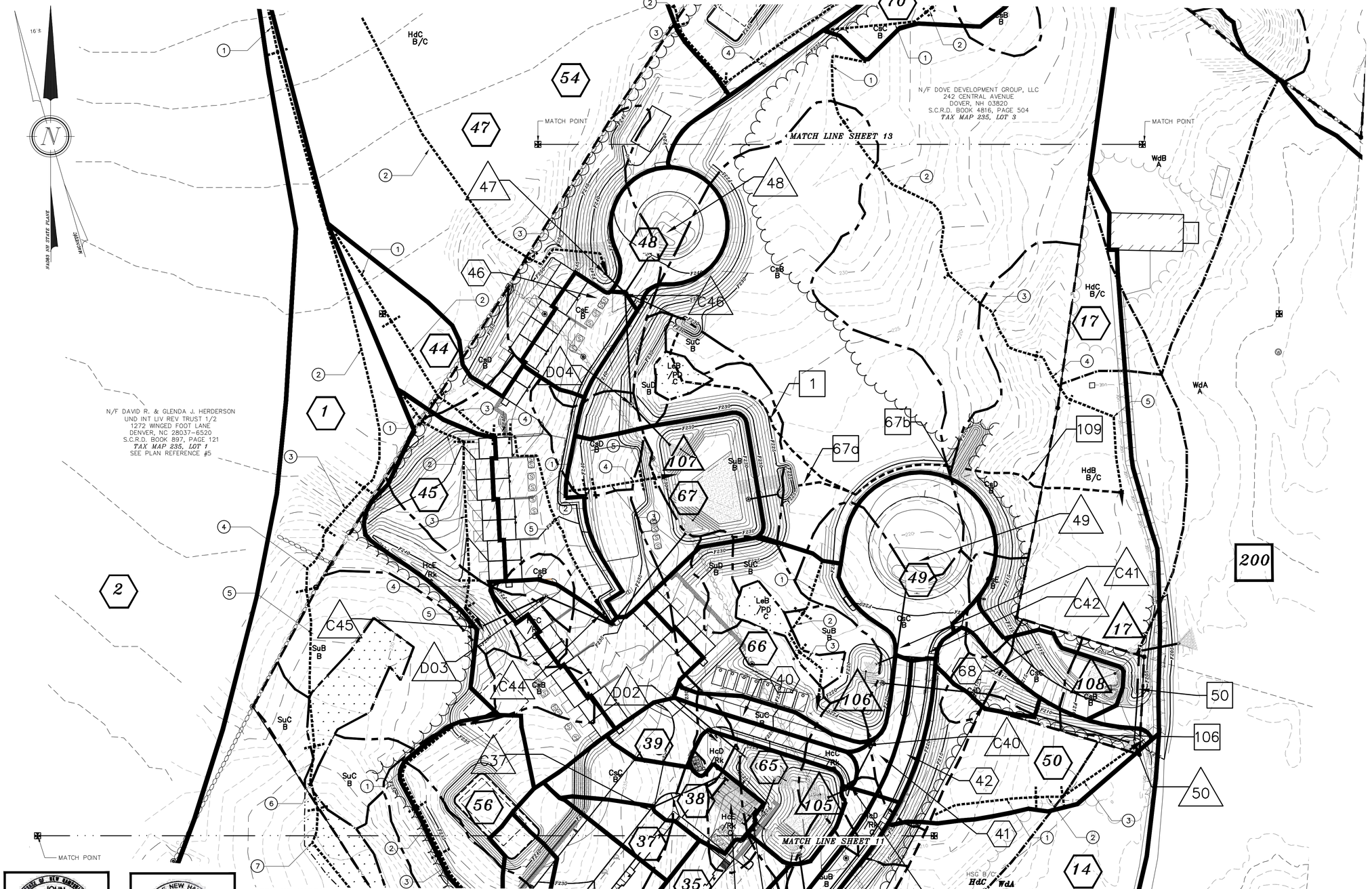
REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W-2 PROPOSED WATERSHED DETAIL
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097

KENNETH A. BERRY, LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE – No. 14040



WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

STATE OF NEW HAMPSHIRE JOHN P. HAYES III No. 087 CERTIFIED SOIL SCIENTIST

JOHN P. HAYES III, CSS #87

STATE OF NEW HAMPSHIRE JOHN P. HAYES, III CERTIFIED WETLAND SCIENTIST #18

JOHN P. HAYES III, CWS #18

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W-2 PROPOSED WATERSHED DETAIL
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

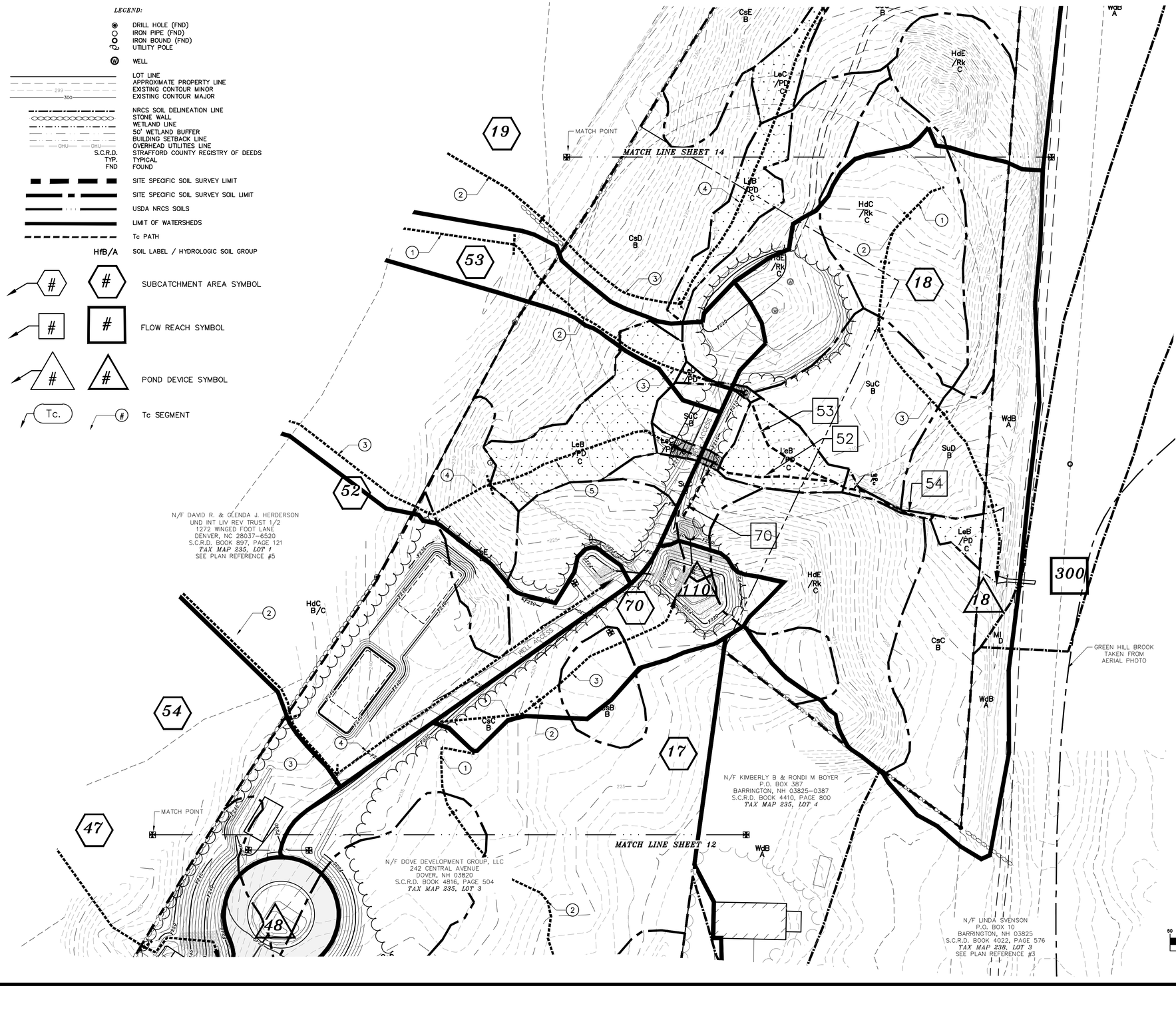
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

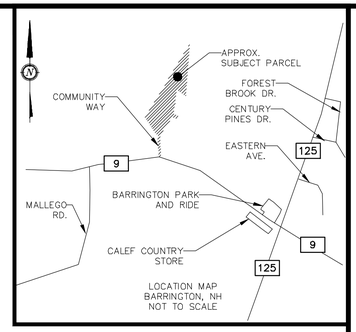
SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

STATE OF NEW HAMPSHIRE KENNETH A. BERRY No. 14245 LICENSED PROFESSIONAL ENGINEER

LEGEND:

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOIL SURVEY SOIL LIMIT
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A SOIL LABEL / HYDROLOGIC SOIL GROUP
- SUBCATCHMENT AREA SYMBOL
- FLOW REACH SYMBOL
- POND DEVICE SYMBOL
- Tc SEGMENT





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1-1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1-1 AND TAX MAP 235 LOT 3.

JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W-2 PROPOSED WATERSHED DETAIL
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

LEGEND:

- DRILL HOLE (FND)
- IRON PIPE (FND)
- IRON BOUND (FND)
- UTILITY POLE
- WELL
- LOT LINE
- APPROXIMATE PROPERTY LINE
- 299 EXISTING CONTOUR MINOR
- 300 EXISTING CONTOUR MAJOR
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OHU OVERHEAD UTILITIES LINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- SITE SPECIFIC SOIL SURVEY LIMIT
- SITE SPECIFIC SOIL SURVEY SOIL LIMIT
- USDA NRCS SOILS
- LIMIT OF WATERSHEDS
- Tc PATH
- HfB/A SOIL LABEL / HYDROLOGIC SOIL GROUP
- # SUBCATCHMENT AREA SYMBOL
- # FLOW REACH SYMBOL
- # POND DEVICE SYMBOL
- Tc. Tc SEGMENT
- (#) Tc SEGMENT

STATE OF NEW HAMPSHIRE — JOHN P. HAYES III — CERTIFIED SOIL SCIENTIST

JOHN P. HAYES III, CSS #87

STATE OF NEW HAMPSHIRE — JOHN P. HAYES, III — CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES III, CWS #18

WETLAND NOTES:

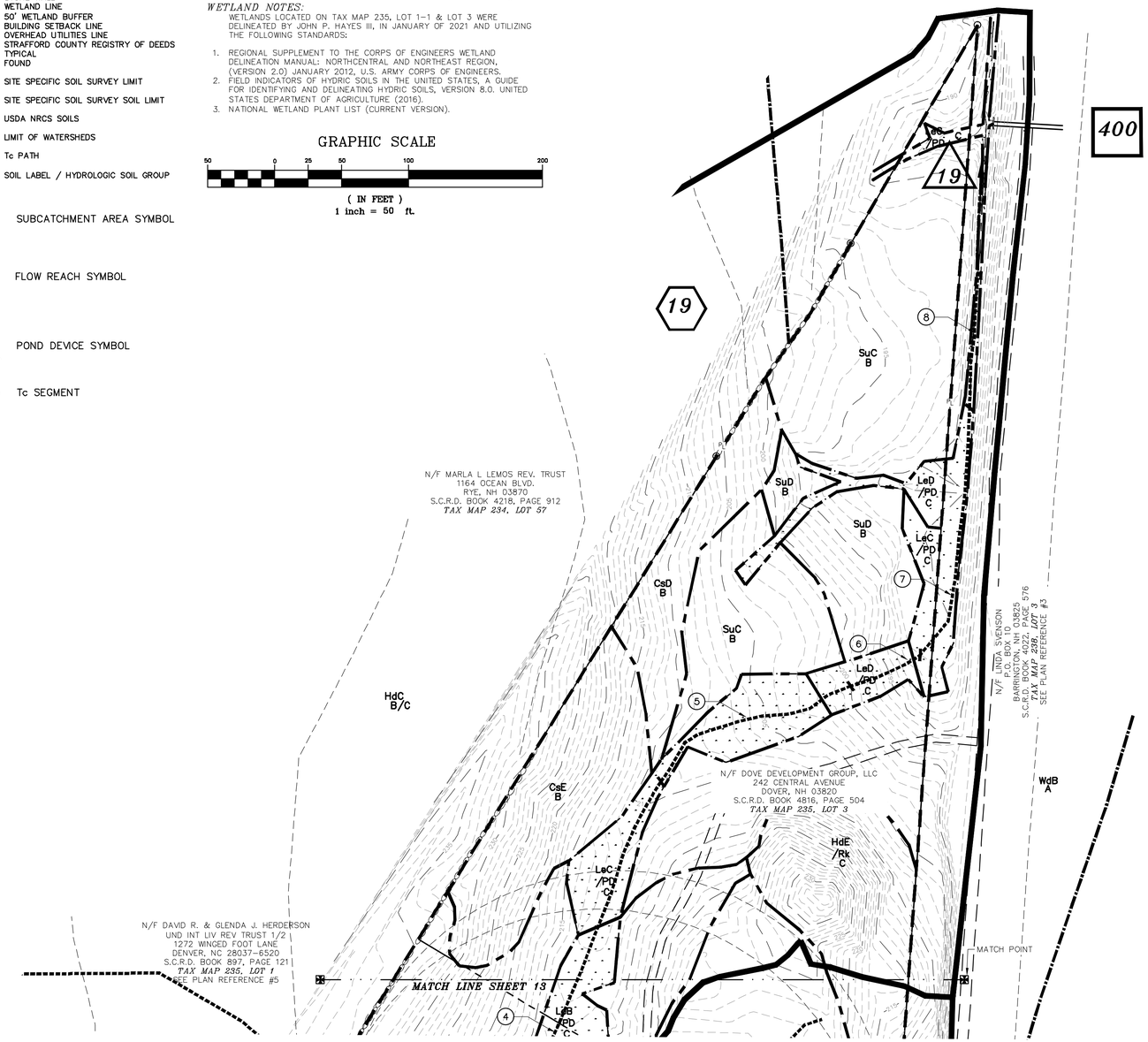
WETLANDS LOCATED ON TAX MAP 235, LOT 1–1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

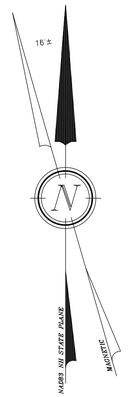
1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

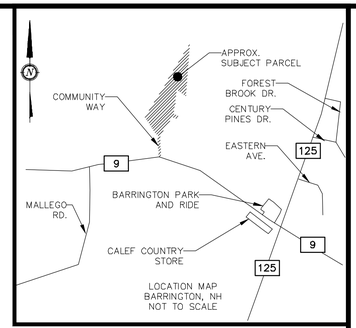
GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.







NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED CONDITIONS WATERSHEDS OF TAX MAP 235 LOT 1–1 AND TAX MAP 235 LOT 3.

SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
CsB	CHARLTON (VERY STONY)	B
CsC	CHARLTON (VERY STONY)	B
CsD	CHARLTON (VERY STONY)	B
CsE	CHARLTON (VERY STONY)	B
HcC	HOLLIS (VERY STONY)	C/D
HcD	HOLLIS (VERY STONY)	C/D
HcE	HOLLIS (VERY STONY)	C/D
HdD	HOLLIS CHARLTON COMPLEX (VERY STONY)	C/D
HdE	HOLLIS CHARLTON COMPLEX (VERY STONY)	C/D
LeB	LEICESTER (VERY STONY)	C
LeC	LEICESTER (VERY STONY)	C
LeD	LEICESTER (VERY STONY)	C
SuB	SUTTON	B
	SUTTON	B
SuD	SUTTON	B

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

NRCS SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
HdB	HOLLIS–CHARLTON (VERY ROCKY)	B/C
HdC	HOLLIS–CHARLTON (VERY ROCKY)	B/C
MI	MIXED ALLUVIAL LAND	D
WdA	WINDSOR	A
WdB	WINDSOR	A

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

#	DATE	REVISION
#2	10–12–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08–30–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

W–2 PROPOSED WATERSHED DETAIL
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

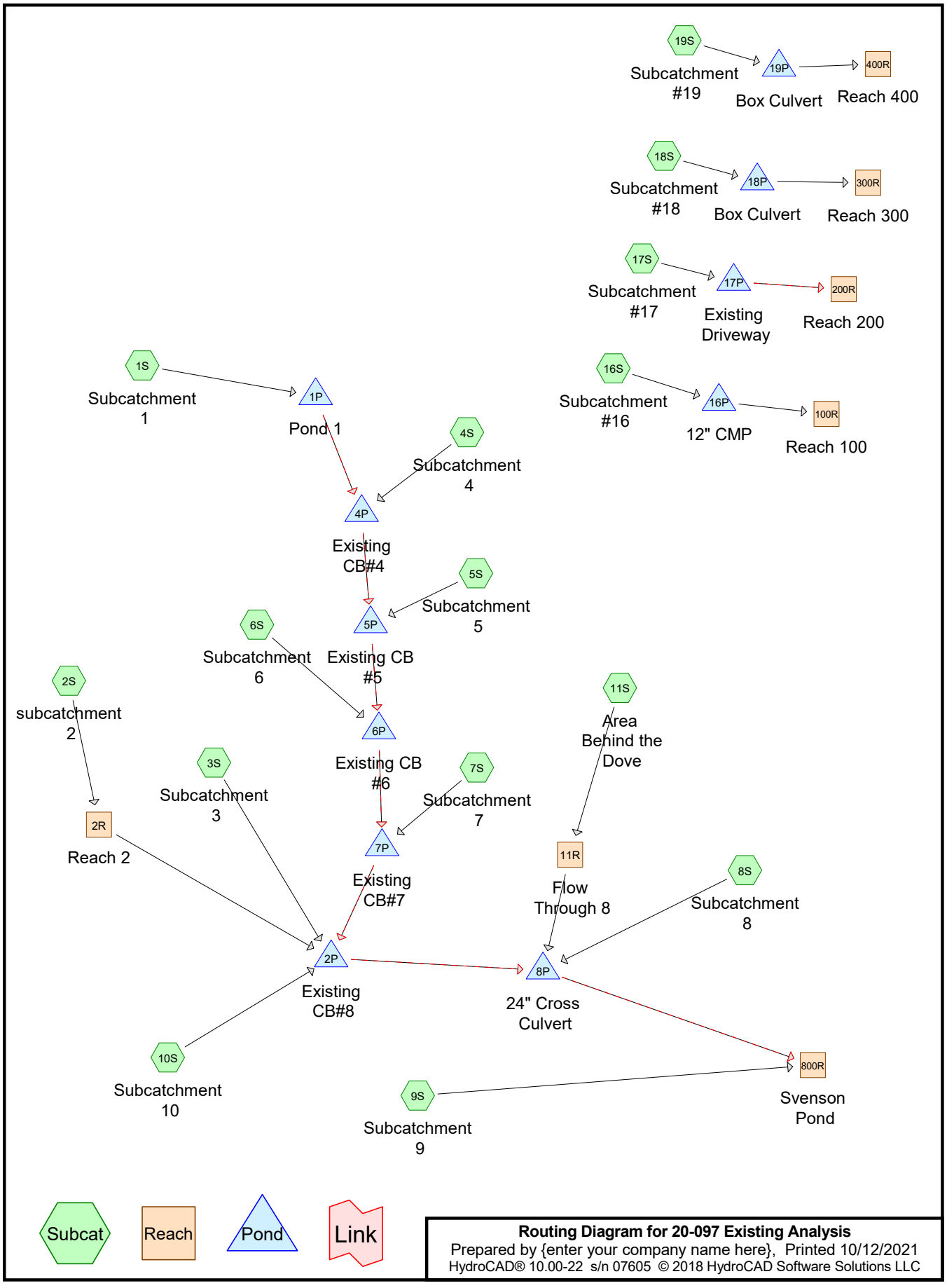
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY — No. 14,040 — LICENSED PROFESSIONAL ENGINEER

Appendix I - Existing Conditions Analysis

25 Yr - 24 Hr. Full Summary
2 Yr - 24 Hr. Node Listing
10 Yr -24 Hr. Node Listing
25 Yr - 24 Hr. Node Listing
50 Yr - 24 Hr. Node Listing
100 Yr - 24 Hr. Node Listing



Routing Diagram for 20-097 Existing Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.339	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 16S, 17S)
0.106	61	>75% Grass cover, Good, HSG B (1S, 11S, 16S, 17S)
0.101	74	>75% Grass cover, Good, HSG C (11S, 16S, 17S)
0.098	96	Gravel surface, HSG A (16S, 17S, 18S)
0.024	96	Gravel surface, HSG B (17S)
0.024	96	Gravel surface, HSG C (17S)
0.002	96	Gravel surface, HSG D (18S)
1.516	98	Paved parking, HSG A (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 16S)
0.491	98	Roofs, HSG A (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 16S)
0.067	98	Water Surface, 0% imp, HSG A (2S)
4.175	30	Woods, Good, HSG A (1S, 2S, 3S, 11S, 16S, 17S, 18S, 19S)
39.038	55	Woods, Good, HSG B (1S, 2S, 3S, 11S, 16S, 17S, 18S, 19S)
25.001	70	Woods, Good, HSG C (1S, 2S, 3S, 11S, 16S, 17S, 18S, 19S)
0.016	77	Woods, Good, HSG D (18S)
78.998	**58**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
14.685	HSG A	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 16S, 17S, 18S, 19S
39.168	HSG B	1S, 2S, 3S, 11S, 16S, 17S, 18S, 19S
25.126	HSG C	1S, 2S, 3S, 11S, 16S, 17S, 18S, 19S
0.018	HSG D	18S
0.000	Other	
78.998		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
8.339	0.106	0.101	0.000	0.000	8.545	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 16S, 17S
0.098	0.024	0.024	0.002	0.000	0.149	Gravel surface	16S, 17S, 18S
1.516	0.000	0.000	0.000	0.000	1.516	Paved parking	2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 16S
0.491	0.000	0.000	0.000	0.000	0.491	Roofs	2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 16S
0.067	0.000	0.000	0.000	0.000	0.067	Water Surface, 0% imp	2S
4.175	39.038	25.001	0.016	0.000	68.230	Woods, Good	1S, 2S, 3S, 11S, 16S, 17S, 18S, 19S
14.685	**39.168**	**25.126**	**0.018**	**0.000**	**78.998**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	201.13	198.83	34.7	0.0663	0.025	12.0	0.0	0.0
2	2P	196.62	196.28	67.8	0.0050	0.025	24.0	0.0	0.0
3	4P	198.65	197.33	56.4	0.0234	0.025	12.0	0.0	0.0
4	5P	197.43	196.02	46.1	0.0306	0.025	12.0	0.0	0.0
5	6P	196.02	195.72	101.6	0.0030	0.025	12.0	0.0	0.0
6	7P	195.72	195.00	35.9	0.0201	0.025	24.0	0.0	0.0
7	8P	196.55	196.44	21.6	0.0051	0.012	24.0	0.0	0.0
8	16P	203.25	203.05	20.0	0.0100	0.025	12.0	0.0	0.0
9	18P	190.25	190.20	28.0	0.0018	0.012	36.0	36.0	0.0
10	19P	182.69	183.13	52.0	-0.0085	0.012	36.0	36.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=302,003 sf 0.00% Impervious Runoff Depth>1.03"
Flow Length=1,542' Tc=32.6 min CN=59 Runoff=3.91 cfs 0.592 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>1.08"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=7.71 cfs 1.573 af

Subcatchment 3S: Subcatchment 3 Runoff Area=122,849 sf 0.64% Impervious Runoff Depth>0.19"
Flow Length=993' Tc=20.7 min CN=41 Runoff=0.08 cfs 0.045 af

Subcatchment 4S: Subcatchment 4 Runoff Area=4,089 sf 98.95% Impervious Runoff Depth>4.29"
Flow Length=85' Slope=0.0472 '/' Tc=6.0 min CN=97 Runoff=0.41 cfs 0.034 af

Subcatchment 5S: Subcatchment 5 Runoff Area=10,452 sf 82.66% Impervious Runoff Depth>3.33"
Flow Length=75' Tc=6.0 min CN=88 Runoff=0.90 cfs 0.066 af

Subcatchment 6S: Subcatchment 6 Runoff Area=24,193 sf 93.83% Impervious Runoff Depth>3.95"
Flow Length=216' Tc=6.0 min CN=94 Runoff=2.35 cfs 0.183 af

Subcatchment 7S: Subcatchment 7 Runoff Area=7,743 sf 65.07% Impervious Runoff Depth>2.32"
Flow Length=98' Tc=9.7 min CN=77 Runoff=0.42 cfs 0.034 af

Subcatchment 8S: Subcatchment 8 Runoff Area=19,227 sf 32.64% Impervious Runoff Depth>0.97"
Flow Length=152' Tc=10.4 min CN=58 Runoff=0.35 cfs 0.036 af

Subcatchment 9S: Subcatchment 9 Runoff Area=64,869 sf 22.90% Impervious Runoff Depth>0.70"
Flow Length=484' Tc=19.3 min CN=53 Runoff=0.58 cfs 0.086 af

Subcatchment 10S: Subcatchment 10 Runoff Area=53,175 sf 5.56% Impervious Runoff Depth>0.22"
Flow Length=438' Tc=18.4 min CN=42 Runoff=0.06 cfs 0.023 af

Subcatchment 11S: Area Behind the Dove Runoff Area=106,113 sf 10.71% Impervious Runoff Depth>0.50"
Flow Length=802' Tc=22.0 min CN=49 Runoff=0.53 cfs 0.102 af

Subcatchment 16S: Subcatchment #16 Runoff Area=299,000 sf 1.92% Impervious Runoff Depth>0.69"
Flow Length=1,113' Tc=27.2 min CN=53 Runoff=2.36 cfs 0.397 af

Subcatchment 17S: Subcatchment #17 Runoff Area=497,407 sf 0.00% Impervious Runoff Depth>0.97"
Flow Length=1,540' Tc=35.5 min CN=58 Runoff=5.70 cfs 0.919 af

Subcatchment 18S: Subcatchment #18 Runoff Area=474,696 sf 0.00% Impervious Runoff Depth>1.09"
Flow Length=1,280' Tc=29.3 min CN=60 Runoff=6.96 cfs 0.987 af

Subcatchment 19S: Subcatchment #19 Runoff Area=690,822 sf 0.00% Impervious Runoff Depth>1.08"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=8.06 cfs 1.428 af

Reach 2R: Reach 2 Avg. Flow Depth=0.54' Max Vel=3.52 fps Inflow=7.71 cfs 1.573 af
n=0.022 L=329.8' S=0.0091 '/' Capacity=24.64 cfs Outflow=7.71 cfs 1.571 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.14' Max Vel=1.02 fps Inflow=0.53 cfs 0.102 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=0.53 cfs 0.101 af

Reach 100R: Reach 100 Inflow=1.89 cfs 0.396 af
Outflow=1.89 cfs 0.396 af

Reach 200R: Reach 200 Inflow=5.69 cfs 0.868 af
Outflow=5.69 cfs 0.868 af

Reach 300R: Reach 300 Inflow=6.95 cfs 0.987 af
Outflow=6.95 cfs 0.987 af

Reach 400R: Reach 400 Inflow=8.06 cfs 1.428 af
Outflow=8.06 cfs 1.428 af

Reach 800R: Svenson Pond Inflow=11.57 cfs 2.771 af
Outflow=11.57 cfs 2.771 af

Pond 1P: Pond 1 Peak Elev=204.73' Storage=1,558 cf Inflow=3.91 cfs 0.592 af
Primary=2.98 cfs 0.581 af Secondary=0.65 cfs 0.011 af Outflow=3.26 cfs 0.592 af

Pond 2P: Existing CB#8 Peak Elev=199.34' Storage=501 cf Inflow=11.26 cfs 2.549 af
Primary=11.05 cfs 2.548 af Secondary=0.00 cfs 0.000 af Outflow=11.05 cfs 2.548 af

Pond 4P: Existing CB#4 Peak Elev=203.70' Storage=65 cf Inflow=3.31 cfs 0.626 af
Primary=2.99 cfs 0.621 af Secondary=0.33 cfs 0.007 af Outflow=3.32 cfs 0.626 af

Pond 5P: Existing CB #5 Peak Elev=201.91' Storage=74 cf Inflow=3.42 cfs 0.694 af
Primary=2.03 cfs 0.572 af Secondary=1.74 cfs 0.122 af Outflow=3.44 cfs 0.694 af

Pond 6P: Existing CB #6 Peak Elev=201.43' Storage=73 cf Inflow=4.21 cfs 0.877 af
Primary=3.28 cfs 0.802 af Secondary=1.13 cfs 0.075 af Outflow=4.28 cfs 0.877 af

Pond 7P: Existing CB#7 Peak Elev=199.38' Storage=46 cf Inflow=4.68 cfs 0.911 af
Primary=4.68 cfs 0.911 af Secondary=0.00 cfs 0.000 af Outflow=4.68 cfs 0.911 af

Pond 8P: 24" Cross Culvert Peak Elev=198.45' Storage=1,267 cf Inflow=11.41 cfs 2.685 af
Primary=11.36 cfs 2.685 af Secondary=0.00 cfs 0.000 af Outflow=11.36 cfs 2.685 af

Pond 16P: 12" CMP Peak Elev=204.30' Storage=1,044 cf Inflow=2.36 cfs 0.397 af
Outflow=1.89 cfs 0.396 af

Pond 17P: Existing Driveway Peak Elev=204.12' Storage=2,920 cf Inflow=5.70 cfs 0.919 af
Primary=4.31 cfs 0.795 af Secondary=1.38 cfs 0.073 af Outflow=5.69 cfs 0.868 af

Pond 18P: Box Culvert Peak Elev=191.21' Storage=70 cf Inflow=6.96 cfs 0.987 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=6.95 cfs 0.987 af

Pond 19P: Box Culvert Peak Elev=184.02' Storage=18 cf Inflow=8.06 cfs 1.428 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=8.06 cfs 1.428 af

Total Runoff Area = 78.998 ac Runoff Volume = 6.503 af Average Runoff Depth = 0.99"
97.46% Pervious = 76.991 ac 2.54% Impervious = 2.007 ac

Summary for Subcatchment 1S: Subcatchment 1

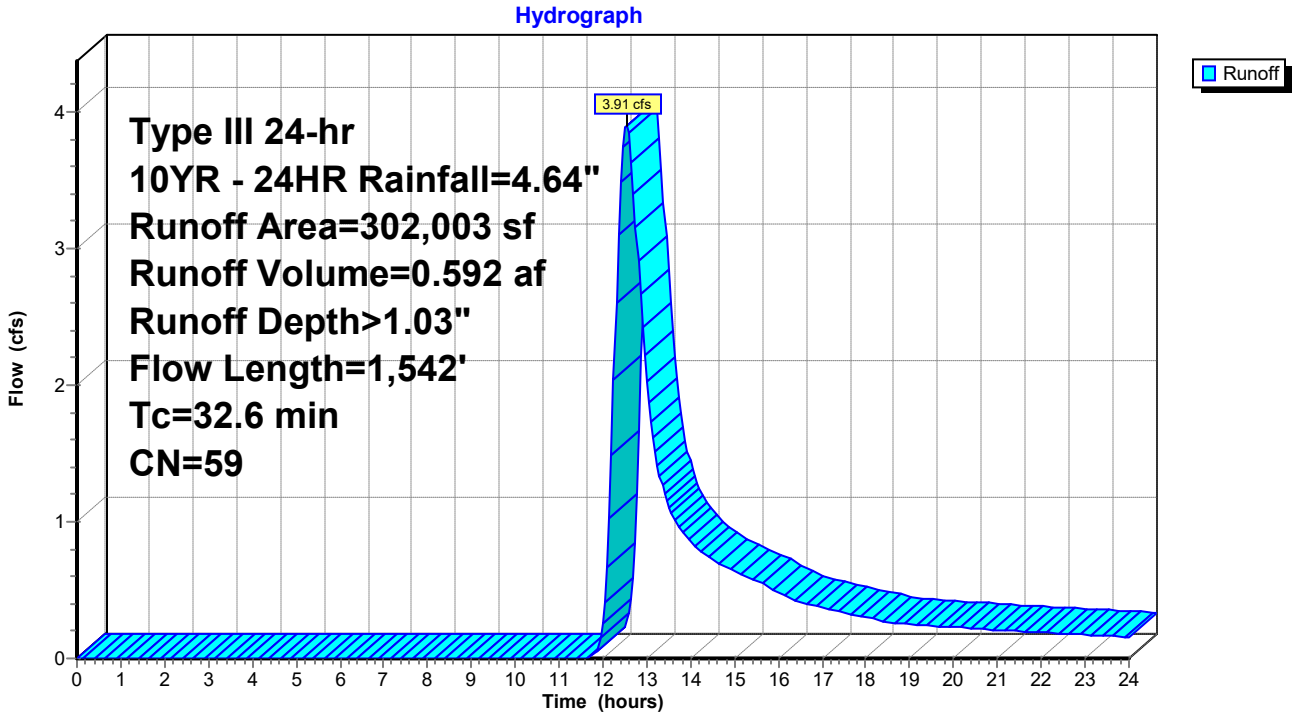
Runoff = 3.91 cfs @ 12.53 hrs, Volume= 0.592 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,815	39	>75% Grass cover, Good, HSG A
221	61	>75% Grass cover, Good, HSG B
13,531	30	Woods, Good, HSG A
183,846	55	Woods, Good, HSG B
101,590	70	Woods, Good, HSG C
302,003	59	Weighted Average
302,003		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.1500	0.17		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.08"
4.7	442	0.0973	1.56		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
0.5	65	0.2153	2.32		**Shallow Concentrated Flow, Segment 3** Woodland Kv= 5.0 fps
2.6	153	0.0395	0.99		**Shallow Concentrated Flow, Segment 4** Woodland Kv= 5.0 fps
2.6	153	0.0393	0.99		**Shallow Concentrated Flow, Segment 5** Woodland Kv= 5.0 fps
0.7	62	0.0806	1.42		**Shallow Concentrated Flow, Segment 6** Woodland Kv= 5.0 fps
5.0	190	0.0158	0.63		**Shallow Concentrated Flow, Segment 7** Woodland Kv= 5.0 fps
5.9	315	0.0317	0.89		**Shallow Concentrated Flow, Segment 8** Woodland Kv= 5.0 fps
0.8	62	0.0645	1.27		**Shallow Concentrated Flow, Segment 9** Woodland Kv= 5.0 fps
32.6	1,542	Total			

Subcatchment 1S: Subcatchment 1



Summary for Subcatchment 2S: subcatchment 2

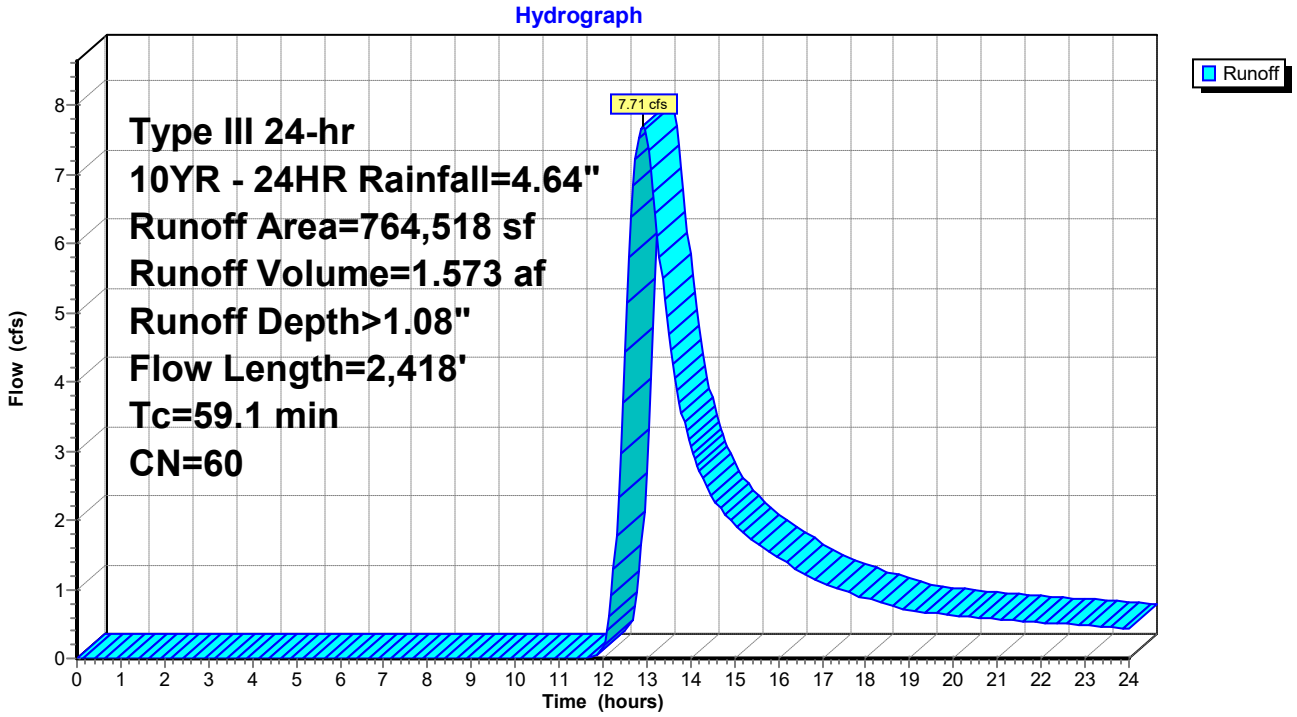
Runoff = 7.71 cfs @ 12.91 hrs, Volume= 1.573 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,663	98	Roofs, HSG A
55,787	39	>75% Grass cover, Good, HSG A
2,337	98	Paved parking, HSG A
37,068	30	Woods, Good, HSG A
2,905	98	Water Surface, 0% imp, HSG A
331,879	70	Woods, Good, HSG C
331,879	55	Woods, Good, HSG B
764,518	60	Weighted Average
759,518		99.35% Pervious Area
5,000		0.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0500	0.11		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.08"
9.8	940	0.1032	1.61		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
14.8	445	0.0101	0.50		**Shallow Concentrated Flow, Segment 3** Woodland Kv= 5.0 fps
2.1	59	0.0085	0.46		**Shallow Concentrated Flow, Segment 4** Woodland Kv= 5.0 fps
1.7	137	0.0728	1.35		**Shallow Concentrated Flow, Segment 5** Woodland Kv= 5.0 fps
12.7	418	0.0120	0.55		**Shallow Concentrated Flow, Segment 6** Woodland Kv= 5.0 fps
2.5	165	0.0242	1.09		**Shallow Concentrated Flow, Segment 7** Short Grass Pasture Kv= 7.0 fps
0.1	68		12.69		**Lake or Reservoir, Segment 8** Mean Depth= 5.00'
0.2	86	0.0174	6.81	23.84	**Trap/Vee/Rect Channel Flow, Segment 9** Bot.W=3.00' D=1.00' Z= 0.5 '/' Top.W=4.00' n= 0.022 Earth, clean & straight
59.1	2,418	Total			

Subcatchment 2S: subcatchment 2



Summary for Subcatchment 3S: Subcatchment 3

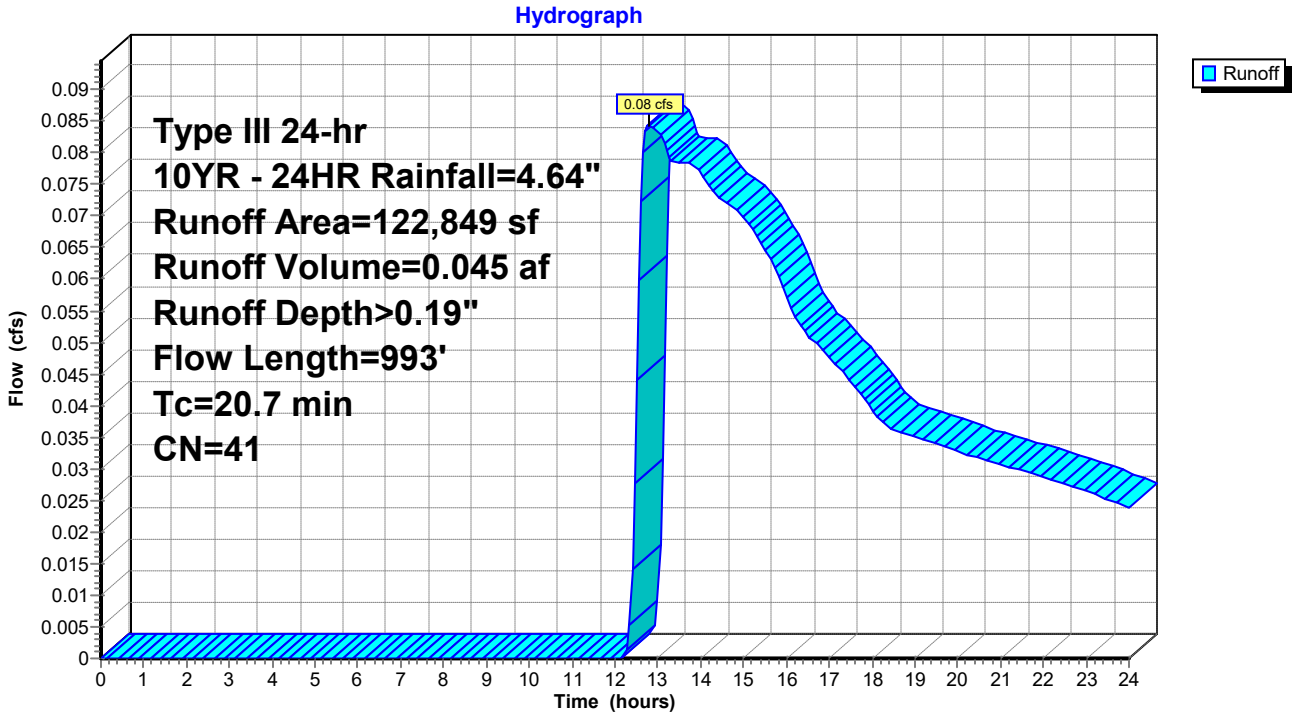
Runoff = 0.08 cfs @ 12.77 hrs, Volume= 0.045 af, Depth> 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
357	98	Roofs, HSG A
38,528	39	>75% Grass cover, Good, HSG A
434	98	Paved parking, HSG A
54,552	30	Woods, Good, HSG A
14,489	55	Woods, Good, HSG B
14,489	70	Woods, Good, HSG C
122,849	41	Weighted Average
122,058		99.36% Pervious Area
791		0.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	97	0.1334	0.16		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.08"
2.7	155	0.0355	0.94		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
5.3	290	0.0328	0.91		**Shallow Concentrated Flow, Segment 3** Woodland Kv= 5.0 fps
1.6	132	0.0379	1.36		**Shallow Concentrated Flow, Segment 4** Short Grass Pasture Kv= 7.0 fps
1.1	319	0.0094	5.01	17.52	**Trap/Vee/Rect Channel Flow, Segment 5** Bot.W=3.00' D=1.00' Z= 0.5 '/' Top.W=4.00' n= 0.022 Earth, clean & straight
20.7	993	Total			

Subcatchment 3S: Subcatchment 3



Summary for Subcatchment 4S: Subcatchment 4

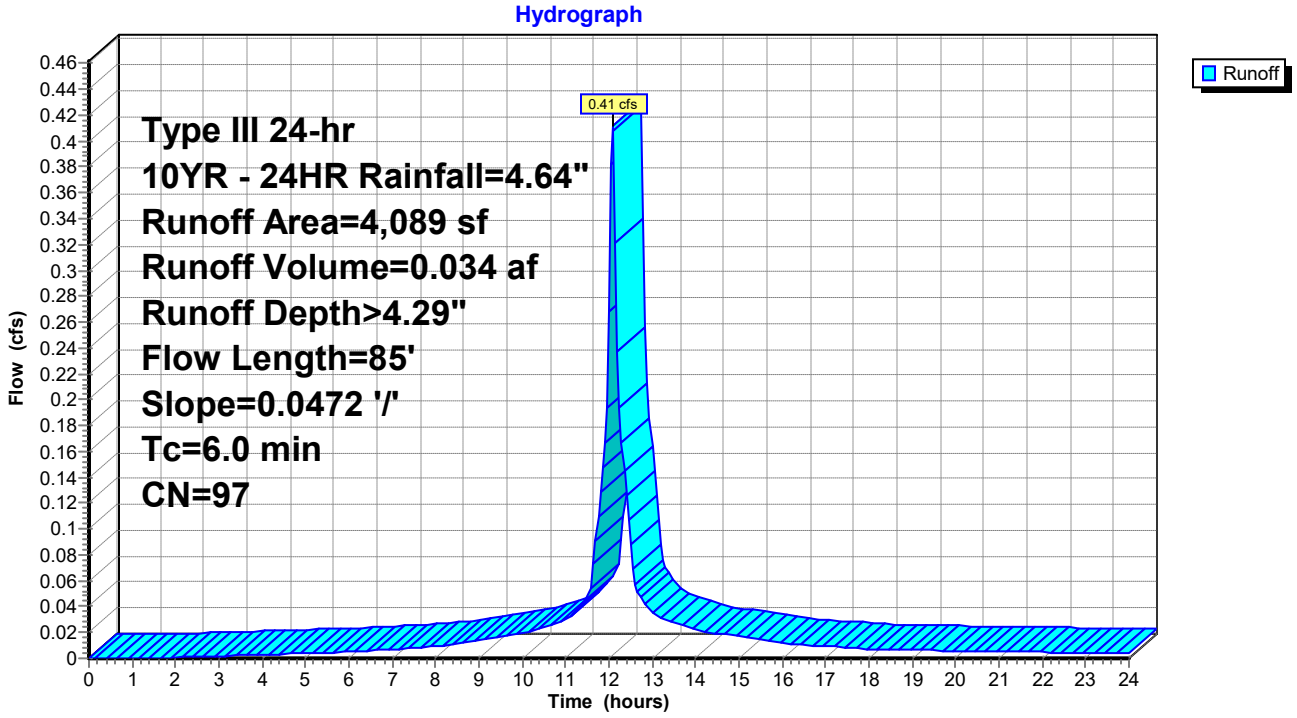
Runoff = 0.41 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
859	98	Roofs, HSG A
43	39	>75% Grass cover, Good, HSG A
3,187	98	Paved parking, HSG A
4,089	97	Weighted Average
43		1.05% Pervious Area
4,046		98.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	85	0.0472	1.84		**Sheet Flow, Segment 1** Smooth surfaces n= 0.011 P2= 3.08"
0.8	85	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 4S: Subcatchment 4



Summary for Subcatchment 5S: Subcatchment 5

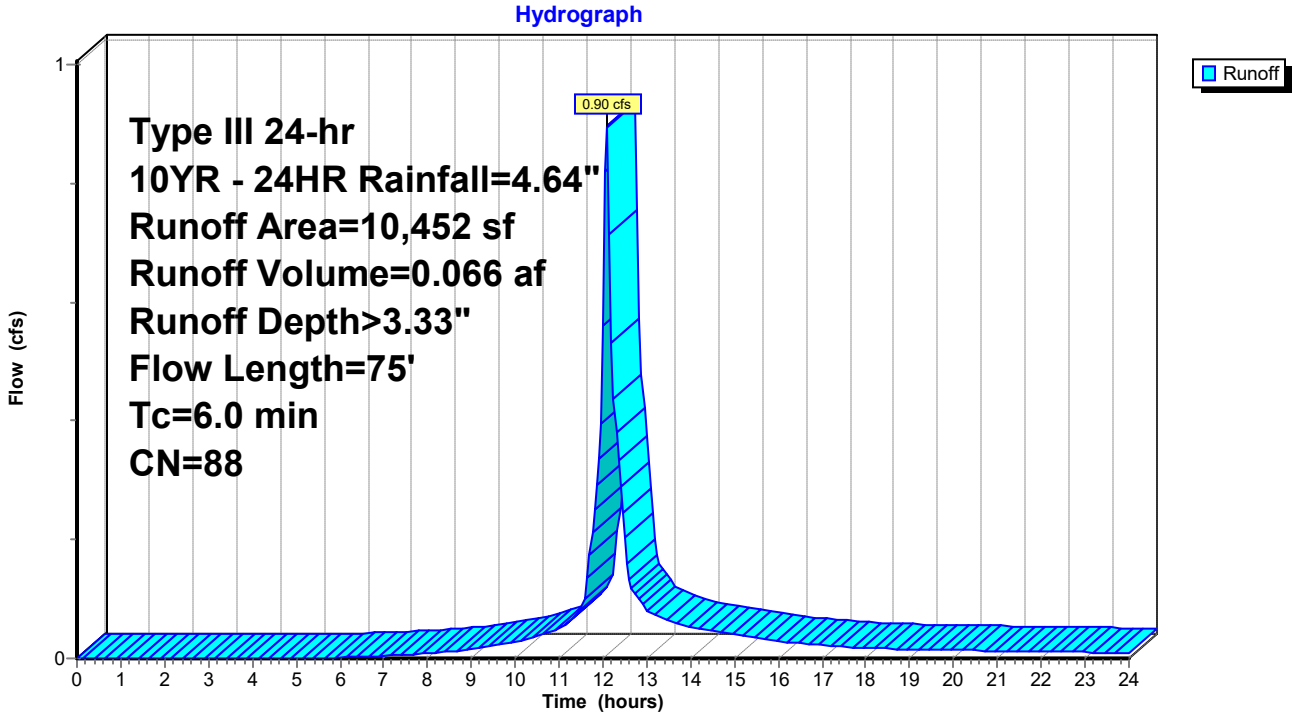
Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.066 af, Depth> 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
1,527	98	Roofs, HSG A
1,812	39	>75% Grass cover, Good, HSG A
7,113	98	Paved parking, HSG A
10,452	88	Weighted Average
1,812		17.34% Pervious Area
8,640		82.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	54	0.0553	0.22		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.08"
0.1	21	0.0237	3.13		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
4.2	75	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 5S: Subcatchment 5



Summary for Subcatchment 6S: Subcatchment 6

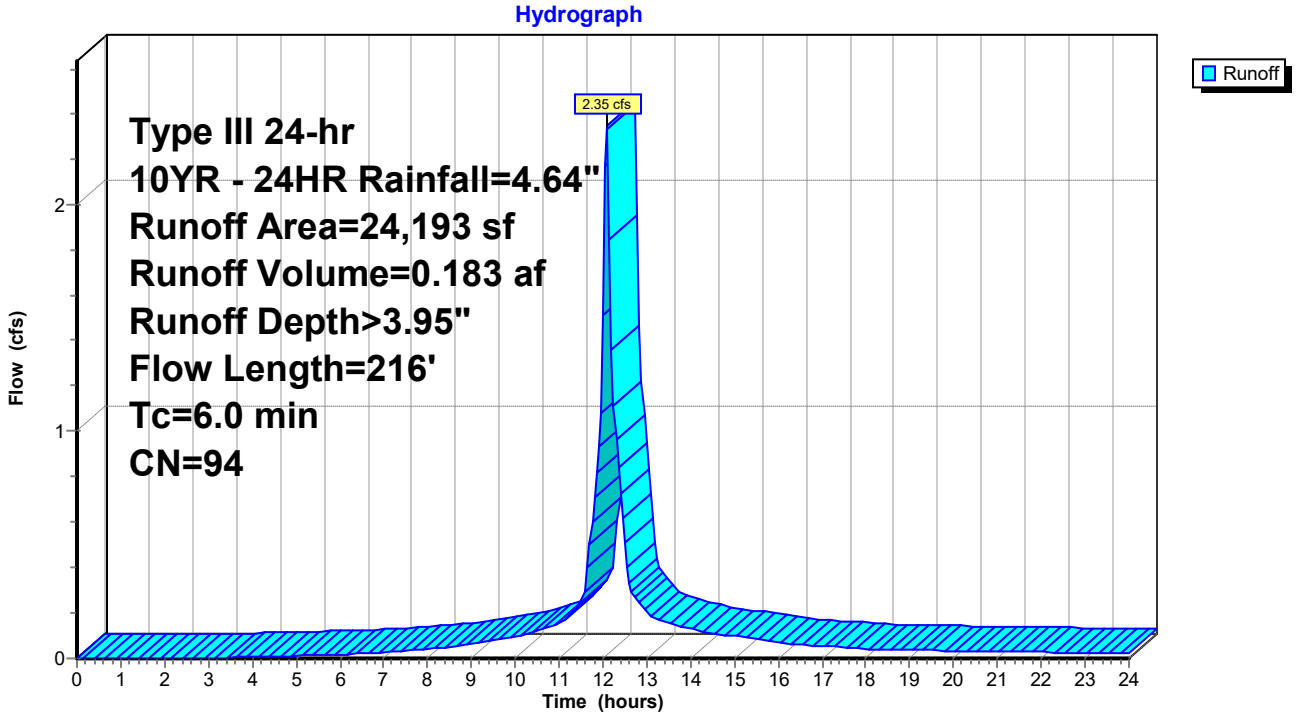
Runoff = 2.35 cfs @ 12.09 hrs, Volume= 0.183 af, Depth> 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
1,394	98	Roofs, HSG A
1,493	39	>75% Grass cover, Good, HSG A
21,306	98	Paved parking, HSG A
24,193	94	Weighted Average
1,493		6.17% Pervious Area
22,700		93.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0384	1.75		**Sheet Flow, Segment 1** Smooth surfaces n= 0.011 P2= 3.08"
0.6	116	0.0259	3.27		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
1.6	216	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 6S: Subcatchment 6



Summary for Subcatchment 7S: Subcatchment 7

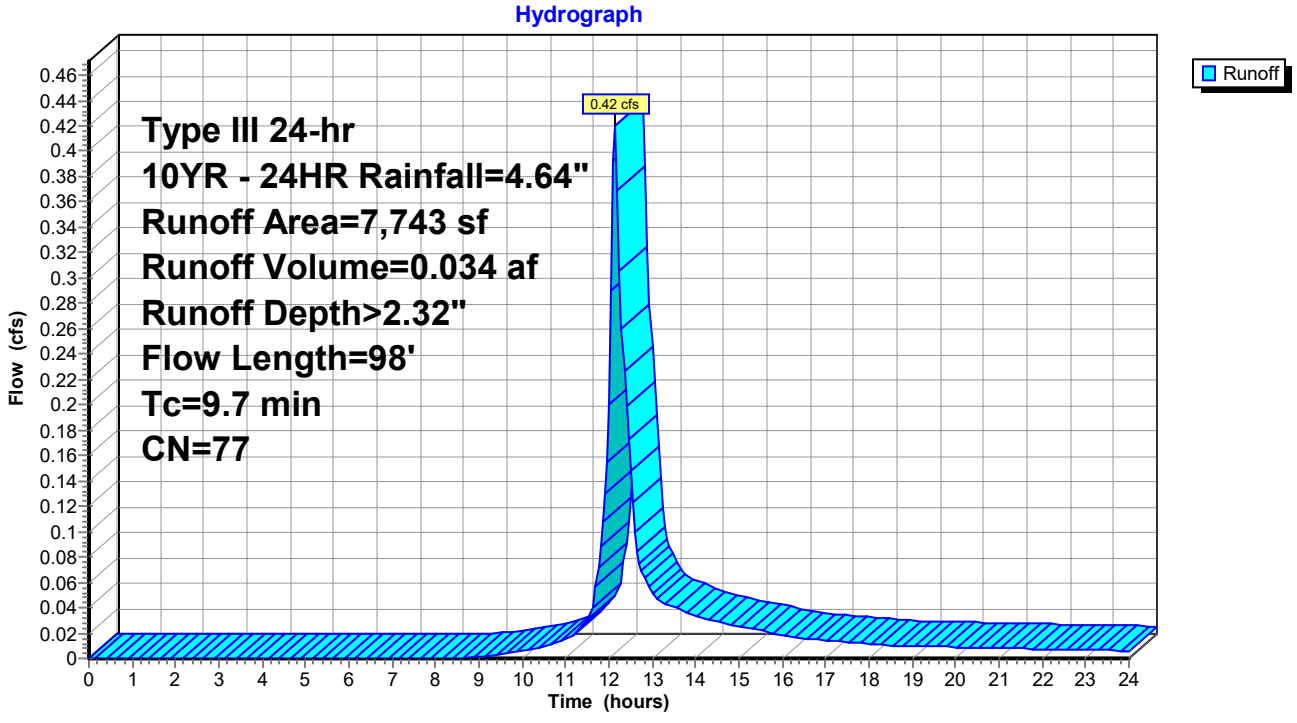
Runoff = 0.42 cfs @ 12.14 hrs, Volume= 0.034 af, Depth> 2.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,685	98	Roofs, HSG A
2,705	39	>75% Grass cover, Good, HSG A
2,353	98	Paved parking, HSG A
7,743	77	Weighted Average
2,705		34.93% Pervious Area
5,038		65.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	60	0.0083	0.11		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.08"
0.3	38	0.0132	2.33		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
9.7	98	Total			

Subcatchment 7S: Subcatchment 7



Summary for Subcatchment 8S: Subcatchment 8

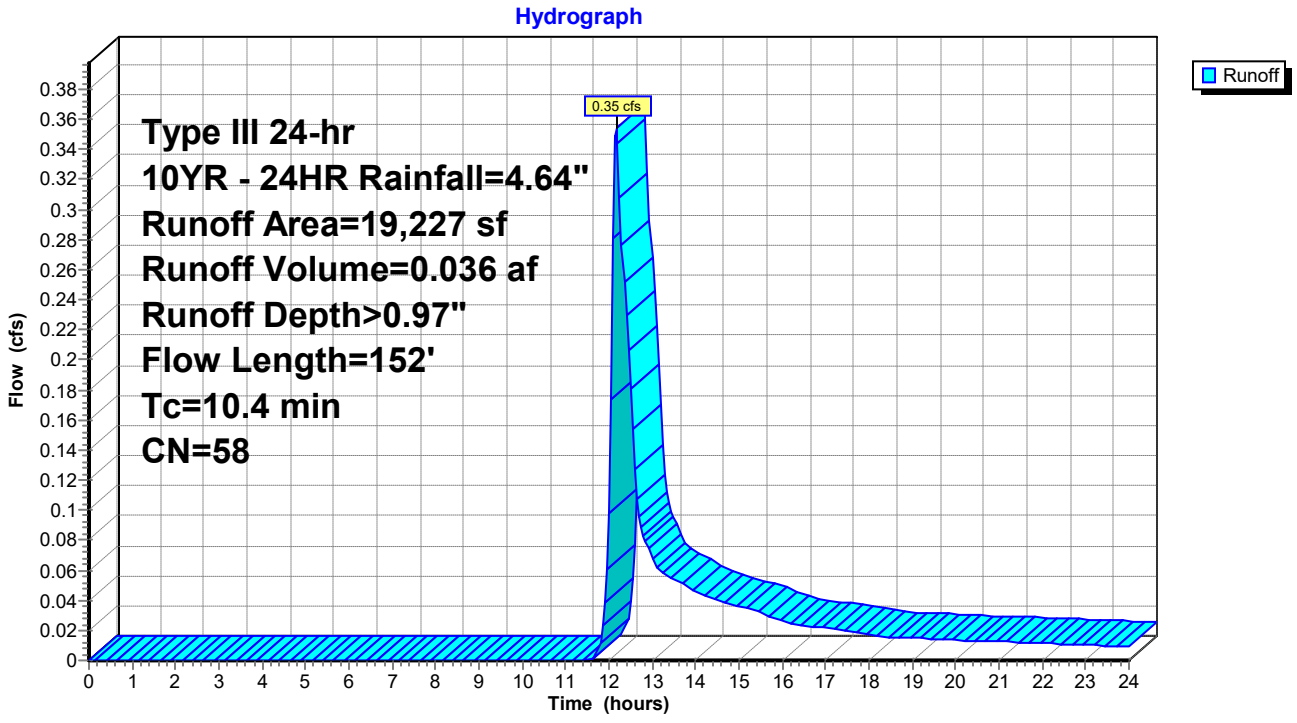
Runoff = 0.35 cfs @ 12.17 hrs, Volume= 0.036 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,600	98	Roofs, HSG A
12,952	39	>75% Grass cover, Good, HSG A
3,675	98	Paved parking, HSG A
19,227	58	Weighted Average
12,952		67.36% Pervious Area
6,275		32.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	87	0.0172	0.15		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.08"
0.9	65	0.0309	1.23		**Shallow Concentrated Flow, Segment 2** Short Grass Pasture Kv= 7.0 fps
10.4	152	Total			

Subcatchment 8S: Subcatchment 8



Summary for Subcatchment 9S: Subcatchment 9

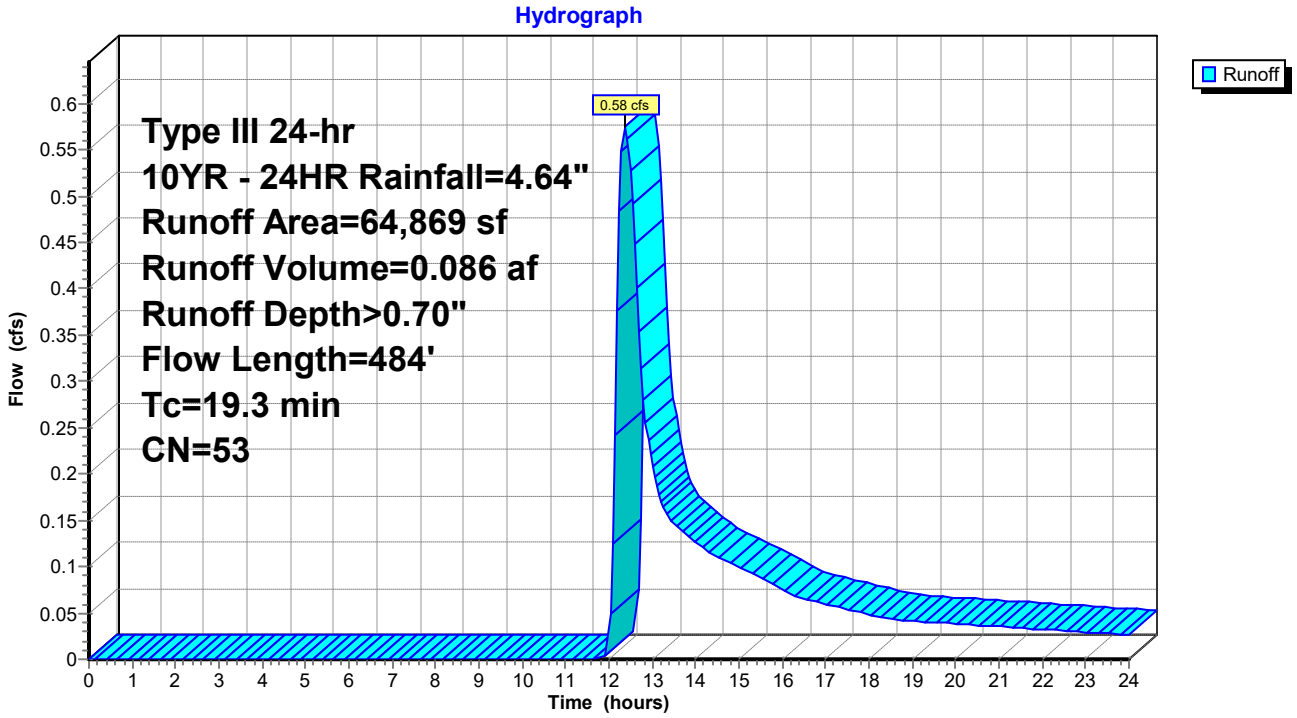
Runoff = 0.58 cfs @ 12.37 hrs, Volume= 0.086 af, Depth> 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
606	98	Roofs, HSG A
50,011	39	>75% Grass cover, Good, HSG A
14,252	98	Paved parking, HSG A
64,869	53	Weighted Average
50,011		77.10% Pervious Area
14,858		22.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0200	0.17		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.08"
6.5	195	0.0051	0.50		**Shallow Concentrated Flow, Segment 2** Short Grass Pasture Kv= 7.0 fps
1.6	88	0.0170	0.91		**Shallow Concentrated Flow, Segment 3** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0397	1.39		**Shallow Concentrated Flow, Segment 4** Short Grass Pasture Kv= 7.0 fps
19.3	484	Total			

Subcatchment 9S: Subcatchment 9



Summary for Subcatchment 10S: Subcatchment 10

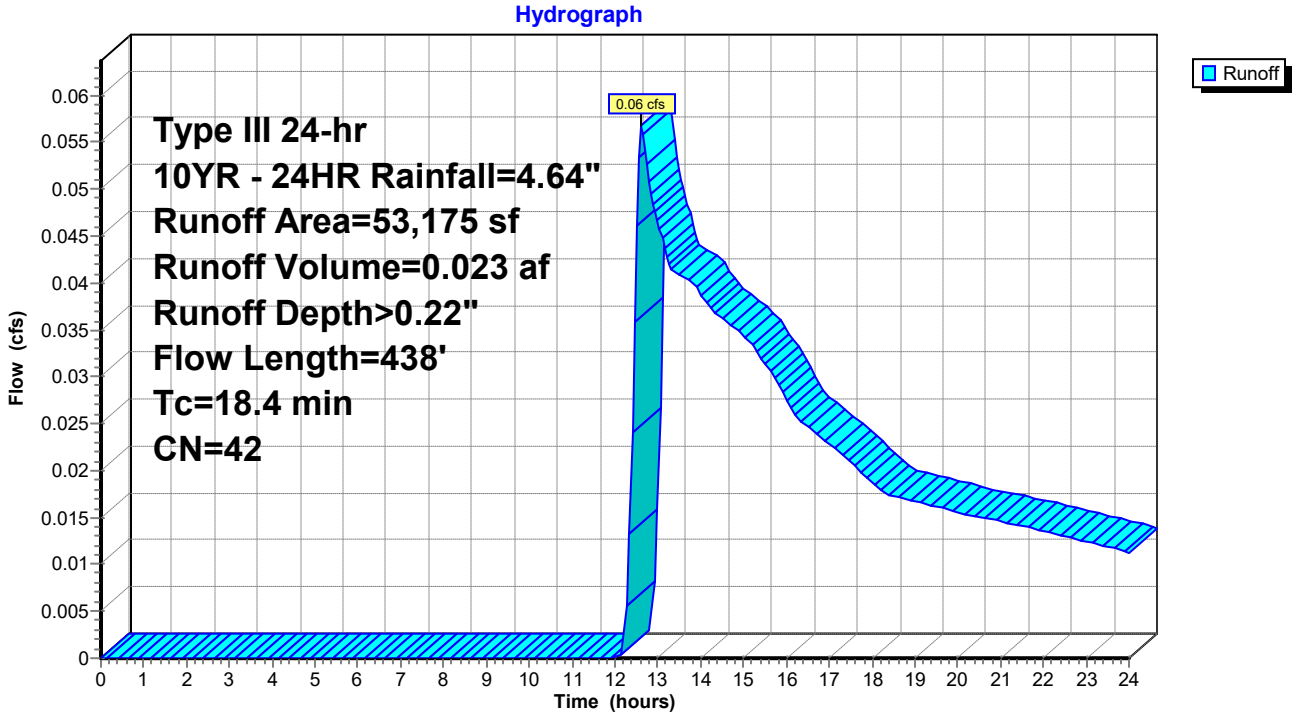
Runoff = 0.06 cfs @ 12.63 hrs, Volume= 0.023 af, Depth> 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
1,952	98	Roofs, HSG A
50,218	39	>75% Grass cover, Good, HSG A
1,005	98	Paved parking, HSG A
53,175	42	Weighted Average
50,218		94.44% Pervious Area
2,957		5.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	99	0.0151	0.15		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.08"
0.9	76	0.0394	1.39		**Shallow Concentrated Flow, Segment 2** Short Grass Pasture Kv= 7.0 fps
6.4	263	0.0095	0.68		**Shallow Concentrated Flow, Segment 3** Short Grass Pasture Kv= 7.0 fps
18.4	438	Total			

Subcatchment 10S: Subcatchment 10



Summary for Subcatchment 11S: Area Behind the Dove

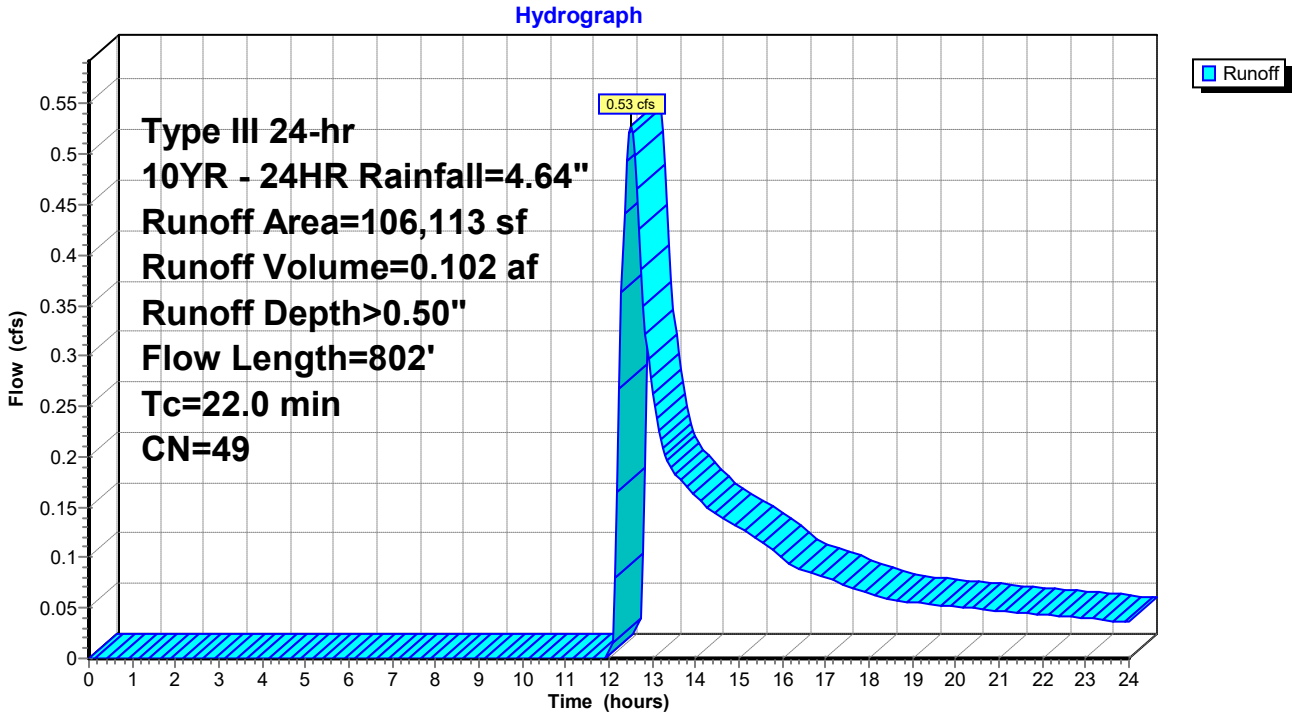
Runoff = 0.53 cfs @ 12.50 hrs, Volume= 0.102 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
6,514	98	Roofs, HSG A
4,856	98	Paved parking, HSG A
56,980	39	>75% Grass cover, Good, HSG A
8,705	30	Woods, Good, HSG A
199	61	>75% Grass cover, Good, HSG B
199	74	>75% Grass cover, Good, HSG C
25,818	55	Woods, Good, HSG B
2,842	70	Woods, Good, HSG C
106,113	49	Weighted Average
94,743		89.29% Pervious Area
11,370		10.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0850	0.14		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 3.08"
3.6	314	0.0830	1.44		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
6.1	388	0.0230	1.06		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
22.0	802	Total			

Subcatchment 11S: Area Behind the Dove



Summary for Subcatchment 16S: Subcatchment #16

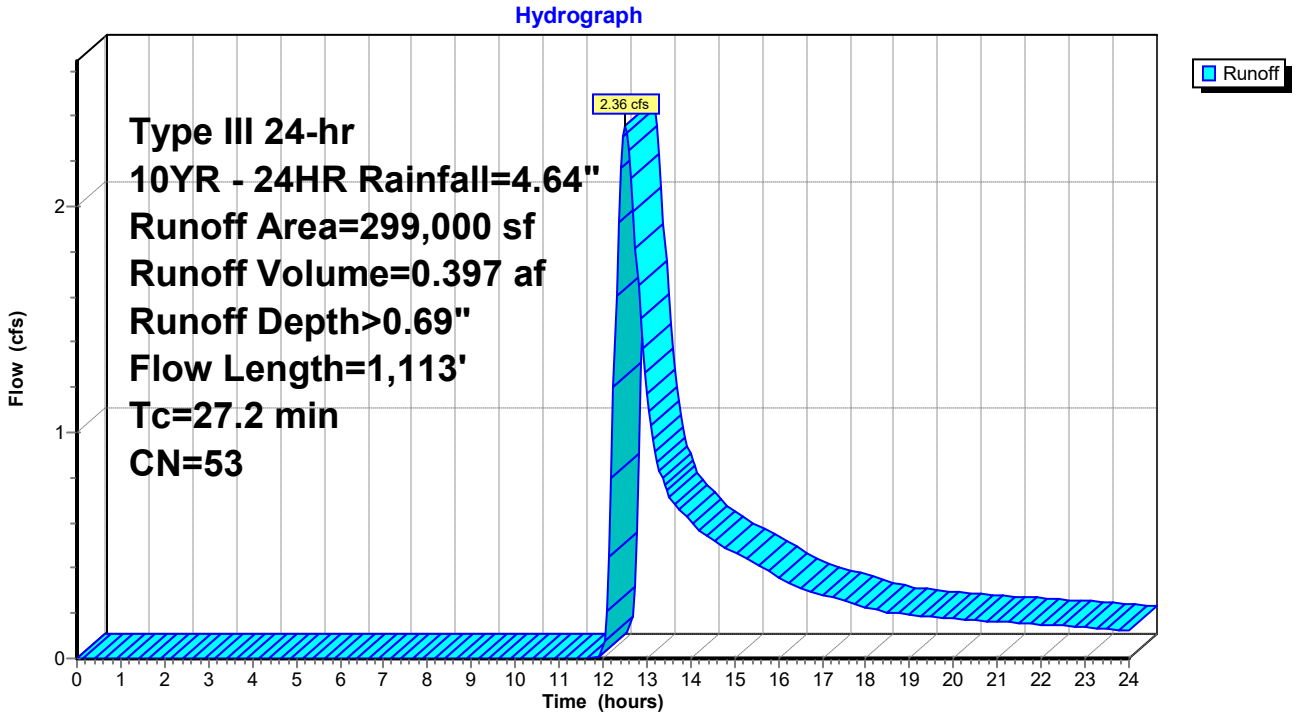
Runoff = 2.36 cfs @ 12.51 hrs, Volume= 0.397 af, Depth> 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
236	98	Roofs, HSG A
89,138	39	>75% Grass cover, Good, HSG A
5,510	98	Paved parking, HSG A
2,451	96	Gravel surface, HSG A
2,633	30	Woods, Good, HSG A
161,859	55	Woods, Good, HSG B
33,687	70	Woods, Good, HSG C
1,743	61	>75% Grass cover, Good, HSG B
1,743	74	>75% Grass cover, Good, HSG C
299,000	53	Weighted Average
293,254		98.08% Pervious Area
5,746		1.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1400	0.17		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
1.3	75	0.0398	1.00		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
2.4	250	0.1202	1.73		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
2.5	132	0.0302	0.87		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
4.9	129	0.0078	0.44		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
4.3	291	0.0515	1.13		**Shallow Concentrated Flow, Segment #6** Woodland Kv= 5.0 fps
1.7	136	0.0369	1.34		**Shallow Concentrated Flow, Segment #7** Short Grass Pasture Kv= 7.0 fps
27.2	1,113	Total			

Subcatchment 16S: Subcatchment #16



Summary for Subcatchment 17S: Subcatchment #17

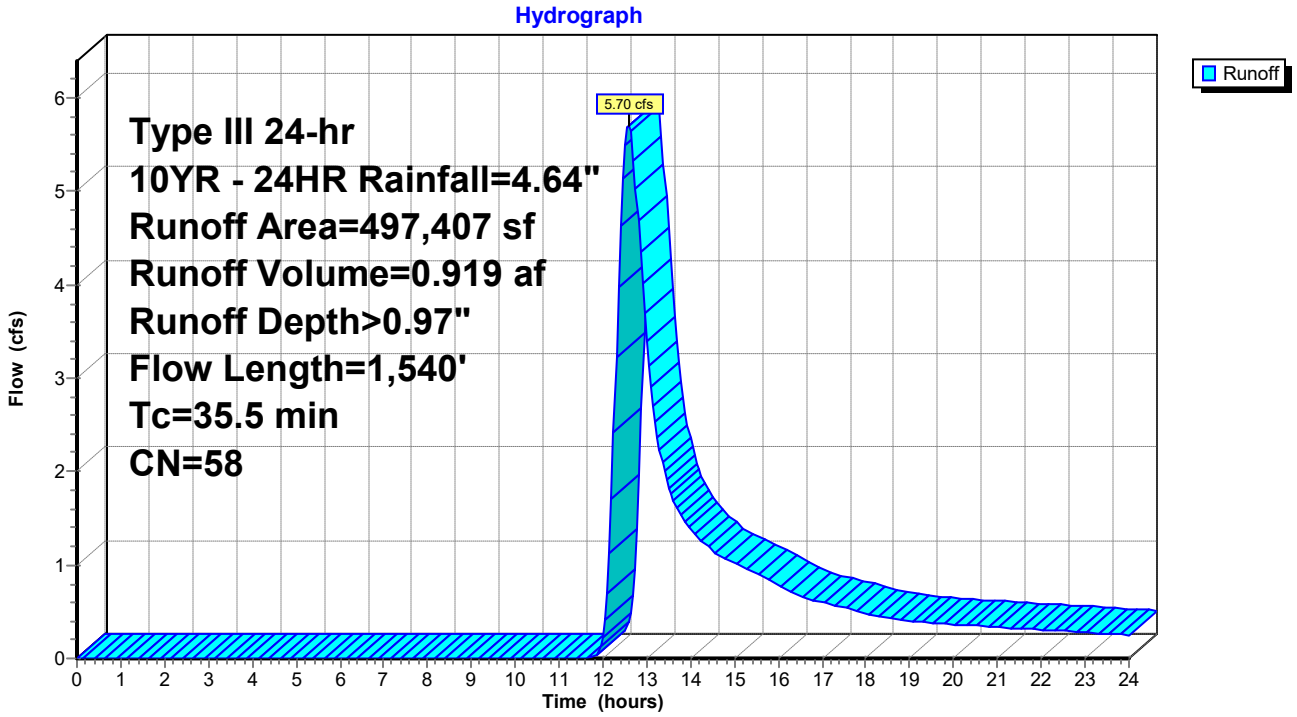
Runoff = 5.70 cfs @ 12.58 hrs, Volume= 0.919 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,893	30	Woods, Good, HSG A
383,302	55	Woods, Good, HSG B
102,568	70	Woods, Good, HSG C
747	39	>75% Grass cover, Good, HSG A
889	96	Gravel surface, HSG A
1,054	96	Gravel surface, HSG B
1,054	96	Gravel surface, HSG C
2,450	61	>75% Grass cover, Good, HSG B
2,450	74	>75% Grass cover, Good, HSG C
497,407	58	Weighted Average
497,407		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0500	0.11		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
8.0	729	0.0919	1.52		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
1.4	181	0.1752	2.09		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
9.1	390	0.0205	0.72		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
1.8	140	0.0648	1.27		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
35.5	1,540	Total			

Subcatchment 17S: Subcatchment #17



Summary for Subcatchment 18S: Subcatchment #18

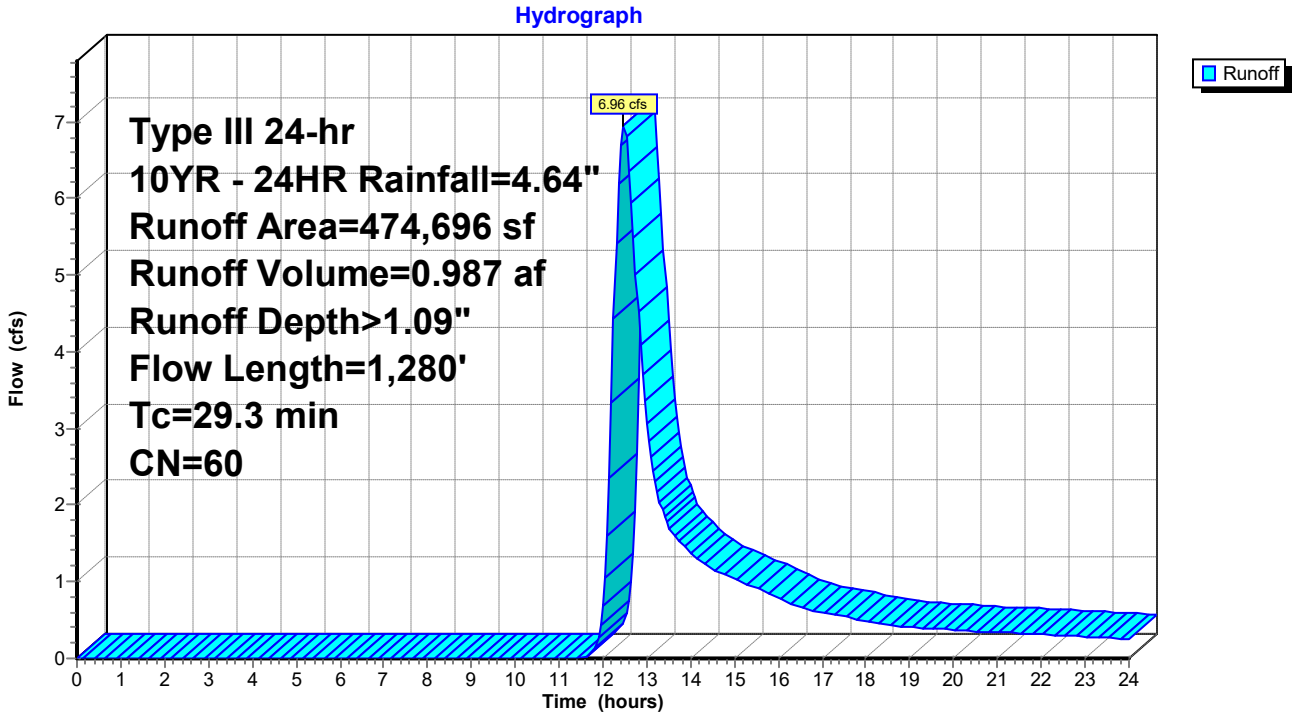
Runoff = 6.96 cfs @ 12.47 hrs, Volume= 0.987 af, Depth> 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
927	96	Gravel surface, HSG A
26,038	30	Woods, Good, HSG A
245,172	55	Woods, Good, HSG B
201,754	70	Woods, Good, HSG C
105	96	Gravel surface, HSG D
700	77	Woods, Good, HSG D
474,696	60	Weighted Average
474,696		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0500	0.11		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
4.5	544	0.1637	2.02		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.6	71	0.1840	2.14		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
6.7	382	0.0366	0.96		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
0.8	91	0.1422	1.89		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
1.5	92	0.0436	1.04		**Shallow Concentrated Flow, Segment #6** Woodland Kv= 5.0 fps
29.3	1,280	Total			

Subcatchment 18S: Subcatchment #18



Summary for Subcatchment 19S: Subcatchment #19

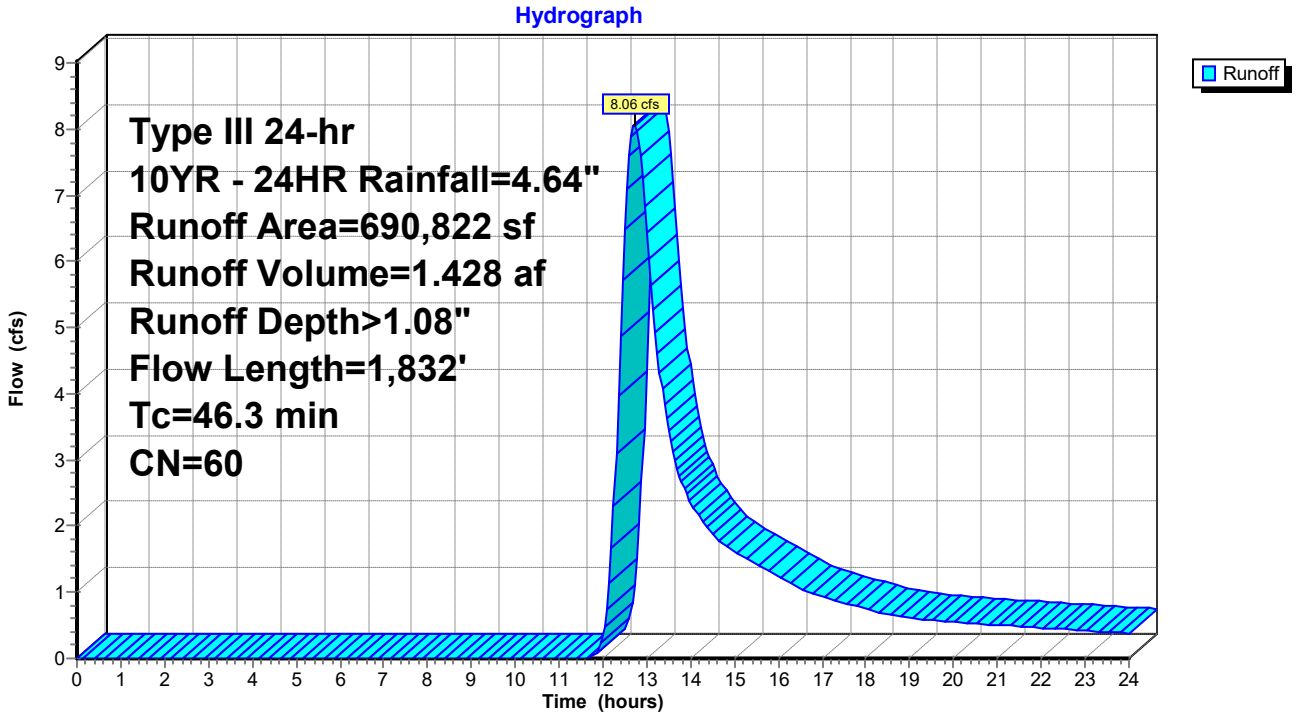
Runoff = 8.06 cfs @ 12.72 hrs, Volume= 1.428 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
36,457	30	Woods, Good, HSG A
354,130	55	Woods, Good, HSG B
300,235	70	Woods, Good, HSG C
690,822	60	Weighted Average
690,822		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	100	0.0400	0.10		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
6.0	653	0.1333	1.83		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
1.5	167	0.1346	1.83		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
7.7	327	0.0199	0.71		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
2.4	161	0.0496	1.11		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
0.5	59	0.1530	1.96		**Shallow Concentrated Flow, Segment #6** Woodland Kv= 5.0 fps
6.3	193	0.0104	0.51		**Shallow Concentrated Flow, Segment #7** Woodland Kv= 5.0 fps
5.3	172	0.0116	0.54		**Shallow Concentrated Flow, Segment #8** Woodland Kv= 5.0 fps
46.3	1,832	Total			

Subcatchment 19S: Subcatchment #19



Summary for Reach 2R: Reach 2

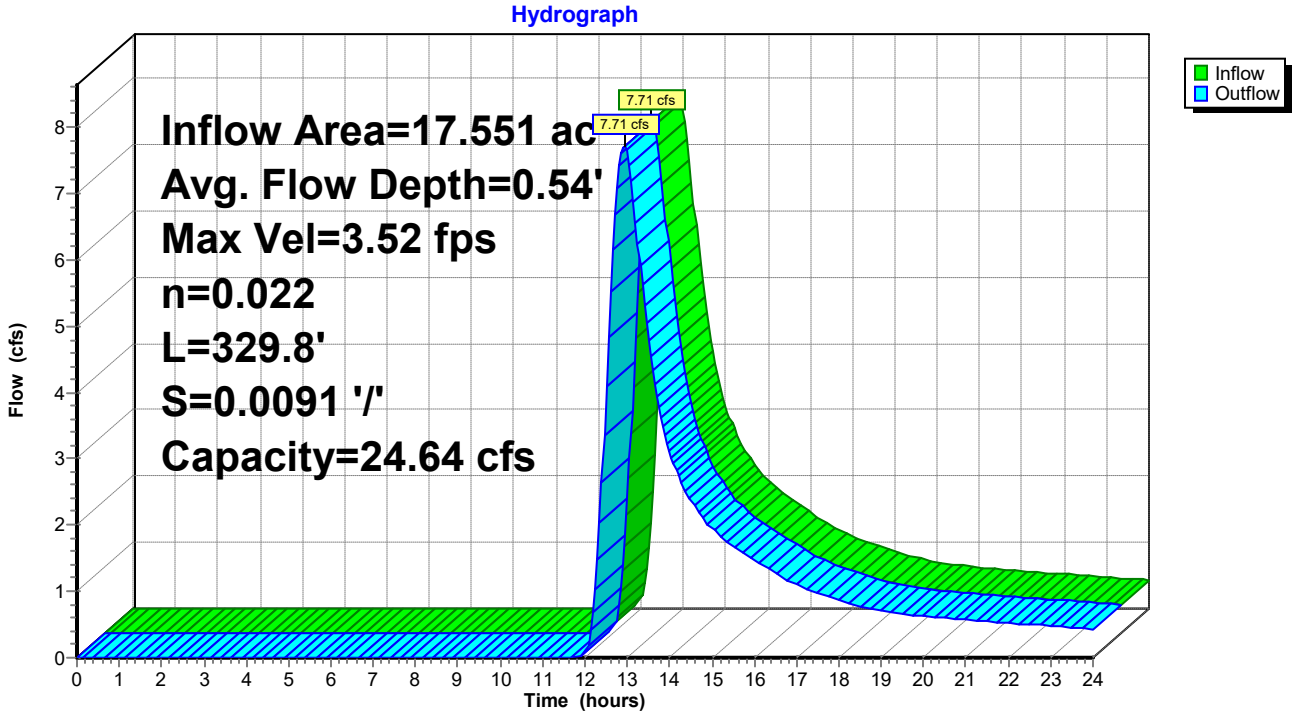
Inflow Area = 17.551 ac, 0.65% Impervious, Inflow Depth > 1.08" for 10YR - 24HR event
Inflow = 7.71 cfs @ 12.91 hrs, Volume= 1.573 af
Outflow = 7.71 cfs @ 12.92 hrs, Volume= 1.571 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 3.52 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.86 fps, Avg. Travel Time= 3.0 min

Peak Storage= 721 cf @ 12.92 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 24.64 cfs

3.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 7.00'
Length= 329.8' Slope= 0.0091 '/'
Inlet Invert= 202.00', Outlet Invert= 199.00'

Reach 2R: Reach 2



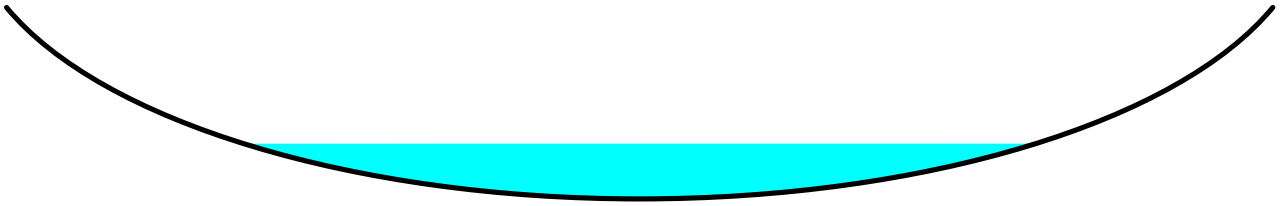
Summary for Reach 11R: Flow Through 8

Inflow Area = 2.436 ac, 10.71% Impervious, Inflow Depth > 0.50" for 10YR - 24HR event
Inflow = 0.53 cfs @ 12.50 hrs, Volume= 0.102 af
Outflow = 0.53 cfs @ 12.51 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.02 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 2.2 min

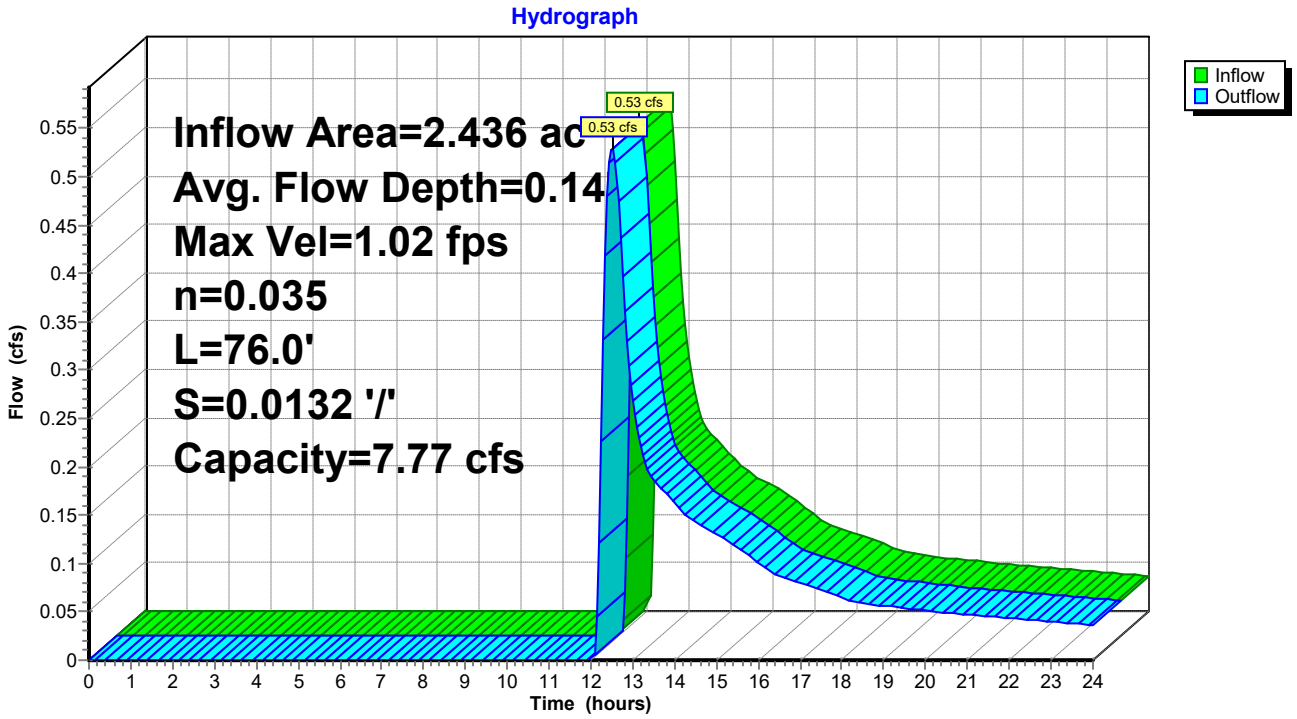
Peak Storage= 39 cf @ 12.51 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.50' Flow Area= 3.3 sf, Capacity= 7.77 cfs

10.00' x 0.50' deep Parabolic Channel, n= 0.035
Length= 76.0' Slope= 0.0132 '/'
Inlet Invert= 199.00', Outlet Invert= 198.00'



‡

Reach 11R: Flow Through 8



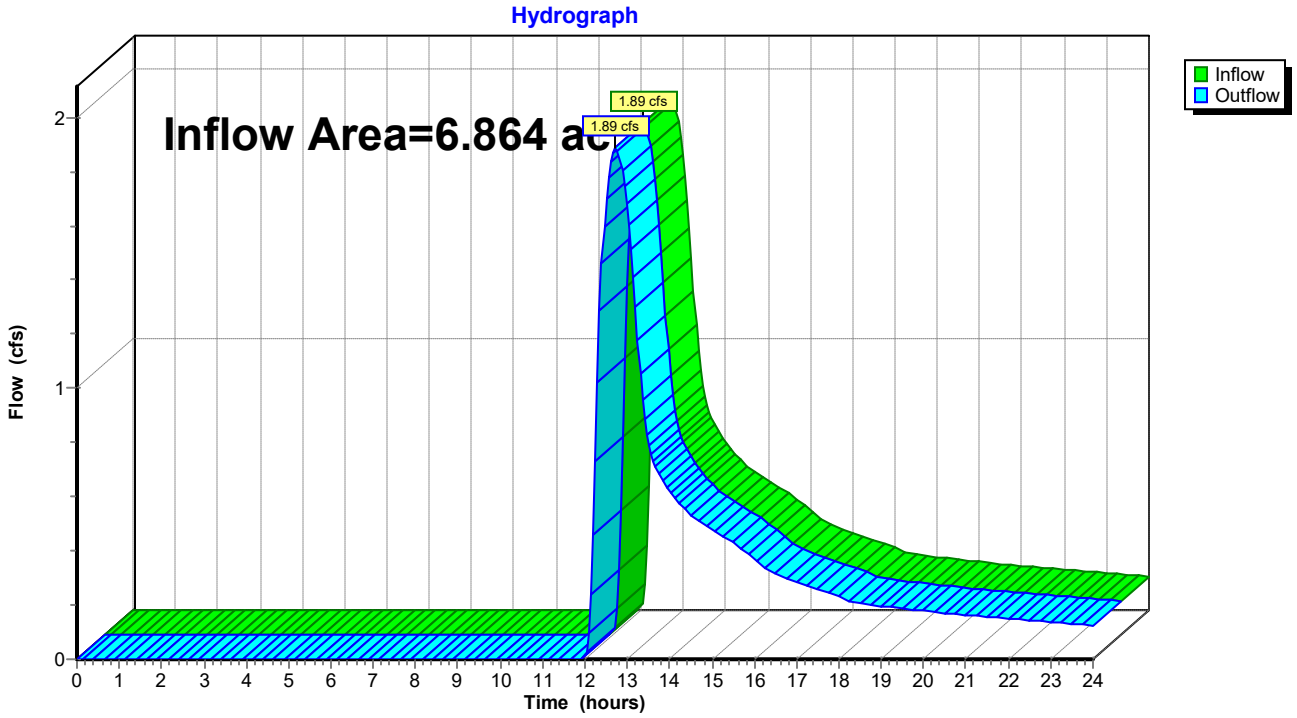
Summary for Reach 100R: Reach 100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.864 ac, 1.92% Impervious, Inflow Depth > 0.69" for 10YR - 24HR event
Inflow = 1.89 cfs @ 12.73 hrs, Volume= 0.396 af
Outflow = 1.89 cfs @ 12.73 hrs, Volume= 0.396 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 100R: Reach 100



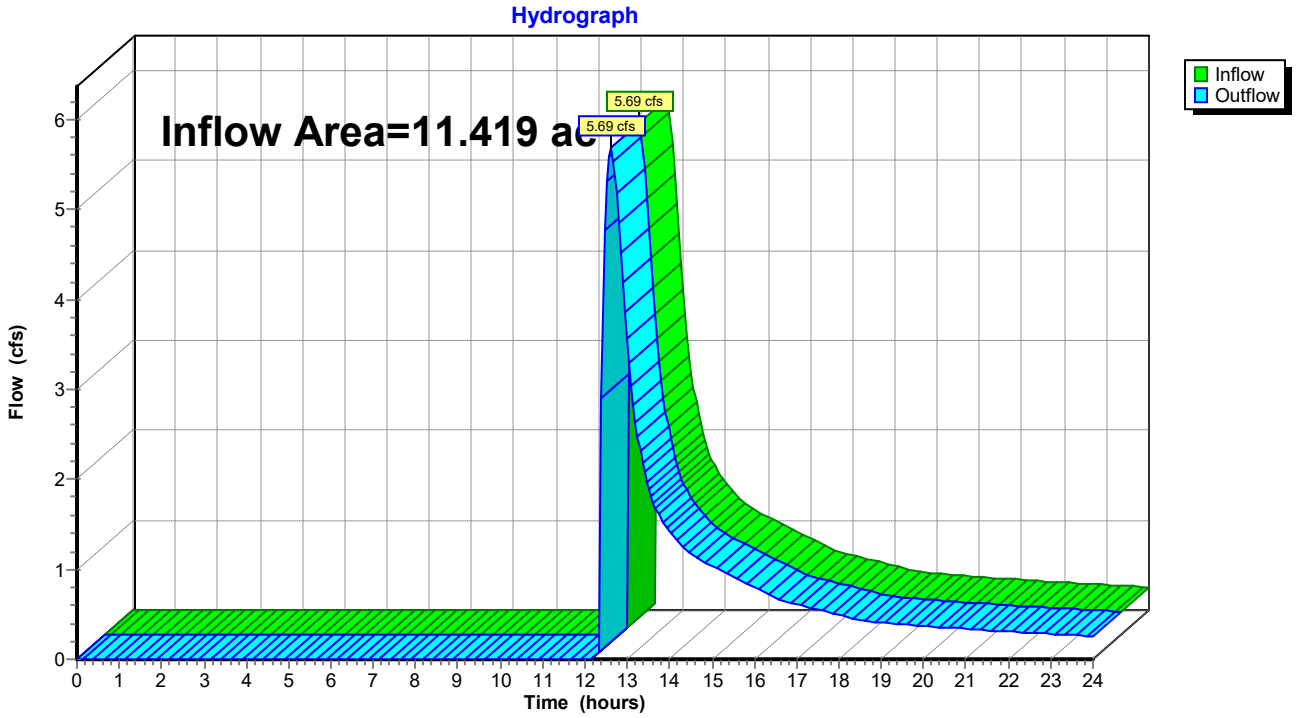
Summary for Reach 200R: Reach 200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.419 ac, 0.00% Impervious, Inflow Depth > 0.91" for 10YR - 24HR event
Inflow = 5.69 cfs @ 12.61 hrs, Volume= 0.868 af
Outflow = 5.69 cfs @ 12.61 hrs, Volume= 0.868 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 200R: Reach 200



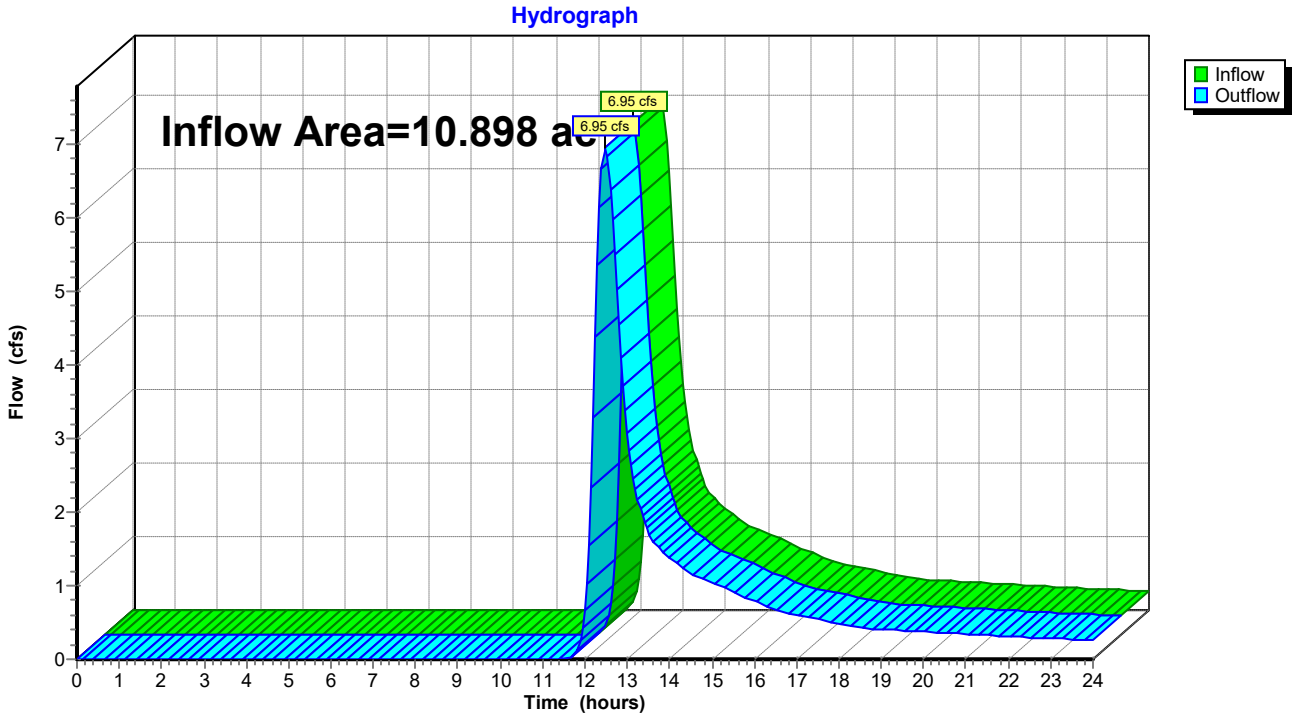
Summary for Reach 300R: Reach 300

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.898 ac, 0.00% Impervious, Inflow Depth > 1.09" for 10YR - 24HR event
Inflow = 6.95 cfs @ 12.48 hrs, Volume= 0.987 af
Outflow = 6.95 cfs @ 12.48 hrs, Volume= 0.987 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 300R: Reach 300



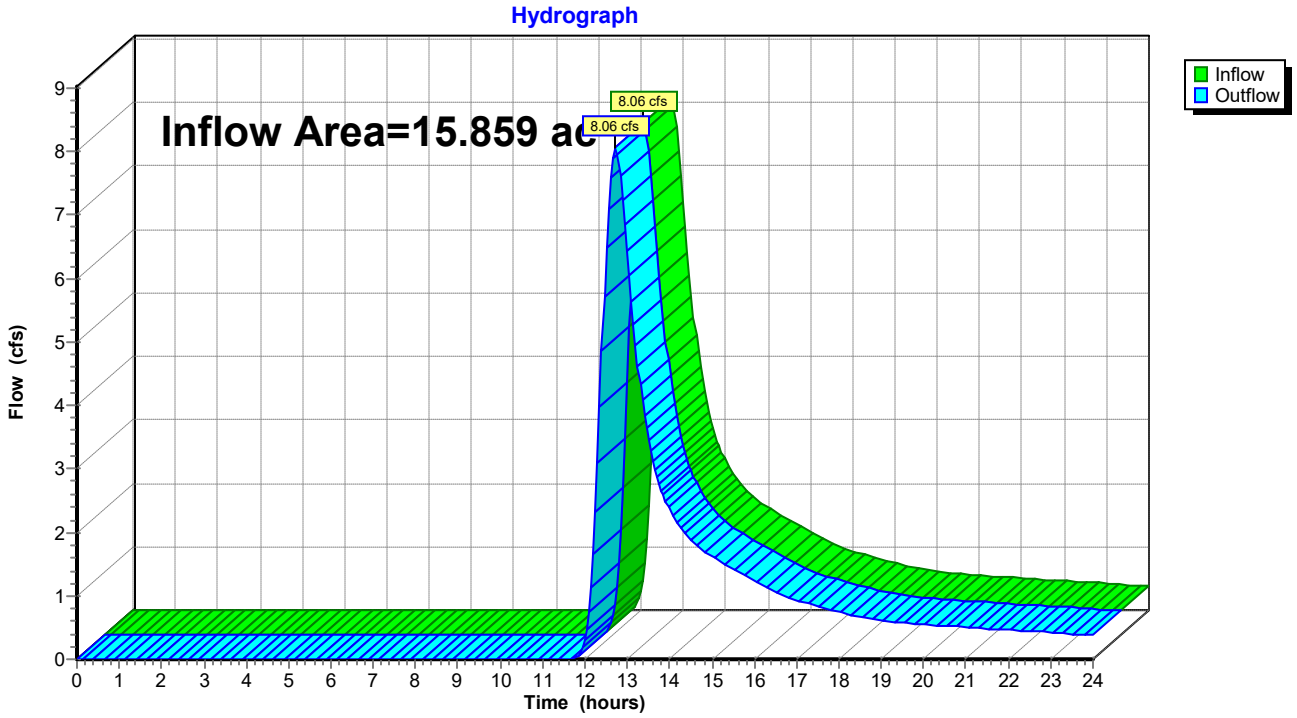
Summary for Reach 400R: Reach 400

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 15.859 ac, 0.00% Impervious, Inflow Depth > 1.08" for 10YR - 24HR event
Inflow = 8.06 cfs @ 12.72 hrs, Volume= 1.428 af
Outflow = 8.06 cfs @ 12.72 hrs, Volume= 1.428 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 400R: Reach 400



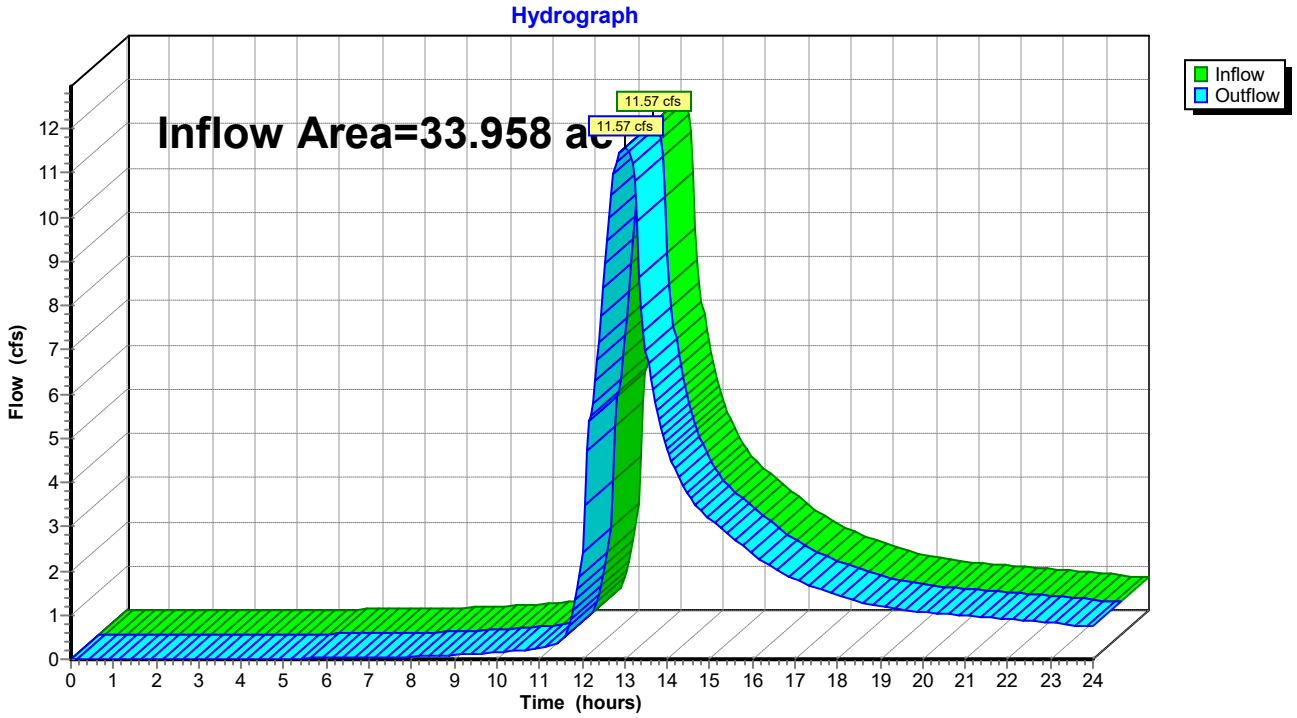
Summary for Reach 800R: Svenson Pond

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 33.958 ac, 5.52% Impervious, Inflow Depth > 0.98" for 10YR - 24HR event
Inflow = 11.57 cfs @ 13.01 hrs, Volume= 2.771 af
Outflow = 11.57 cfs @ 13.01 hrs, Volume= 2.771 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 800R: Svenson Pond



Summary for Pond 1P: Pond 1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=46)

Inflow Area = 6.933 ac, 0.00% Impervious, Inflow Depth > 1.03" for 10YR - 24HR event
Inflow = 3.91 cfs @ 12.53 hrs, Volume= 0.592 af
Outflow = 3.26 cfs @ 12.73 hrs, Volume= 0.592 af, Atten= 17%, Lag= 12.1 min
Primary = 2.98 cfs @ 13.20 hrs, Volume= 0.581 af
Secondary = 0.65 cfs @ 12.73 hrs, Volume= 0.011 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 204.73' @ 12.73 hrs Surf.Area= 4,874 sf Storage= 1,558 cf
Flood Elev= 205.00' Surf.Area= 8,255 sf Storage= 3,340 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.2 min (905.9 - 903.7)

Volume	Invert	Avail.Storage	Storage Description
#1	201.13'	3,340 cf	**Open Storage (Irregular)** Listed below (Recalc)

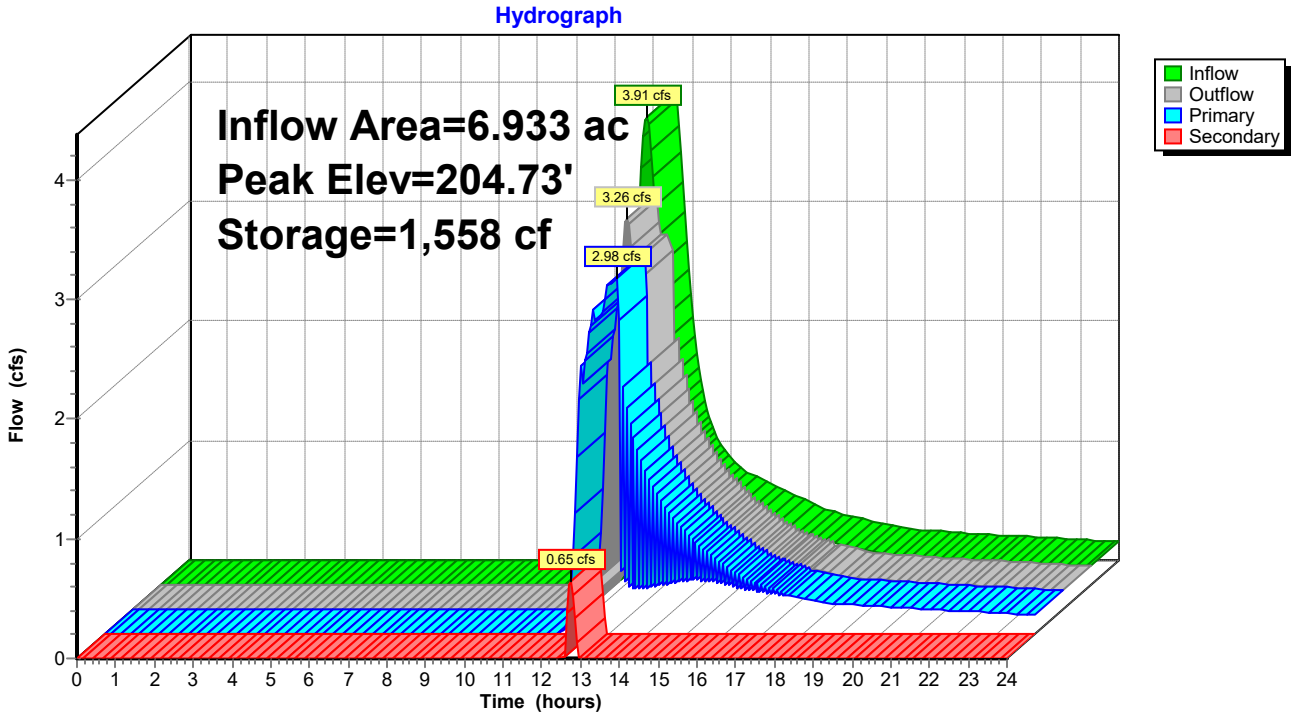
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
201.13	5	9.6	0	0	5
202.00	5	9.6	4	4	13
203.00	6	10.7	5	10	24
204.00	202	93.0	81	91	705
205.00	8,255	814.0	3,249	3,340	52,746

Device	Routing	Invert	Outlet Devices
#1	Primary	201.13'	**12.0" Round 12" CMP** L= 34.7' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 201.13' / 198.83' S= 0.0663 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Secondary	204.67'	**20.0' long x 10.0' breadth Edge of Parking Lot** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.20 cfs @ 13.20 hrs HW=204.28' TW=203.56' (Dynamic Tailwater)
↑—**1=12" CMP** (Outlet Controls 2.20 cfs @ 2.80 fps)

Secondary OutFlow Max=0.64 cfs @ 12.73 hrs HW=204.72' TW=203.70' (Dynamic Tailwater)
↑—**2=Edge of Parking Lot** (Weir Controls 0.64 cfs @ 0.58 fps)

Pond 1P: Pond 1



Summary for Pond 2P: Existing CB#8

This Basin has an outlet culvert which is half in the basin, below the rim, and is mostly exposed above the rim. This structure also has incoming flow below the invert out. This model best represents the existing conditions.

---

[61] Hint: Exceeded Reach 2R outlet invert by 0.34' @ 13.00 hrs
[80] Warning: Exceeded Pond 7P by 0.10' @ 4.35 hrs (1.36 cfs 0.034 af)

Inflow Area =	29.592 ac,	3.81% Impervious,	Inflow Depth >	1.03" for 10YR - 24HR event
Inflow =	11.26 cfs @	12.85 hrs,	Volume=	2.549 af
Outflow =	11.05 cfs @	12.98 hrs,	Volume=	2.548 af, Atten= 2%, Lag= 8.0 min
Primary =	11.05 cfs @	12.98 hrs,	Volume=	2.548 af
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 199.34' @ 12.99 hrs Surf.Area= 1,451 sf Storage= 501 cf
Flood Elev= 200.07' Surf.Area= 5,143 sf Storage= 2,904 cf

Plug-Flow detention time= 0.4 min calculated for 2.543 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (903.8 - 903.5)

Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	38 cf	**4.00'D x 3.00'H Basin**
#2	198.00'	7,638 cf	**Open Water Storage (Irregular)** Listed below (Recalc)
		7,675 cf	Total Available Storage

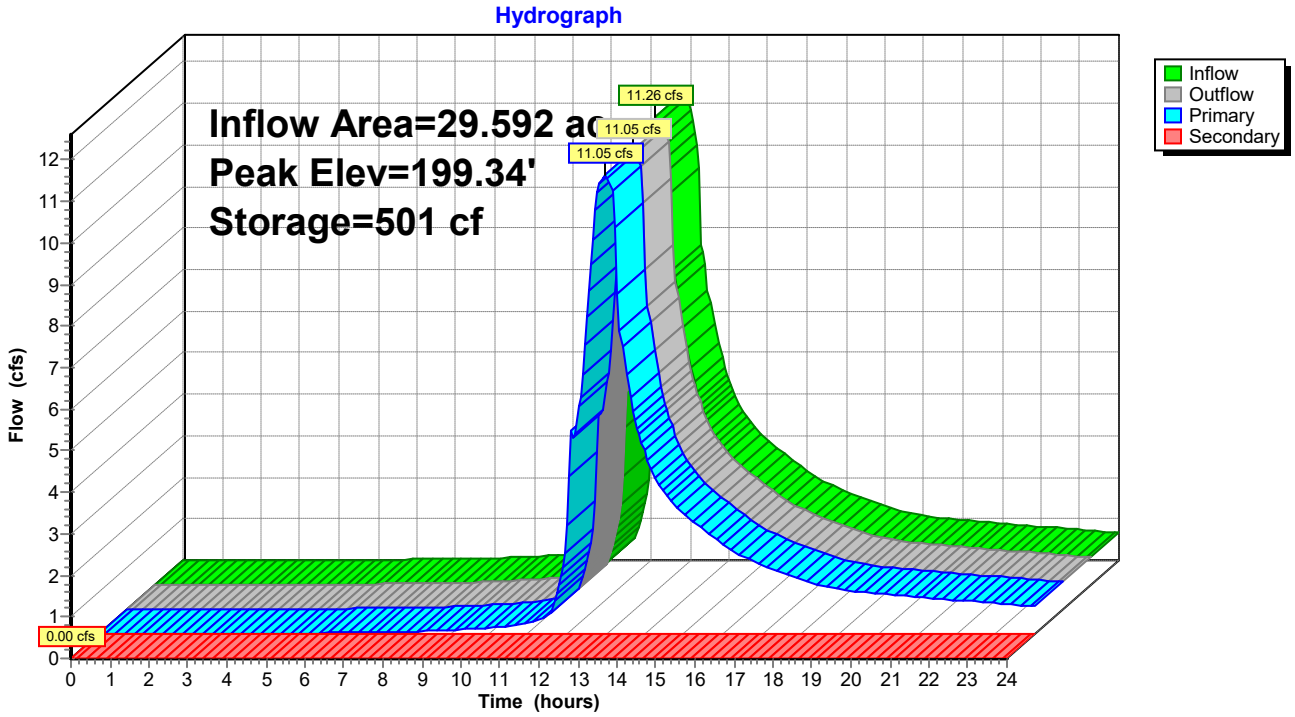
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
198.00	8	15.0	0	0	8
199.00	425	170.0	164	164	2,292
200.00	5,130	630.0	2,344	2,508	31,579
201.00	5,130	630.0	5,130	7,638	32,209

Device	Routing	Invert	Outlet Devices
#1	Primary	196.62'	**24.0" Round 24" CMP** L= 67.8' Ke= 0.500 Inlet / Outlet Invert= 196.62' / 196.28' S= 0.0050 '/' Cc= 0.900 n= 0.025, Flow Area= 3.14 sf
#2	Secondary	200.07'	**30.0' long x 10.0' breadth Flow Over Ex. Driveway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=11.04 cfs @ 12.98 hrs HW=199.34' TW=198.45' (Dynamic Tailwater)
↑—**1=24" CMP** (Outlet Controls 11.04 cfs @ 3.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=195.00' TW=196.55' (Dynamic Tailwater)
↑—**2=Flow Over Ex. Driveway** (Controls 0.00 cfs)

Pond 2P: Existing CB#8



Summary for Pond 4P: Existing CB#4

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 7.027 ac, 1.32% Impervious, Inflow Depth > 1.07" for 10YR - 24HR event
Inflow = 3.31 cfs @ 12.73 hrs, Volume= 0.626 af
Outflow = 3.32 cfs @ 12.74 hrs, Volume= 0.626 af, Atten= 0%, Lag= 0.5 min
Primary = 2.99 cfs @ 13.20 hrs, Volume= 0.621 af
Secondary = 0.33 cfs @ 12.74 hrs, Volume= 0.007 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 203.70' @ 12.74 hrs Surf.Area= 25 sf Storage= 65 cf
Flood Elev= 205.00' Surf.Area= 25 sf Storage= 85 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.2 min (898.1 - 897.9)

Volume	Invert	Avail.Storage	Storage Description
#1	198.65'	80 cf	**4.00'D x 6.39'H Basin**
#2	203.54'	6 cf	**Open Storage (Irregular)** Listed below (Recalc)
		86 cf	Total Available Storage

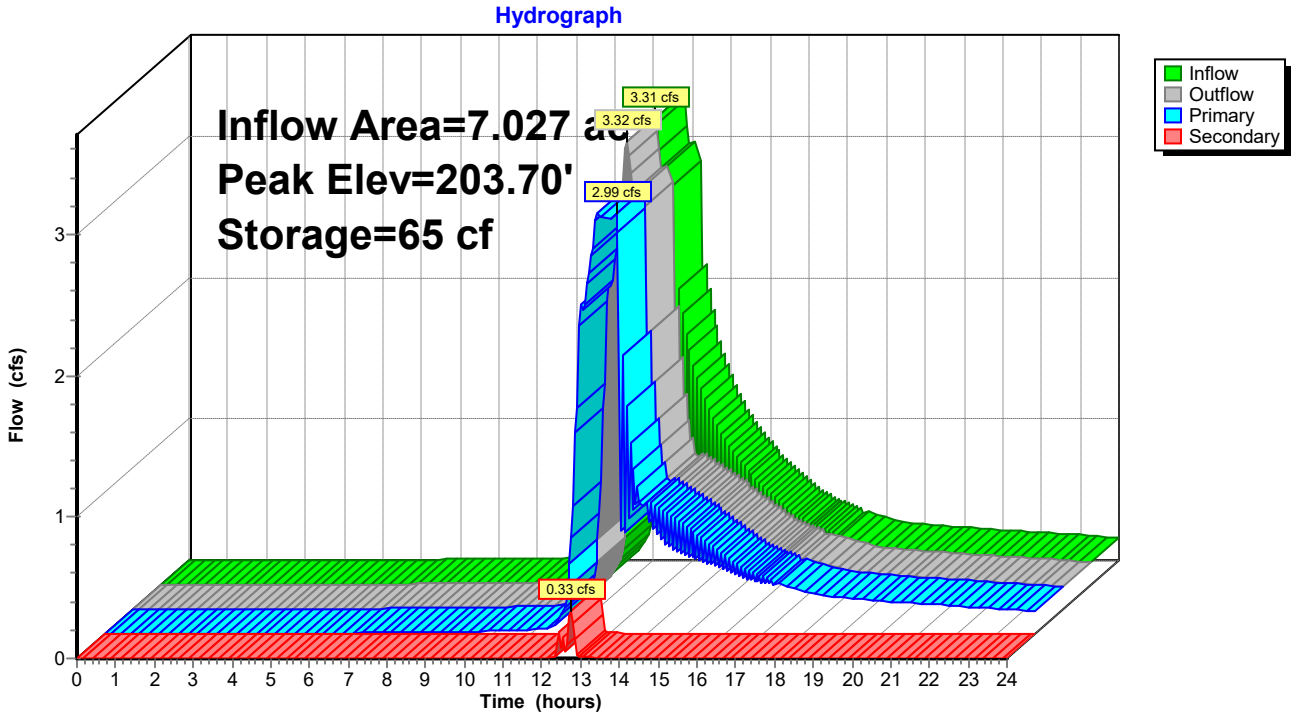
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.54	12	15.0	0	0	12
204.00	12	15.0	6	6	19

Device	Routing	Invert	Outlet Devices
#1	Primary	198.65'	**12.0" Round 12" CMP** L= 56.4' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 198.65' / 197.33' S= 0.0234 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Secondary	203.54'	**2.0' long x 2.0' breadth Rim Overflow** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=2.94 cfs @ 13.20 hrs HW=203.56' TW=201.81' (Dynamic Tailwater)
1=12" CMP (Outlet Controls 2.94 cfs @ 3.74 fps)

Secondary OutFlow Max=0.33 cfs @ 12.74 hrs HW=203.70' TW=201.90' (Dynamic Tailwater)
2=Rim Overflow (Weir Controls 0.33 cfs @ 1.02 fps)

Pond 4P: Existing CB#4



Summary for Pond 5P: Existing CB #5

[58] Hint: Peaked 0.48' above defined flood level
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[80] Warning: Exceeded Pond 4P by 1.49' @ 12.05 hrs (2.71 cfs 0.018 af)

Inflow Area =	7.267 ac,	4.01% Impervious,	Inflow Depth >	1.15"	for 10YR - 24HR event
Inflow =	3.42 cfs @	12.74 hrs,	Volume=	0.694 af	
Outflow =	3.44 cfs @	12.72 hrs,	Volume=	0.694 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.03 cfs @	13.23 hrs,	Volume=	0.572 af	
Secondary =	1.74 cfs @	12.72 hrs,	Volume=	0.122 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 201.91' @ 12.72 hrs Surf.Area= 97 sf Storage= 74 cf
Flood Elev= 201.43' Surf.Area= 35 sf Storage= 50 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (888.6 - 888.3)

Volume	Invert	Avail.Storage	Storage Description
#1	197.43'	50 cf	**4.00'D x 4.00'H Basin**
#2	201.43'	32 cf	**Open Storage (Irregular)** Listed below (Recalc)
		82 cf	Total Available Storage

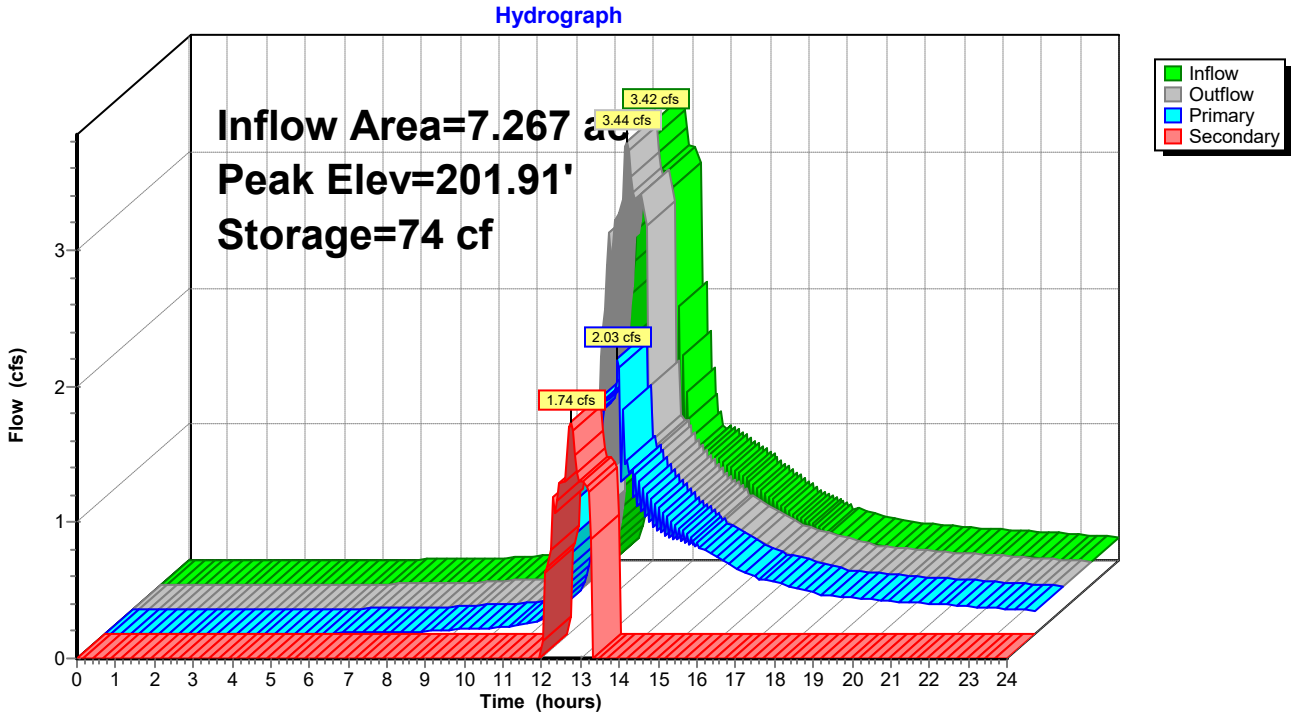
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
201.43	22	18.0	0	0	22
202.00	100	40.0	32	32	125

Device	Routing	Invert	Outlet Devices
#1	Primary	197.43'	**12.0" Round 12" CMP** L= 46.1' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 197.43' / 196.02' S= 0.0306 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Secondary	201.43'	**2.0' long x 2.0' breadth Rim Overflow** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.64 cfs @ 13.23 hrs HW=201.77' TW=201.30' (Dynamic Tailwater)
↑—**1=12" CMP** (Outlet Controls 1.64 cfs @ 2.08 fps)

Secondary OutFlow Max=1.70 cfs @ 12.72 hrs HW=201.90' TW=201.40' (Dynamic Tailwater)
↑—**2=Rim Overflow** (Weir Controls 1.70 cfs @ 1.80 fps)

Pond 5P: Existing CB #5



Summary for Pond 6P: Existing CB #6

[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)
[80] Warning: Exceeded Pond 5P by 0.05' @ 13.30 hrs (0.55 cfs 0.002 af)

Inflow Area =	7.822 ac,	10.39% Impervious,	Inflow Depth >	1.35"	for 10YR - 24HR event
Inflow =	4.21 cfs @	12.11 hrs,	Volume=	0.877 af	
Outflow =	4.28 cfs @	12.11 hrs,	Volume=	0.877 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.28 cfs @	12.07 hrs,	Volume=	0.802 af	
Secondary =	1.13 cfs @	12.11 hrs,	Volume=	0.075 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 201.43' @ 12.11 hrs Surf.Area= 62 sf Storage= 73 cf
Flood Elev= 202.00' Surf.Area= 184 sf Storage= 133 cf

Plug-Flow detention time= 0.6 min calculated for 0.877 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (865.3 - 864.9)

Volume	Invert	Avail.Storage	Storage Description
#1	196.02'	63 cf	**4.00'D x 5.04'H Basin**
#2	201.06'	70 cf	**Open Storage (Irregular)** Listed below (Recalc)
		133 cf	Total Available Storage

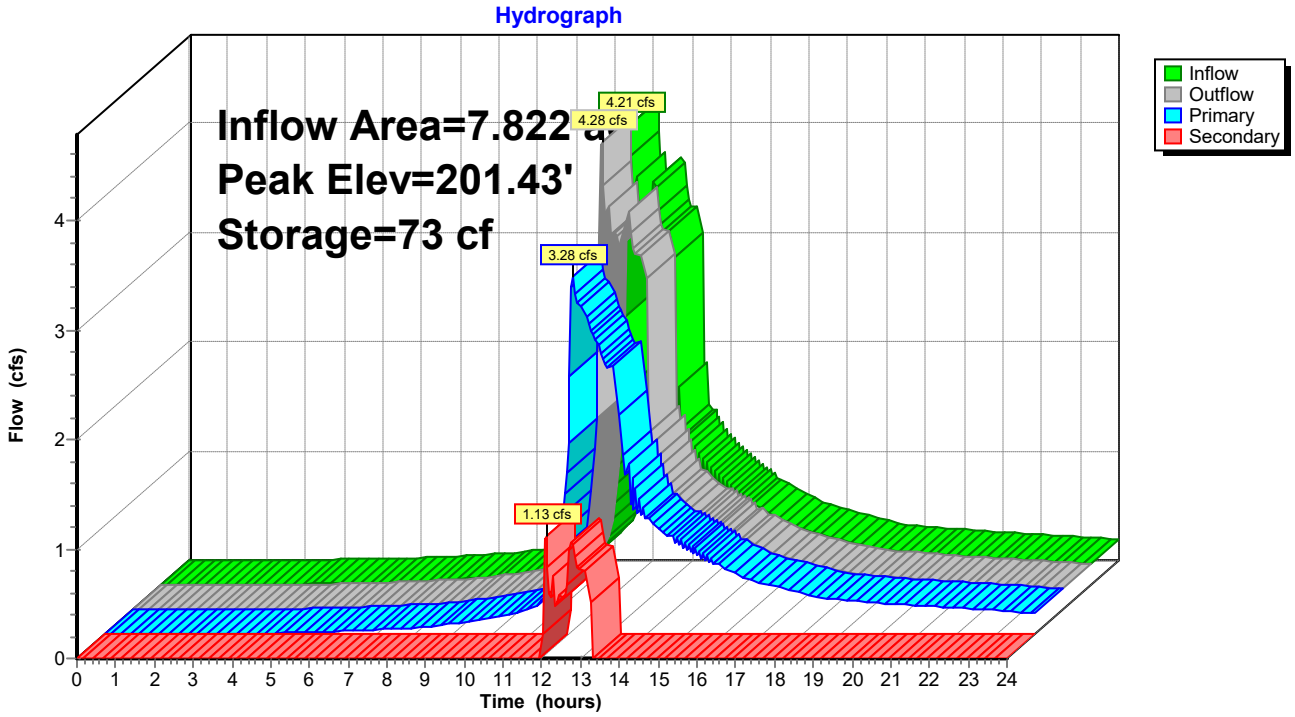
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
201.06	10	10.0	0	0	10
202.00	171	58.0	70	70	272

Device	Routing	Invert	Outlet Devices
#1	Primary	196.02'	**12.0" Round 12" CMP** L= 101.6' Ke= 0.500 Inlet / Outlet Invert= 196.02' / 195.72' S= 0.0030 '/' Cc= 0.900 n= 0.025, Flow Area= 0.79 sf
#2	Secondary	201.06'	**2.0' long x 2.0' breadth Rim Overflow** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.11 cfs @ 12.07 hrs HW=201.30' TW=198.06' (Dynamic Tailwater)
1=12" CMP (Outlet Controls 3.11 cfs @ 3.96 fps)

Secondary OutFlow Max=1.01 cfs @ 12.11 hrs HW=201.40' TW=198.17' (Dynamic Tailwater)
2=Rim Overflow (Weir Controls 1.01 cfs @ 1.50 fps)

Pond 6P: Existing CB #6



Summary for Pond 7P: Existing CB#7

[80] Warning: Exceeded Pond 6P by 0.22' @ 4.10 hrs (0.19 cfs 0.014 af)

Inflow Area = 8.000 ac, 11.60% Impervious, Inflow Depth > 1.37" for 10YR - 24HR event
Inflow = 4.68 cfs @ 12.11 hrs, Volume= 0.911 af
Outflow = 4.68 cfs @ 12.11 hrs, Volume= 0.911 af, Atten= 0%, Lag= 0.0 min
Primary = 4.68 cfs @ 12.11 hrs, Volume= 0.911 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 199.38' @ 12.99 hrs Surf.Area= 13 sf Storage= 46 cf
Flood Elev= 200.22' Surf.Area= 33 sf Storage= 57 cf

Plug-Flow detention time= 0.6 min calculated for 0.909 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (864.6 - 864.2)

Volume	Invert	Avail.Storage	Storage Description
#1	195.72'	57 cf	**4.00'D x 4.50'H Basin**
#2	200.22'	103 cf	**Open Storage (Irregular)** Listed below (Recalc)
		160 cf	Total Available Storage

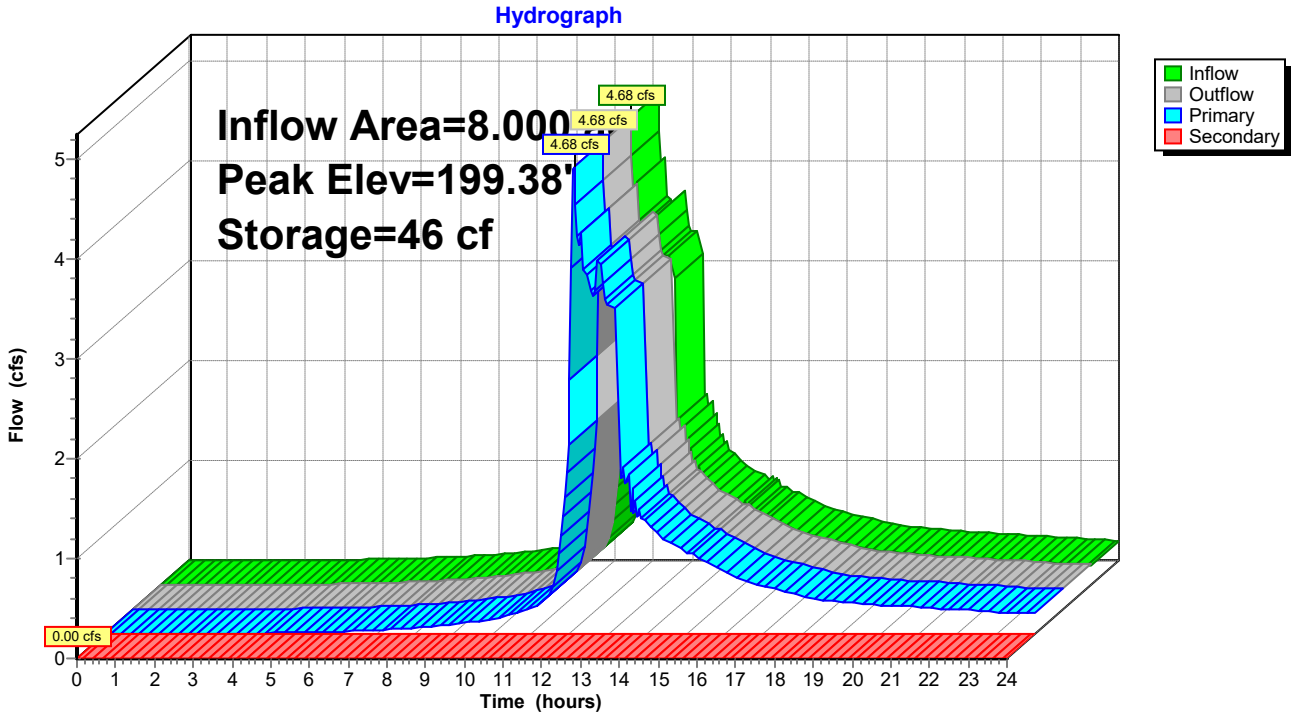
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
200.22	20	40.0	0	0	20
201.00	300	70.0	103	103	286

Device	Routing	Invert	Outlet Devices
#1	Primary	195.72'	**24.0" Round 24" CMP** L= 35.9' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 195.72' / 195.00' S= 0.0201 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf
#2	Secondary	200.22'	**2.0' long x 2.0' breadth Rim Overflow** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=2.65 cfs @ 12.11 hrs HW=198.17' TW=198.14' (Dynamic Tailwater)
1=24" CMP (Outlet Controls 2.65 cfs @ 0.88 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=195.72' TW=195.00' (Dynamic Tailwater)
2=Rim Overflow (Controls 0.00 cfs)

Pond 7P: Existing CB#7



Summary for Pond 8P: 24" Cross Culvert

[62] Hint: Exceeded Reach 11R OUTLET depth by 0.35' @ 13.05 hrs

Inflow Area = 32.469 ac, 4.72% Impervious, Inflow Depth > 0.99" for 10YR - 24HR event
Inflow = 11.41 cfs @ 12.97 hrs, Volume= 2.685 af
Outflow = 11.36 cfs @ 13.02 hrs, Volume= 2.685 af, Atten= 0%, Lag= 3.1 min
Primary = 11.36 cfs @ 13.02 hrs, Volume= 2.685 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 198.45' @ 13.02 hrs Surf.Area= 1,976 sf Storage= 1,267 cf
Flood Elev= 199.55' Surf.Area= 3,482 sf Storage= 4,655 cf

Plug-Flow detention time= 1.1 min calculated for 2.679 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (906.2 - 905.1)

Volume	Invert	Avail.Storage	Storage Description
#1	196.55'	6,222 cf	**Open Storage (Irregular)** Listed below (Recalc)

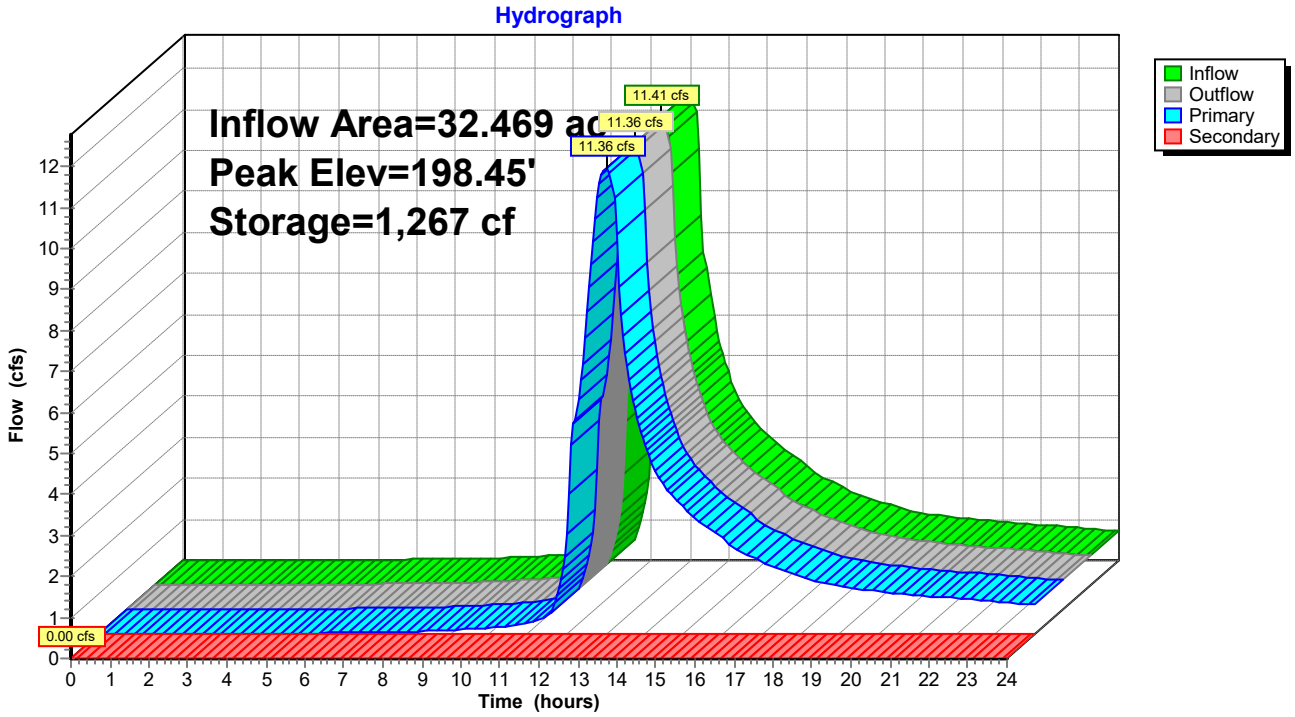
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
196.55	10	10.0	0	0	10
197.00	184	97.0	36	36	751
198.00	1,049	166.0	557	593	2,201
199.00	3,482	329.0	2,147	2,740	8,627
200.00	3,482	329.0	3,482	6,222	8,956

Device	Routing	Invert	Outlet Devices
#1	Primary	196.55'	**24.0" Round 24" HDPE N-12** L= 21.6' Ke= 0.500 Inlet / Outlet Invert= 196.55' / 196.44' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	199.55'	**100.0' long x 10.0' breadth Flow Over The Driveway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=11.36 cfs @ 13.02 hrs HW=198.45' TW=0.00' (Dynamic Tailwater)
1=24" HDPE N-12 (Barrel Controls 11.36 cfs @ 4.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=196.55' TW=0.00' (Dynamic Tailwater)
2=Flow Over The Driveway (Controls 0.00 cfs)

Pond 8P: 24" Cross Culvert



Summary for Pond 16P: 12" CMP

Inflow Area = 6.864 ac, 1.92% Impervious, Inflow Depth > 0.69" for 10YR - 24HR event
Inflow = 2.36 cfs @ 12.51 hrs, Volume= 0.397 af
Outflow = 1.89 cfs @ 12.73 hrs, Volume= 0.396 af, Atten= 20%, Lag= 13.4 min
Primary = 1.89 cfs @ 12.73 hrs, Volume= 0.396 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 204.30' @ 12.73 hrs Surf.Area= 4,315 sf Storage= 1,044 cf

Plug-Flow detention time= 4.9 min calculated for 0.395 af (100% of inflow)
Center-of-Mass det. time= 4.1 min (927.7 - 923.7)

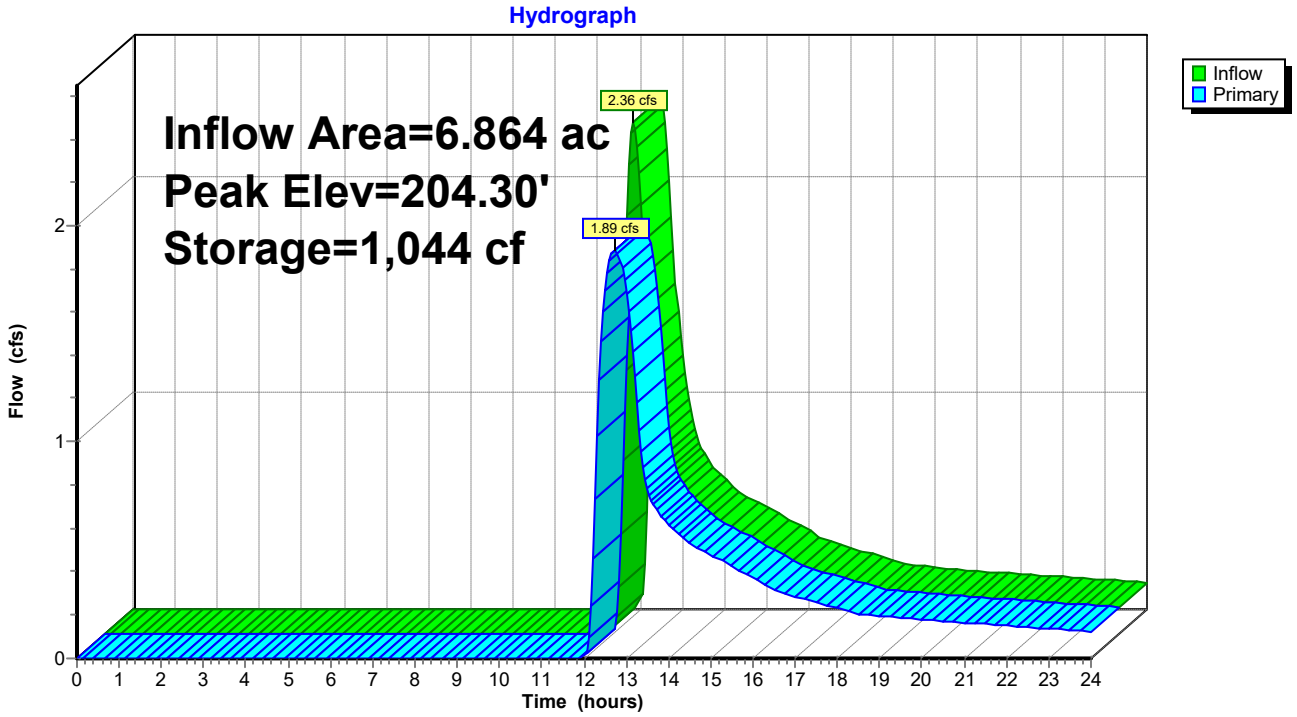
Volume	Invert	Avail.Storage	Storage Description
#1	203.25'	9,229 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.25	50	30.0	0	0	50
204.00	962	127.1	308	308	1,265
205.00	21,278	680.9	8,921	9,229	36,876

Device	Routing	Invert	Outlet Devices
#1	Primary	204.75'	**50.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Primary	203.25'	**12.0" Round 12" CMP** L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.25' / 203.05' S= 0.0100 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=1.89 cfs @ 12.73 hrs HW=204.30' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
2=12" CMP (Barrel Controls 1.89 cfs @ 2.84 fps)

Pond 16P: 12" CMP



Summary for Pond 17P: Existing Driveway

Inflow Area = 11.419 ac, 0.00% Impervious, Inflow Depth > 0.97" for 10YR - 24HR event
Inflow = 5.70 cfs @ 12.58 hrs, Volume= 0.919 af
Outflow = 5.69 cfs @ 12.61 hrs, Volume= 0.868 af, Atten= 0%, Lag= 1.5 min
Primary = 4.31 cfs @ 12.61 hrs, Volume= 0.795 af
Secondary = 1.38 cfs @ 12.61 hrs, Volume= 0.073 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 204.12' @ 12.61 hrs Surf.Area= 7,143 sf Storage= 2,920 cf

Plug-Flow detention time= 39.3 min calculated for 0.867 af (94% of inflow)
Center-of-Mass det. time= 12.6 min (922.0 - 909.3)

Volume	Invert	Avail.Storage	Storage Description
#1	203.50'	3,838 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

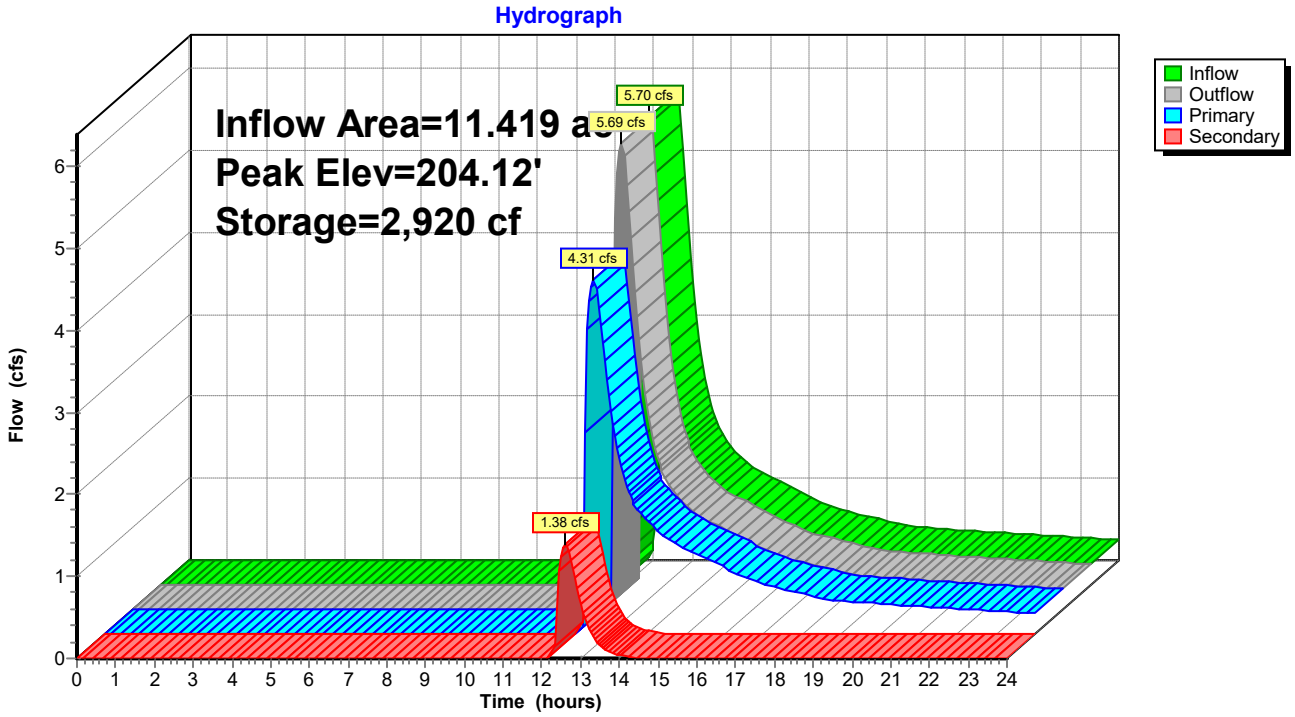
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.50	1,694	166.7	0	0	1,694
204.00	7,143	405.4	2,053	2,053	12,562
204.25	7,143	405.4	1,786	3,838	12,663

Device	Routing	Invert	Outlet Devices
#1	Primary	204.00'	**38.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	204.05'	**27.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.30 cfs @ 12.61 hrs HW=204.12' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 4.30 cfs @ 0.93 fps)

Secondary OutFlow Max=1.38 cfs @ 12.61 hrs HW=204.12' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.38 cfs @ 0.72 fps)

Pond 17P: Existing Driveway



Summary for Pond 18P: Box Culvert

Inflow Area = 10.898 ac, 0.00% Impervious, Inflow Depth > 1.09" for 10YR - 24HR event
Inflow = 6.96 cfs @ 12.47 hrs, Volume= 0.987 af
Outflow = 6.95 cfs @ 12.48 hrs, Volume= 0.987 af, Atten= 0%, Lag= 0.3 min
Primary = 6.95 cfs @ 12.48 hrs, Volume= 0.987 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 191.21' @ 12.48 hrs Surf.Area= 171 sf Storage= 70 cf

Plug-Flow detention time= 0.2 min calculated for 0.987 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (898.1 - 897.9)

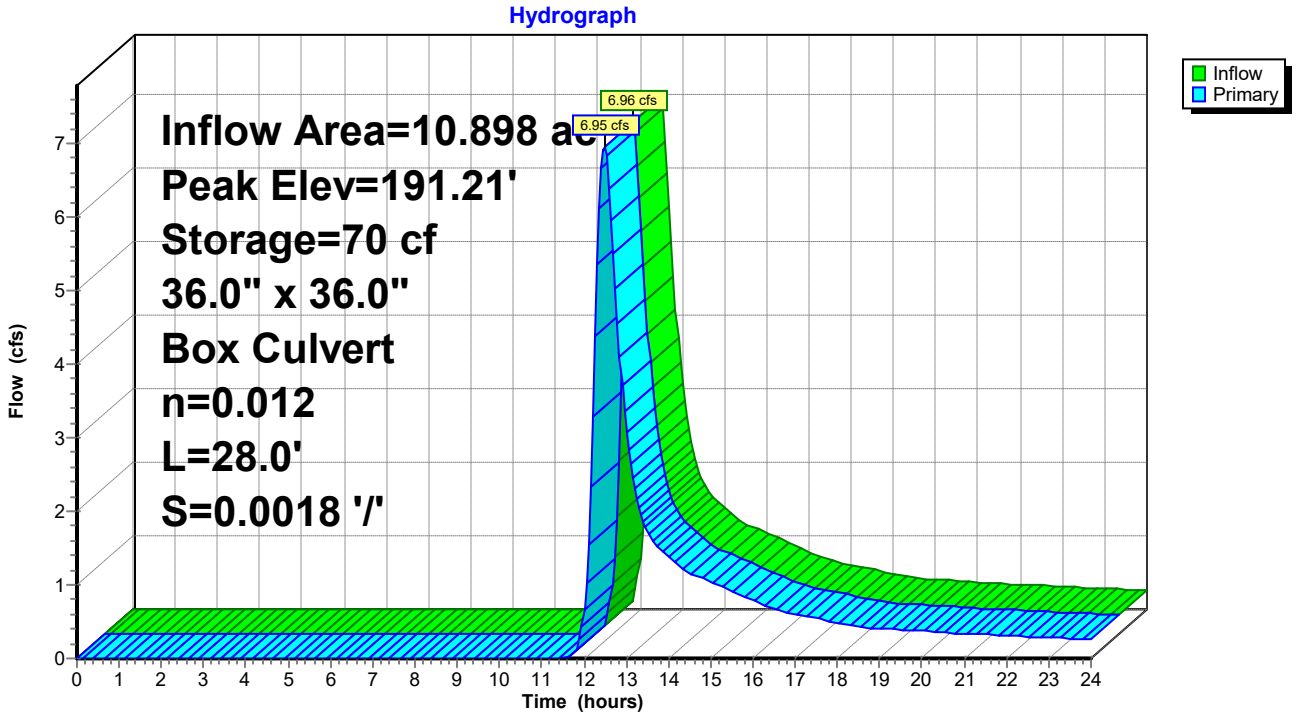
Volume	Invert	Avail.Storage	Storage Description
#1	190.25'	56,817 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
190.25	50	30.0	0	0	50
191.00	72	54.2	46	46	215
192.00	912	215.6	413	459	3,683
193.00	2,290	273.4	1,549	2,008	5,946
194.00	4,070	334.6	3,138	5,146	8,922
195.00	6,222	483.3	5,108	10,254	18,609
196.00	8,396	606.1	7,282	17,536	29,269
197.00	11,534	890.2	9,924	27,459	63,105
198.00	15,764	977.3	13,594	41,053	76,083
199.00	15,764	977.3	15,764	56,817	77,060

Device	Routing	Invert	Outlet Devices
#1	Primary	190.25'	**36.0" W x 36.0" H Box Box Culvert N-12** L= 28.0' Ke= 0.500 Inlet / Outlet Invert= 190.25' / 190.20' S= 0.0018 '/' Cc= 0.900 n= 0.012, Flow Area= 9.00 sf

Primary OutFlow Max=6.93 cfs @ 12.48 hrs HW=191.21' TW=0.00' (Dynamic Tailwater)
↑—**1=Box Culvert N-12** (Barrel Controls 6.93 cfs @ 3.21 fps)

Pond 18P: Box Culvert



Summary for Pond 19P: Box Culvert

Inflow Area = 15.859 ac, 0.00% Impervious, Inflow Depth > 1.08" for 10YR - 24HR event
Inflow = 8.06 cfs @ 12.72 hrs, Volume= 1.428 af
Outflow = 8.06 cfs @ 12.72 hrs, Volume= 1.428 af, Atten= 0%, Lag= 0.1 min
Primary = 8.06 cfs @ 12.72 hrs, Volume= 1.428 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 184.02' @ 12.72 hrs Surf.Area= 35 sf Storage= 18 cf

Plug-Flow detention time= 0.1 min calculated for 1.425 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (910.6 - 910.5)

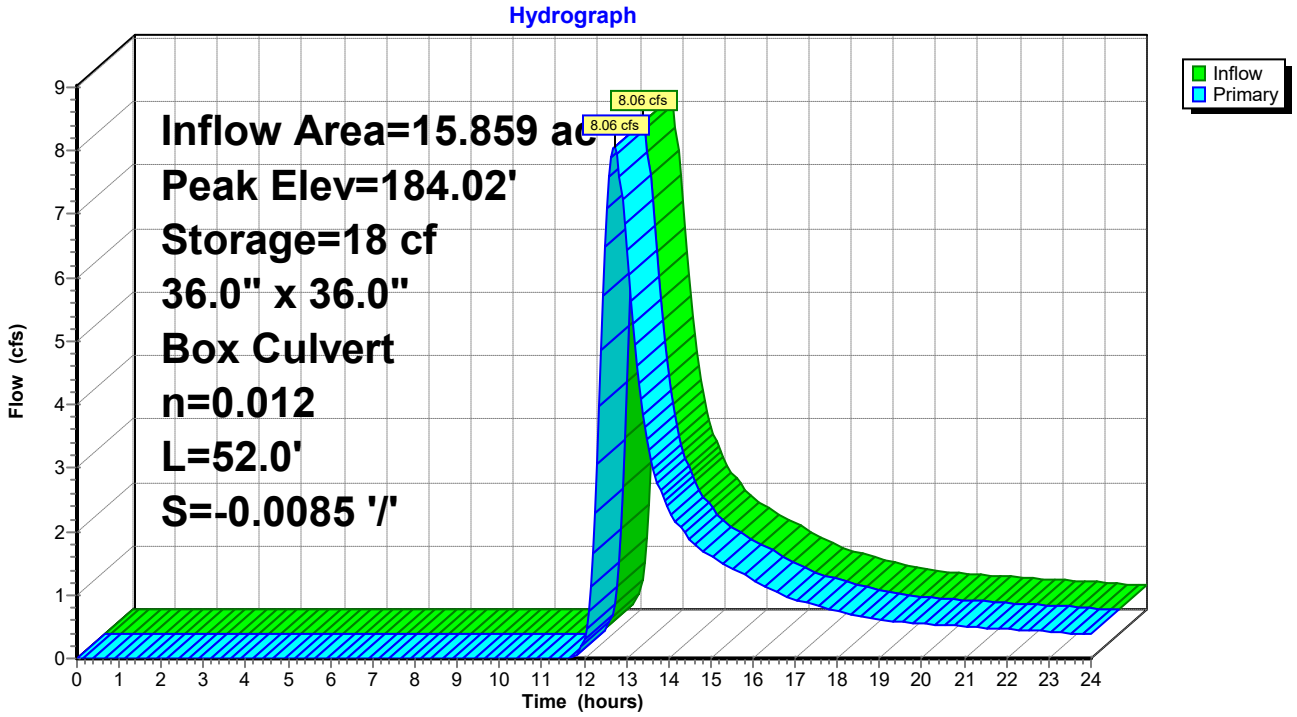
Volume	Invert	Avail.Storage	Storage Description
#1	182.69'	612 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

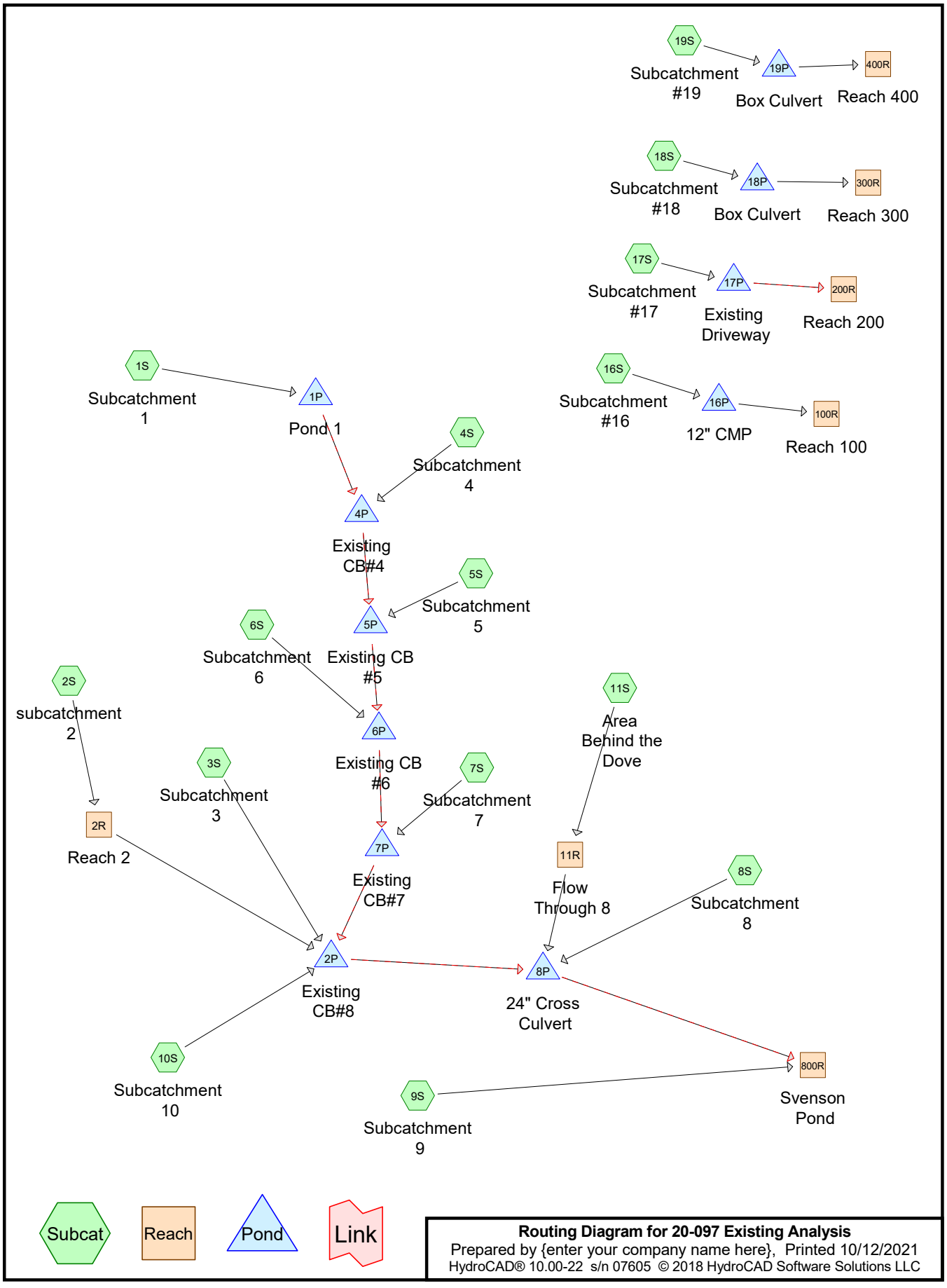
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
182.69	1	5.1	0	0	1
184.00	33	33.5	17	17	92
185.00	195	111.6	103	120	997
186.00	870	252.1	492	612	5,067

Device	Routing	Invert	Outlet Devices
#1	Primary	183.13'	**36.0" W x 36.0" H Box Box Culvert N-12** L= 52.0' Ke= 0.500 Inlet / Outlet Invert= 182.69' / 183.13' S= -0.0085 '/' Cc= 0.900 n= 0.012, Flow Area= 9.00 sf

Primary OutFlow Max=8.04 cfs @ 12.72 hrs HW=184.02' TW=0.00' (Dynamic Tailwater)
↑—**1=Box Culvert N-12** (Inlet Controls 8.04 cfs @ 3.02 fps)

Pond 19P: Box Culvert





Routing Diagram for 20-097 Existing Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=302,003 sf 0.00% Impervious Runoff Depth>0.33"
Flow Length=1,542' Tc=32.6 min CN=59 Runoff=0.85 cfs 0.188 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>0.35"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=1.85 cfs 0.517 af

Subcatchment 3S: Subcatchment 3 Runoff Area=122,849 sf 0.64% Impervious Runoff Depth>0.00"
Flow Length=993' Tc=20.7 min CN=41 Runoff=0.00 cfs 0.001 af

Subcatchment 4S: Subcatchment 4 Runoff Area=4,089 sf 98.95% Impervious Runoff Depth>2.74"
Flow Length=85' Slope=0.0472 '/' Tc=6.0 min CN=97 Runoff=0.27 cfs 0.021 af

Subcatchment 5S: Subcatchment 5 Runoff Area=10,452 sf 82.66% Impervious Runoff Depth>1.89"
Flow Length=75' Tc=6.0 min CN=88 Runoff=0.52 cfs 0.038 af

Subcatchment 6S: Subcatchment 6 Runoff Area=24,193 sf 93.83% Impervious Runoff Depth>2.43"
Flow Length=216' Tc=6.0 min CN=94 Runoff=1.48 cfs 0.112 af

Subcatchment 7S: Subcatchment 7 Runoff Area=7,743 sf 65.07% Impervious Runoff Depth>1.12"
Flow Length=98' Tc=9.7 min CN=77 Runoff=0.20 cfs 0.017 af

Subcatchment 8S: Subcatchment 8 Runoff Area=19,227 sf 32.64% Impervious Runoff Depth>0.30"
Flow Length=152' Tc=10.4 min CN=58 Runoff=0.06 cfs 0.011 af

Subcatchment 9S: Subcatchment 9 Runoff Area=64,869 sf 22.90% Impervious Runoff Depth>0.17"
Flow Length=484' Tc=19.3 min CN=53 Runoff=0.06 cfs 0.021 af

Subcatchment 10S: Subcatchment 10 Runoff Area=53,175 sf 5.56% Impervious Runoff Depth>0.01"
Flow Length=438' Tc=18.4 min CN=42 Runoff=0.00 cfs 0.001 af

Subcatchment 11S: Area Behind the Dove Runoff Area=106,113 sf 10.71% Impervious Runoff Depth>0.09"
Flow Length=802' Tc=22.0 min CN=49 Runoff=0.03 cfs 0.017 af

Subcatchment 16S: Subcatchment #16 Runoff Area=299,000 sf 1.92% Impervious Runoff Depth>0.17"
Flow Length=1,113' Tc=27.2 min CN=53 Runoff=0.25 cfs 0.094 af

Subcatchment 17S: Subcatchment #17 Runoff Area=497,407 sf 0.00% Impervious Runoff Depth>0.30"
Flow Length=1,540' Tc=35.5 min CN=58 Runoff=1.14 cfs 0.281 af

Subcatchment 18S: Subcatchment #18 Runoff Area=474,696 sf 0.00% Impervious Runoff Depth>0.36"
Flow Length=1,280' Tc=29.3 min CN=60 Runoff=1.62 cfs 0.325 af

Subcatchment 19S: Subcatchment #19 Runoff Area=690,822 sf 0.00% Impervious Runoff Depth>0.36"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=1.90 cfs 0.470 af

Reach 2R: Reach 2 Avg. Flow Depth=0.24' Max Vel=2.23 fps Inflow=1.85 cfs 0.517 af
n=0.022 L=329.8' S=0.0091 '/' Capacity=24.64 cfs Outflow=1.84 cfs 0.515 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.04' Max Vel=0.42 fps Inflow=0.03 cfs 0.017 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=0.03 cfs 0.017 af

Reach 100R: Reach 100 Inflow=0.24 cfs 0.094 af
Outflow=0.24 cfs 0.094 af

Reach 200R: Reach 200 Inflow=0.79 cfs 0.232 af
Outflow=0.79 cfs 0.232 af

Reach 300R: Reach 300 Inflow=1.62 cfs 0.325 af
Outflow=1.62 cfs 0.325 af

Reach 400R: Reach 400 Inflow=1.91 cfs 0.470 af
Outflow=1.91 cfs 0.470 af

Reach 800R: Svenson Pond Inflow=2.76 cfs 0.941 af
Outflow=2.76 cfs 0.941 af

Pond 1P: Pond 1 Peak Elev=201.67' Storage=3 cf Inflow=0.85 cfs 0.188 af
Primary=0.85 cfs 0.188 af Secondary=0.00 cfs 0.000 af Outflow=0.85 cfs 0.188 af

Pond 2P: Existing CB#8 Peak Elev=197.74' Storage=34 cf Inflow=2.67 cfs 0.893 af
Primary=2.67 cfs 0.892 af Secondary=0.00 cfs 0.000 af Outflow=2.67 cfs 0.892 af

Pond 4P: Existing CB#4 Peak Elev=199.40' Storage=9 cf Inflow=0.88 cfs 0.210 af
Primary=0.89 cfs 0.210 af Secondary=0.00 cfs 0.000 af Outflow=0.89 cfs 0.210 af

Pond 5P: Existing CB #5 Peak Elev=199.48' Storage=26 cf Inflow=0.97 cfs 0.247 af
Primary=0.96 cfs 0.247 af Secondary=0.00 cfs 0.000 af Outflow=0.96 cfs 0.247 af

Pond 6P: Existing CB #6 Peak Elev=199.31' Storage=41 cf Inflow=2.25 cfs 0.360 af
Primary=2.24 cfs 0.359 af Secondary=0.00 cfs 0.000 af Outflow=2.24 cfs 0.359 af

Pond 7P: Existing CB#7 Peak Elev=197.74' Storage=25 cf Inflow=2.42 cfs 0.376 af
Primary=2.41 cfs 0.376 af Secondary=0.00 cfs 0.000 af Outflow=2.41 cfs 0.376 af

Pond 8P: 24" Cross Culvert Peak Elev=197.37' Storage=145 cf Inflow=2.71 cfs 0.920 af
Primary=2.71 cfs 0.920 af Secondary=0.00 cfs 0.000 af Outflow=2.71 cfs 0.920 af

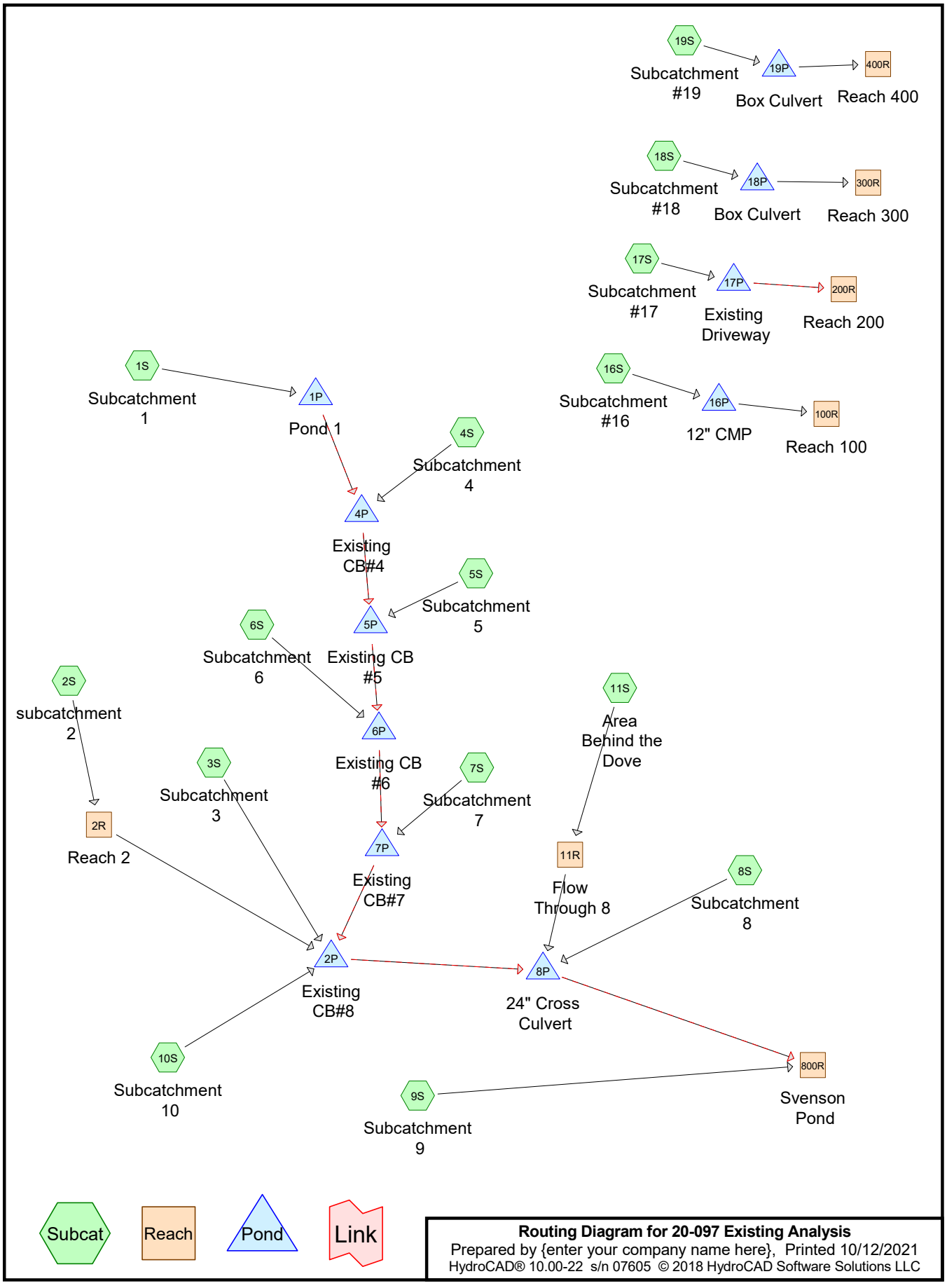
Pond 16P: 12" CMP Peak Elev=203.57' Storage=52 cf Inflow=0.25 cfs 0.094 af
Outflow=0.24 cfs 0.094 af

Pond 17P: Existing Driveway Peak Elev=204.04' Storage=2,332 cf Inflow=1.14 cfs 0.281 af
Primary=0.79 cfs 0.232 af Secondary=0.00 cfs 0.000 af Outflow=0.79 cfs 0.232 af

Pond 18P: Box Culvert Peak Elev=190.62' Storage=20 cf Inflow=1.62 cfs 0.325 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=1.62 cfs 0.325 af

Pond 19P: Box Culvert Peak Elev=183.47' Storage=5 cf Inflow=1.90 cfs 0.470 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=1.91 cfs 0.470 af

Total Runoff Area = 78.998 ac Runoff Volume = 2.114 af Average Runoff Depth = 0.32"
97.46% Pervious = 76.991 ac 2.54% Impervious = 2.007 ac



Routing Diagram for 20-097 Existing Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=302,003 sf 0.00% Impervious Runoff Depth>1.03"
Flow Length=1,542' Tc=32.6 min CN=59 Runoff=3.91 cfs 0.592 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>1.08"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=7.71 cfs 1.573 af

Subcatchment 3S: Subcatchment 3 Runoff Area=122,849 sf 0.64% Impervious Runoff Depth>0.19"
Flow Length=993' Tc=20.7 min CN=41 Runoff=0.08 cfs 0.045 af

Subcatchment 4S: Subcatchment 4 Runoff Area=4,089 sf 98.95% Impervious Runoff Depth>4.29"
Flow Length=85' Slope=0.0472 '/' Tc=6.0 min CN=97 Runoff=0.41 cfs 0.034 af

Subcatchment 5S: Subcatchment 5 Runoff Area=10,452 sf 82.66% Impervious Runoff Depth>3.33"
Flow Length=75' Tc=6.0 min CN=88 Runoff=0.90 cfs 0.066 af

Subcatchment 6S: Subcatchment 6 Runoff Area=24,193 sf 93.83% Impervious Runoff Depth>3.95"
Flow Length=216' Tc=6.0 min CN=94 Runoff=2.35 cfs 0.183 af

Subcatchment 7S: Subcatchment 7 Runoff Area=7,743 sf 65.07% Impervious Runoff Depth>2.32"
Flow Length=98' Tc=9.7 min CN=77 Runoff=0.42 cfs 0.034 af

Subcatchment 8S: Subcatchment 8 Runoff Area=19,227 sf 32.64% Impervious Runoff Depth>0.97"
Flow Length=152' Tc=10.4 min CN=58 Runoff=0.35 cfs 0.036 af

Subcatchment 9S: Subcatchment 9 Runoff Area=64,869 sf 22.90% Impervious Runoff Depth>0.70"
Flow Length=484' Tc=19.3 min CN=53 Runoff=0.58 cfs 0.086 af

Subcatchment 10S: Subcatchment 10 Runoff Area=53,175 sf 5.56% Impervious Runoff Depth>0.22"
Flow Length=438' Tc=18.4 min CN=42 Runoff=0.06 cfs 0.023 af

Subcatchment 11S: Area Behind the Dove Runoff Area=106,113 sf 10.71% Impervious Runoff Depth>0.50"
Flow Length=802' Tc=22.0 min CN=49 Runoff=0.53 cfs 0.102 af

Subcatchment 16S: Subcatchment #16 Runoff Area=299,000 sf 1.92% Impervious Runoff Depth>0.69"
Flow Length=1,113' Tc=27.2 min CN=53 Runoff=2.36 cfs 0.397 af

Subcatchment 17S: Subcatchment #17 Runoff Area=497,407 sf 0.00% Impervious Runoff Depth>0.97"
Flow Length=1,540' Tc=35.5 min CN=58 Runoff=5.70 cfs 0.919 af

Subcatchment 18S: Subcatchment #18 Runoff Area=474,696 sf 0.00% Impervious Runoff Depth>1.09"
Flow Length=1,280' Tc=29.3 min CN=60 Runoff=6.96 cfs 0.987 af

Subcatchment 19S: Subcatchment #19 Runoff Area=690,822 sf 0.00% Impervious Runoff Depth>1.08"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=8.06 cfs 1.428 af

Reach 2R: Reach 2 Avg. Flow Depth=0.54' Max Vel=3.52 fps Inflow=7.71 cfs 1.573 af
n=0.022 L=329.8' S=0.0091 '/' Capacity=24.64 cfs Outflow=7.71 cfs 1.571 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.14' Max Vel=1.02 fps Inflow=0.53 cfs 0.102 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=0.53 cfs 0.101 af

Reach 100R: Reach 100 Inflow=1.89 cfs 0.396 af
Outflow=1.89 cfs 0.396 af

Reach 200R: Reach 200 Inflow=5.69 cfs 0.868 af
Outflow=5.69 cfs 0.868 af

Reach 300R: Reach 300 Inflow=6.95 cfs 0.987 af
Outflow=6.95 cfs 0.987 af

Reach 400R: Reach 400 Inflow=8.06 cfs 1.428 af
Outflow=8.06 cfs 1.428 af

Reach 800R: Svenson Pond Inflow=11.57 cfs 2.771 af
Outflow=11.57 cfs 2.771 af

Pond 1P: Pond 1 Peak Elev=204.73' Storage=1,558 cf Inflow=3.91 cfs 0.592 af
Primary=2.98 cfs 0.581 af Secondary=0.65 cfs 0.011 af Outflow=3.26 cfs 0.592 af

Pond 2P: Existing CB#8 Peak Elev=199.34' Storage=501 cf Inflow=11.26 cfs 2.549 af
Primary=11.05 cfs 2.548 af Secondary=0.00 cfs 0.000 af Outflow=11.05 cfs 2.548 af

Pond 4P: Existing CB#4 Peak Elev=203.70' Storage=65 cf Inflow=3.31 cfs 0.626 af
Primary=2.99 cfs 0.621 af Secondary=0.33 cfs 0.007 af Outflow=3.32 cfs 0.626 af

Pond 5P: Existing CB #5 Peak Elev=201.91' Storage=74 cf Inflow=3.42 cfs 0.694 af
Primary=2.03 cfs 0.572 af Secondary=1.74 cfs 0.122 af Outflow=3.44 cfs 0.694 af

Pond 6P: Existing CB #6 Peak Elev=201.43' Storage=73 cf Inflow=4.21 cfs 0.877 af
Primary=3.28 cfs 0.802 af Secondary=1.13 cfs 0.075 af Outflow=4.28 cfs 0.877 af

Pond 7P: Existing CB#7 Peak Elev=199.38' Storage=46 cf Inflow=4.68 cfs 0.911 af
Primary=4.68 cfs 0.911 af Secondary=0.00 cfs 0.000 af Outflow=4.68 cfs 0.911 af

Pond 8P: 24" Cross Culvert Peak Elev=198.45' Storage=1,267 cf Inflow=11.41 cfs 2.685 af
Primary=11.36 cfs 2.685 af Secondary=0.00 cfs 0.000 af Outflow=11.36 cfs 2.685 af

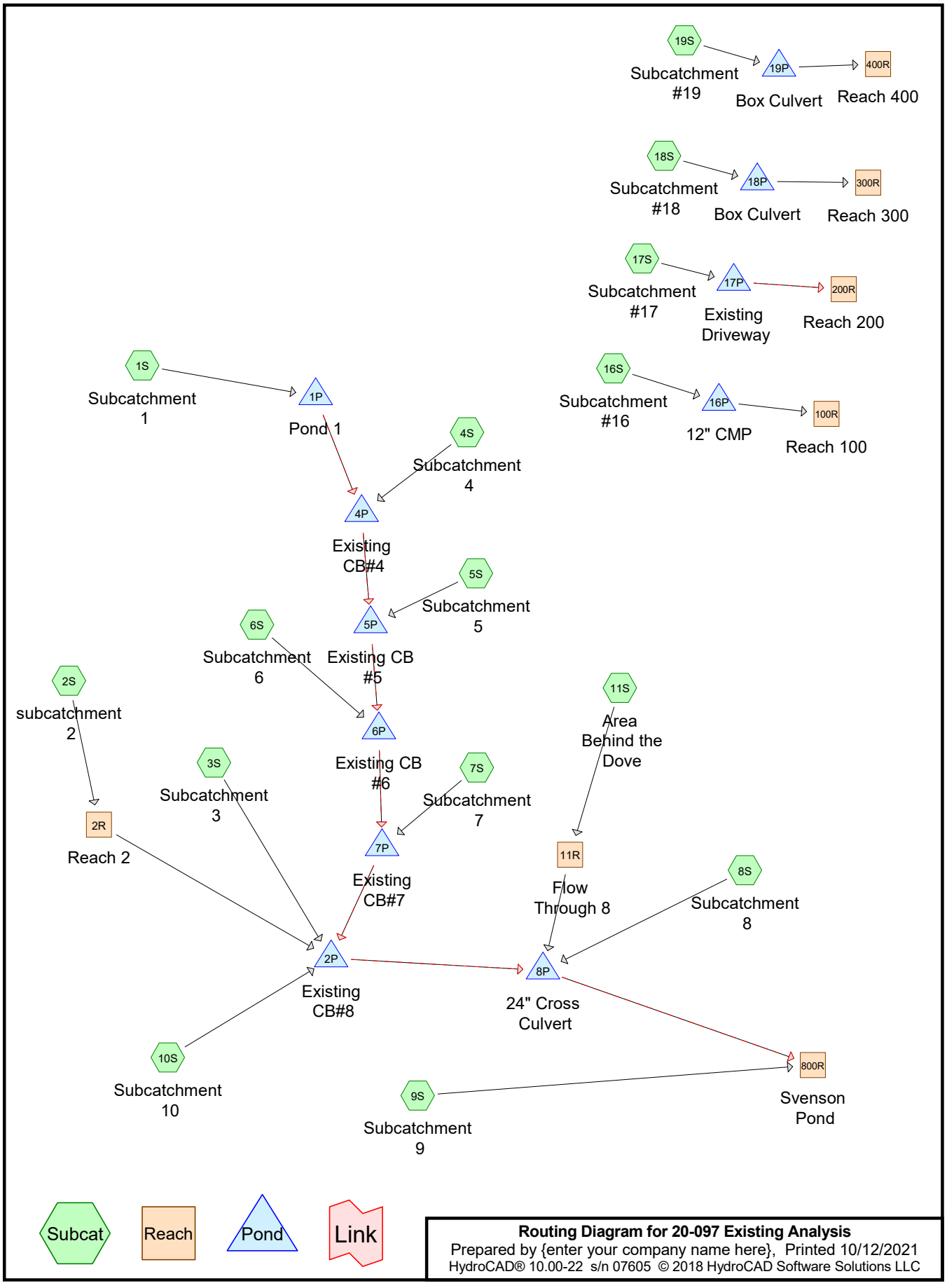
Pond 16P: 12" CMP Peak Elev=204.30' Storage=1,044 cf Inflow=2.36 cfs 0.397 af
Outflow=1.89 cfs 0.396 af

Pond 17P: Existing Driveway Peak Elev=204.12' Storage=2,920 cf Inflow=5.70 cfs 0.919 af
Primary=4.31 cfs 0.795 af Secondary=1.38 cfs 0.073 af Outflow=5.69 cfs 0.868 af

Pond 18P: Box Culvert Peak Elev=191.21' Storage=70 cf Inflow=6.96 cfs 0.987 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=6.95 cfs 0.987 af

Pond 19P: Box Culvert Peak Elev=184.02' Storage=18 cf Inflow=8.06 cfs 1.428 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=8.06 cfs 1.428 af

Total Runoff Area = 78.998 ac Runoff Volume = 6.503 af Average Runoff Depth = 0.99"
97.46% Pervious = 76.991 ac 2.54% Impervious = 2.007 ac



Routing Diagram for 20-097 Existing Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=302,003 sf 0.00% Impervious Runoff Depth>1.73"
Flow Length=1,542' Tc=32.6 min CN=59 Runoff=7.18 cfs 1.002 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>1.80"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=13.92 cfs 2.633 af

Subcatchment 3S: Subcatchment 3 Runoff Area=122,849 sf 0.64% Impervious Runoff Depth>0.51"
Flow Length=993' Tc=20.7 min CN=41 Runoff=0.54 cfs 0.119 af

Subcatchment 4S: Subcatchment 4 Runoff Area=4,089 sf 98.95% Impervious Runoff Depth>5.50"
Flow Length=85' Slope=0.0472 '/' Tc=6.0 min CN=97 Runoff=0.52 cfs 0.043 af

Subcatchment 5S: Subcatchment 5 Runoff Area=10,452 sf 82.66% Impervious Runoff Depth>4.49"
Flow Length=75' Tc=6.0 min CN=88 Runoff=1.19 cfs 0.090 af

Subcatchment 6S: Subcatchment 6 Runoff Area=24,193 sf 93.83% Impervious Runoff Depth>5.15"
Flow Length=216' Tc=6.0 min CN=94 Runoff=3.02 cfs 0.239 af

Subcatchment 7S: Subcatchment 7 Runoff Area=7,743 sf 65.07% Impervious Runoff Depth>3.35"
Flow Length=98' Tc=9.7 min CN=77 Runoff=0.61 cfs 0.050 af

Subcatchment 8S: Subcatchment 8 Runoff Area=19,227 sf 32.64% Impervious Runoff Depth>1.67"
Flow Length=152' Tc=10.4 min CN=58 Runoff=0.68 cfs 0.061 af

Subcatchment 9S: Subcatchment 9 Runoff Area=64,869 sf 22.90% Impervious Runoff Depth>1.28"
Flow Length=484' Tc=19.3 min CN=53 Runoff=1.29 cfs 0.159 af

Subcatchment 10S: Subcatchment 10 Runoff Area=53,175 sf 5.56% Impervious Runoff Depth>0.56"
Flow Length=438' Tc=18.4 min CN=42 Runoff=0.29 cfs 0.057 af

Subcatchment 11S: Area Behind the Dove Runoff Area=106,113 sf 10.71% Impervious Runoff Depth>1.00"
Flow Length=802' Tc=22.0 min CN=49 Runoff=1.39 cfs 0.203 af

Subcatchment 16S: Subcatchment #16 Runoff Area=299,000 sf 1.92% Impervious Runoff Depth>1.28"
Flow Length=1,113' Tc=27.2 min CN=53 Runoff=5.18 cfs 0.731 af

Subcatchment 17S: Subcatchment #17 Runoff Area=497,407 sf 0.00% Impervious Runoff Depth>1.65"
Flow Length=1,540' Tc=35.5 min CN=58 Runoff=10.72 cfs 1.573 af

Subcatchment 18S: Subcatchment #18 Runoff Area=474,696 sf 0.00% Impervious Runoff Depth>1.82"
Flow Length=1,280' Tc=29.3 min CN=60 Runoff=12.52 cfs 1.650 af

Subcatchment 19S: Subcatchment #19 Runoff Area=690,822 sf 0.00% Impervious Runoff Depth>1.81"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=14.51 cfs 2.388 af

Reach 2R: Reach 2 Avg. Flow Depth=0.74' Max Vel=4.19 fps Inflow=13.92 cfs 2.633 af
n=0.022 L=329.8' S=0.0091 '/' Capacity=24.64 cfs Outflow=13.92 cfs 2.630 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.23' Max Vel=1.38 fps Inflow=1.39 cfs 0.203 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=1.39 cfs 0.203 af

Reach 100R: Reach 100 Inflow=2.72 cfs 0.730 af
Outflow=2.72 cfs 0.730 af

Reach 200R: Reach 200 Inflow=10.71 cfs 1.522 af
Outflow=10.71 cfs 1.522 af

Reach 300R: Reach 300 Inflow=12.51 cfs 1.649 af
Outflow=12.51 cfs 1.649 af

Reach 400R: Reach 400 Inflow=14.51 cfs 2.388 af
Outflow=14.51 cfs 2.388 af

Reach 800R: Svenson Pond Inflow=21.24 cfs 4.652 af
Outflow=21.24 cfs 4.652 af

Pond 1P: Pond 1 Peak Elev=204.89' Storage=2,506 cf Inflow=7.18 cfs 1.002 af
Primary=2.96 cfs 0.794 af Secondary=5.11 cfs 0.208 af Outflow=6.96 cfs 1.002 af

Pond 2P: Existing CB#8 Peak Elev=200.33' Storage=4,227 cf Inflow=20.62 cfs 4.231 af
Primary=13.49 cfs 3.799 af Secondary=9.86 cfs 0.431 af Outflow=20.29 cfs 4.230 af

Pond 4P: Existing CB#4 Peak Elev=204.39' Storage=78 cf Inflow=7.03 cfs 1.045 af
Primary=3.01 cfs 0.886 af Secondary=4.07 cfs 0.161 af Outflow=7.05 cfs 1.045 af

Pond 5P: Existing CB #5 Peak Elev=202.59' Storage=82 cf Inflow=7.25 cfs 1.137 af
Primary=1.75 cfs 0.770 af Secondary=5.50 cfs 0.367 af Outflow=7.25 cfs 1.137 af

Pond 6P: Existing CB #6 Peak Elev=202.06' Storage=133 cf Inflow=7.68 cfs 1.376 af
Primary=3.17 cfs 1.009 af Secondary=5.36 cfs 0.367 af Outflow=7.73 cfs 1.375 af

Pond 7P: Existing CB#7 Peak Elev=200.49' Storage=69 cf Inflow=7.91 cfs 1.425 af
Primary=7.84 cfs 1.402 af Secondary=0.66 cfs 0.023 af Outflow=7.88 cfs 1.425 af

Pond 8P: 24" Cross Culvert Peak Elev=199.57' Storage=4,710 cf Inflow=21.18 cfs 4.494 af
Primary=20.34 cfs 4.491 af Secondary=0.48 cfs 0.002 af Outflow=20.82 cfs 4.493 af

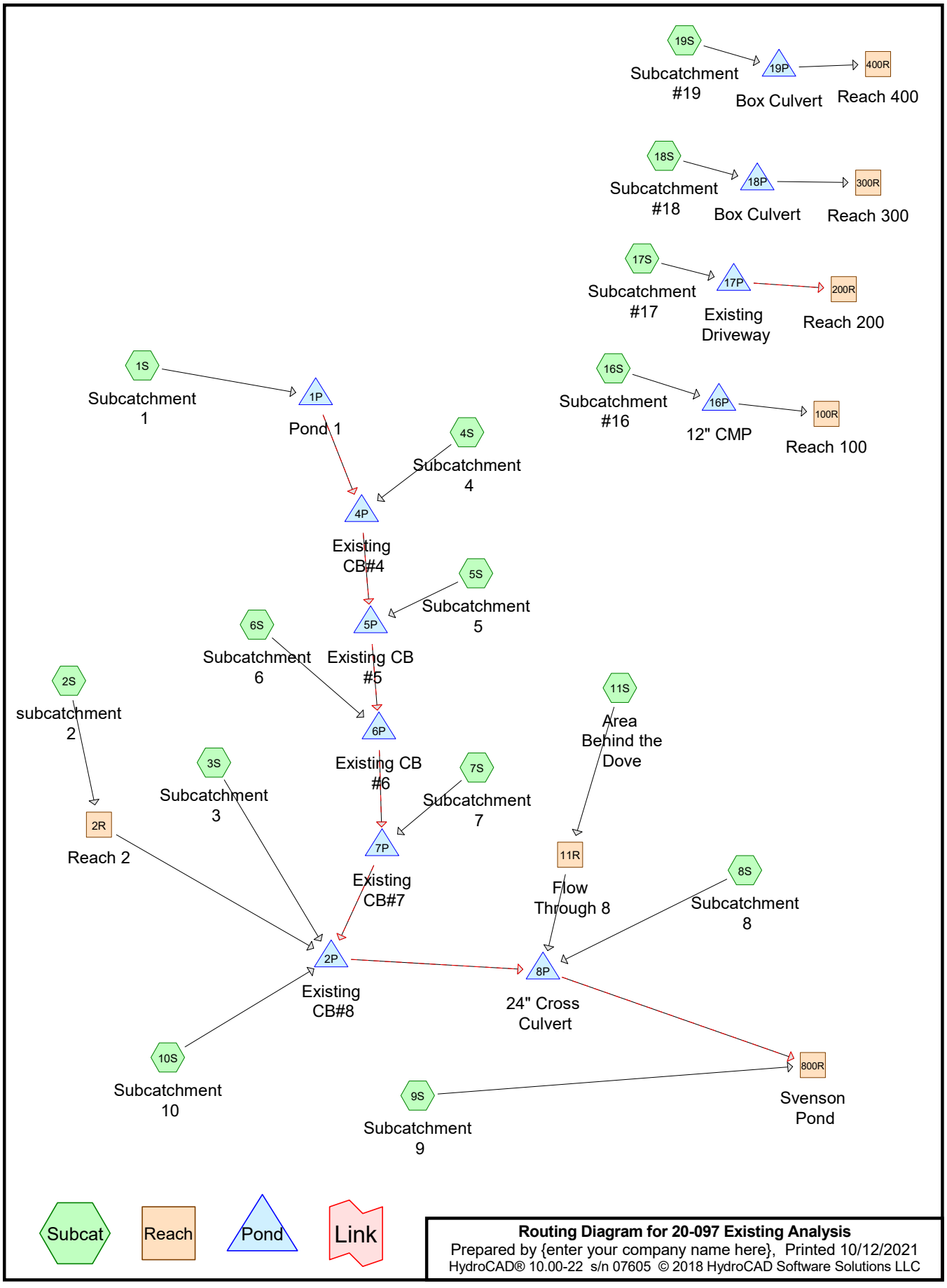
Pond 16P: 12" CMP Peak Elev=204.76' Storage=5,027 cf Inflow=5.18 cfs 0.731 af
Outflow=2.72 cfs 0.730 af

Pond 17P: Existing Driveway Peak Elev=204.18' Storage=3,306 cf Inflow=10.72 cfs 1.573 af
Primary=7.49 cfs 1.301 af Secondary=3.22 cfs 0.222 af Outflow=10.71 cfs 1.522 af

Pond 18P: Box Culvert Peak Elev=191.68' Storage=227 cf Inflow=12.52 cfs 1.650 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=12.51 cfs 1.649 af

Pond 19P: Box Culvert Peak Elev=184.44' Storage=43 cf Inflow=14.51 cfs 2.388 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=14.51 cfs 2.388 af

Total Runoff Area = 78.998 ac Runoff Volume = 10.998 af Average Runoff Depth = 1.67"
97.46% Pervious = 76.991 ac 2.54% Impervious = 2.007 ac



Routing Diagram for 20-097 Existing Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=302,003 sf 0.00% Impervious Runoff Depth>2.49"
Flow Length=1,542' Tc=32.6 min CN=59 Runoff=10.64 cfs 1.436 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>2.56"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=20.47 cfs 3.749 af

Subcatchment 3S: Subcatchment 3 Runoff Area=122,849 sf 0.64% Impervious Runoff Depth>0.91"
Flow Length=993' Tc=20.7 min CN=41 Runoff=1.28 cfs 0.214 af

Subcatchment 4S: Subcatchment 4 Runoff Area=4,089 sf 98.95% Impervious Runoff Depth>6.64"
Flow Length=85' Slope=0.0472 '/' Tc=6.0 min CN=97 Runoff=0.63 cfs 0.052 af

Subcatchment 5S: Subcatchment 5 Runoff Area=10,452 sf 82.66% Impervious Runoff Depth>5.59"
Flow Length=75' Tc=6.0 min CN=88 Runoff=1.47 cfs 0.112 af

Subcatchment 6S: Subcatchment 6 Runoff Area=24,193 sf 93.83% Impervious Runoff Depth>6.28"
Flow Length=216' Tc=6.0 min CN=94 Runoff=3.64 cfs 0.291 af

Subcatchment 7S: Subcatchment 7 Runoff Area=7,743 sf 65.07% Impervious Runoff Depth>4.36"
Flow Length=98' Tc=9.7 min CN=77 Runoff=0.79 cfs 0.065 af

Subcatchment 8S: Subcatchment 8 Runoff Area=19,227 sf 32.64% Impervious Runoff Depth>2.40"
Flow Length=152' Tc=10.4 min CN=58 Runoff=1.02 cfs 0.088 af

Subcatchment 9S: Subcatchment 9 Runoff Area=64,869 sf 22.90% Impervious Runoff Depth>1.93"
Flow Length=484' Tc=19.3 min CN=53 Runoff=2.09 cfs 0.239 af

Subcatchment 10S: Subcatchment 10 Runoff Area=53,175 sf 5.56% Impervious Runoff Depth>0.99"
Flow Length=438' Tc=18.4 min CN=42 Runoff=0.66 cfs 0.101 af

Subcatchment 11S: Area Behind the Dove Runoff Area=106,113 sf 10.71% Impervious Runoff Depth>1.57"
Flow Length=802' Tc=22.0 min CN=49 Runoff=2.47 cfs 0.318 af

Subcatchment 16S: Subcatchment #16 Runoff Area=299,000 sf 1.92% Impervious Runoff Depth>1.92"
Flow Length=1,113' Tc=27.2 min CN=53 Runoff=8.38 cfs 1.100 af

Subcatchment 17S: Subcatchment #17 Runoff Area=497,407 sf 0.00% Impervious Runoff Depth>2.39"
Flow Length=1,540' Tc=35.5 min CN=58 Runoff=16.08 cfs 2.272 af

Subcatchment 18S: Subcatchment #18 Runoff Area=474,696 sf 0.00% Impervious Runoff Depth>2.58"
Flow Length=1,280' Tc=29.3 min CN=60 Runoff=18.36 cfs 2.347 af

Subcatchment 19S: Subcatchment #19 Runoff Area=690,822 sf 0.00% Impervious Runoff Depth>2.57"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=21.30 cfs 3.400 af

Reach 2R: Reach 2 Avg. Flow Depth=0.91' Max Vel=4.68 fps Inflow=20.47 cfs 3.749 af
n=0.022 L=329.8' S=0.0091 '/' Capacity=24.64 cfs Outflow=20.48 cfs 3.746 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.29' Max Vel=1.64 fps Inflow=2.47 cfs 0.318 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=2.47 cfs 0.318 af

Reach 100R: Reach 100 Inflow=7.15 cfs 1.099 af
Outflow=7.15 cfs 1.099 af

Reach 200R: Reach 200 Inflow=16.07 cfs 2.220 af
Outflow=16.07 cfs 2.220 af

Reach 300R: Reach 300 Inflow=18.32 cfs 2.347 af
Outflow=18.32 cfs 2.347 af

Reach 400R: Reach 400 Inflow=21.29 cfs 3.400 af
Outflow=21.29 cfs 3.400 af

Reach 800R: Svenson Pond Inflow=33.70 cfs 6.661 af
Outflow=33.70 cfs 6.661 af

Pond 1P: Pond 1 Peak Elev=205.04' Storage=3,340 cf Inflow=10.64 cfs 1.436 af
Primary=2.94 cfs 0.973 af Secondary=9.83 cfs 0.463 af Outflow=11.00 cfs 1.436 af

Pond 2P: Existing CB#8 Peak Elev=200.48' Storage=4,995 cf Inflow=30.59 cfs 6.018 af
Primary=13.10 cfs 4.665 af Secondary=20.02 cfs 1.352 af Outflow=30.55 cfs 6.017 af

Pond 4P: Existing CB#4 Peak Elev=204.84' Storage=83 cf Inflow=11.10 cfs 1.488 af
Primary=2.98 cfs 1.114 af Secondary=8.14 cfs 0.376 af Outflow=11.11 cfs 1.488 af

Pond 5P: Existing CB #5 Peak Elev=203.12' Storage=82 cf Inflow=11.36 cfs 1.601 af
Primary=1.93 cfs 0.955 af Secondary=9.53 cfs 0.648 af Outflow=11.40 cfs 1.601 af

Pond 6P: Existing CB #6 Peak Elev=202.52' Storage=133 cf Inflow=12.00 cfs 1.894 af
Primary=3.06 cfs 1.214 af Secondary=9.91 cfs 0.680 af Outflow=12.14 cfs 1.893 af

Pond 7P: Existing CB#7 Peak Elev=200.89' Storage=131 cf Inflow=12.35 cfs 1.958 af
Primary=9.46 cfs 1.847 af Secondary=2.64 cfs 0.111 af Outflow=12.10 cfs 1.958 af

Pond 8P: 24" Cross Culvert Peak Elev=199.68' Storage=5,098 cf Inflow=32.23 cfs 6.424 af
Primary=21.32 cfs 5.933 af Secondary=11.28 cfs 0.490 af Outflow=32.60 cfs 6.422 af

Pond 16P: 12" CMP Peak Elev=204.85' Storage=6,443 cf Inflow=8.38 cfs 1.100 af
Outflow=7.15 cfs 1.099 af

Pond 17P: Existing Driveway Peak Elev=204.22' Storage=3,653 cf Inflow=16.08 cfs 2.272 af
Primary=10.81 cfs 1.812 af Secondary=5.26 cfs 0.408 af Outflow=16.07 cfs 2.220 af

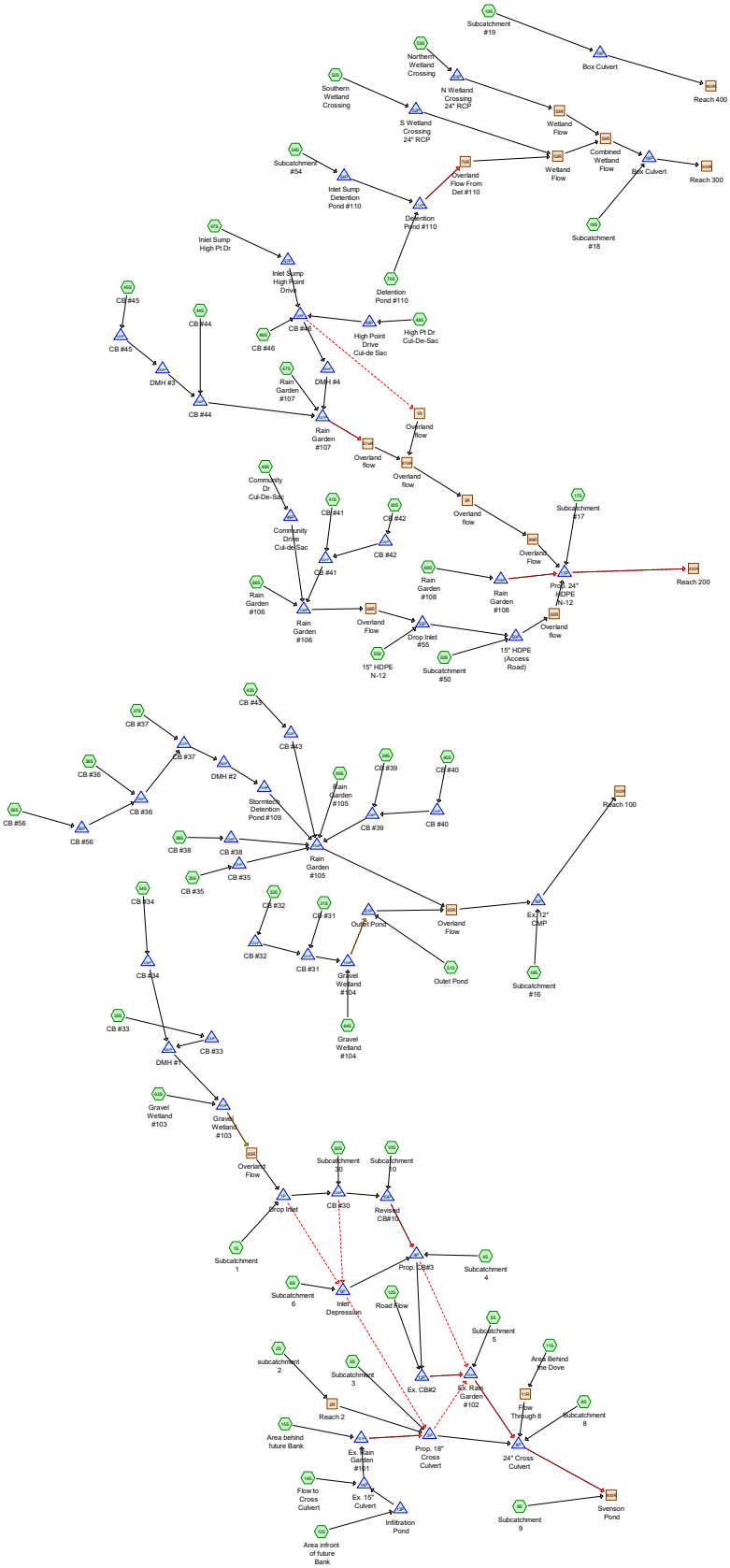
Pond 18P: Box Culvert Peak Elev=192.09' Storage=548 cf Inflow=18.36 cfs 2.347 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=18.32 cfs 2.347 af

Pond 19P: Box Culvert Peak Elev=184.85' Storage=93 cf Inflow=21.30 cfs 3.400 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=21.29 cfs 3.400 af

Total Runoff Area = 78.998 ac Runoff Volume = 15.785 af Average Runoff Depth = 2.40"
97.46% Pervious = 76.991 ac 2.54% Impervious = 2.007 ac

Appendix II - Proposed Conditions Analysis

25 Yr - 24 Hr. Full Summary
2 Yr - 24 Hr. Node Listing
10 Yr - 24 Hr. Node Listing
25 Yr – 24 Hr. Node Listing
50 Yr - 24 Hr. Node Listing
100 Yr - 24 Hr. Ponds Only



Subcat Reach Pond Link

Routing Diagram for 20-097 Proposed Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

HydroCAD® 10.00-22 s/n 07605 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.967	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 5S, 6S, 8S, 9S, 10S, 11S, 13S, 14S, 15S, 16S, 17S, 50S)
7.242	61	>75% Grass cover, Good, HSG B (1S, 10S, 11S, 16S, 17S, 18S, 30S, 31S, 32S, 33S, 35S, 36S, 37S, 38S, 39S, 41S, 42S, 43S, 44S, 45S, 46S, 47S, 48S, 49S, 50S, 51S, 52S, 53S, 54S, 55S, 56S, 63S, 64S, 65S, 66S, 67S, 68S, 70S)
1.021	74	>75% Grass cover, Good, HSG C (1S, 11S, 16S, 17S, 18S, 19S, 31S, 32S, 35S, 39S, 43S, 45S, 50S, 52S, 53S, 65S, 66S, 70S)
0.099	96	Gravel surface, HSG A (16S, 17S, 18S)
0.302	96	Gravel surface, HSG B (17S, 32S, 43S, 44S, 47S, 48S, 49S, 52S, 54S, 66S, 68S)
0.062	96	Gravel surface, HSG C (17S, 18S, 52S, 53S, 66S)
0.002	96	Gravel surface, HSG D (18S)
1.911	98	Paved parking, HSG A (2S, 4S, 5S, 6S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 16S, 17S)
2.490	98	Paved parking, HSG B (10S, 17S, 30S, 31S, 32S, 33S, 34S, 35S, 36S, 37S, 38S, 39S, 40S, 41S, 42S, 43S, 44S, 46S, 48S, 49S, 63S, 65S, 68S)
0.200	98	Paved parking, HSG C (31S, 32S, 35S, 38S, 39S, 40S, 41S, 42S, 43S, 65S)
0.475	98	Roofs, HSG A (2S, 4S, 5S, 8S, 9S, 11S, 13S, 16S)
0.564	98	Roofs, HSG B (33S, 34S, 36S, 37S, 39S, 43S, 44S, 45S, 46S, 47S, 66S)
0.045	98	Roofs, HSG C (35S, 43S, 45S)
0.067	98	Water Surface, 0% imp, HSG A (2S)
4.167	30	Woods, Good, HSG A (1S, 2S, 3S, 6S, 10S, 11S, 16S, 18S, 19S)
28.570	55	Woods, Good, HSG B (1S, 2S, 3S, 11S, 16S, 17S, 18S, 19S, 44S, 45S, 47S, 50S, 52S, 53S, 54S, 70S)
23.799	70	Woods, Good, HSG C (1S, 2S, 3S, 11S, 16S, 17S, 18S, 19S, 44S, 45S, 47S, 50S, 52S, 53S, 54S, 70S)
0.016	77	Woods, Good, HSG D (18S)
78.998	**61**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
14.685	HSG A	1S, 2S, 3S, 4S, 5S, 6S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 50S
39.168	HSG B	1S, 2S, 3S, 10S, 11S, 16S, 17S, 18S, 19S, 30S, 31S, 32S, 33S, 34S, 35S, 36S, 37S, 38S, 39S, 40S, 41S, 42S, 43S, 44S, 45S, 46S, 47S, 48S, 49S, 50S, 51S, 52S, 53S, 54S, 55S, 56S, 63S, 64S, 65S, 66S, 67S, 68S, 70S
25.126	HSG C	1S, 2S, 3S, 11S, 16S, 17S, 18S, 19S, 31S, 32S, 35S, 38S, 39S, 40S, 41S, 42S, 43S, 44S, 45S, 47S, 50S, 52S, 53S, 54S, 65S, 66S, 70S
0.018	HSG D	18S
0.000	Other	
78.998		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
7.967	7.242	1.021	0.000	0.000	16.229	>75% Grass cover, Good	1S, 2S, 3S, 5S, 6S, 8S, 9S, 10S, 11S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 30S, 31S, 32S, 33S, 35S, 36S, 37S, 38S, 39S, 41S, 42S, 43S, 44S, 45S, 46S, 47S, 48S, 49S, 50S, 51S, 52S, 53S, 54S, 55S, 56S, 63S, 64S, 65S, 66S, 67S, 68S, 70S

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.099	0.302	0.062	0.002	0.000	0.466	Gravel surface	16S, 17S, 18S, 32S, 43S, 44S, 47S, 48S, 49S, 52S, 53S, 54S, 66S, 68S
1.911	2.490	0.200	0.000	0.000	4.601	Paved parking	2S, 4S, 5S, 6S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 30S, 31S, 32S, 33S, 34S, 35S, 36S, 37S, 38S, 39S, 40S, 41S, 42S, 43S, 44S, 46S, 48S, 49S, 63S, 65S, 68S

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.475	0.564	0.045	0.000	0.000	1.084	Roofs	2S, 4S, 5S, 8S, 9S, 11S, 13S, 16S, 33S, 34S, 35S, 36S, 37S, 39S, 43S, 44S, 45S, 46S, 47S, 66S
0.067	0.000	0.000	0.000	0.000	0.067	Water Surface, 0% imp	2S
4.167	28.570	23.799	0.016	0.000	56.551	Woods, Good	1S, 2S, 3S, 6S, 10S, 11S, 16S, 17S, 18S, 19S, 44S, 45S, 47S, 50S, 52S, 53S, 54S, 70S
14.685	**39.168**	**25.126**	**0.018**	**0.000**	**78.998**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	200.75	200.40	11.5	0.0304	0.012	15.0	0.0	0.0
2	2P	198.10	197.50	60.0	0.0100	0.012	18.0	0.0	0.0
3	4P	199.20	198.70	93.7	0.0053	0.012	15.0	0.0	0.0
4	6P	200.00	199.30	30.0	0.0233	0.012	15.0	0.0	0.0
5	8P	196.55	196.44	21.6	0.0051	0.012	24.0	0.0	0.0
6	10P	200.07	199.30	153.9	0.0050	0.012	15.0	0.0	0.0
7	12P	198.60	198.50	20.0	0.0050	0.012	15.0	0.0	0.0
8	14P	201.50	201.00	50.0	0.0100	0.012	15.0	0.0	0.0
9	16P	203.25	203.05	20.0	0.0100	0.025	12.0	0.0	0.0
10	17P	202.25	202.00	37.0	0.0068	0.012	24.0	0.0	0.0
11	18P	190.25	190.20	28.0	0.0018	0.012	36.0	36.0	0.0
12	19P	182.69	183.13	52.0	-0.0085	0.012	36.0	36.0	0.0
13	47P	236.75	235.35	22.5	0.0622	0.012	18.0	0.0	0.0
14	48P	236.00	235.35	55.0	0.0118	0.012	15.0	0.0	0.0
15	49P	216.75	216.30	70.0	0.0064	0.012	15.0	0.0	0.0
16	50P	203.25	203.00	42.0	0.0060	0.012	15.0	0.0	0.0
17	52P	213.00	212.00	36.0	0.0278	0.024	24.0	0.0	6.0
18	53P	215.00	213.50	25.0	0.0600	0.024	24.0	0.0	6.0
19	54P	225.00	223.50	35.0	0.0429	0.012	18.0	0.0	0.0
20	55P	203.75	203.25	93.2	0.0054	0.012	15.0	0.0	0.0
21	56P	224.50	224.18	38.0	0.0084	0.012	15.0	0.0	0.0
22	101P	198.50	198.30	20.0	0.0100	0.012	6.0	0.0	0.0
23	102P	196.50	196.40	20.0	0.0050	0.012	6.0	0.0	0.0
24	103P	211.67	211.00	15.5	0.0432	0.012	15.0	0.0	0.0
25	103P	211.67	211.00	20.0	0.0335	0.012	15.0	0.0	0.0
26	104P	213.67	213.00	15.7	0.0427	0.012	6.0	0.0	0.0
27	104P	213.67	213.00	16.5	0.0406	0.012	15.0	0.0	0.0
28	105P	212.50	212.00	91.5	0.0055	0.012	18.0	0.0	0.0
29	106P	212.75	211.00	95.0	0.0184	0.012	15.0	0.0	0.0
30	107P	223.50	223.00	27.5	0.0182	0.012	15.0	0.0	0.0
31	108P	202.50	202.25	22.5	0.0111	0.012	6.0	0.0	0.0
32	109P	218.90	218.50	32.0	0.0125	0.012	15.0	0.0	0.0
33	110P	217.50	217.00	30.0	0.0167	0.012	15.0	0.0	0.0
34	C30P	200.30	200.17	23.0	0.0057	0.012	15.0	0.0	0.0
35	C31P	214.15	214.00	25.0	0.0060	0.012	15.0	0.0	0.0
36	C32P	214.40	214.25	29.0	0.0052	0.012	15.0	0.0	0.0
37	C33P	212.50	212.30	28.7	0.0070	0.012	15.0	0.0	0.0
38	C34P	216.55	212.30	63.5	0.0669	0.012	15.0	0.0	0.0
39	C35P	216.60	216.50	8.0	0.0125	0.012	15.0	0.0	0.0
40	C36P	224.08	223.25	162.0	0.0051	0.012	15.0	0.0	0.0
41	C37P	222.00	221.50	70.5	0.0071	0.012	15.0	0.0	0.0

Pipe Listing (all nodes) (continued)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
42	C38P	219.55	219.00	10.0	0.0550	0.012	15.0	0.0	0.0
43	C39P	217.05	216.50	20.0	0.0275	0.012	15.0	0.0	0.0
44	C40P	217.60	217.15	50.0	0.0090	0.012	15.0	0.0	0.0
45	C41P	216.20	216.00	17.5	0.0114	0.012	15.0	0.0	0.0
46	C42P	216.70	216.30	26.0	0.0154	0.012	15.0	0.0	0.0
47	C43P	227.20	223.00	90.0	0.0467	0.012	15.0	0.0	0.0
48	C44P	229.25	228.50	110.0	0.0068	0.012	15.0	0.0	0.0
49	C45P	230.50	230.10	65.0	0.0062	0.012	15.0	0.0	0.0
50	C46P	233.00	228.10	105.0	0.0467	0.012	15.0	0.0	0.0
51	C46P	233.50	229.00	55.0	0.0818	0.012	15.0	0.0	0.0
52	D01P	212.20	212.00	22.5	0.0089	0.012	15.0	0.0	0.0
53	D02P	220.00	220.00	3.0	0.0000	0.012	24.0	0.0	0.0
54	D03P	230.00	229.35	65.5	0.0099	0.012	15.0	0.0	0.0
55	D04P	228.00	227.50	50.0	0.0100	0.012	15.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=240,329 sf 0.00% Impervious Runoff Depth>1.09"
Flow Length=1,542' Tc=32.6 min CN=60 Runoff=3.36 cfs 0.499 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>1.08"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=7.71 cfs 1.573 af

Subcatchment 3S: Subcatchment 3 Runoff Area=118,503 sf 0.00% Impervious Runoff Depth>0.16"
Flow Length=993' Tc=20.7 min CN=40 Runoff=0.06 cfs 0.036 af

Subcatchment 4S: Subcatchment 4 Runoff Area=9,068 sf 100.00% Impervious Runoff Depth>4.40"
Flow Length=207' Tc=6.0 min CN=98 Runoff=0.92 cfs 0.076 af

Subcatchment 5S: Subcatchment 5 Runoff Area=22,497 sf 40.08% Impervious Runoff Depth>1.28"
Flow Length=212' Tc=7.0 min CN=63 Runoff=0.68 cfs 0.055 af

Subcatchment 6S: Subcatchment 6 Runoff Area=25,520 sf 84.67% Impervious Runoff Depth>3.43"
Tc=6.0 min CN=89 Runoff=2.25 cfs 0.167 af

Subcatchment 8S: Subcatchment 8 Runoff Area=25,776 sf 25.48% Impervious Runoff Depth>0.75"
Flow Length=152' Tc=10.4 min CN=54 Runoff=0.31 cfs 0.037 af

Subcatchment 9S: Subcatchment 9 Runoff Area=45,641 sf 11.38% Impervious Runoff Depth>0.37"
Flow Length=259' Tc=13.4 min CN=46 Runoff=0.15 cfs 0.033 af

Subcatchment 10S: Subcatchment 10 Runoff Area=9,312 sf 47.01% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=70 Runoff=0.43 cfs 0.032 af

Subcatchment 11S: Area Behind the Dove Runoff Area=84,440 sf 13.47% Impervious Runoff Depth>0.45"
Flow Length=636' Tc=29.3 min CN=48 Runoff=0.33 cfs 0.073 af

Subcatchment 12S: Road Flow Runoff Area=4,388 sf 100.00% Impervious Runoff Depth>4.40"
Tc=6.0 min CN=98 Runoff=0.45 cfs 0.037 af

Subcatchment 13S: Area infront of future Runoff Area=29,777 sf 30.66% Impervious Runoff Depth>0.92"
Flow Length=175' Tc=12.4 min CN=57 Runoff=0.47 cfs 0.052 af

Subcatchment 14S: Flow to Cross Culvert Runoff Area=7,713 sf 59.39% Impervious Runoff Depth>2.08"
Tc=6.0 min CN=74 Runoff=0.42 cfs 0.031 af

Subcatchment 15S: Area behind future Runoff Area=17,796 sf 67.02% Impervious Runoff Depth>2.49"
Tc=6.0 min CN=79 Runoff=1.17 cfs 0.085 af

Subcatchment 16S: Subcatchment #16 Runoff Area=124,974 sf 4.60% Impervious Runoff Depth>0.46"
Flow Length=344' Tc=16.5 min CN=48 Runoff=0.57 cfs 0.109 af

Subcatchment 17S: Subcatchment #17 Runoff Area=221,822 sf 0.52% Impervious Runoff Depth>1.03"
Flow Length=590' Tc=32.1 min CN=59 Runoff=2.89 cfs 0.435 af

Subcatchment 18S: Subcatchment #18 Runoff Area=168,645 sf 0.00% Impervious Runoff Depth>1.03"
Flow Length=451' Tc=24.9 min CN=59 Runoff=2.45 cfs 0.332 af

Subcatchment 19S: Subcatchment #19 Runoff Area=687,994 sf 0.00% Impervious Runoff Depth>1.08"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=8.03 cfs 1.422 af

Subcatchment 30S: Subcatchment 30 Runoff Area=5,396 sf 79.95% Impervious Runoff Depth>3.63"
Tc=6.0 min CN=91 Runoff=0.50 cfs 0.037 af

Subcatchment 31S: CB #31 Runoff Area=6,793 sf 80.13% Impervious Runoff Depth>3.63"
Tc=6.0 min CN=91 Runoff=0.62 cfs 0.047 af

Subcatchment 32S: CB #32 Runoff Area=7,675 sf 61.20% Impervious Runoff Depth>3.03"
Tc=6.0 min CN=85 Runoff=0.61 cfs 0.045 af

Subcatchment 33S: CB #33 Runoff Area=14,563 sf 62.46% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=84 Runoff=1.12 cfs 0.082 af

Subcatchment 34S: CB #34 Runoff Area=5,164 sf 100.00% Impervious Runoff Depth>4.40"
Tc=6.0 min CN=98 Runoff=0.52 cfs 0.043 af

Subcatchment 35S: CB #35 Runoff Area=7,817 sf 68.21% Impervious Runoff Depth>3.23"
Tc=6.0 min CN=87 Runoff=0.66 cfs 0.048 af

Subcatchment 36S: CB #36 Runoff Area=12,881 sf 80.50% Impervious Runoff Depth>3.63"
Tc=6.0 min CN=91 Runoff=1.18 cfs 0.089 af

Subcatchment 37S: CB #37 Runoff Area=5,252 sf 70.16% Impervious Runoff Depth>3.23"
Tc=6.0 min CN=87 Runoff=0.44 cfs 0.032 af

Subcatchment 38S: CB #38 Runoff Area=8,972 sf 76.16% Impervious Runoff Depth>3.43"
Tc=6.0 min CN=89 Runoff=0.79 cfs 0.059 af

Subcatchment 39S: CB #39 Runoff Area=8,469 sf 63.81% Impervious Runoff Depth>3.03"
Tc=6.0 min CN=85 Runoff=0.67 cfs 0.049 af

Subcatchment 40S: CB #40 Runoff Area=3,230 sf 100.00% Impervious Runoff Depth>4.40"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.027 af

Subcatchment 41S: CB #41 Runoff Area=2,930 sf 92.56% Impervious Runoff Depth>4.06"
Tc=6.0 min CN=95 Runoff=0.29 cfs 0.023 af

Subcatchment 42S: CB #42 Runoff Area=3,320 sf 84.85% Impervious Runoff Depth>3.74"
Tc=6.0 min CN=92 Runoff=0.31 cfs 0.024 af

Subcatchment 43S: CB #43 Runoff Area=14,691 sf 86.27% Impervious Runoff Depth>3.95"
Tc=6.0 min CN=94 Runoff=1.43 cfs 0.111 af

Subcatchment 44S: CB #44 Runoff Area=27,005 sf 48.05% Impervious Runoff Depth>2.49"
Flow Length=493' Tc=14.6 min CN=79 Runoff=1.38 cfs 0.129 af

Subcatchment 45S: CB #45 Runoff Area=30,206 sf 17.92% Impervious Runoff Depth>1.84"
Flow Length=265' Tc=10.2 min CN=71 Runoff=1.26 cfs 0.107 af

Subcatchment 46S: CB #46 Runoff Area=9,814 sf 97.25% Impervious Runoff Depth>4.29"
Tc=6.0 min CN=97 Runoff=0.99 cfs 0.080 af

Subcatchment 47S: Inlet Sump High Pt Dr Runoff Area=174,905 sf 1.77% Impervious Runoff Depth>1.28"
Flow Length=862' Tc=26.2 min CN=63 Runoff=3.30 cfs 0.427 af

Subcatchment 48S: High Pt Dr Cul-De-Sac Runoff Area=11,063 sf 68.77% Impervious Runoff Depth>3.33"
Tc=6.0 min CN=88 Runoff=0.95 cfs 0.070 af

Subcatchment 49S: Community Dr Runoff Area=19,859 sf 64.00% Impervious Runoff Depth>3.13"
Tc=6.0 min CN=86 Runoff=1.62 cfs 0.119 af

Subcatchment 50S: Subcatchment #50 Runoff Area=20,009 sf 0.00% Impervious Runoff Depth>1.09"
Flow Length=209' Tc=15.8 min CN=60 Runoff=0.37 cfs 0.042 af

Subcatchment 51S: Outet Pond Runoff Area=2,846 sf 0.00% Impervious Runoff Depth>1.16"
Tc=6.0 min CN=61 Runoff=0.08 cfs 0.006 af

Subcatchment 52S: Southern Wetland Runoff Area=156,553 sf 0.00% Impervious Runoff Depth>1.21"
Flow Length=971' Tc=24.9 min CN=62 Runoff=2.83 cfs 0.363 af

Subcatchment 53S: Northern Wetland Runoff Area=26,372 sf 0.00% Impervious Runoff Depth>1.41"
Flow Length=497' Tc=20.6 min CN=65 Runoff=0.62 cfs 0.071 af

Subcatchment 54S: Subcatchment #54 Runoff Area=120,358 sf 0.00% Impervious Runoff Depth>1.28"
Flow Length=1,059' Tc=24.7 min CN=63 Runoff=2.33 cfs 0.294 af

Subcatchment 55S: 15" HDPE N-12 Runoff Area=4,389 sf 0.00% Impervious Runoff Depth>1.16"
Tc=6.0 min CN=61 Runoff=0.12 cfs 0.010 af

Subcatchment 56S: CB #56 Runoff Area=16,876 sf 0.00% Impervious Runoff Depth>1.15"
Flow Length=247' Tc=15.6 min CN=61 Runoff=0.34 cfs 0.037 af

Subcatchment 63S: Gravel Wetland #103 Runoff Area=6,291 sf 0.30% Impervious Runoff Depth>1.16"
Tc=6.0 min CN=61 Runoff=0.17 cfs 0.014 af

Subcatchment 64S: Gravel Wetland #104 Runoff Area=1,940 sf 0.00% Impervious Runoff Depth>1.16"
Tc=6.0 min CN=61 Runoff=0.05 cfs 0.004 af

Subcatchment 65S: Rain Garden #105 Runoff Area=10,279 sf 0.72% Impervious Runoff Depth>1.49"
Tc=6.0 min CN=66 Runoff=0.38 cfs 0.029 af

Subcatchment 66S: Rain Garden #106 Runoff Area=30,740 sf 5.62% Impervious Runoff Depth>1.48"
Flow Length=153' Tc=17.2 min CN=66 Runoff=0.82 cfs 0.087 af

Subcatchment 67S: Rain Garden #107 Runoff Area=23,728 sf 0.00% Impervious Runoff Depth>1.16"
Flow Length=99' Tc=8.8 min CN=61 Runoff=0.58 cfs 0.052 af

Subcatchment 68S: Rain Garden #108 Runoff Area=7,539 sf 47.49% Impervious Runoff Depth>2.49"
Tc=6.0 min CN=79 Runoff=0.50 cfs 0.036 af

Subcatchment 70S: Detention Pond #110 Runoff Area=24,497 sf 0.00% Impervious Runoff Depth>1.03"
Flow Length=273' Tc=12.3 min CN=59 Runoff=0.46 cfs 0.048 af

Reach 1R: Overland flow Avg. Flow Depth=0.15' Max Vel=1.98 fps Inflow=0.79 cfs 0.034 af
n=0.030 L=264.5' S=0.0340 '/' Capacity=45.70 cfs Outflow=0.78 cfs 0.034 af

Reach 2R: Reach 2 Avg. Flow Depth=0.54' Max Vel=3.52 fps Inflow=7.71 cfs 1.573 af
n=0.022 L=220.0' S=0.0091 '/' Capacity=24.64 cfs Outflow=7.71 cfs 1.572 af

Reach 3R: Overland flow Avg. Flow Depth=0.15' Max Vel=3.82 fps Inflow=1.50 cfs 0.579 af
n=0.030 L=71.0' S=0.1268 '/' Capacity=88.20 cfs Outflow=1.50 cfs 0.579 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.12' Max Vel=0.88 fps Inflow=0.33 cfs 0.073 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=0.32 cfs 0.073 af

Reach 50R: Overland flow Avg. Flow Depth=0.12' Max Vel=1.52 fps Inflow=0.47 cfs 0.140 af
n=0.025 L=42.0' S=0.0179 '/' Capacity=186.81 cfs Outflow=0.47 cfs 0.140 af

Reach 52R: Wetland Flow Avg. Flow Depth=0.22' Max Vel=1.57 fps Inflow=3.14 cfs 0.695 af
n=0.045 L=123.0' S=0.0285 '/' Capacity=17.83 cfs Outflow=3.14 cfs 0.694 af

Reach 53R: Wetland Flow Avg. Flow Depth=0.10' Max Vel=1.04 fps Inflow=0.62 cfs 0.071 af
n=0.045 L=135.0' S=0.0370 '/' Capacity=20.35 cfs Outflow=0.62 cfs 0.071 af

Reach 54R: Combined Wetland Flow Avg. Flow Depth=0.25' Max Vel=4.47 fps Inflow=3.72 cfs 0.765 af
n=0.045 L=87.0' S=0.1379 '/' Capacity=610.11 cfs Outflow=3.72 cfs 0.765 af

Reach 63R: Overland Flow Avg. Flow Depth=0.02' Max Vel=0.68 fps Inflow=0.06 cfs 0.043 af
n=0.030 L=126.0' S=0.0476 '/' Capacity=43.27 cfs Outflow=0.06 cfs 0.043 af

Reach 65R: Overland Flow Avg. Flow Depth=0.13' Max Vel=1.34 fps Inflow=1.17 cfs 0.386 af
n=0.035 L=342.1' S=0.0270 '/' Capacity=22.35 cfs Outflow=1.13 cfs 0.385 af

Reach 66R: Overland Flow Avg. Flow Depth=0.05' Max Vel=1.65 fps Inflow=0.19 cfs 0.089 af
n=0.025 L=48.0' S=0.0677 '/' Capacity=24.68 cfs Outflow=0.19 cfs 0.089 af

Reach 67aR: Overland flow Avg. Flow Depth=0.17' Max Vel=3.09 fps Inflow=1.49 cfs 0.546 af
n=0.030 L=58.0' S=0.0690 '/' Capacity=65.05 cfs Outflow=1.49 cfs 0.546 af

Reach 67bR: Overland flow Avg. Flow Depth=0.21' Max Vel=1.51 fps Inflow=1.50 cfs 0.580 af
n=0.030 L=115.0' S=0.0087 '/' Capacity=24.95 cfs Outflow=1.50 cfs 0.579 af

Reach 69R: Overland Flow Avg. Flow Depth=0.14' Max Vel=1.67 fps Inflow=1.50 cfs 0.579 af
n=0.035 L=84.0' S=0.0357 '/' Capacity=101.76 cfs Outflow=1.50 cfs 0.578 af

Reach 70R: Overland Flow From Det Avg. Flow Depth=0.10' Max Vel=1.99 fps Inflow=0.42 cfs 0.332 af
n=0.035 L=61.0' S=0.0820 '/' Capacity=60.79 cfs Outflow=0.42 cfs 0.332 af

Reach 100R: Reach 100 Inflow=1.38 cfs 0.493 af
Outflow=1.38 cfs 0.493 af

Reach 200R: Reach 200 Inflow=4.43 cfs 1.176 af
Outflow=4.43 cfs 1.176 af

Reach 300R: Reach 300 Inflow=6.17 cfs 1.096 af
Outflow=6.17 cfs 1.096 af

Reach 400R: Reach 400 Inflow=8.03 cfs 1.422 af
Outflow=8.03 cfs 1.422 af

Reach 800R: Svenson Pond Inflow=11.51 cfs 2.748 af
Outflow=11.51 cfs 2.748 af

Pond 1P: Drop Inlet Peak Elev=202.85' Storage=7 cf Inflow=3.38 cfs 0.542 af
Primary=3.37 cfs 0.542 af Secondary=0.00 cfs 0.000 af Outflow=3.37 cfs 0.542 af

Pond 2P: Prop. 18" Cross Culvert Peak Elev=199.74' Storage=425 cf Inflow=8.07 cfs 1.704 af
Primary=8.04 cfs 1.704 af Secondary=0.00 cfs 0.000 af Outflow=8.04 cfs 1.704 af

Pond 4P: Prop. CB#3 Peak Elev=201.68' Storage=31 cf Inflow=5.50 cfs 0.854 af
Primary=5.50 cfs 0.854 af Secondary=0.00 cfs 0.000 af Outflow=5.50 cfs 0.854 af

Pond 6P: Inlet Depression Peak Elev=201.55' Storage=546 cf Inflow=2.25 cfs 0.167 af
Primary=1.98 cfs 0.167 af Secondary=0.00 cfs 0.000 af Outflow=1.98 cfs 0.167 af

Pond 8P: 24" Cross Culvert Peak Elev=198.46' Storage=1,282 cf Inflow=11.54 cfs 2.716 af
Primary=11.43 cfs 2.715 af Secondary=0.00 cfs 0.000 af Outflow=11.43 cfs 2.715 af

Pond 10P: Revised CB#10 Peak Elev=202.16' Storage=41 cf Inflow=3.60 cfs 0.611 af
Primary=3.57 cfs 0.611 af Secondary=0.00 cfs 0.000 af Outflow=3.57 cfs 0.611 af

Pond 12P: Ex. CB#2 Peak Elev=201.06' Storage=31 cf Inflow=5.56 cfs 0.891 af
Primary=5.54 cfs 0.891 af Secondary=0.00 cfs 0.000 af Outflow=5.54 cfs 0.891 af

Pond 13P: Infiltration Pond Peak Elev=203.16' Storage=371 cf Inflow=0.47 cfs 0.052 af
Discarded=0.19 cfs 0.052 af Primary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.052 af

Pond 14P: Ex. 15" Culvert Peak Elev=201.77' Storage=205 cf Inflow=0.42 cfs 0.031 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=0.26 cfs 0.030 af

Pond 16P: Ex. 12" CMP Peak Elev=204.10' Storage=436 cf Inflow=1.48 cfs 0.494 af
Outflow=1.38 cfs 0.493 af

Pond 17P: Prop. 24" HDPE N-12 Peak Elev=203.32' Storage=306 cf Inflow=4.45 cfs 1.177 af
Primary=4.43 cfs 1.176 af Secondary=0.00 cfs 0.000 af Outflow=4.43 cfs 1.176 af

Pond 18P: Box Culvert Peak Elev=191.14' Storage=59 cf Inflow=6.17 cfs 1.096 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=6.17 cfs 1.096 af

Pond 19P: Box Culvert Peak Elev=184.02' Storage=18 cf Inflow=8.03 cfs 1.422 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=8.03 cfs 1.422 af

Pond 47P: Inlet Sump High Point Drive Peak Elev=237.61' Storage=108 cf Inflow=3.30 cfs 0.427 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0622 '/' Outflow=3.30 cfs 0.427 af

Pond 48P: High Point Drive Cul-de Sac Peak Elev=236.45' Storage=107 cf Inflow=0.95 cfs 0.070 af
15.0" Round Culvert n=0.012 L=55.0' S=0.0118 '/' Outflow=0.92 cfs 0.070 af

Pond 49P: Community Drive Cul-de Sac Peak Elev=218.09' Storage=4,057 cf Inflow=1.62 cfs 0.119 af
15.0" Round Culvert n=0.012 L=70.0' S=0.0064 '/' Outflow=0.32 cfs 0.026 af

Pond 50P: 15" HDPE (Access Road) Peak Elev=203.62' Storage=41 cf Inflow=0.48 cfs 0.140 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0060 '/' Outflow=0.47 cfs 0.140 af

Pond 51P: Outlet Pond Peak Elev=214.04' Storage=923 cf Inflow=0.54 cfs 0.069 af
Outflow=0.34 cfs 0.048 af

Pond 52P: S Wetland Crossing 24" RCP Peak Elev=214.10' Storage=39 cf Inflow=2.83 cfs 0.363 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=36.0' S=0.0278 '/' Outflow=2.83 cfs 0.363 af

Pond 53P: N Wetland Crossing 24" RCP Peak Elev=215.72' Storage=7 cf Inflow=0.62 cfs 0.071 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=25.0' S=0.0600 '/' Outflow=0.62 cfs 0.071 af

Pond 54P: Inlet Sump Detention Pond #110 Peak Elev=225.70' Storage=241 cf Inflow=2.33 cfs 0.294 af
18.0" Round Culvert n=0.012 L=35.0' S=0.0429 '/' Outflow=2.32 cfs 0.293 af

Pond 55P: Drop Inlet #55 Peak Elev=203.99' Storage=0.000 af Inflow=0.20 cfs 0.098 af
15.0" Round Culvert n=0.012 L=93.2' S=0.0054 '/' Outflow=0.20 cfs 0.098 af

Pond 56P: CB #56 Peak Elev=224.82' Storage=4 cf Inflow=0.34 cfs 0.037 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0084 '/' Outflow=0.34 cfs 0.037 af

Pond 101P: Ex. Rain Garden #101 Peak Elev=201.70' Storage=1,915 cf Inflow=1.41 cfs 0.115 af
Primary=0.31 cfs 0.096 af Secondary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.096 af

Pond 102P: Ex. Rain Garden #102 Peak Elev=200.21' Storage=6,283 cf Inflow=5.70 cfs 0.946 af
Primary=0.46 cfs 0.520 af Secondary=4.56 cfs 0.382 af Outflow=5.02 cfs 0.902 af

Pond 103P: Gravel Wetland #103 Peak Elev=214.39' Storage=4,346 cf Inflow=1.80 cfs 0.138 af
Primary=0.02 cfs 0.026 af Secondary=0.04 cfs 0.017 af Tertiary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.043 af

Pond 104P: Gravel Wetland #104 Peak Elev=216.40' Storage=1,750 cf Inflow=1.26 cfs 0.095 af
Primary=0.01 cfs 0.012 af Secondary=0.49 cfs 0.050 af Tertiary=0.00 cfs 0.000 af Outflow=0.50 cfs 0.063 af

Pond 105P: Rain Garden #105 Peak Elev=218.85' Storage=8,297 cf Inflow=4.36 cfs 0.479 af
Outflow=0.90 cfs 0.338 af

Pond 106P: Rain Garden #106 Peak Elev=218.55' Storage=3,802 cf Inflow=1.71 cfs 0.164 af
Outflow=0.19 cfs 0.089 af

Pond 107P: Rain Garden #107 Peak Elev=228.77' Storage=16,012 cf Inflow=5.75 cfs 0.831 af
Discarded=0.02 cfs 0.018 af Primary=1.49 cfs 0.546 af Secondary=0.00 cfs 0.000 af Outflow=1.51 cfs 0.564 af

Pond 108P: Rain Garden #108 Peak Elev=206.24' Storage=953 cf Inflow=0.50 cfs 0.036 af
Primary=0.02 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.024 af

Pond 109P: Stormtech Detention Pond #109 Peak Elev=221.83' Storage=2,436 cf Inflow=1.78 cfs 0.159 af
Outflow=0.52 cfs 0.156 af

Pond 110P: Detention Pond #110 Peak Elev=220.77' Storage=5,939 cf Inflow=2.65 cfs 0.342 af
Primary=0.42 cfs 0.332 af Secondary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.332 af

Pond C30P: CB #30 Peak Elev=202.42' Storage=42 cf Inflow=3.47 cfs 0.580 af
Primary=3.48 cfs 0.580 af Secondary=0.00 cfs 0.000 af Outflow=3.48 cfs 0.580 af

Pond C31P: CB #31 Peak Elev=216.40' Storage=28 cf Inflow=1.22 cfs 0.091 af
15.0" Round Culvert n=0.012 L=25.0' S=0.0060 '/' Outflow=1.21 cfs 0.091 af

Pond C32P: CB #32 Peak Elev=216.40' Storage=25 cf Inflow=0.61 cfs 0.045 af
15.0" Round Culvert n=0.012 L=29.0' S=0.0052 '/' Outflow=0.60 cfs 0.044 af

Pond C33P: CB #33 Peak Elev=214.39' Storage=24 cf Inflow=1.12 cfs 0.082 af
15.0" Round Culvert n=0.012 L=28.7' S=0.0070 '/' Outflow=1.12 cfs 0.081 af

Pond C34P: CB #34 Peak Elev=216.89' Storage=8 cf Inflow=0.52 cfs 0.043 af
15.0" Round Culvert n=0.012 L=63.5' S=0.0669 '/' Outflow=0.53 cfs 0.043 af

Pond C35P: CB #35 Peak Elev=218.85' Storage=28 cf Inflow=0.66 cfs 0.048 af
15.0" Round Culvert n=0.012 L=8.0' S=0.0125 '/' Outflow=0.64 cfs 0.048 af

Pond C36P: CB #36 Peak Elev=224.70' Storage=8 cf Inflow=1.37 cfs 0.127 af
15.0" Round Culvert n=0.012 L=162.0' S=0.0051 '/' Outflow=1.37 cfs 0.127 af

Pond C37P: CB #37 Peak Elev=222.70' Storage=9 cf Inflow=1.81 cfs 0.159 af
15.0" Round Culvert n=0.012 L=70.5' S=0.0071 '/' Outflow=1.81 cfs 0.159 af

Pond C38P: CB #38 Peak Elev=219.97' Storage=5 cf Inflow=0.79 cfs 0.059 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0550 '/' Outflow=0.79 cfs 0.059 af

Pond C39P: CB #39 Peak Elev=218.85' Storage=23 cf Inflow=1.00 cfs 0.076 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0275 '/' Outflow=0.99 cfs 0.076 af

Pond C40P: CB #40 Peak Elev=218.85' Storage=16 cf Inflow=0.33 cfs 0.027 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0090 '/' Outflow=0.33 cfs 0.027 af

Pond C41P: CB #41 Peak Elev=218.55' Storage=30 cf Inflow=0.59 cfs 0.046 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0114 '/' Outflow=0.58 cfs 0.045 af

Pond C42P: CB #42 Peak Elev=218.56' Storage=23 cf Inflow=0.31 cfs 0.024 af
15.0" Round Culvert n=0.012 L=26.0' S=0.0154 '/' Outflow=0.31 cfs 0.023 af

Pond C43P: CB #43 Peak Elev=227.78' Storage=7 cf Inflow=1.43 cfs 0.111 af
15.0" Round Culvert n=0.012 L=90.0' S=0.0467 '/' Outflow=1.43 cfs 0.111 af

Pond C44P: CB #44 Peak Elev=230.10' Storage=11 cf Inflow=2.57 cfs 0.235 af
15.0" Round Culvert n=0.012 L=110.0' S=0.0068 '/' Outflow=2.57 cfs 0.235 af

Pond C45P: CB #45 Peak Elev=231.10' Storage=8 cf Inflow=1.26 cfs 0.107 af
15.0" Round Culvert n=0.012 L=65.0' S=0.0062 '/' Outflow=1.26 cfs 0.107 af

Pond C46P: CB #46 Peak Elev=233.92' Storage=18 cf Inflow=3.93 cfs 0.578 af
Primary=3.14 cfs 0.544 af Secondary=0.79 cfs 0.034 af Outflow=3.93 cfs 0.578 af

Pond D01P: DMH #1 Peak Elev=214.39' Storage=28 cf Inflow=1.64 cfs 0.125 af
15.0" Round Culvert n=0.012 L=22.5' S=0.0089 '/' Outflow=1.64 cfs 0.124 af

Pond D02P: DMH #2 Peak Elev=221.83' Storage=36 cf Inflow=1.81 cfs 0.159 af
24.0" Round Culvert n=0.012 L=3.0' S=0.0000 '/' Outflow=1.78 cfs 0.159 af

Pond D03P: DMH #3 Peak Elev=230.60' Storage=8 cf Inflow=1.26 cfs 0.107 af
15.0" Round Culvert n=0.012 L=65.5' S=0.0099 '/' Outflow=1.26 cfs 0.107 af

Pond D04P: DMH #4 Peak Elev=228.95' Storage=12 cf Inflow=3.14 cfs 0.544 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=3.14 cfs 0.544 af

Total Runoff Area = 78.998 ac Runoff Volume = 7.829 af Average Runoff Depth = 1.19"
92.80% Pervious = 73.313 ac 7.20% Impervious = 5.685 ac

Summary for Subcatchment 1S: Subcatchment 1

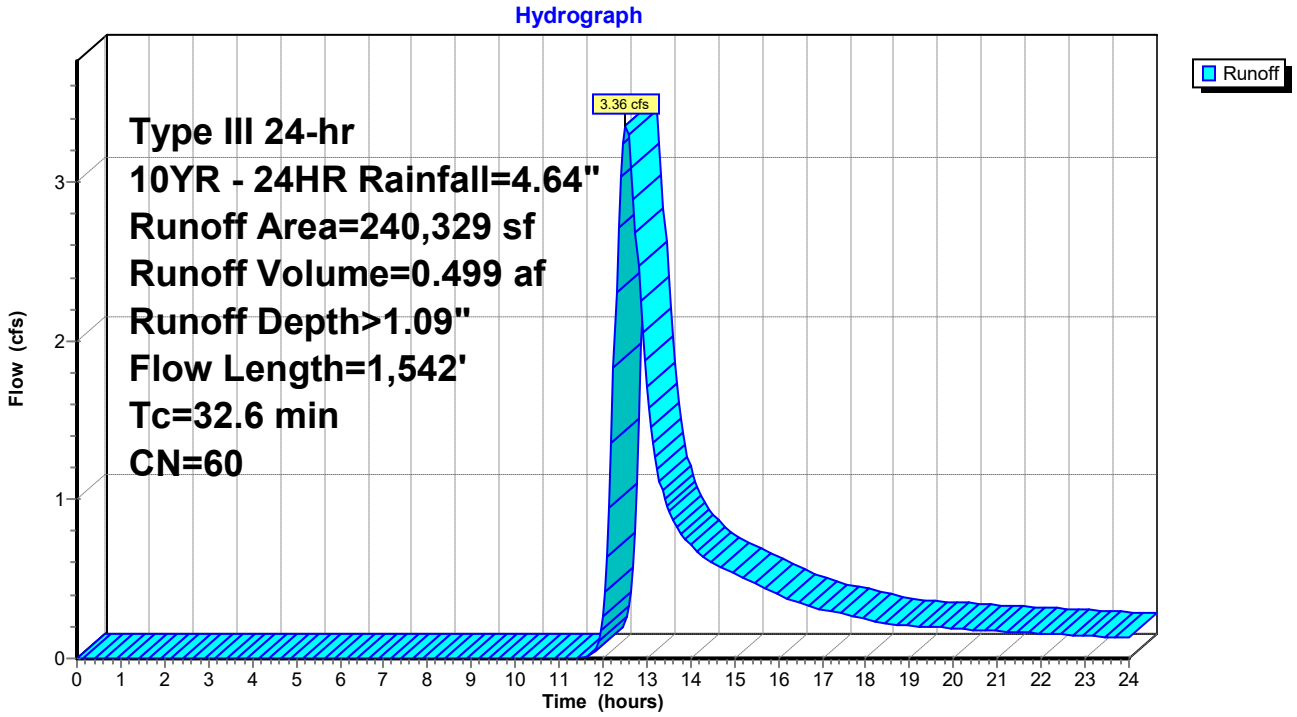
Runoff = 3.36 cfs @ 12.52 hrs, Volume= 0.499 af, Depth> 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
1,912	39	>75% Grass cover, Good, HSG A
11,198	30	Woods, Good, HSG A
11,000	61	>75% Grass cover, Good, HSG B
122,005	55	Woods, Good, HSG B
1,726	74	>75% Grass cover, Good, HSG C
92,488	70	Woods, Good, HSG C
240,329	60	Weighted Average
240,329		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.1500	0.17		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.08"
4.7	442	0.0973	1.56		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
0.5	65	0.2153	2.32		**Shallow Concentrated Flow, Segment 3** Woodland Kv= 5.0 fps
2.6	153	0.0395	0.99		**Shallow Concentrated Flow, Segment 4** Woodland Kv= 5.0 fps
2.6	153	0.0393	0.99		**Shallow Concentrated Flow, Segment 5** Woodland Kv= 5.0 fps
0.7	62	0.0806	1.42		**Shallow Concentrated Flow, Segment 6** Woodland Kv= 5.0 fps
5.0	190	0.0158	0.63		**Shallow Concentrated Flow, Segment 7** Woodland Kv= 5.0 fps
5.9	315	0.0317	0.89		**Shallow Concentrated Flow, Segment 8** Woodland Kv= 5.0 fps
0.8	62	0.0645	1.27		**Shallow Concentrated Flow, Segment 9** Woodland Kv= 5.0 fps
32.6	1,542	Total			

Subcatchment 1S: Subcatchment 1



Summary for Subcatchment 2S: subcatchment 2

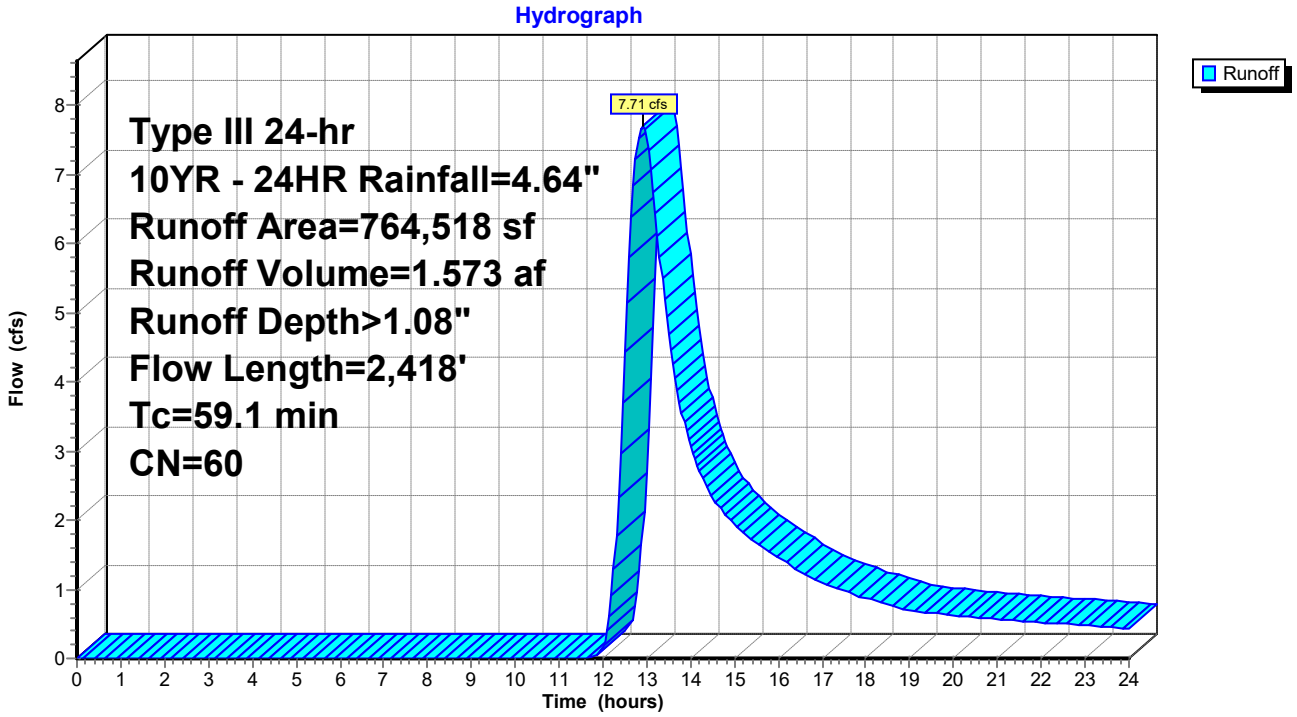
Runoff = 7.71 cfs @ 12.91 hrs, Volume= 1.573 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,663	98	Roofs, HSG A
55,787	39	>75% Grass cover, Good, HSG A
2,337	98	Paved parking, HSG A
37,068	30	Woods, Good, HSG A
2,905	98	Water Surface, 0% imp, HSG A
331,879	55	Woods, Good, HSG B
331,879	70	Woods, Good, HSG C
764,518	60	Weighted Average
759,518		99.35% Pervious Area
5,000		0.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0500	0.11		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.08"
9.8	940	0.1032	1.61		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
14.8	445	0.0101	0.50		**Shallow Concentrated Flow, Segment 3** Woodland Kv= 5.0 fps
2.1	59	0.0085	0.46		**Shallow Concentrated Flow, Segment 4** Woodland Kv= 5.0 fps
1.7	137	0.0728	1.35		**Shallow Concentrated Flow, Segment 5** Woodland Kv= 5.0 fps
12.7	418	0.0120	0.55		**Shallow Concentrated Flow, Segment 6** Woodland Kv= 5.0 fps
2.5	165	0.0242	1.09		**Shallow Concentrated Flow, Segment 7** Short Grass Pasture Kv= 7.0 fps
0.1	68		12.69		**Lake or Reservoir, Segment 8** Mean Depth= 5.00'
0.2	86	0.0174	6.81	23.84	**Trap/Vee/Rect Channel Flow, Segment 9** Bot.W=3.00' D=1.00' Z= 0.5 '/' Top.W=4.00' n= 0.022 Earth, clean & straight
59.1	2,418	Total			

Subcatchment 2S: subcatchment 2



Summary for Subcatchment 3S: Subcatchment 3

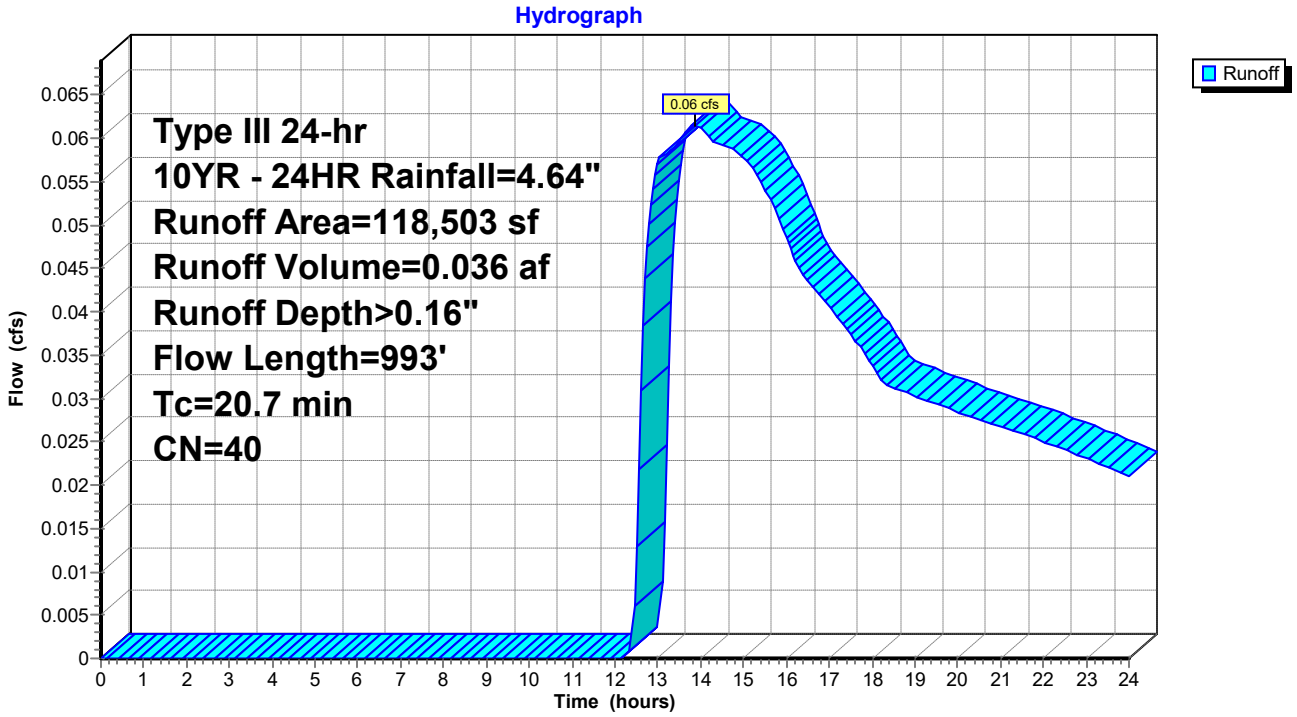
Runoff = 0.06 cfs @ 13.86 hrs, Volume= 0.036 af, Depth> 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
33,586	39	>75% Grass cover, Good, HSG A
55,939	30	Woods, Good, HSG A
14,489	55	Woods, Good, HSG B
14,489	70	Woods, Good, HSG C
118,503	40	Weighted Average
118,503		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	97	0.1334	0.16		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.08"
2.7	155	0.0355	0.94		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
5.3	290	0.0328	0.91		**Shallow Concentrated Flow, Segment 3** Woodland Kv= 5.0 fps
1.6	132	0.0379	1.36		**Shallow Concentrated Flow, Segment 4** Short Grass Pasture Kv= 7.0 fps
1.1	319	0.0094	5.01	17.52	**Trap/Vee/Rect Channel Flow, Segment 5** Bot.W=3.00' D=1.00' Z= 0.5 '/' Top.W=4.00' n= 0.022 Earth, clean & straight
20.7	993	Total			

Subcatchment 3S: Subcatchment 3



Summary for Subcatchment 4S: Subcatchment 4

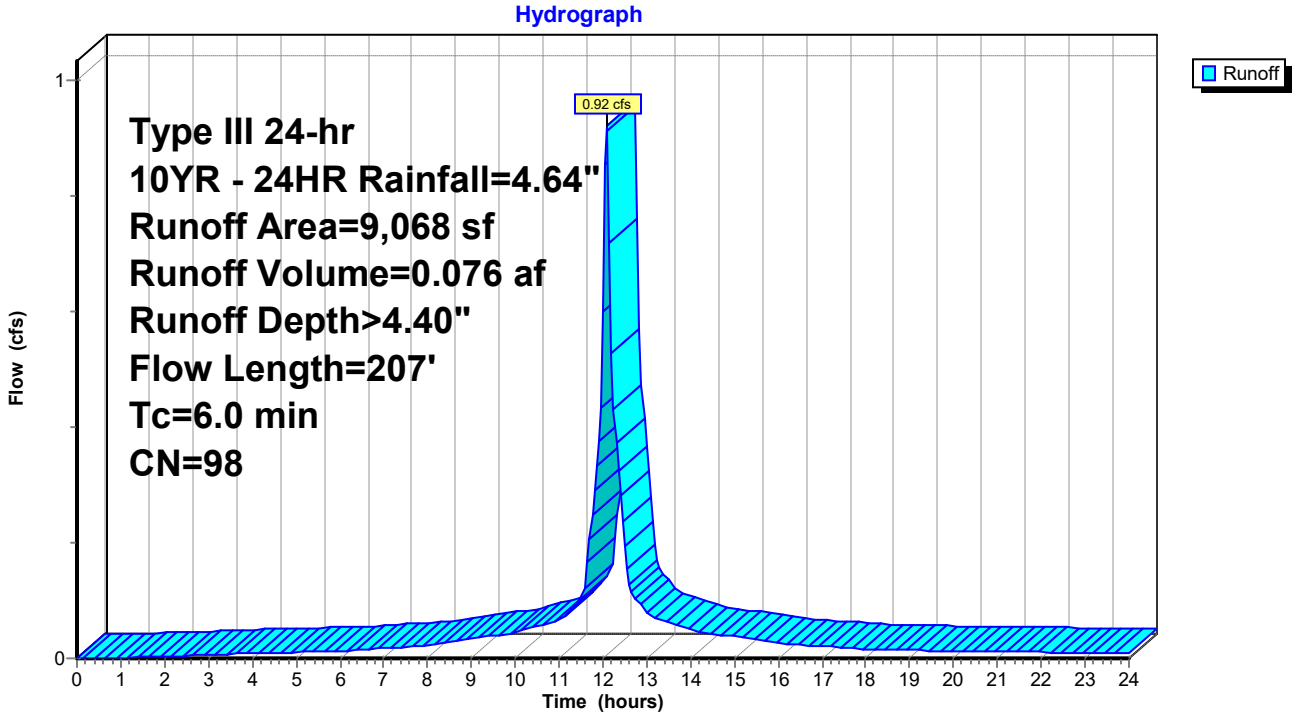
Runoff = 0.92 cfs @ 12.09 hrs, Volume= 0.076 af, Depth> 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
859	98	Roofs, HSG A
8,209	98	Paved parking, HSG A
9,068	98	Weighted Average
9,068		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	71	0.0472	1.78		**Sheet Flow, Segment 1** Smooth surfaces n= 0.011 P2= 3.08"
1.1	136	0.0100	2.03		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.8	207	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 4S: Subcatchment 4



Summary for Subcatchment 5S: Subcatchment 5

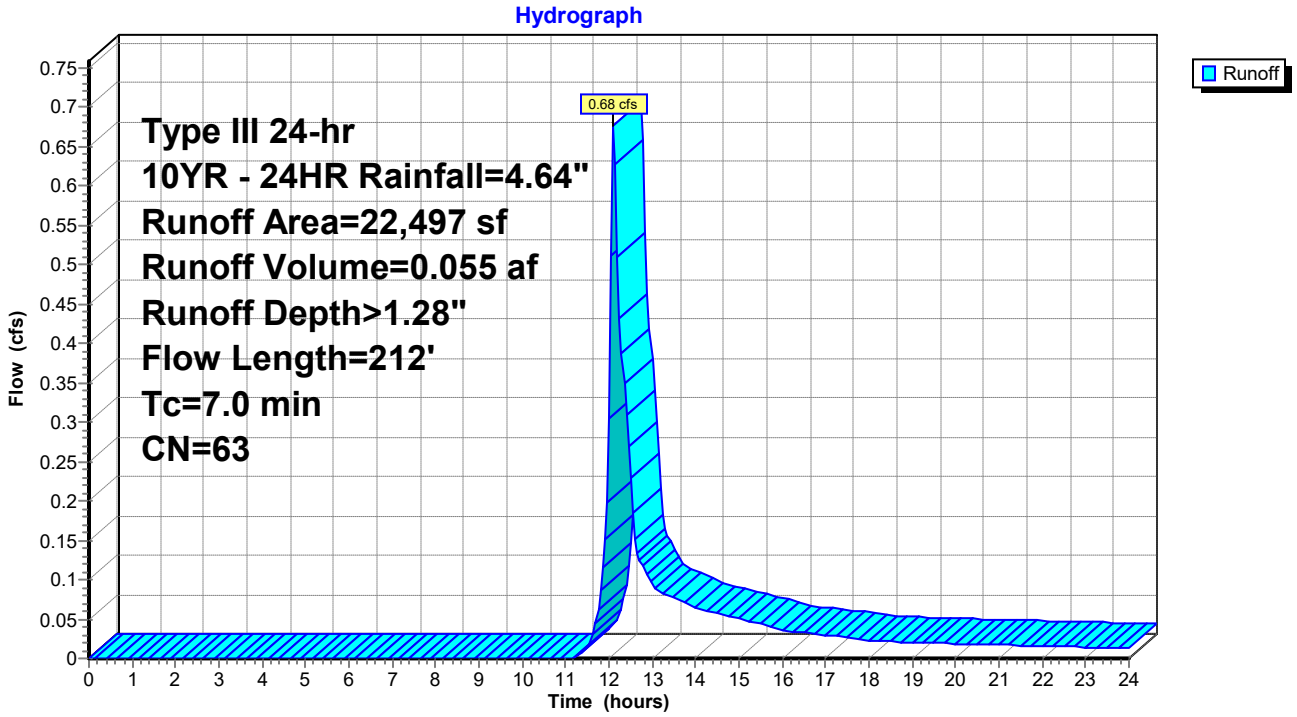
Runoff = 0.68 cfs @ 12.11 hrs, Volume= 0.055 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
6,050	98	Roofs, HSG A
13,481	39	>75% Grass cover, Good, HSG A
2,966	98	Paved parking, HSG A
22,497	63	Weighted Average
13,481		59.92% Pervious Area
9,016		40.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	65	0.0553	0.23		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.08"
0.0	8	0.0200	2.87		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
1.0	40	0.0100	0.70		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
0.3	56	0.0200	2.87		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
1.0	43	0.0100	0.70		**Shallow Concentrated Flow, 4** Short Grass Pasture Kv= 7.0 fps
7.0	212	Total			

Subcatchment 5S: Subcatchment 5



Summary for Subcatchment 6S: Subcatchment 6

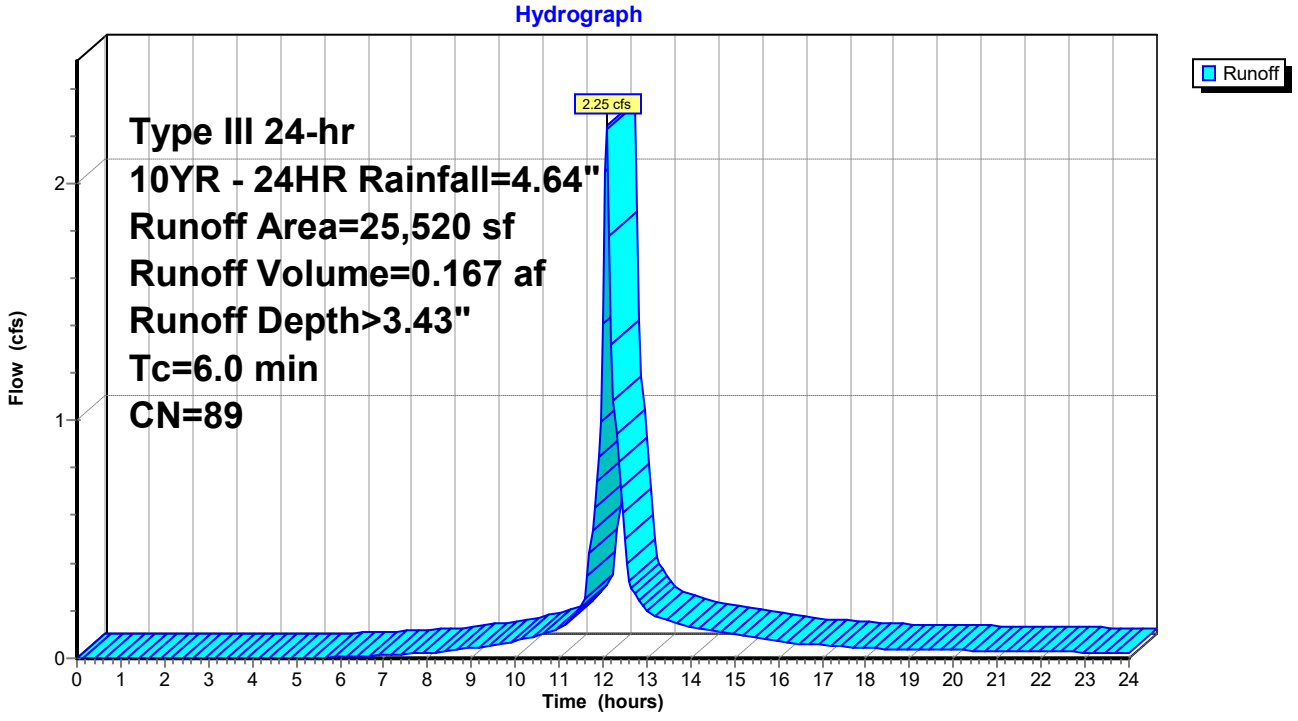
Runoff = 2.25 cfs @ 12.09 hrs, Volume= 0.167 af, Depth> 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
3,588	39	>75% Grass cover, Good, HSG A
21,608	98	Paved parking, HSG A
324	30	Woods, Good, HSG A
25,520	89	Weighted Average
3,912		15.33% Pervious Area
21,608		84.67% Impervious Area

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

Subcatchment 6S: Subcatchment 6



Summary for Subcatchment 8S: Subcatchment 8

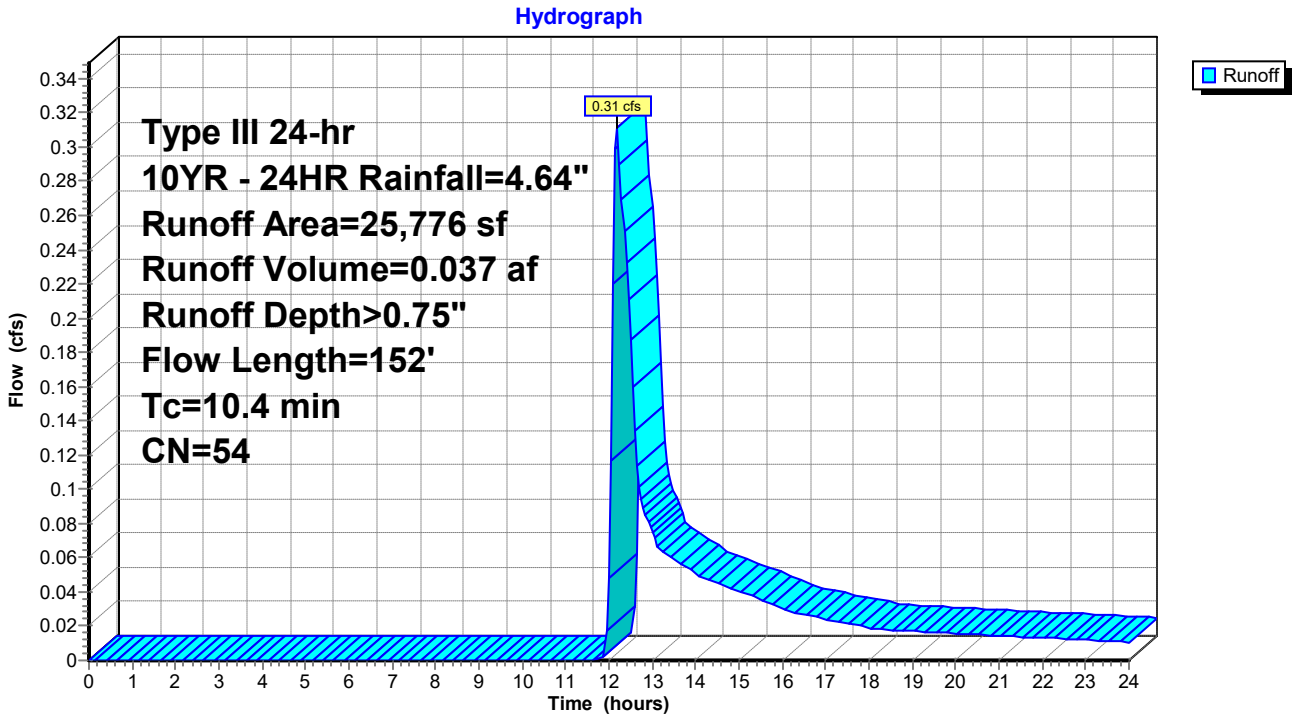
Runoff = 0.31 cfs @ 12.19 hrs, Volume= 0.037 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,022	98	Roofs, HSG A
19,207	39	>75% Grass cover, Good, HSG A
4,547	98	Paved parking, HSG A
25,776	54	Weighted Average
19,207		74.52% Pervious Area
6,569		25.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	87	0.0172	0.15		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.08"
0.9	65	0.0309	1.23		**Shallow Concentrated Flow, Segment 2** Short Grass Pasture Kv= 7.0 fps
10.4	152	Total			

Subcatchment 8S: Subcatchment 8



Summary for Subcatchment 9S: Subcatchment 9

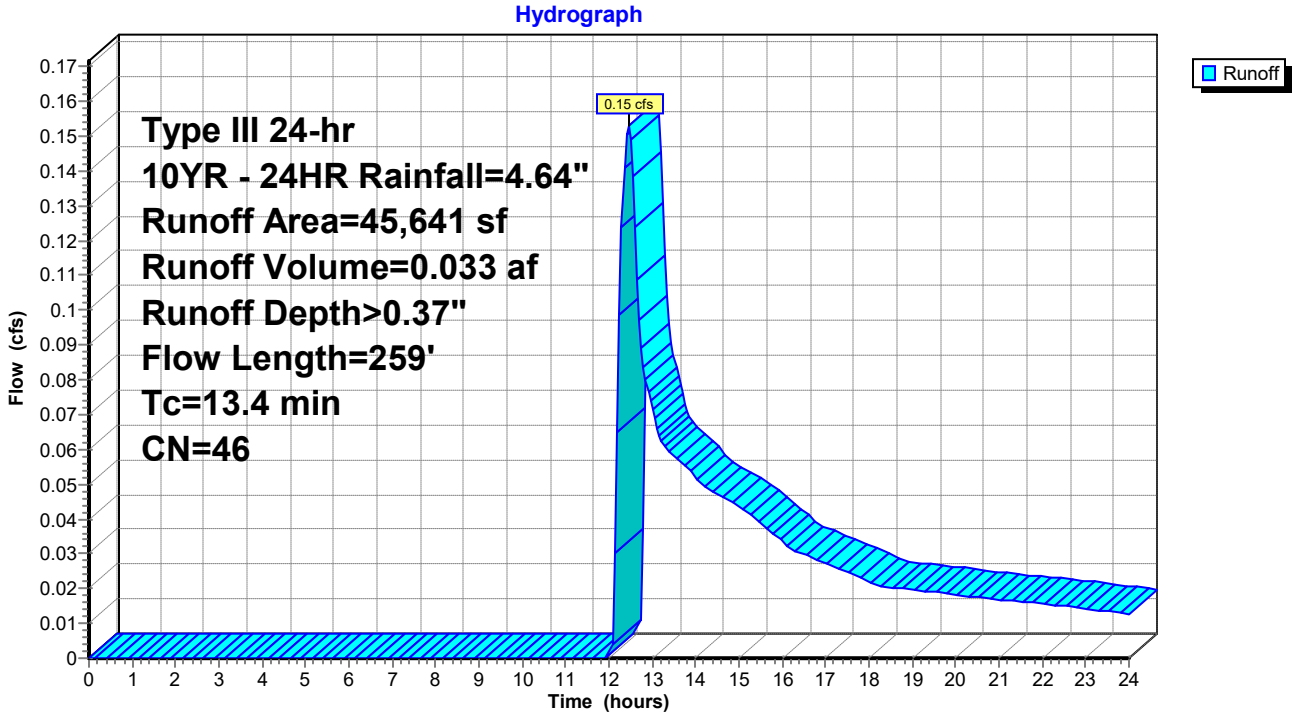
Runoff = 0.15 cfs @ 12.44 hrs, Volume= 0.033 af, Depth> 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
606	98	Roofs, HSG A
40,448	39	>75% Grass cover, Good, HSG A
4,587	98	Paved parking, HSG A
45,641	46	Weighted Average
40,448		88.62% Pervious Area
5,193		11.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0150	0.15		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.08"
1.0	58	0.0200	0.99		**Shallow Concentrated Flow, Segment 2** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0397	1.39		**Shallow Concentrated Flow, Segment 4** Short Grass Pasture Kv= 7.0 fps
13.4	259	Total			

Subcatchment 9S: Subcatchment 9



Summary for Subcatchment 10S: Subcatchment 10

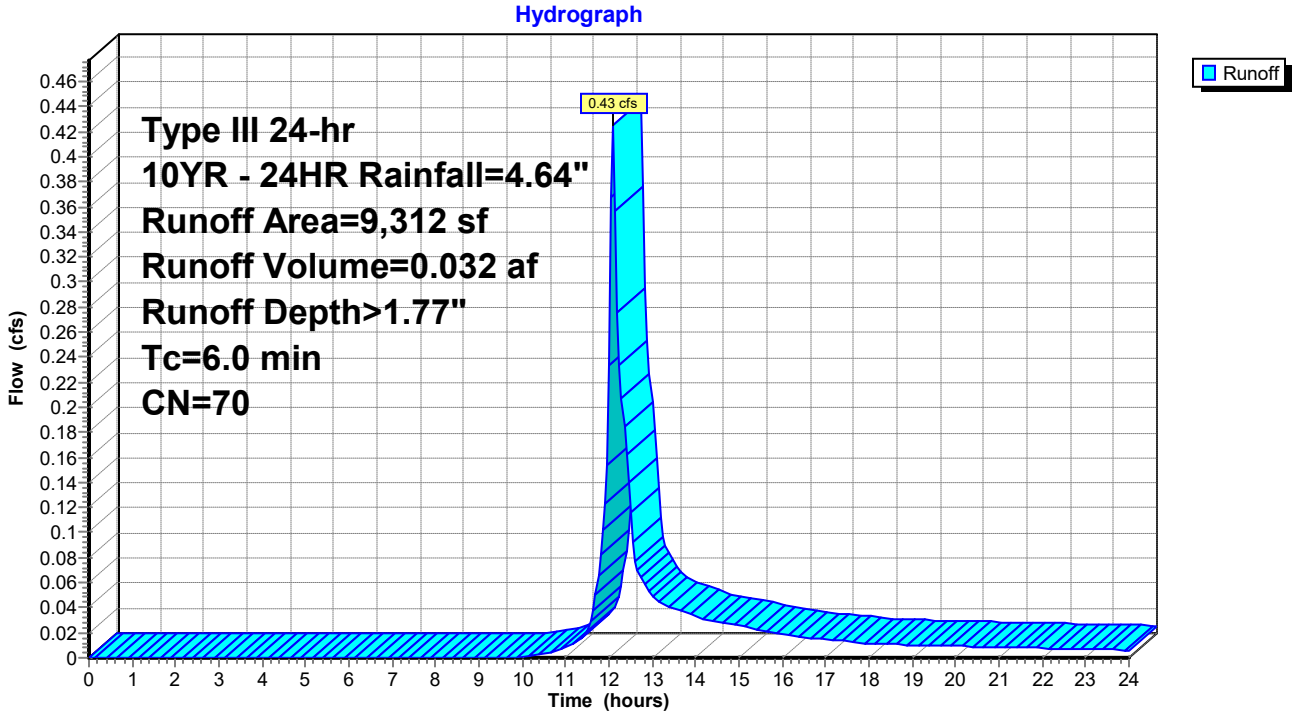
Runoff = 0.43 cfs @ 12.10 hrs, Volume= 0.032 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
746	39	>75% Grass cover, Good, HSG A
2,098	30	Woods, Good, HSG A
2,090	61	>75% Grass cover, Good, HSG B
4,378	98	Paved parking, HSG B
9,312	70	Weighted Average
4,934		52.99% Pervious Area
4,378		47.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Segment 1**

Subcatchment 10S: Subcatchment 10



Summary for Subcatchment 11S: Area Behind the Dove

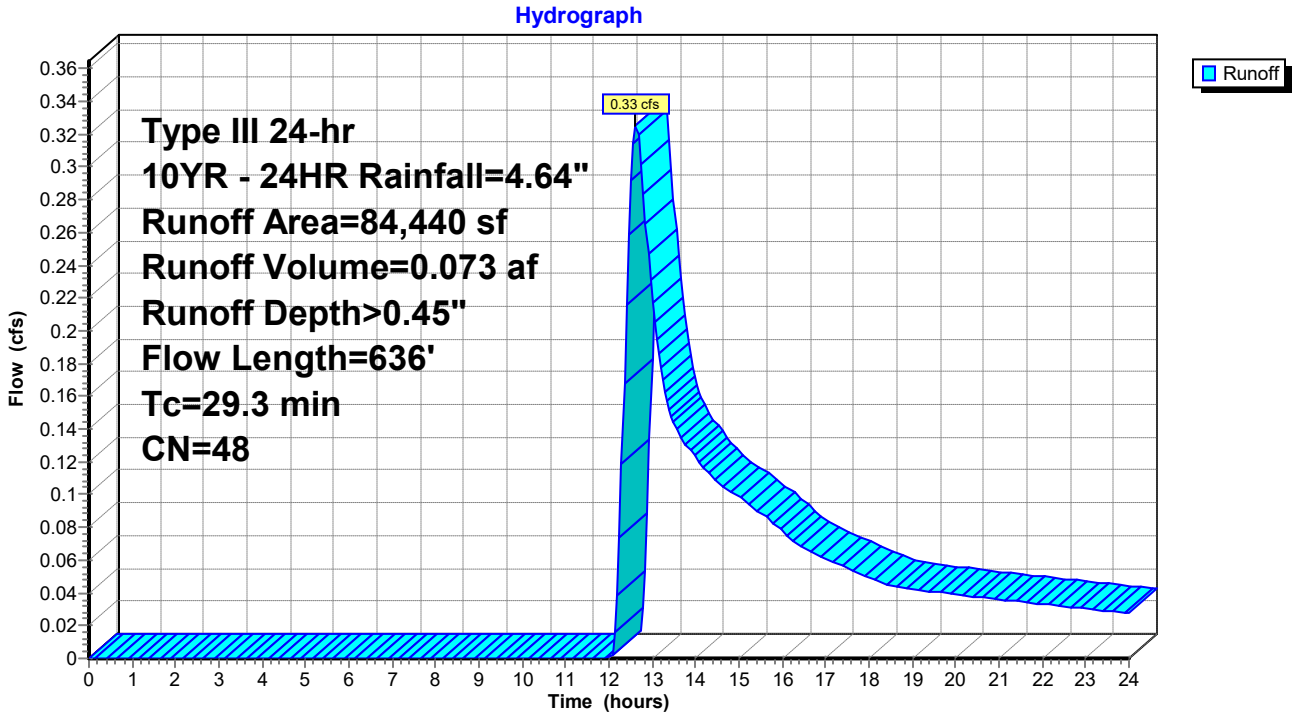
Runoff = 0.33 cfs @ 12.62 hrs, Volume= 0.073 af, Depth> 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
6,514	98	Roofs, HSG A
4,856	98	Paved parking, HSG A
56,980	39	>75% Grass cover, Good, HSG A
8,705	30	Woods, Good, HSG A
199	61	>75% Grass cover, Good, HSG B
199	74	>75% Grass cover, Good, HSG C
4,145	55	Woods, Good, HSG B
2,842	70	Woods, Good, HSG C
84,440	48	Weighted Average
73,070		86.53% Pervious Area
11,370		13.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	32	0.1905	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
14.0	69	0.0292	0.08		**Sheet Flow, Segment #2** Woods: Light underbrush n= 0.400 P2= 3.08"
3.1	215	0.0280	1.17		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
8.6	320	0.0078	0.62		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
29.3	636	Total			

Subcatchment 11S: Area Behind the Dove



Summary for Subcatchment 12S: Road Flow

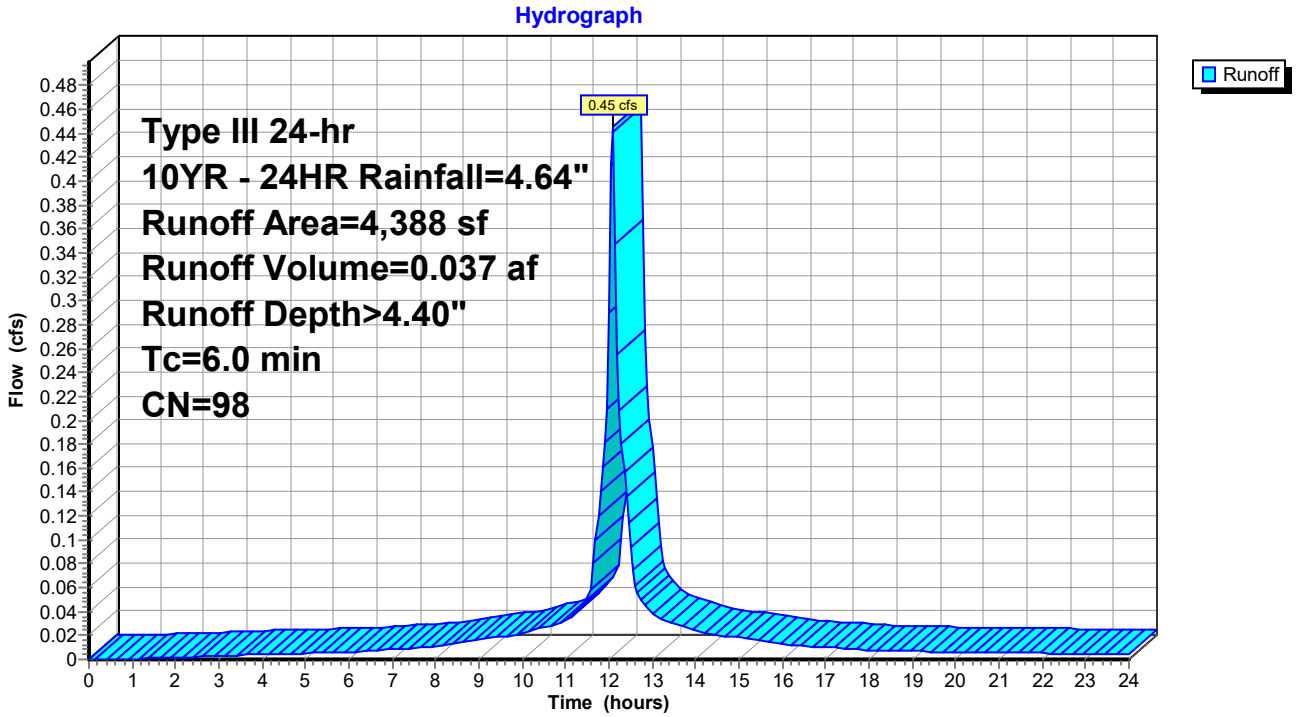
Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.037 af, Depth> 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
4,388	98	Paved parking, HSG A
4,388		100.00% Impervious Area

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

Subcatchment 12S: Road Flow



Summary for Subcatchment 13S: Area infront of future Bank

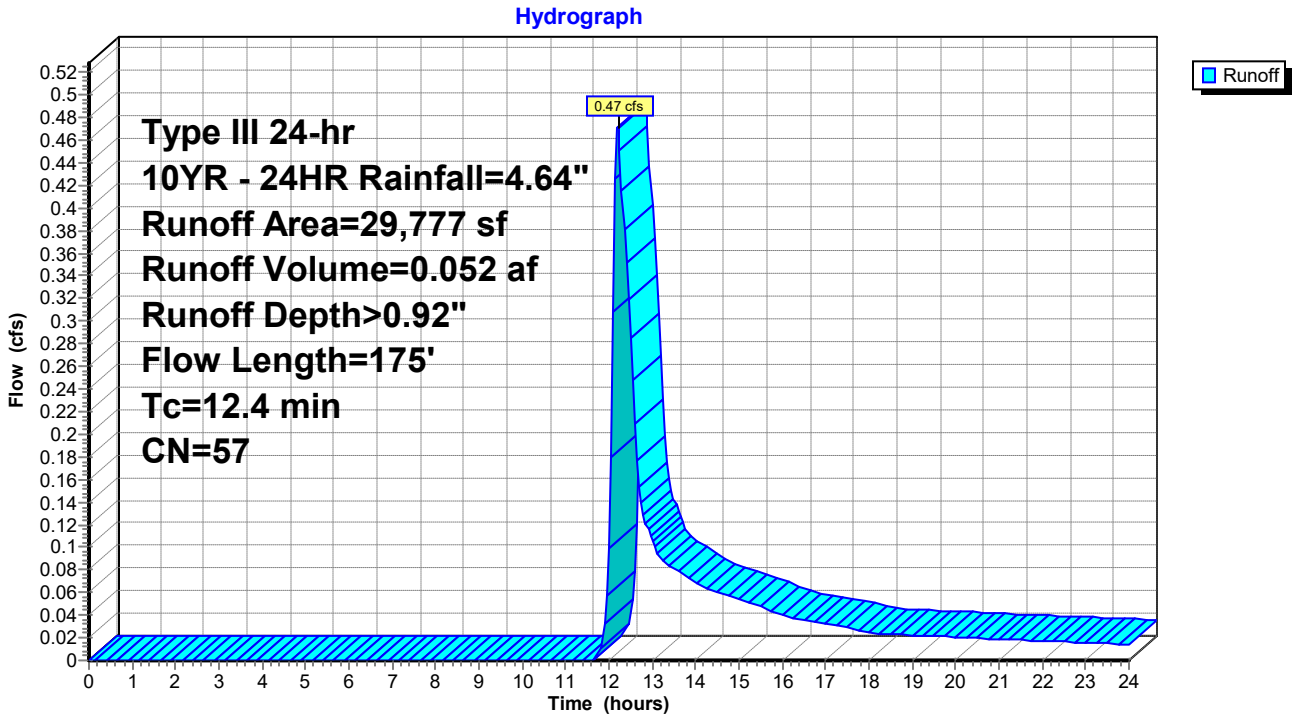
Runoff = 0.47 cfs @ 12.21 hrs, Volume= 0.052 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
1,730	98	Roofs, HSG A
20,647	39	>75% Grass cover, Good, HSG A
7,400	98	Paved parking, HSG A
29,777	57	Weighted Average
20,647		69.34% Pervious Area
9,130		30.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	99	0.0151	0.15		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.08"
1.3	76	0.0200	0.99		**Shallow Concentrated Flow, Segment 2** Short Grass Pasture Kv= 7.0 fps
12.4	175	Total			

Subcatchment 13S: Area infront of future Bank



Summary for Subcatchment 14S: Flow to Cross Culvert

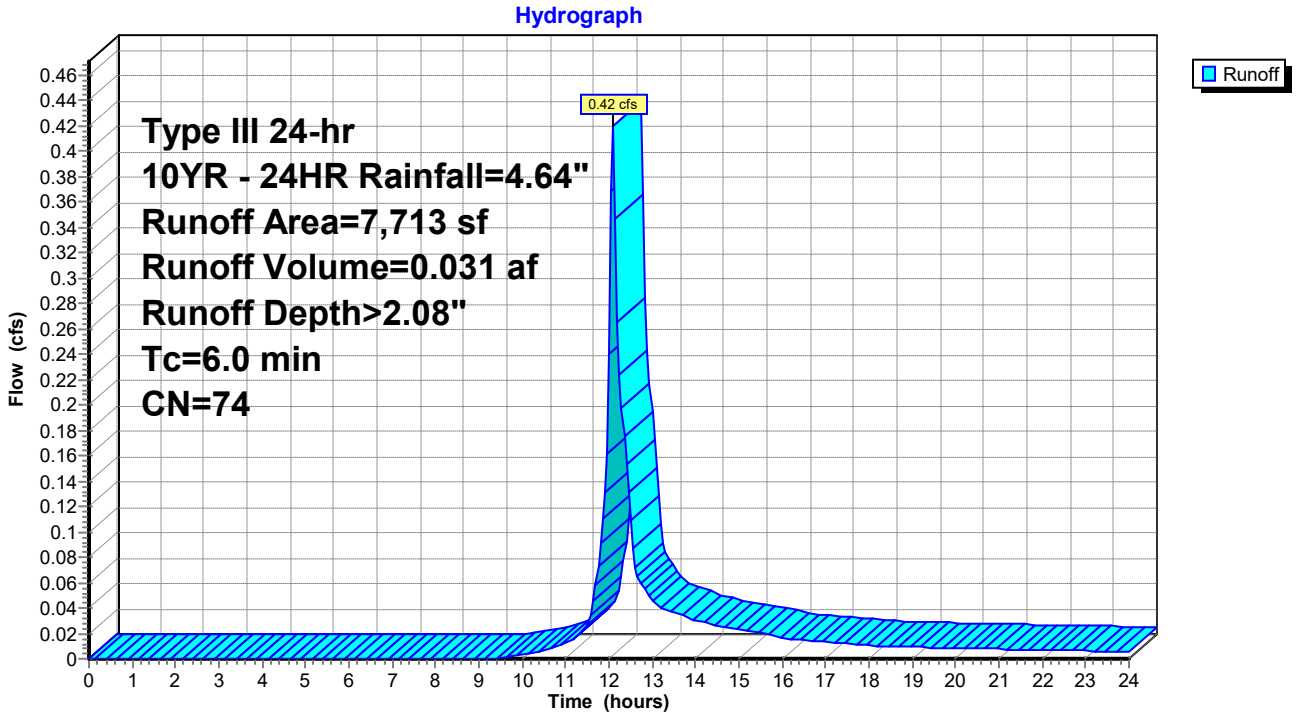
Runoff = 0.42 cfs @ 12.10 hrs, Volume= 0.031 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
4,581	98	Paved parking, HSG A
3,132	39	>75% Grass cover, Good, HSG A
7,713	74	Weighted Average
3,132		40.61% Pervious Area
4,581		59.39% Impervious Area

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

Subcatchment 14S: Flow to Cross Culvert



Summary for Subcatchment 15S: Area behind future Bank

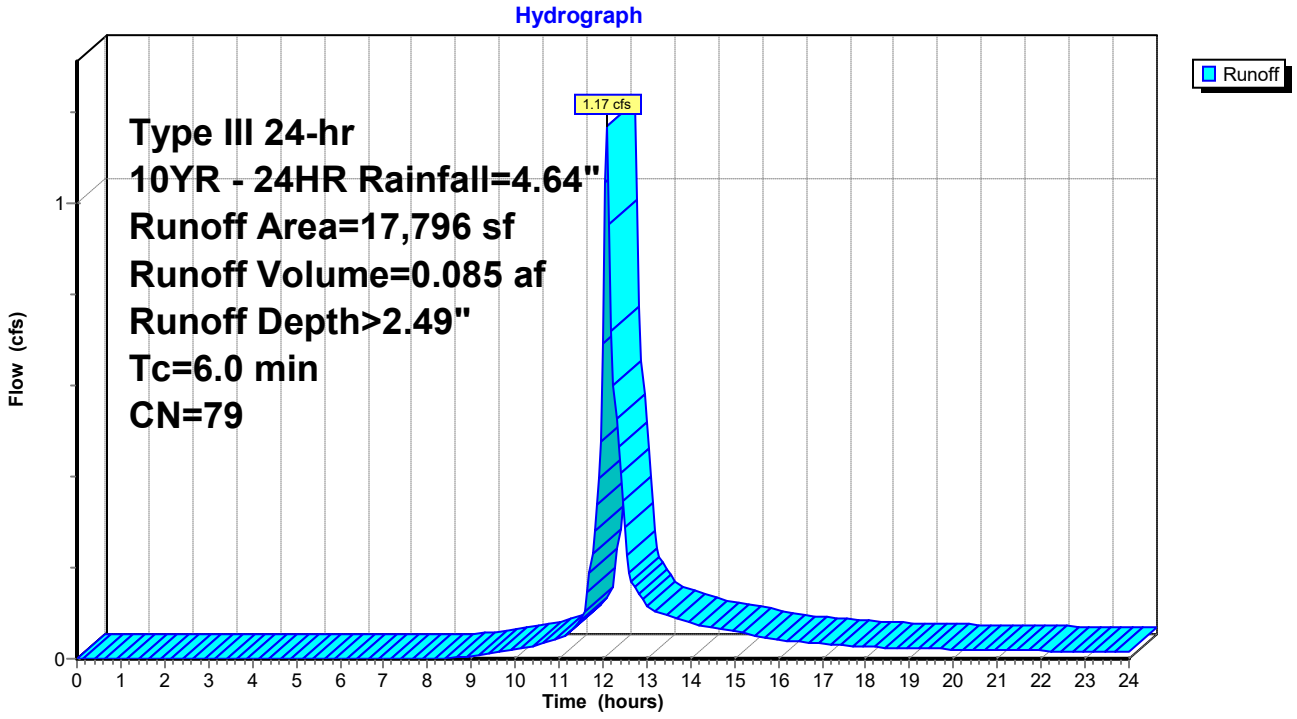
Runoff = 1.17 cfs @ 12.09 hrs, Volume= 0.085 af, Depth> 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
5,870	39	>75% Grass cover, Good, HSG A
11,926	98	Paved parking, HSG A
17,796	79	Weighted Average
5,870		32.98% Pervious Area
11,926		67.02% Impervious Area

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

Subcatchment 15S: Area behind future Bank



Summary for Subcatchment 16S: Subcatchment #16

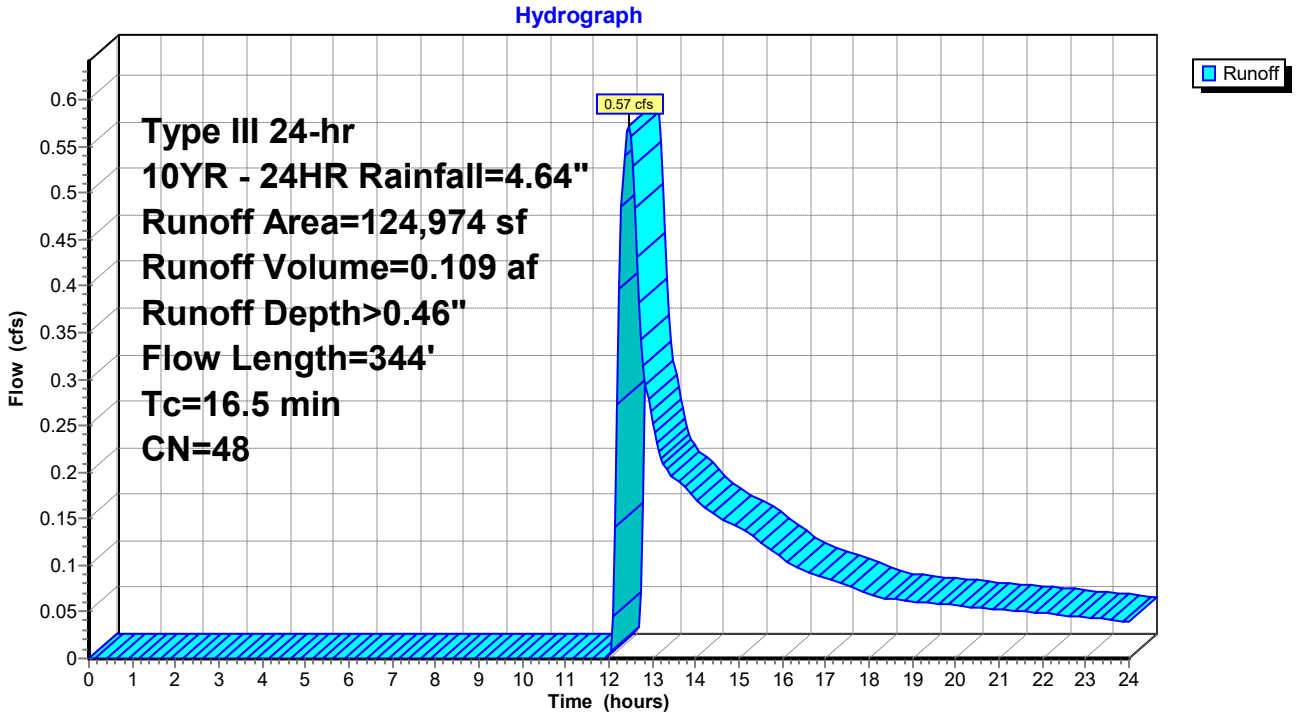
Runoff = 0.57 cfs @ 12.44 hrs, Volume= 0.109 af, Depth> 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
236	98	Roofs, HSG A
89,139	39	>75% Grass cover, Good, HSG A
5,510	98	Paved parking, HSG A
2,633	30	Woods, Good, HSG A
7,573	55	Woods, Good, HSG B
8,340	70	Woods, Good, HSG C
6,077	61	>75% Grass cover, Good, HSG B
3,015	74	>75% Grass cover, Good, HSG C
2,451	96	Gravel surface, HSG A
124,974	48	Weighted Average
119,228		95.40% Pervious Area
5,746		4.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	49	0.0600	0.10		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
4.1	51	0.0490	0.21		**Sheet Flow, Segment #2** Grass: Short n= 0.150 P2= 3.08"
0.4	39	0.0640	1.77		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
4.0	205	0.0146	0.85		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
16.5	344	Total			

Subcatchment 16S: Subcatchment #16



Summary for Subcatchment 17S: Subcatchment #17

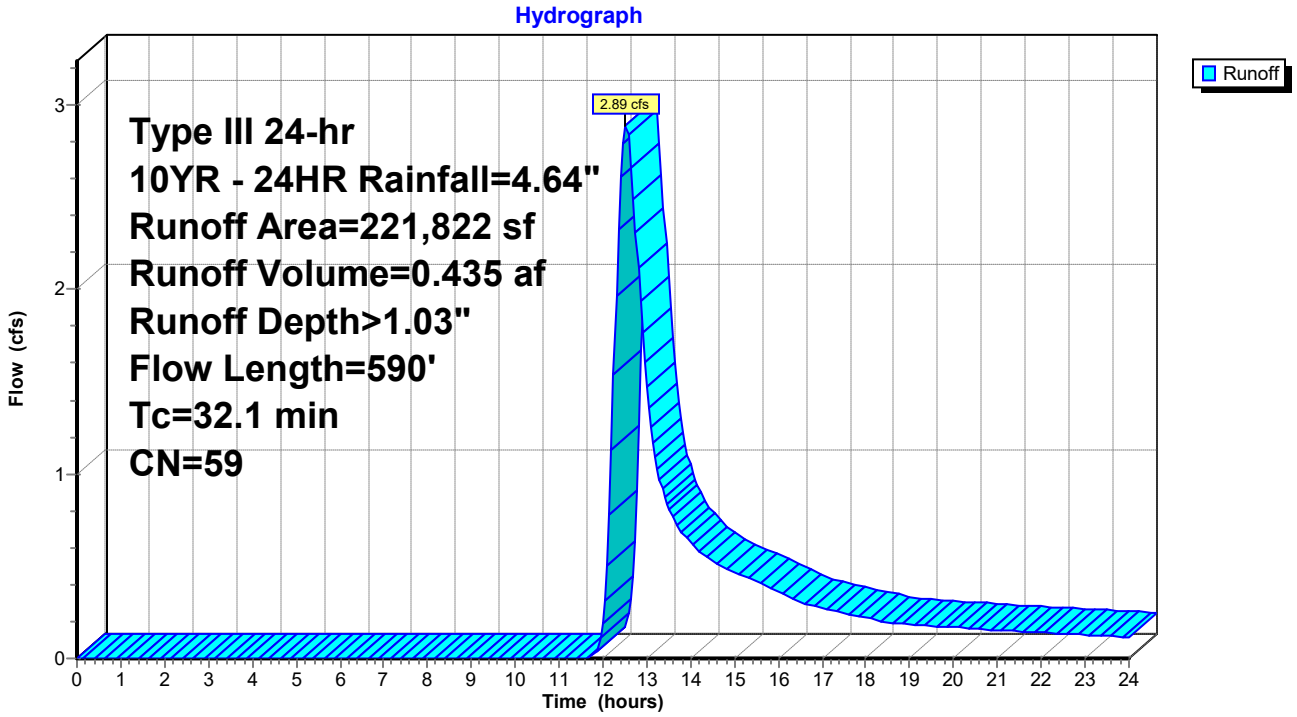
Runoff = 2.89 cfs @ 12.52 hrs, Volume= 0.435 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
343	98	Paved parking, HSG A
801	98	Paved parking, HSG B
925	96	Gravel surface, HSG A
2,627	96	Gravel surface, HSG B
1,055	96	Gravel surface, HSG C
1,272	39	>75% Grass cover, Good, HSG A
76,287	61	>75% Grass cover, Good, HSG B
4,178	74	>75% Grass cover, Good, HSG C
121,692	55	Woods, Good, HSG B
12,642	70	Woods, Good, HSG C
221,822	59	Weighted Average
220,678		99.48% Pervious Area
1,144		0.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	100	0.0150	0.07		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
1.8	112	0.0445	1.05		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
1.1	82	0.0608	1.23		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
1.2	122	0.1148	1.69		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
1.0	57	0.0351	0.94		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
2.4	117	0.0256	0.80		**Shallow Concentrated Flow, Segment #6** Woodland Kv= 5.0 fps
32.1	590	Total			

Subcatchment 17S: Subcatchment #17



Summary for Subcatchment 18S: Subcatchment #18

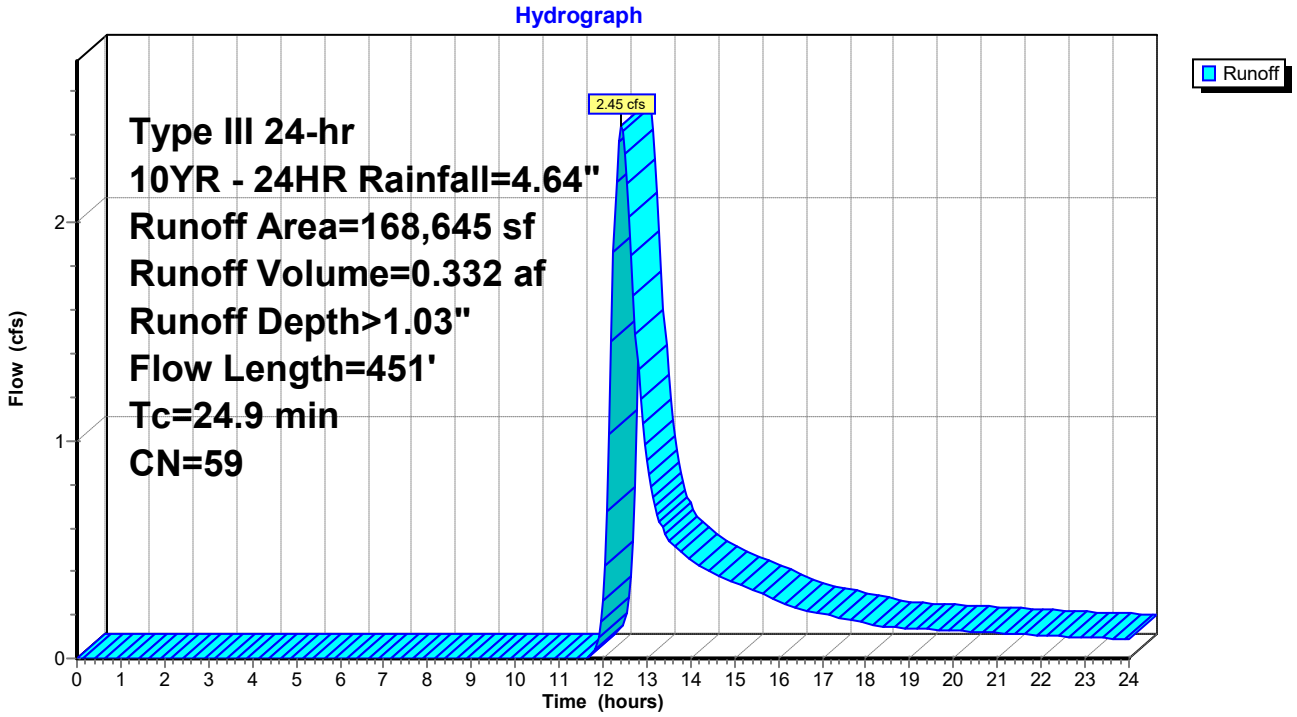
Runoff = 2.45 cfs @ 12.41 hrs, Volume= 0.332 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
927	96	Gravel surface, HSG A
27,083	30	Woods, Good, HSG A
49,888	55	Woods, Good, HSG B
3,963	61	>75% Grass cover, Good, HSG B
75,146	70	Woods, Good, HSG C
10,547	74	>75% Grass cover, Good, HSG C
105	96	Gravel surface, HSG D
700	77	Woods, Good, HSG D
286	96	Gravel surface, HSG C
168,645	59	Weighted Average
168,645		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	48	0.0316	0.08		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
7.3	53	0.0860	0.12		**Sheet Flow, Segment #2** Woods: Light underbrush n= 0.400 P2= 3.08"
0.7	68	0.0935	1.53		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
1.5	106	0.0586	1.21		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
3.2	104	0.0118	0.54		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
2.1	72	0.0132	0.57		**Shallow Concentrated Flow, Segement #6** Woodland Kv= 5.0 fps
24.9	451	Total			

Subcatchment 18S: Subcatchment #18



Summary for Subcatchment 19S: Subcatchment #19

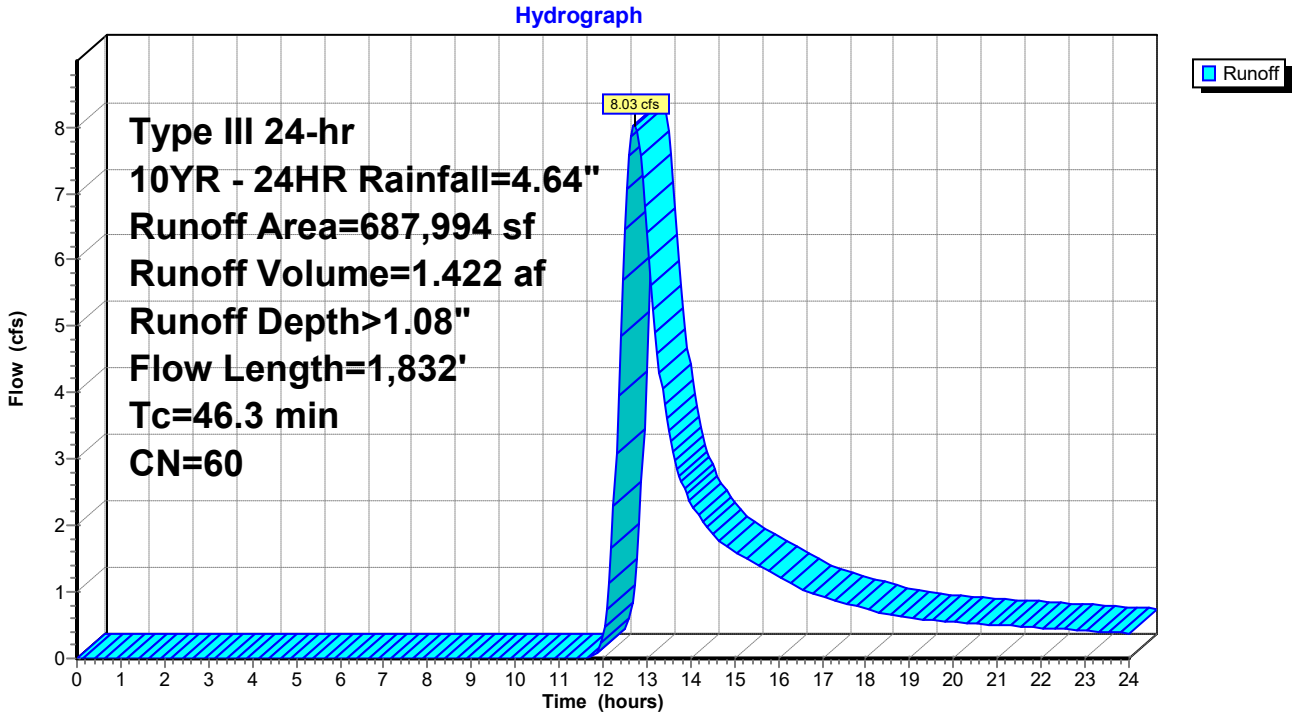
Runoff = 8.03 cfs @ 12.72 hrs, Volume= 1.422 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
36,457	30	Woods, Good, HSG A
354,122	55	Woods, Good, HSG B
296,737	70	Woods, Good, HSG C
678	74	>75% Grass cover, Good, HSG C
687,994	60	Weighted Average
687,994		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	100	0.0400	0.10		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
6.0	653	0.1333	1.83		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
1.5	167	0.1346	1.83		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
7.7	327	0.0199	0.71		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
2.4	161	0.0496	1.11		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
0.5	59	0.1530	1.96		**Shallow Concentrated Flow, Segment #6** Woodland Kv= 5.0 fps
6.3	193	0.0104	0.51		**Shallow Concentrated Flow, Segment #7** Woodland Kv= 5.0 fps
5.3	172	0.0116	0.54		**Shallow Concentrated Flow, Segment #8** Woodland Kv= 5.0 fps
46.3	1,832	Total			

Subcatchment 19S: Subcatchment #19



Summary for Subcatchment 30S: Subcatchment 30

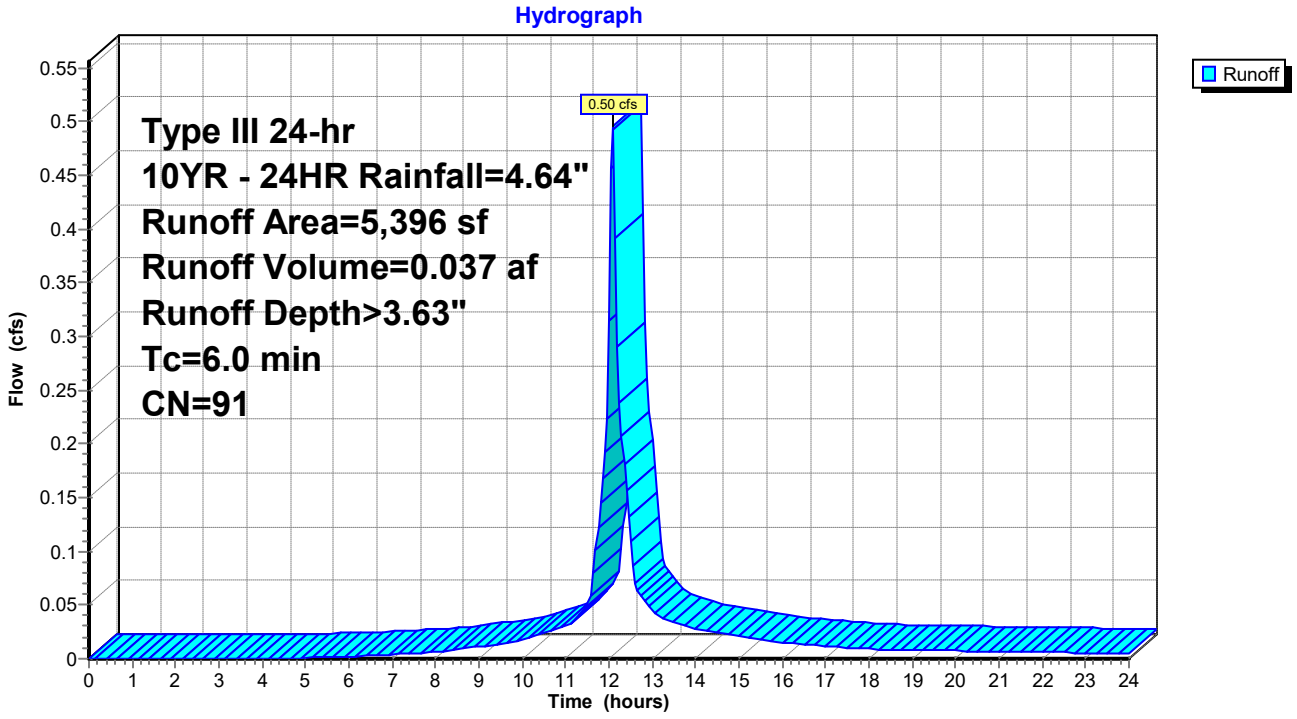
Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.037 af, Depth> 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
4,314	98	Paved parking, HSG B
1,082	61	>75% Grass cover, Good, HSG B
5,396	91	Weighted Average
1,082		20.05% Pervious Area
4,314		79.95% Impervious Area

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

Subcatchment 30S: Subcatchment 30



Summary for Subcatchment 31S: CB #31

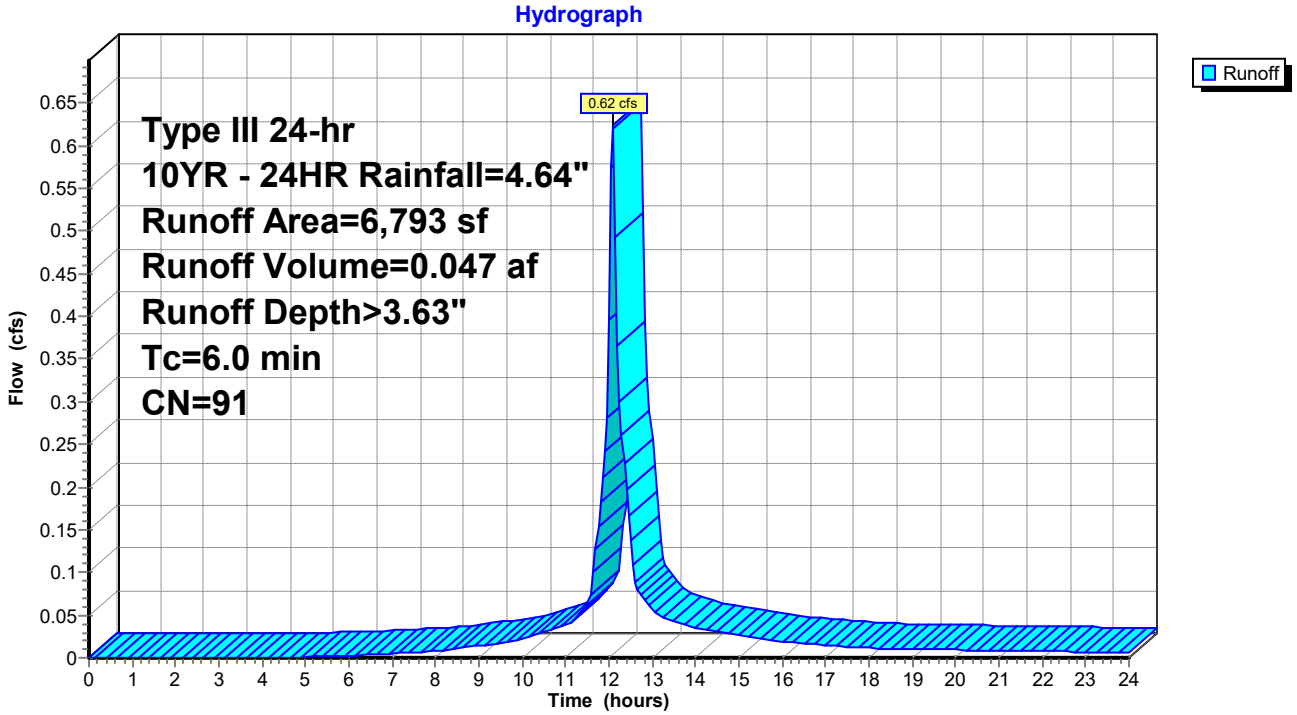
Runoff = 0.62 cfs @ 12.09 hrs, Volume= 0.047 af, Depth> 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
1,108	61	>75% Grass cover, Good, HSG B
4,357	98	Paved parking, HSG B
242	74	>75% Grass cover, Good, HSG C
1,086	98	Paved parking, HSG C
6,793	91	Weighted Average
1,350		19.87% Pervious Area
5,443		80.13% Impervious Area

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

Subcatchment 31S: CB #31



Summary for Subcatchment 32S: CB #32

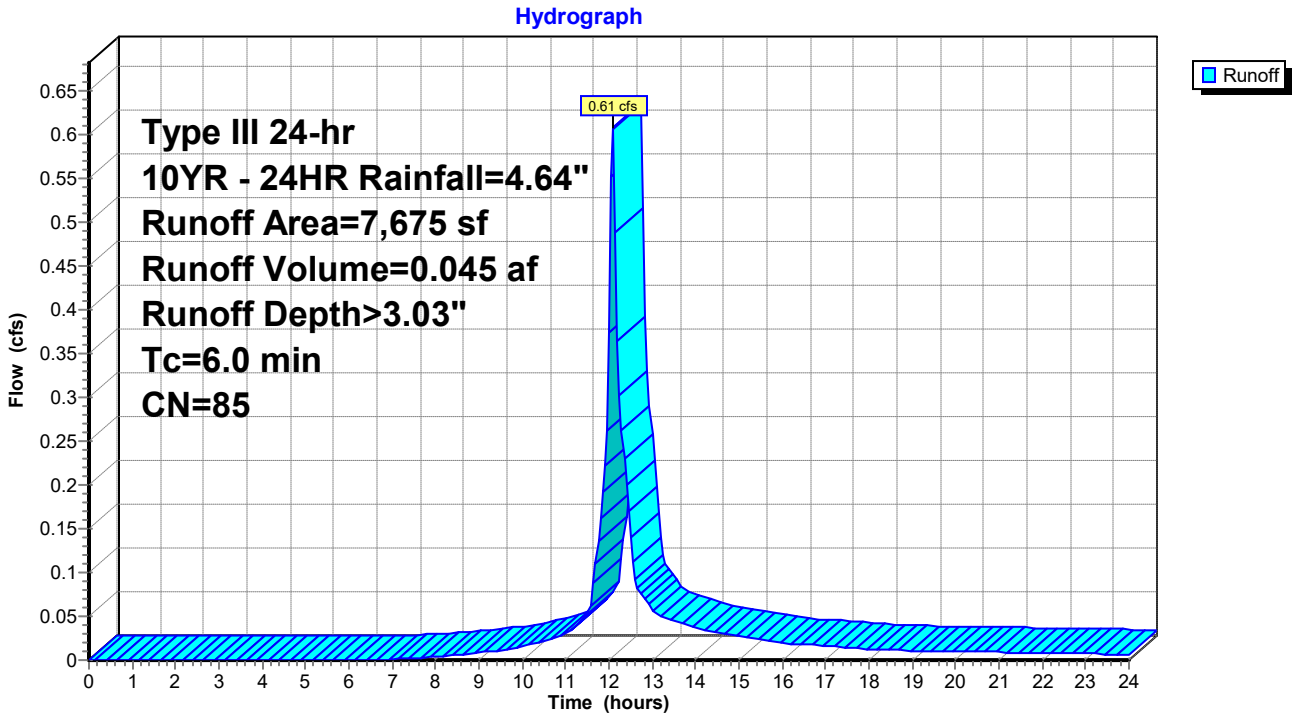
Runoff = 0.61 cfs @ 12.09 hrs, Volume= 0.045 af, Depth> 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,474	61	>75% Grass cover, Good, HSG B
3,809	98	Paved parking, HSG B
159	74	>75% Grass cover, Good, HSG C
888	98	Paved parking, HSG C
345	96	Gravel surface, HSG B
7,675	85	Weighted Average
2,978		38.80% Pervious Area
4,697		61.20% Impervious Area

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

Subcatchment 32S: CB #32



Summary for Subcatchment 33S: CB #33

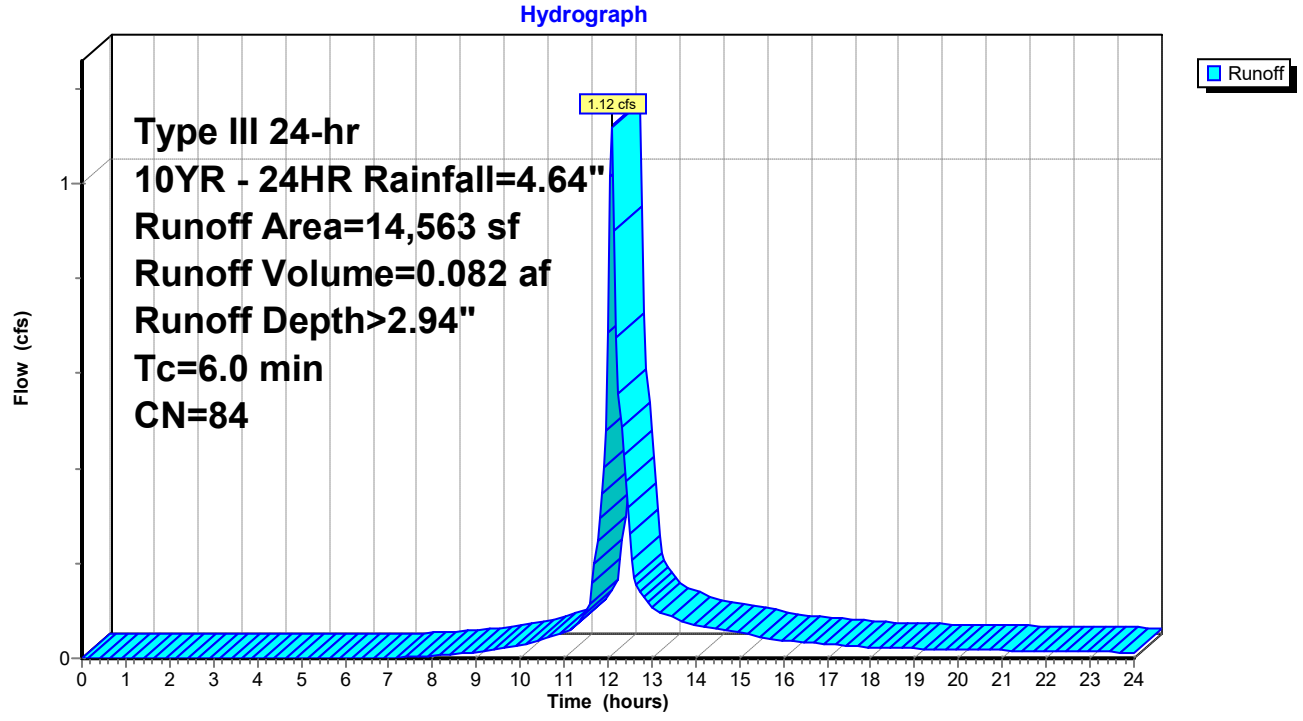
Runoff = 1.12 cfs @ 12.09 hrs, Volume= 0.082 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
5,467	61	>75% Grass cover, Good, HSG B
8,138	98	Paved parking, HSG B
958	98	Roofs, HSG B
14,563	84	Weighted Average
5,467		37.54% Pervious Area
9,096		62.46% Impervious Area

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

Subcatchment 33S: CB #33



Summary for Subcatchment 34S: CB #34

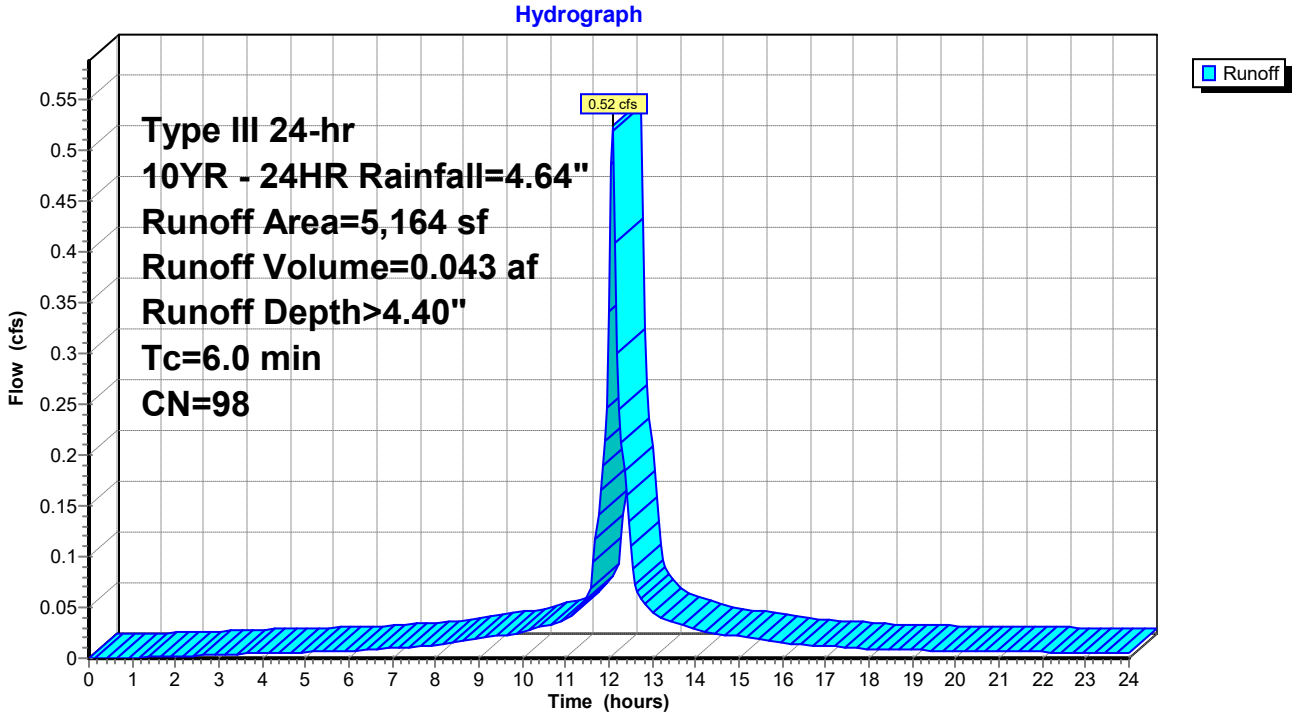
Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.043 af, Depth> 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,125	98	Roofs, HSG B
3,039	98	Paved parking, HSG B
5,164	98	Weighted Average
5,164		100.00% Impervious Area

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

Subcatchment 34S: CB #34



Summary for Subcatchment 35S: CB #35

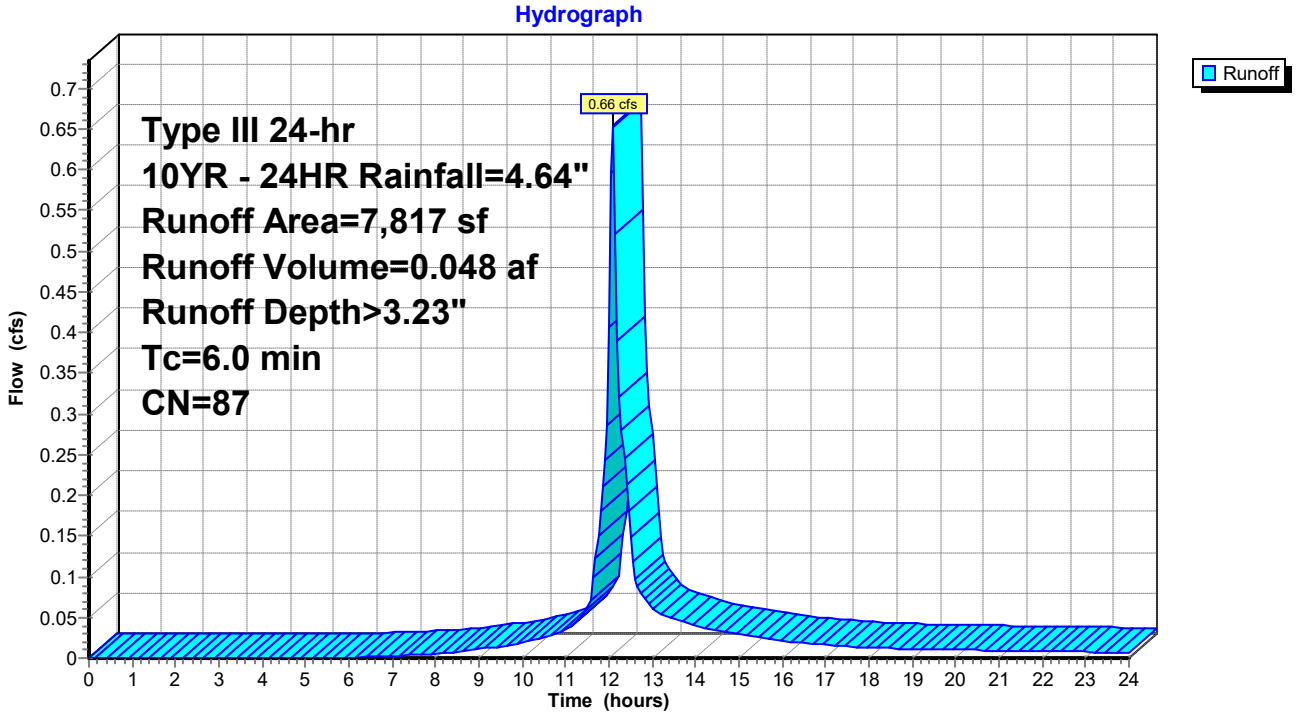
Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 3.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,104	61	>75% Grass cover, Good, HSG B
4,752	98	Paved parking, HSG B
381	74	>75% Grass cover, Good, HSG C
425	98	Paved parking, HSG C
155	98	Roofs, HSG C
7,817	87	Weighted Average
2,485		31.79% Pervious Area
5,332		68.21% Impervious Area

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

Subcatchment 35S: CB #35



Summary for Subcatchment 36S: CB #36

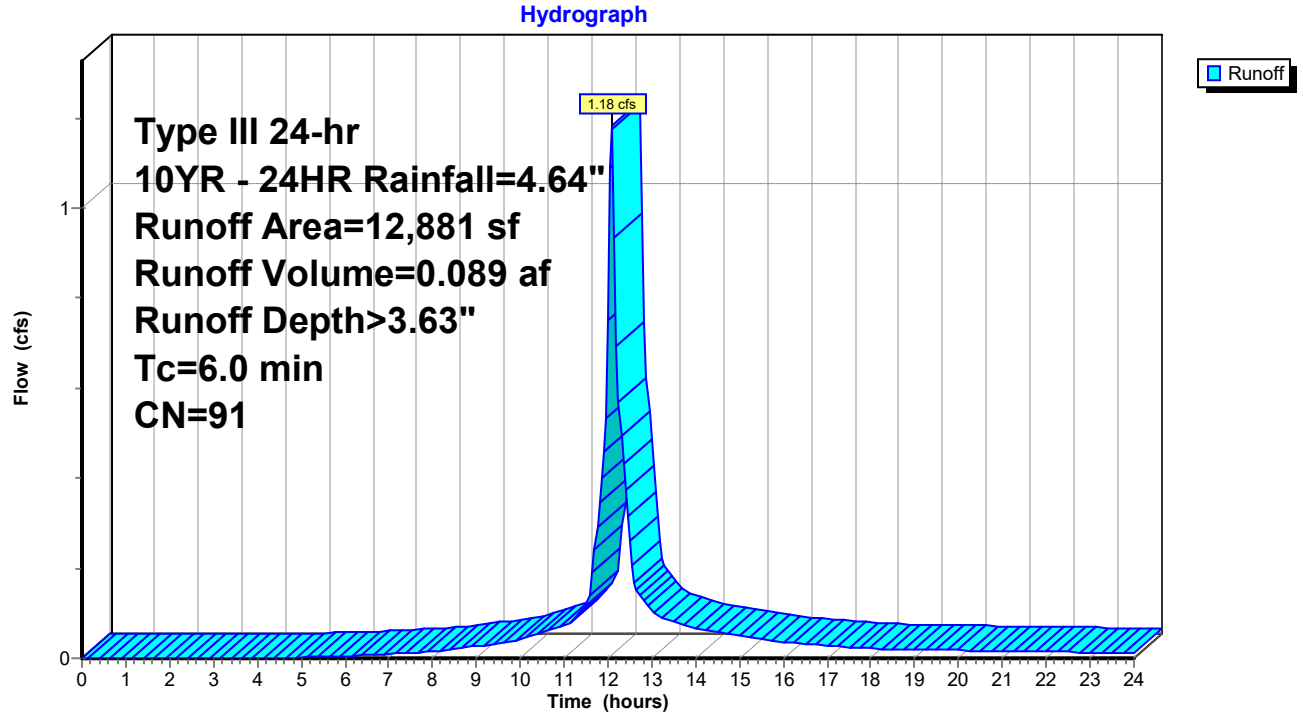
Runoff = 1.18 cfs @ 12.09 hrs, Volume= 0.089 af, Depth> 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,512	61	>75% Grass cover, Good, HSG B
6,685	98	Paved parking, HSG B
3,684	98	Roofs, HSG B
12,881	91	Weighted Average
2,512		19.50% Pervious Area
10,369		80.50% Impervious Area

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

Subcatchment 36S: CB #36



Summary for Subcatchment 37S: CB #37

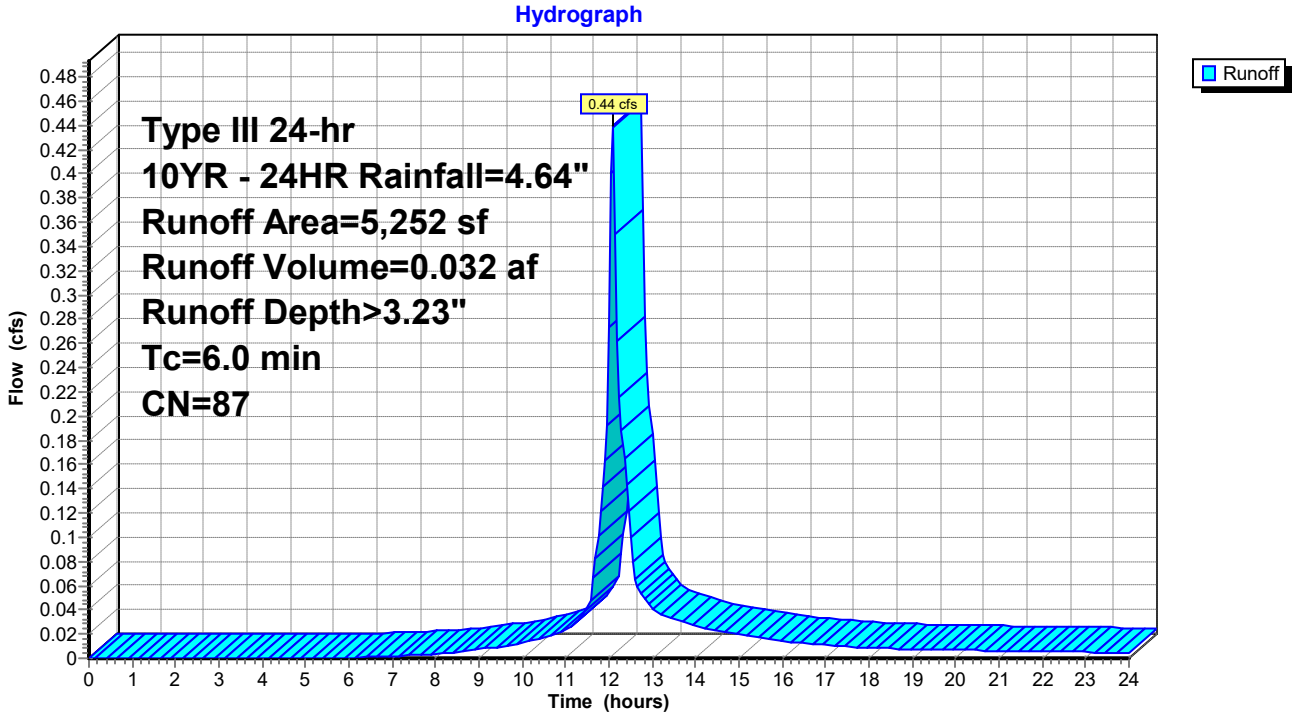
Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.032 af, Depth> 3.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
1,567	61	>75% Grass cover, Good, HSG B
2,718	98	Paved parking, HSG B
967	98	Roofs, HSG B
5,252	87	Weighted Average
1,567		29.84% Pervious Area
3,685		70.16% Impervious Area

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

Subcatchment 37S: CB #37



Summary for Subcatchment 38S: CB #38

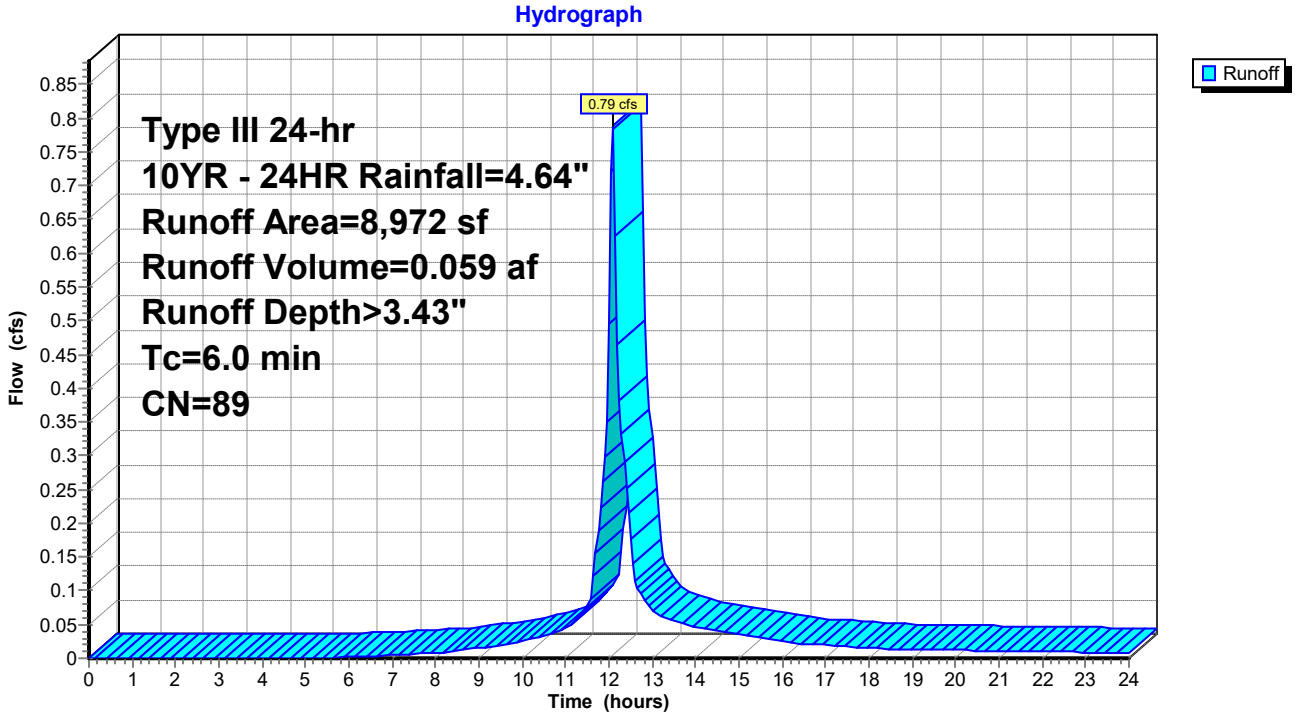
Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.059 af, Depth> 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,139	61	>75% Grass cover, Good, HSG B
4,403	98	Paved parking, HSG B
2,430	98	Paved parking, HSG C
8,972	89	Weighted Average
2,139		23.84% Pervious Area
6,833		76.16% Impervious Area

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

Subcatchment 38S: CB #38



Summary for Subcatchment 39S: CB #39

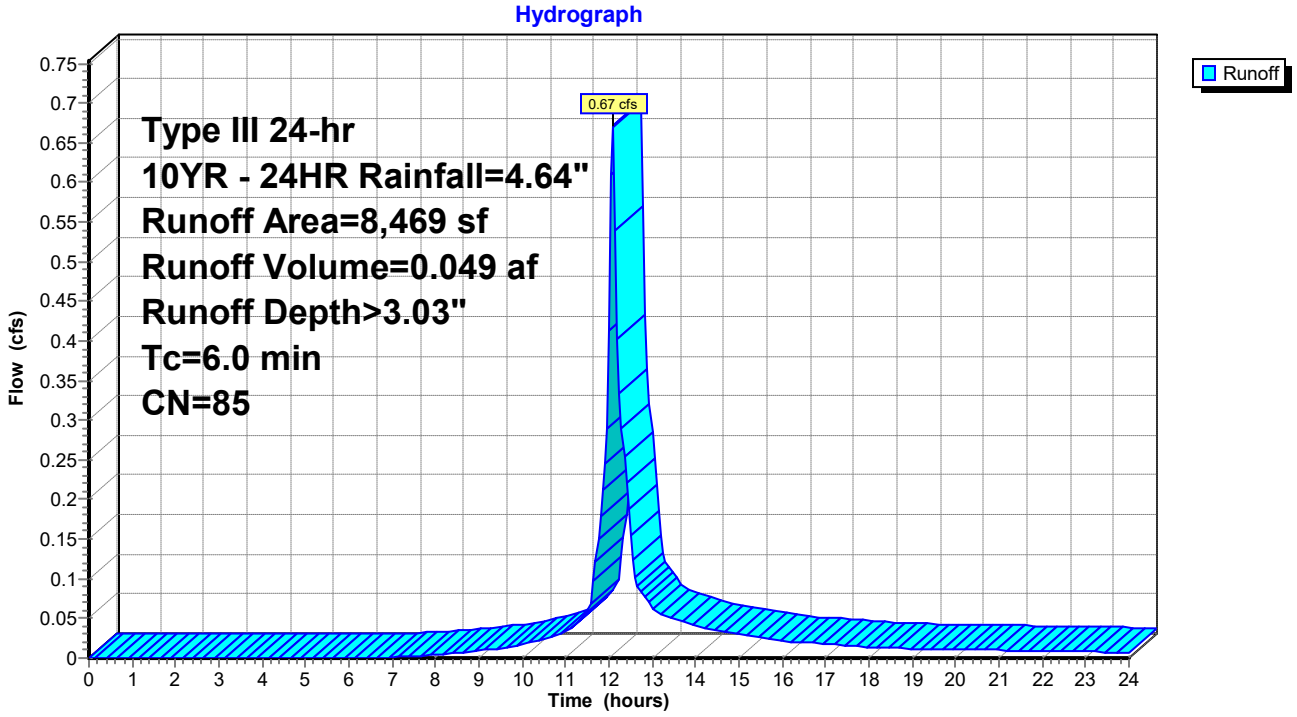
Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.049 af, Depth> 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,912	61	>75% Grass cover, Good, HSG B
3,408	98	Paved parking, HSG B
153	74	>75% Grass cover, Good, HSG C
1,960	98	Paved parking, HSG C
36	98	Roofs, HSG B
8,469	85	Weighted Average
3,065		36.19% Pervious Area
5,404		63.81% Impervious Area

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

Subcatchment 39S: CB #39



Summary for Subcatchment 40S: CB #40

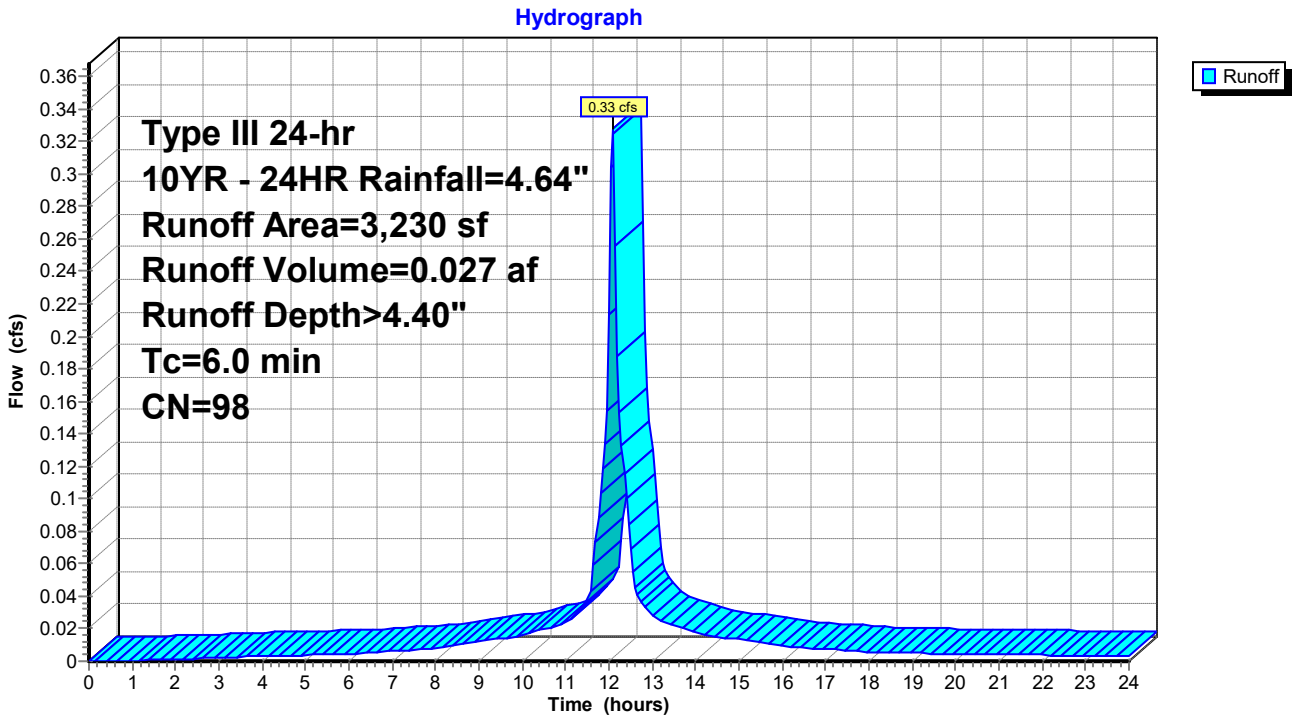
Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af, Depth> 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,333	98	Paved parking, HSG B
897	98	Paved parking, HSG C
3,230	98	Weighted Average
3,230		100.00% Impervious Area

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

Subcatchment 40S: CB #40



Summary for Subcatchment 41S: CB #41

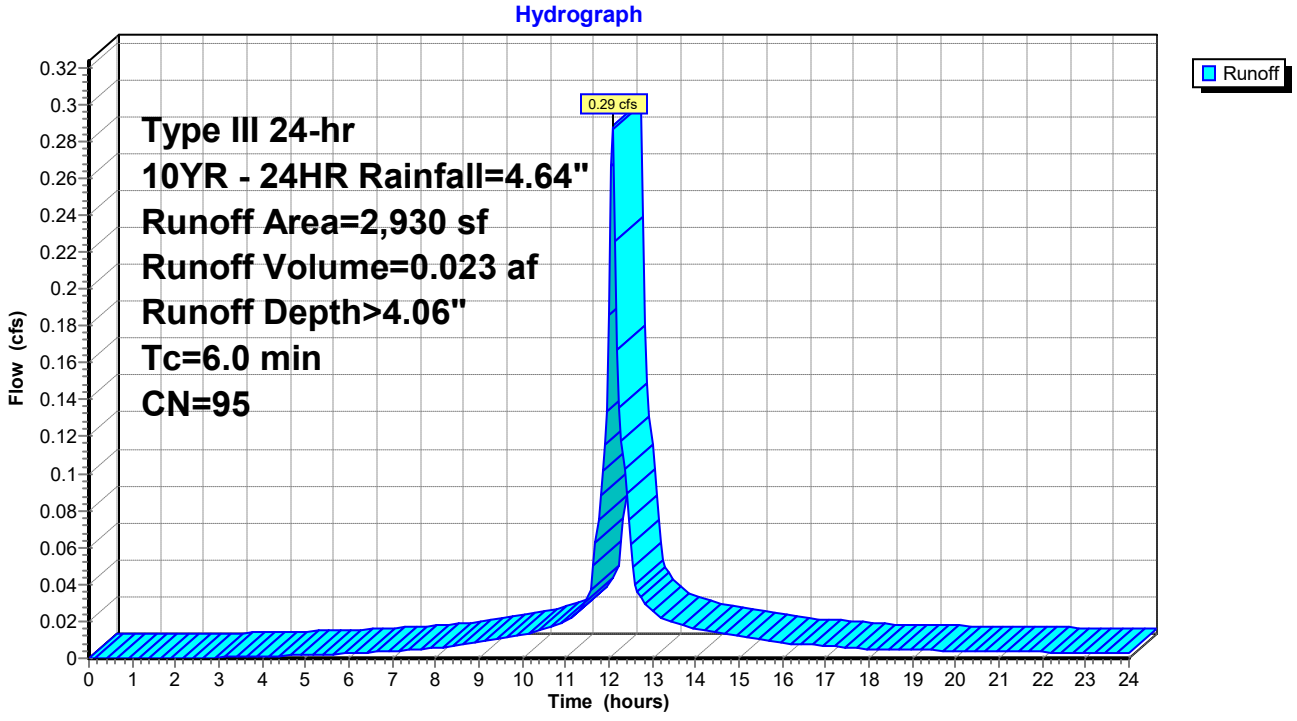
Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
218	61	>75% Grass cover, Good, HSG B
1,901	98	Paved parking, HSG B
811	98	Paved parking, HSG C
2,930	95	Weighted Average
218		7.44% Pervious Area
2,712		92.56% Impervious Area

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

Subcatchment 41S: CB #41



Summary for Subcatchment 42S: CB #42

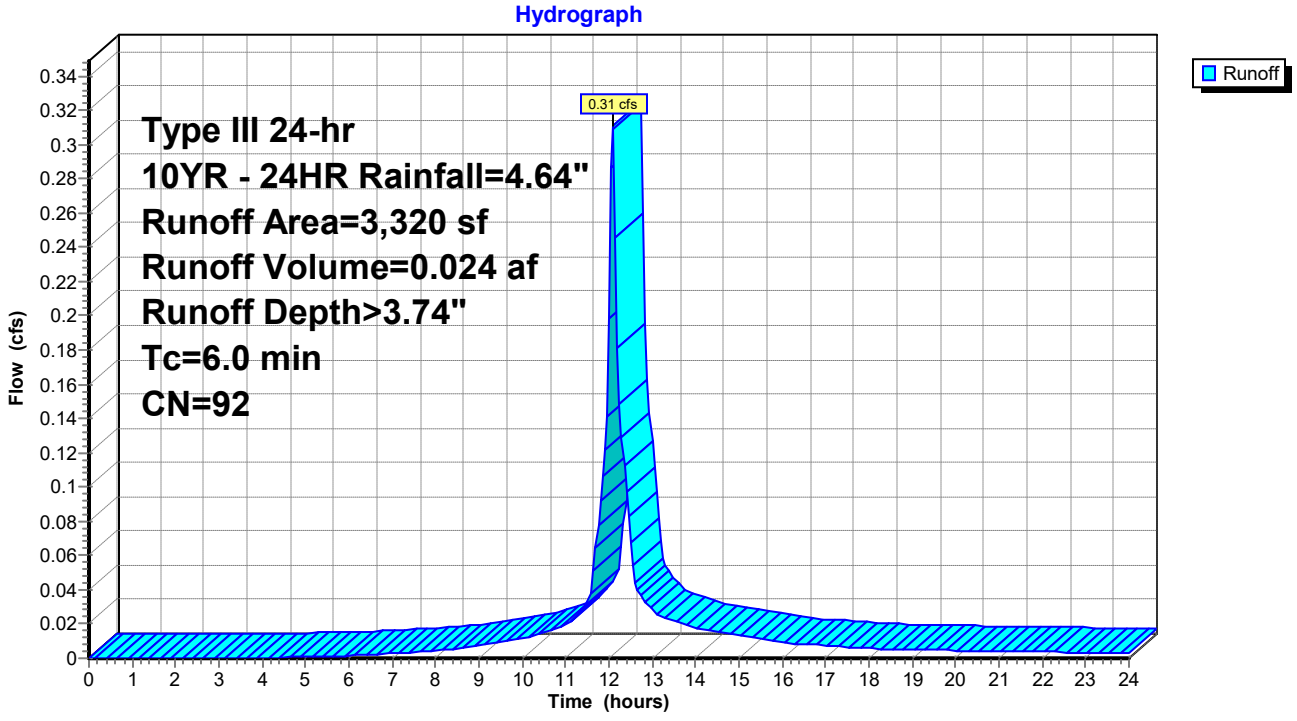
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
503	61	>75% Grass cover, Good, HSG B
2,796	98	Paved parking, HSG B
21	98	Paved parking, HSG C
3,320	92	Weighted Average
503		15.15% Pervious Area
2,817		84.85% Impervious Area

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

Subcatchment 42S: CB #42



Summary for Subcatchment 43S: CB #43

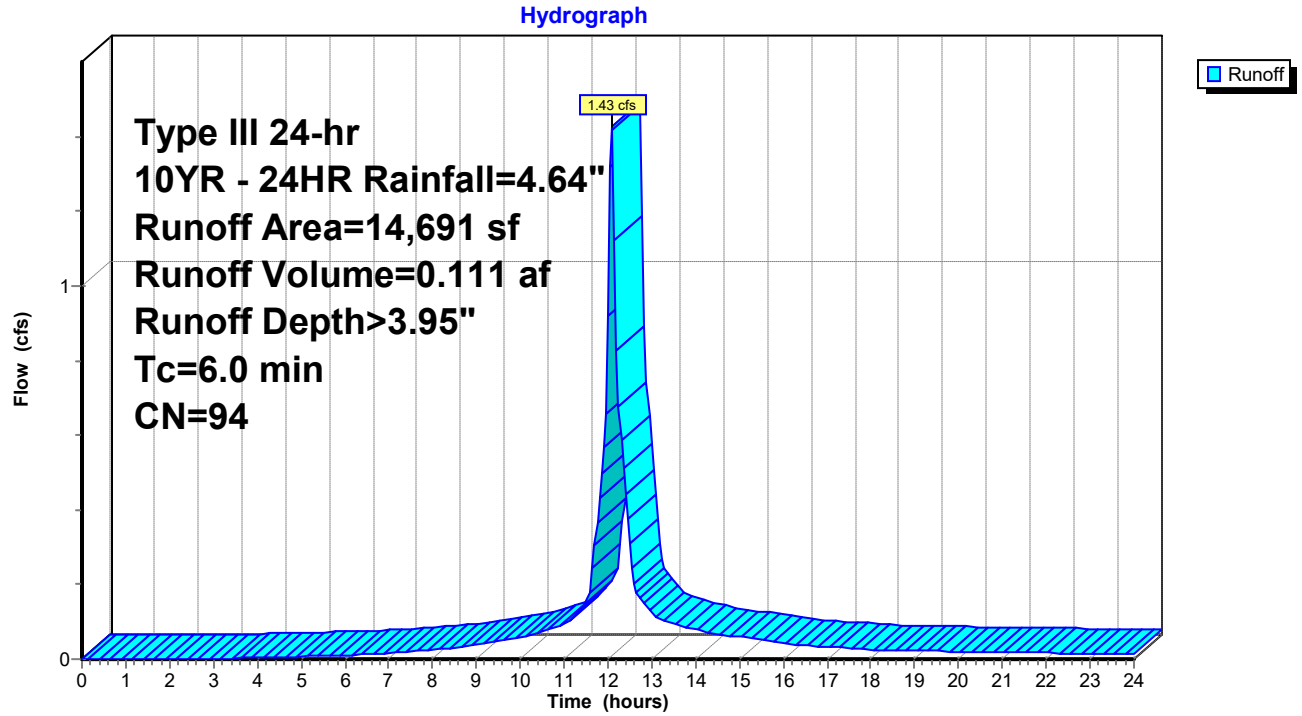
Runoff = 1.43 cfs @ 12.09 hrs, Volume= 0.111 af, Depth> 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
8,670	98	Paved parking, HSG B
3,198	98	Roofs, HSG B
917	61	>75% Grass cover, Good, HSG B
16	96	Gravel surface, HSG B
1,084	74	>75% Grass cover, Good, HSG C
662	98	Roofs, HSG C
144	98	Paved parking, HSG C
14,691	94	Weighted Average
2,017		13.73% Pervious Area
12,674		86.27% Impervious Area

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

Subcatchment 43S: CB #43



Summary for Subcatchment 44S: CB #44

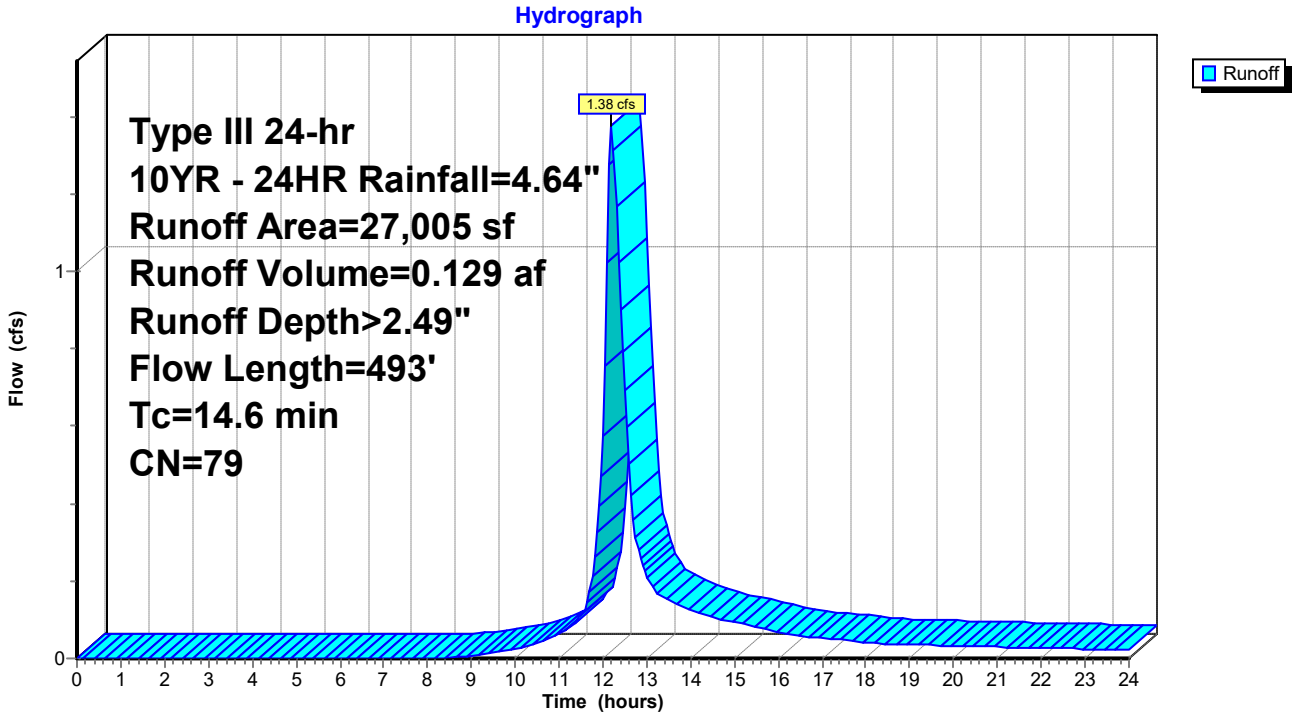
Runoff = 1.38 cfs @ 12.21 hrs, Volume= 0.129 af, Depth> 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
4,678	55	Woods, Good, HSG B
4,678	70	Woods, Good, HSG C
4,622	61	>75% Grass cover, Good, HSG B
2,246	98	Roofs, HSG B
10,730	98	Paved parking, HSG B
51	96	Gravel surface, HSG B
27,005	79	Weighted Average
14,029		51.95% Pervious Area
12,976		48.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0900	0.14		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
0.9	88	0.0969	1.56		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.7	66	0.0534	1.62		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
0.1	16	0.3125	3.91		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
0.9	223	0.0449	4.30		**Shallow Concentrated Flow, Segment #5** Paved Kv= 20.3 fps
14.6	493	Total			

Subcatchment 44S: CB #44



Summary for Subcatchment 45S: CB #45

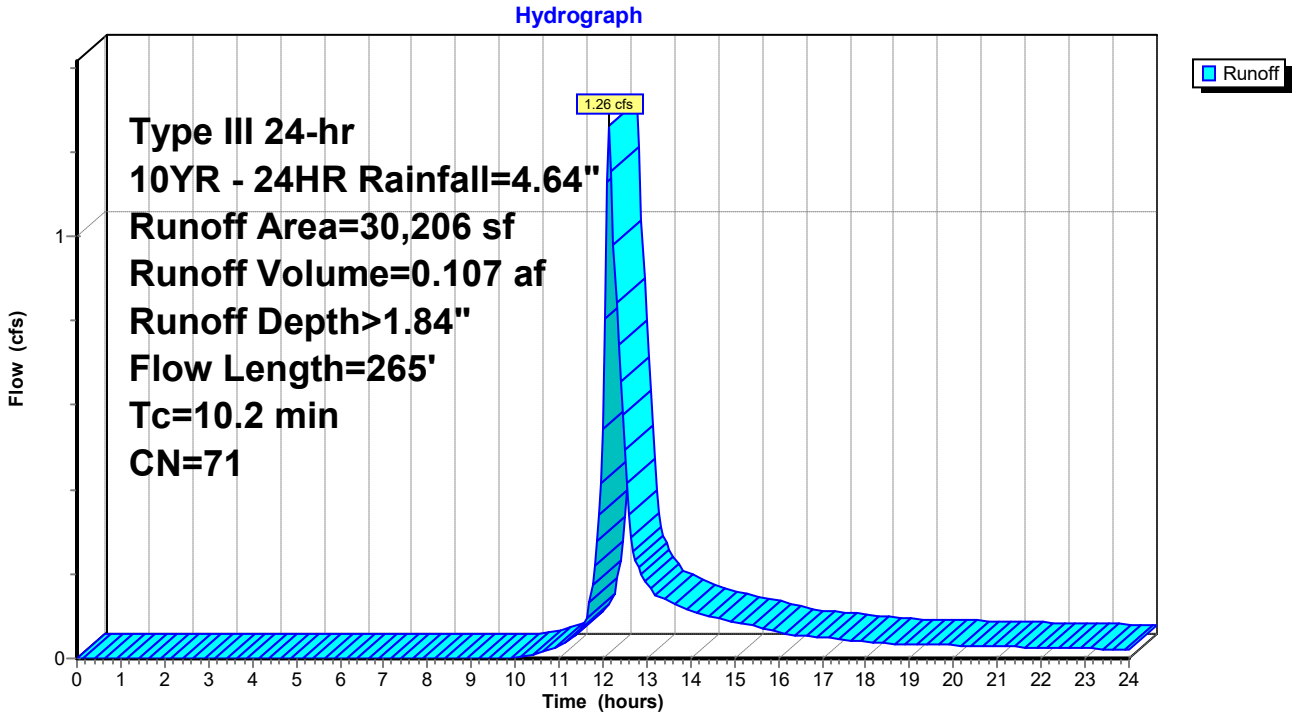
Runoff = 1.26 cfs @ 12.15 hrs, Volume= 0.107 af, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
16,763	61	>75% Grass cover, Good, HSG B
4,254	98	Roofs, HSG B
7,545	74	>75% Grass cover, Good, HSG C
1,158	98	Roofs, HSG C
243	55	Woods, Good, HSG B
243	70	Woods, Good, HSG C
30,206	71	Weighted Average
24,794		82.08% Pervious Area
5,412		17.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	35	0.0567	0.09		**Sheet Flow, Segement #1** Woods: Light underbrush n= 0.400 P2= 3.08"
1.9	45	0.2500	0.39		**Sheet Flow, Segment #2** Grass: Short n= 0.150 P2= 3.08"
1.4	135	0.0518	1.59		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
0.2	27	0.1250	2.47		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
0.5	23	0.0108	0.73		**Shallow Concentrated Flow, Segment #5** Short Grass Pasture Kv= 7.0 fps
10.2	265	Total			

Subcatchment 45S: CB #45



Summary for Subcatchment 46S: CB #46

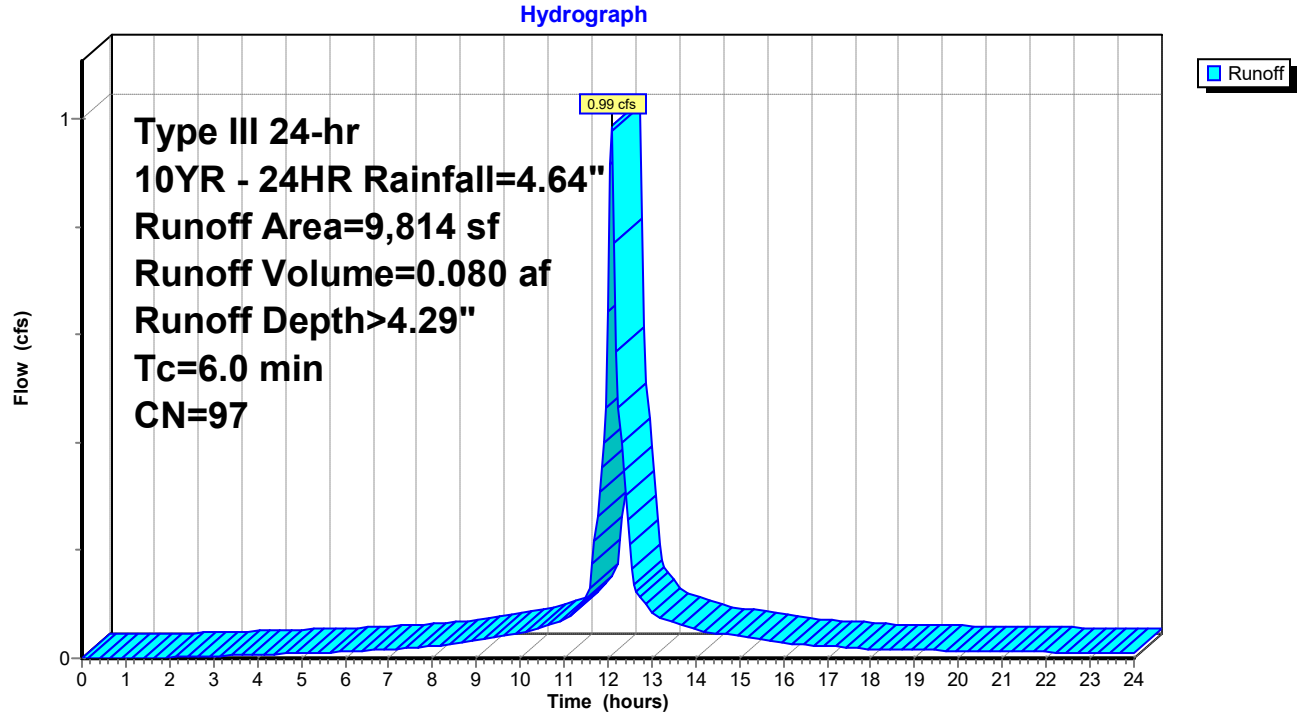
Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.080 af, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
7,274	98	Paved parking, HSG B
2,270	98	Roofs, HSG B
270	61	>75% Grass cover, Good, HSG B
9,814	97	Weighted Average
270		2.75% Pervious Area
9,544		97.25% Impervious Area

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

Subcatchment 46S: CB #46



Summary for Subcatchment 47S: Inlet Sump High Pt Dr

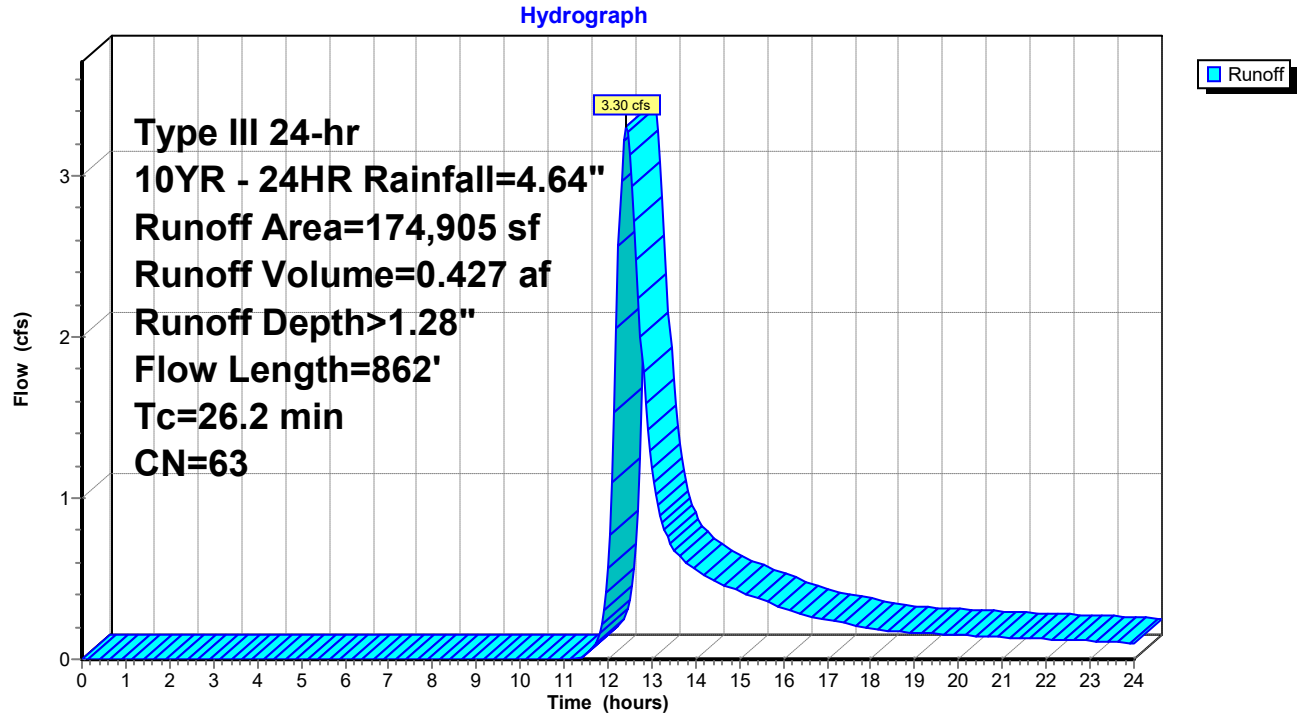
Runoff = 3.30 cfs @ 12.41 hrs, Volume= 0.427 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
18,295	61	>75% Grass cover, Good, HSG B
3,090	98	Roofs, HSG B
1,618	96	Gravel surface, HSG B
75,951	55	Woods, Good, HSG B
75,951	70	Woods, Good, HSG C
174,905	63	Weighted Average
171,815		98.23% Pervious Area
3,090		1.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0300	0.09		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
6.7	665	0.1090	1.65		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.9	97	0.1310	1.81		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
26.2	862	Total			

Subcatchment 47S: Inlet Sump High Pt Dr



Summary for Subcatchment 48S: High Pt Dr Cul-De-Sac

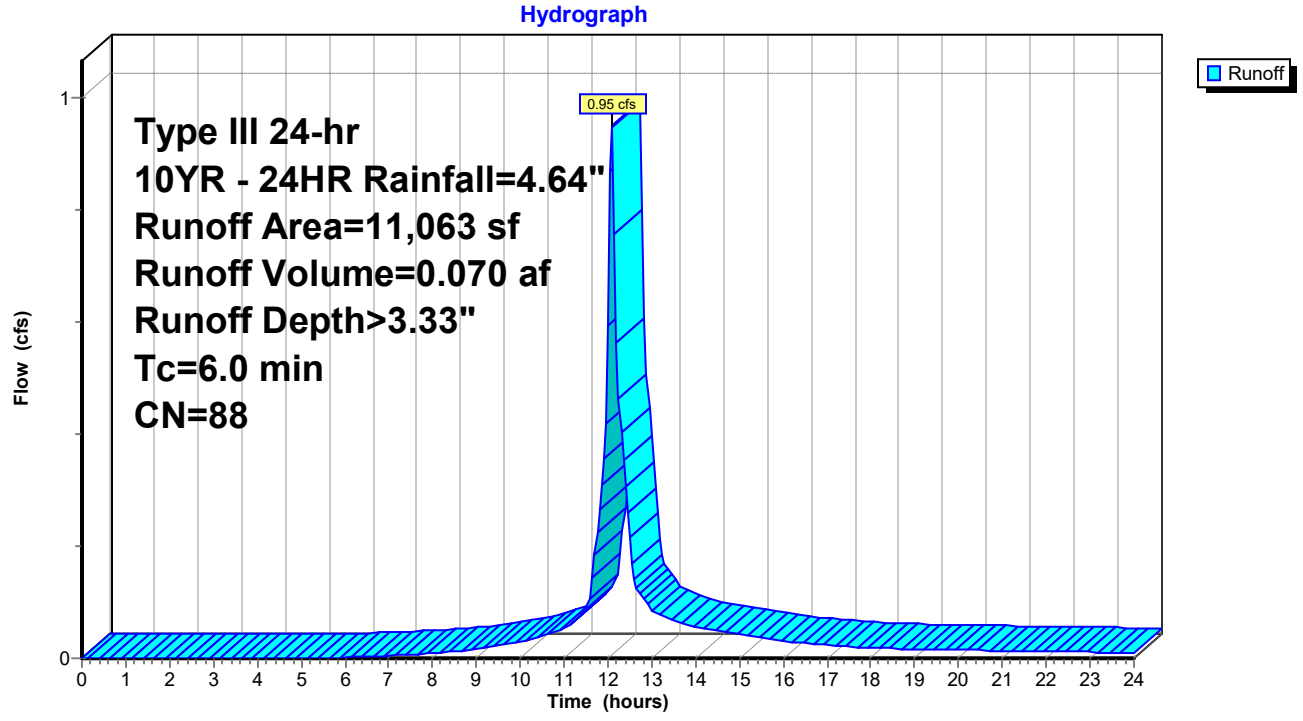
Runoff = 0.95 cfs @ 12.09 hrs, Volume= 0.070 af, Depth> 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,861	61	>75% Grass cover, Good, HSG B
7,608	98	Paved parking, HSG B
594	96	Gravel surface, HSG B
11,063	88	Weighted Average
3,455		31.23% Pervious Area
7,608		68.77% Impervious Area

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

Subcatchment 48S: High Pt Dr Cul-De-Sac



Summary for Subcatchment 49S: Community Dr Cul-De-Sac

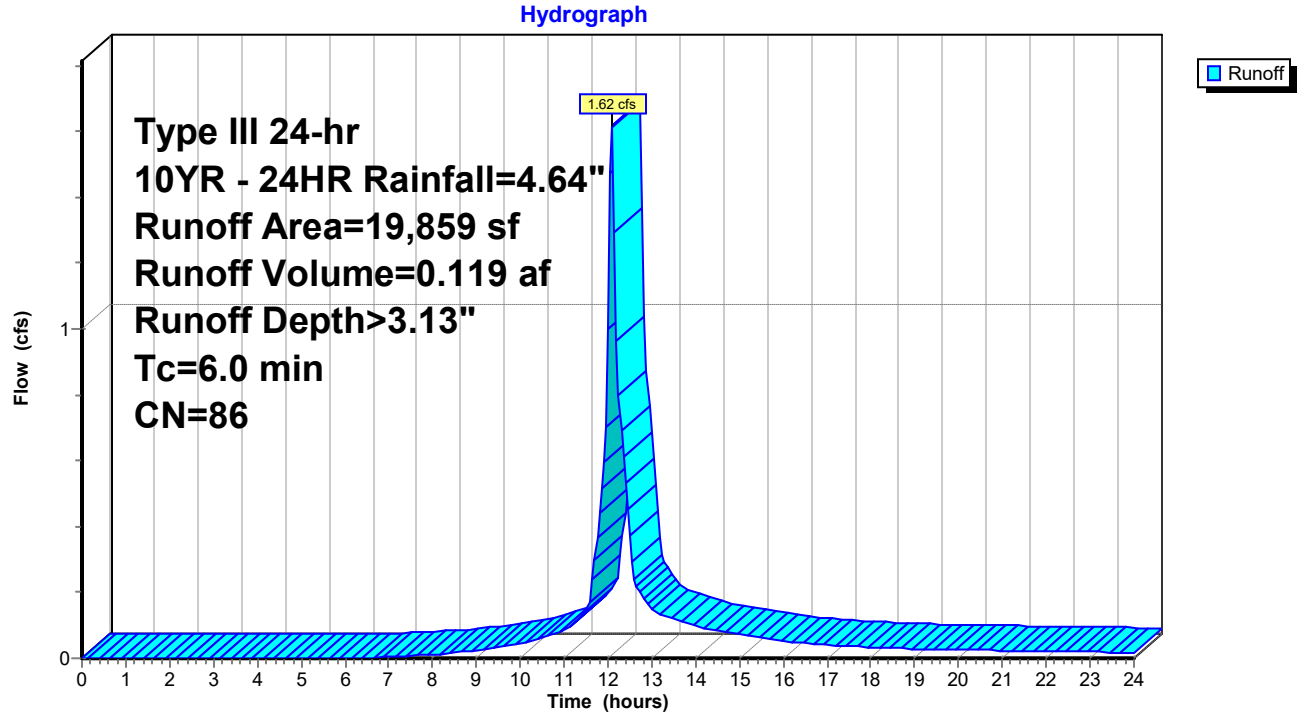
Runoff = 1.62 cfs @ 12.09 hrs, Volume= 0.119 af, Depth> 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
6,236	61	>75% Grass cover, Good, HSG B
12,709	98	Paved parking, HSG B
914	96	Gravel surface, HSG B
19,859	86	Weighted Average
7,150		36.00% Pervious Area
12,709		64.00% Impervious Area

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

Subcatchment 49S: Community Dr Cul-De-Sac



Summary for Subcatchment 50S: Subcatchment #50

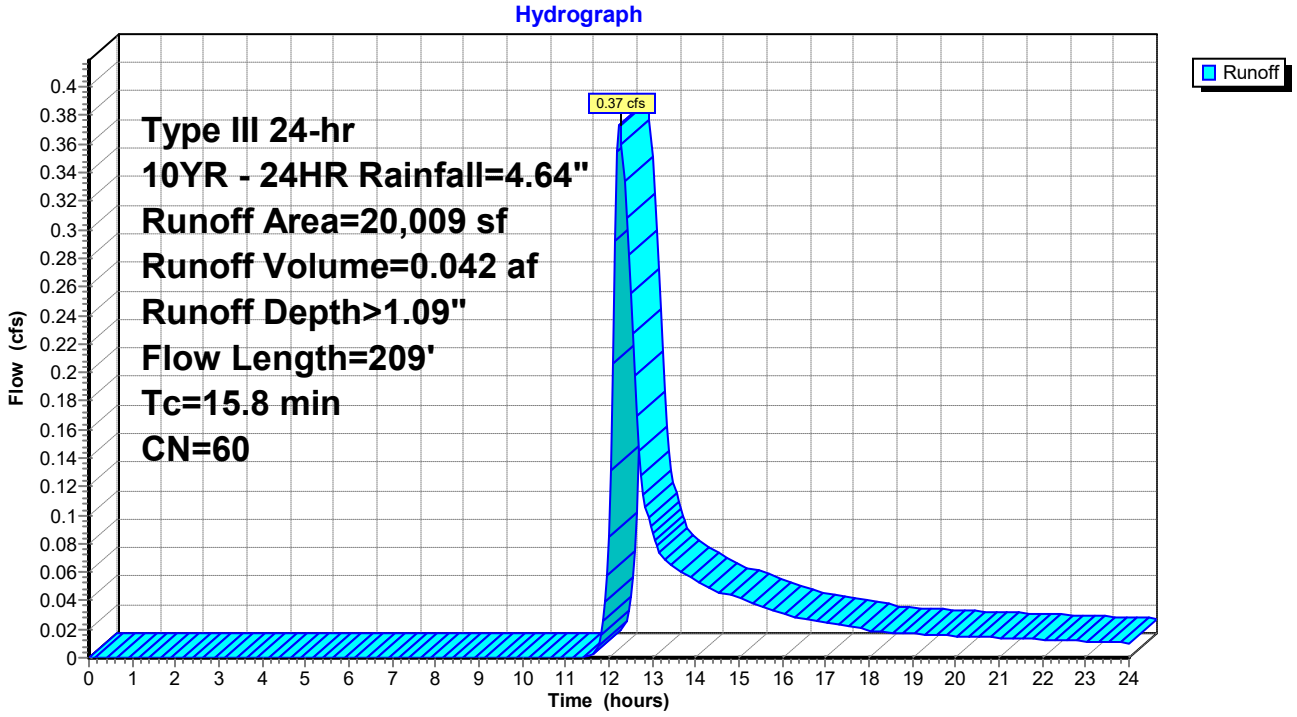
Runoff = 0.37 cfs @ 12.25 hrs, Volume= 0.042 af, Depth> 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
1,249	39	>75% Grass cover, Good, HSG A
5,470	55	Woods, Good, HSG B
7,739	61	>75% Grass cover, Good, HSG B
81	74	>75% Grass cover, Good, HSG C
5,470	70	Woods, Good, HSG C
20,009	60	Weighted Average
20,009		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0600	0.12		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.08"
0.4	26	0.0400	1.00		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
1.3	83	0.0240	1.08		**Shallow Concentrated Flow, Segment 3** Short Grass Pasture Kv= 7.0 fps
15.8	209	Total			

Subcatchment 50S: Subcatchment #50



Summary for Subcatchment 51S: Outet Pond

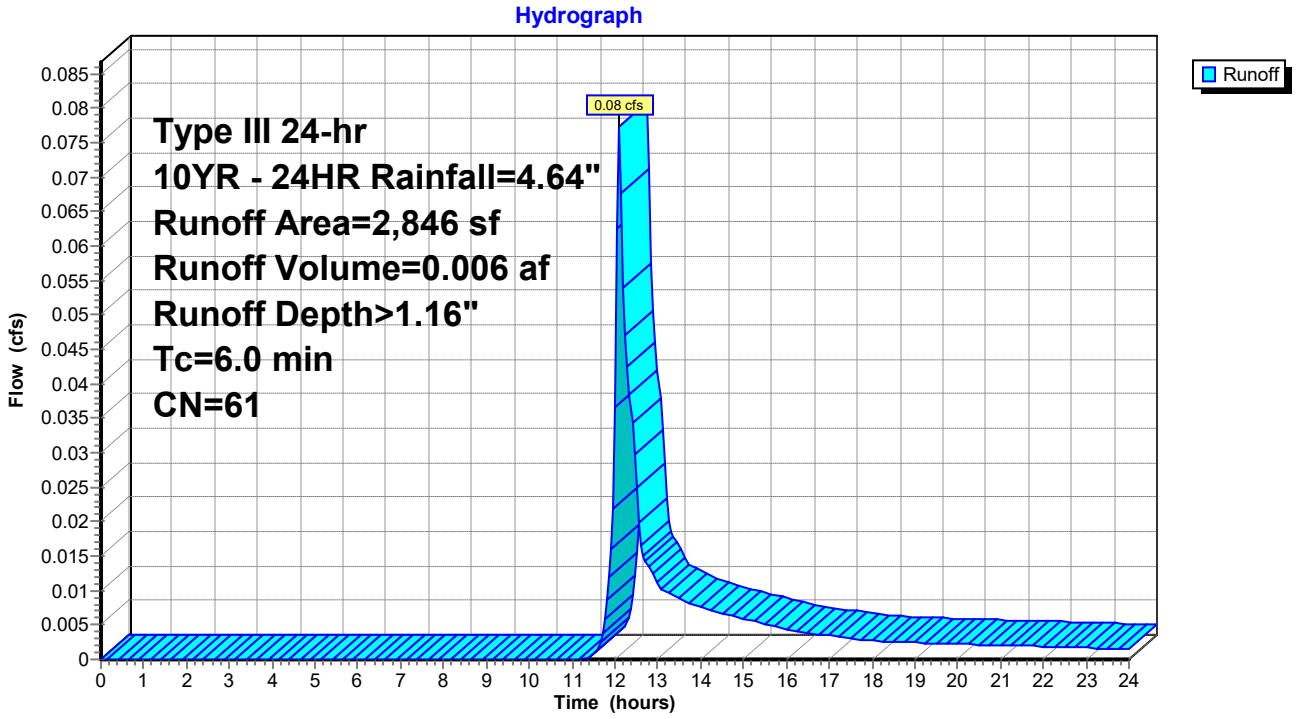
Runoff = 0.08 cfs @ 12.11 hrs, Volume= 0.006 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
2,846	61	>75% Grass cover, Good, HSG B
2,846		100.00% Pervious Area

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

Subcatchment 51S: Outet Pond



Summary for Subcatchment 52S: Southern Wetland Crossing

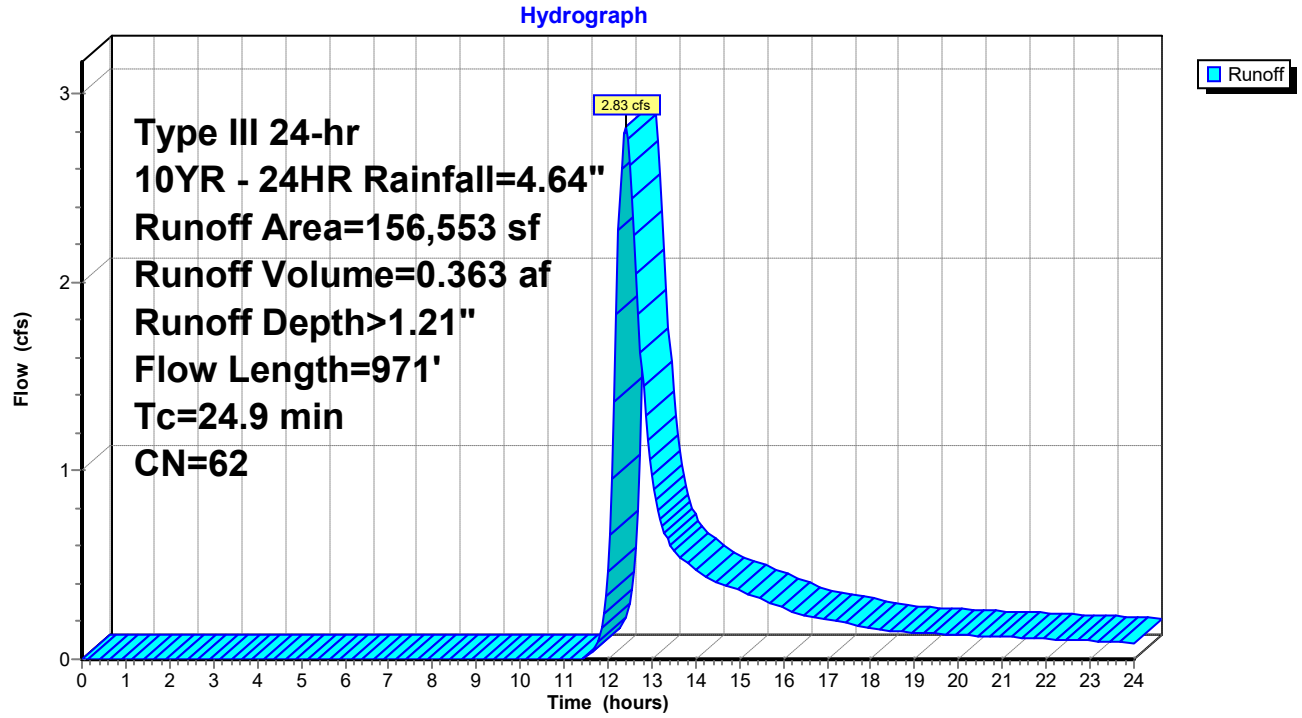
Runoff = 2.83 cfs @ 12.39 hrs, Volume= 0.363 af, Depth> 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
82,875	55	Woods, Good, HSG B
10,441	61	>75% Grass cover, Good, HSG B
416	74	>75% Grass cover, Good, HSG C
60,557	70	Woods, Good, HSG C
2,093	96	Gravel surface, HSG B
171	96	Gravel surface, HSG C
156,553	62	Weighted Average
156,553		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0500	0.11		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
5.9	663	0.1411	1.88		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
3.8	208	0.0337	0.92		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
24.9	971	Total			

Subcatchment 52S: Southern Wetland Crossing



Summary for Subcatchment 53S: Northern Wetland Crossing

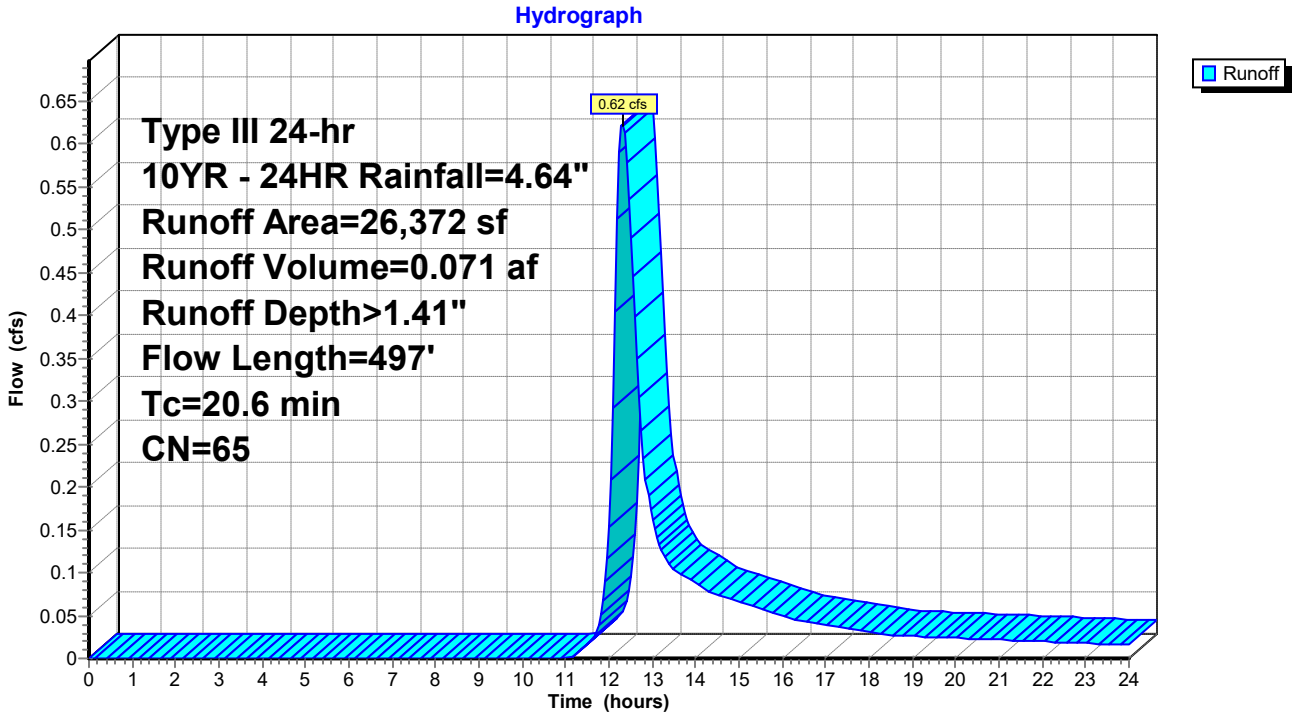
Runoff = 0.62 cfs @ 12.31 hrs, Volume= 0.071 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
11,471	55	Woods, Good, HSG B
331	61	>75% Grass cover, Good, HSG B
9,303	70	Woods, Good, HSG C
4,135	74	>75% Grass cover, Good, HSG C
1,132	96	Gravel surface, HSG C
26,372	65	Weighted Average
26,372		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	100	0.0390	0.10		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
0.9	150	0.2809	2.65		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
1.1	145	0.2042	2.26		**Shallow Concentrated Flow, Segement #3** Woodland Kv= 5.0 fps
1.8	102	0.0342	0.92		**Shallow Concentrated Flow, Segement #4** Woodland Kv= 5.0 fps
20.6	497	Total			

Subcatchment 53S: Northern Wetland Crossing



Summary for Subcatchment 54S: Subcatchment #54

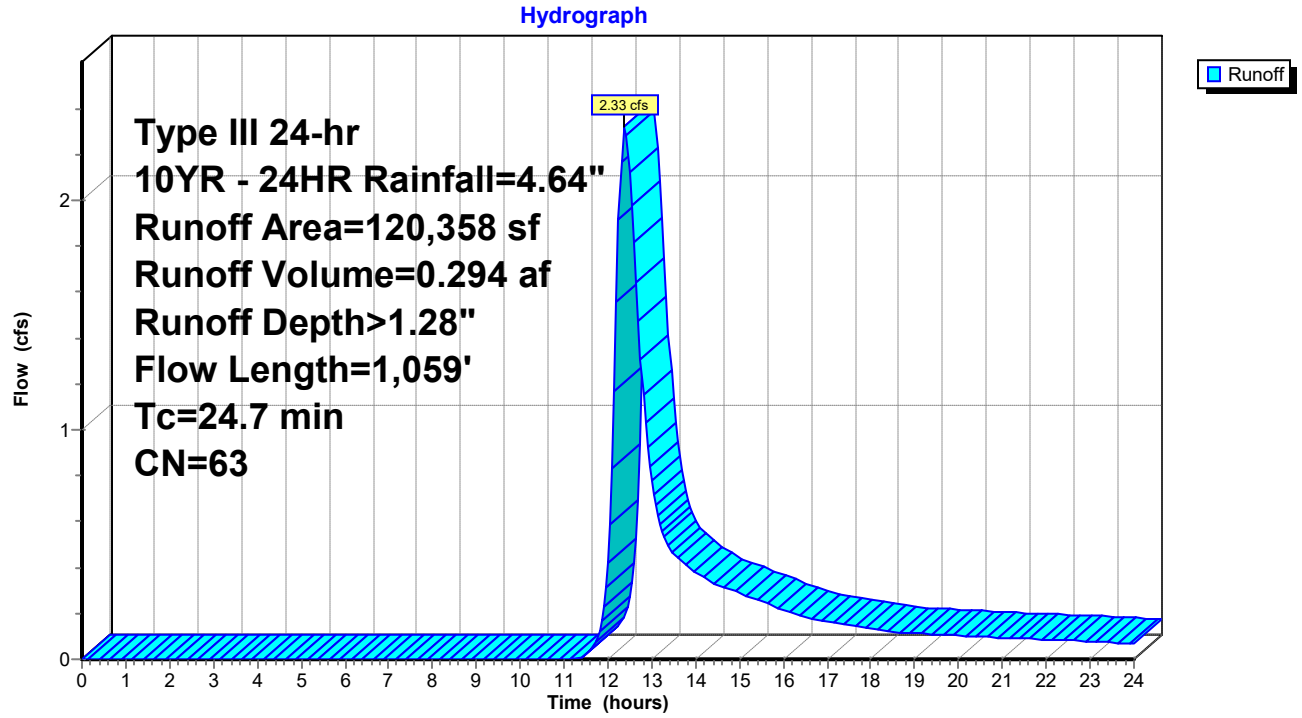
Runoff = 2.33 cfs @ 12.39 hrs, Volume= 0.294 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
46,552	55	Woods, Good, HSG B
24,320	61	>75% Grass cover, Good, HSG B
4,220	96	Gravel surface, HSG B
45,266	70	Woods, Good, HSG C
120,358	63	Weighted Average
120,358		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0500	0.11		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.08"
5.1	565	0.1388	1.86		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.7	73	0.0685	1.83		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
3.7	321	0.0436	1.46		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
24.7	1,059	Total			

Subcatchment 54S: Subcatchment #54



Summary for Subcatchment 55S: 15" HDPE N-12

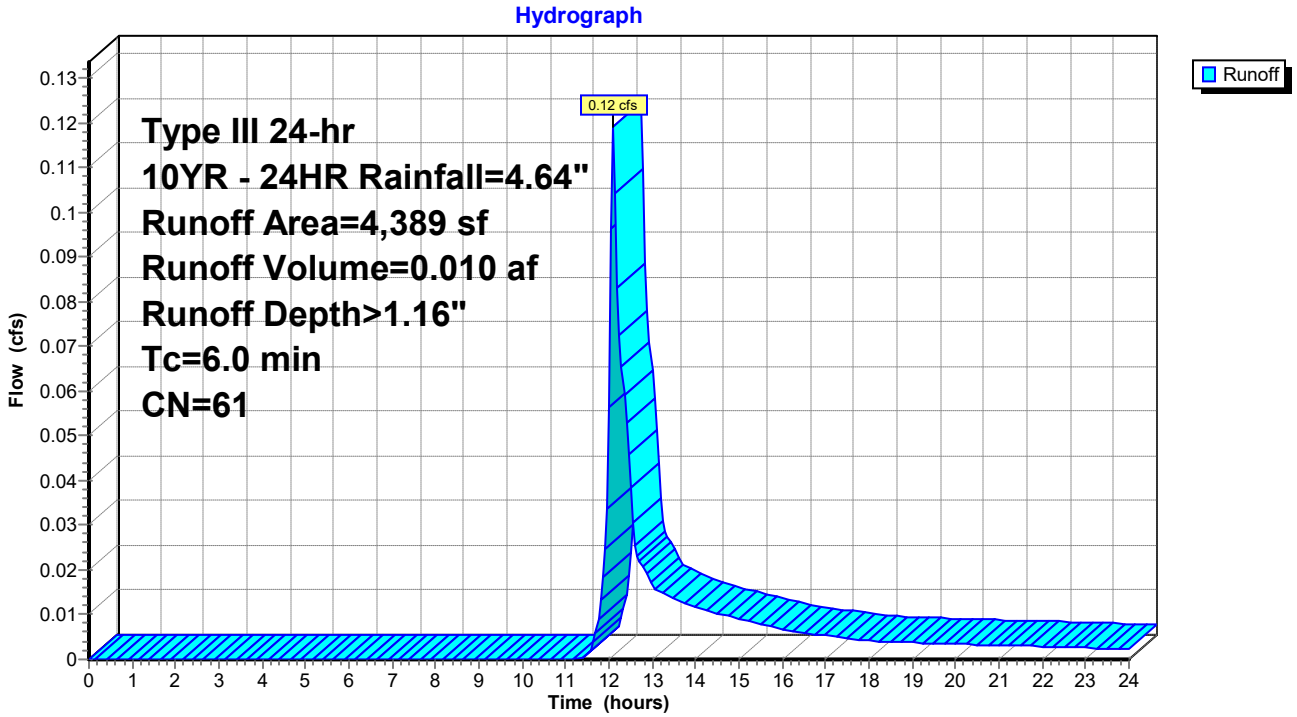
Runoff = 0.12 cfs @ 12.11 hrs, Volume= 0.010 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
4,389	61	>75% Grass cover, Good, HSG B
4,389		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Segment #1**

Subcatchment 55S: 15" HDPE N-12



Summary for Subcatchment 56S: CB #56

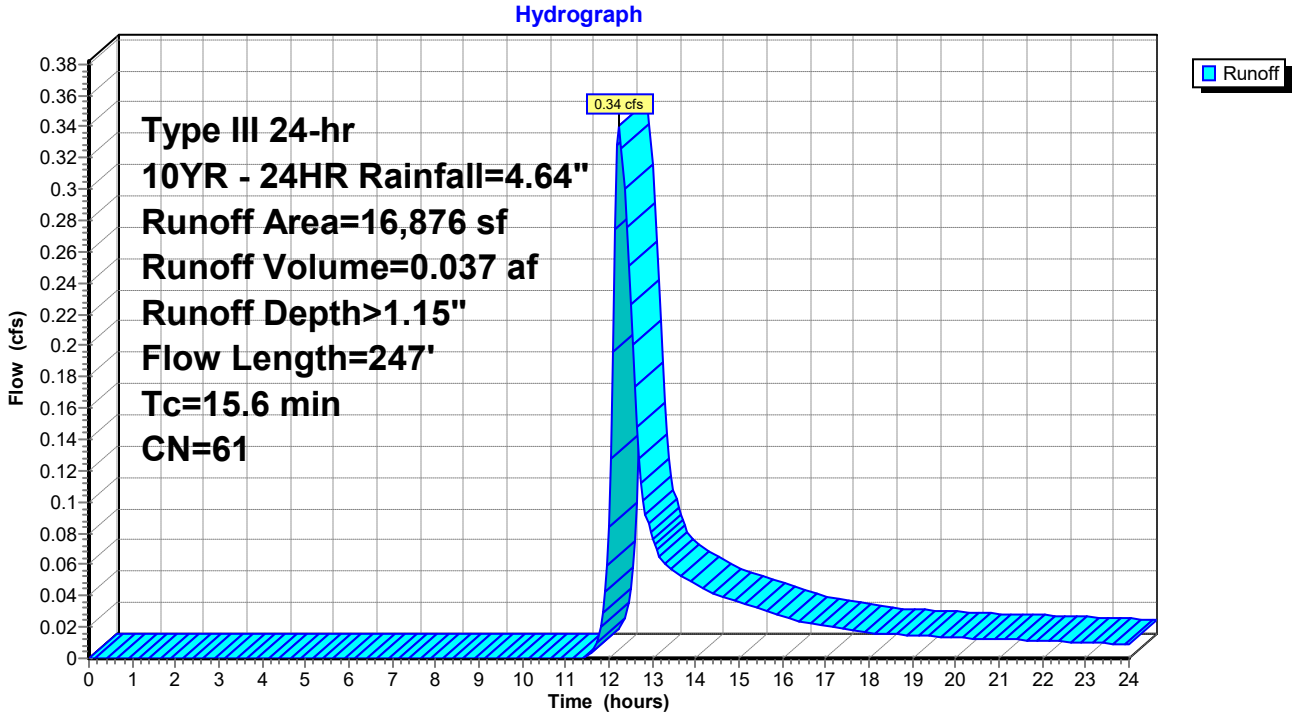
Runoff = 0.34 cfs @ 12.25 hrs, Volume= 0.037 af, Depth> 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
16,876	61	>75% Grass cover, Good, HSG B
16,876		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0100	0.13		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.08"
1.2	50	0.0100	0.70		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
1.2	97	0.0363	1.33		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
15.6	247	Total			

Subcatchment 56S: CB #56



Summary for Subcatchment 63S: Gravel Wetland #103

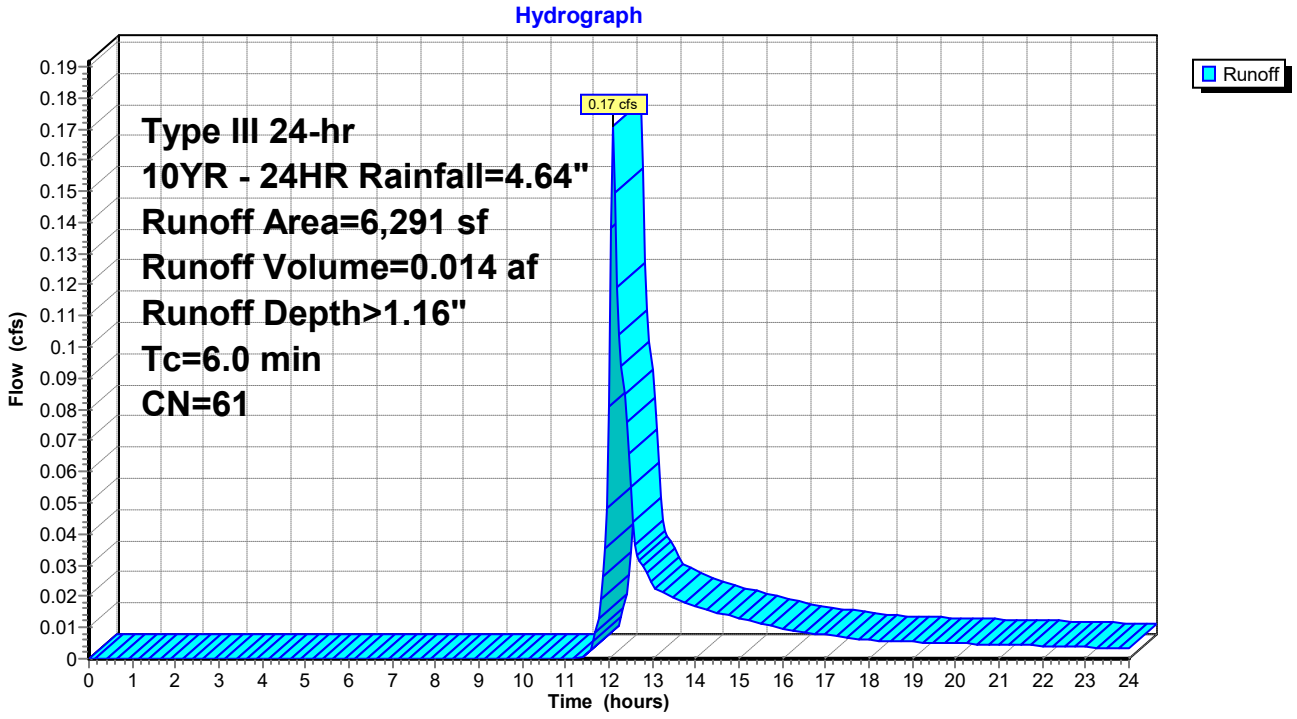
Runoff = 0.17 cfs @ 12.11 hrs, Volume= 0.014 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
6,272	61	>75% Grass cover, Good, HSG B
19	98	Paved parking, HSG B
6,291	61	Weighted Average
6,272		99.70% Pervious Area
19		0.30% Impervious Area

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

Subcatchment 63S: Gravel Wetland #103



Summary for Subcatchment 64S: Gravel Wetland #104

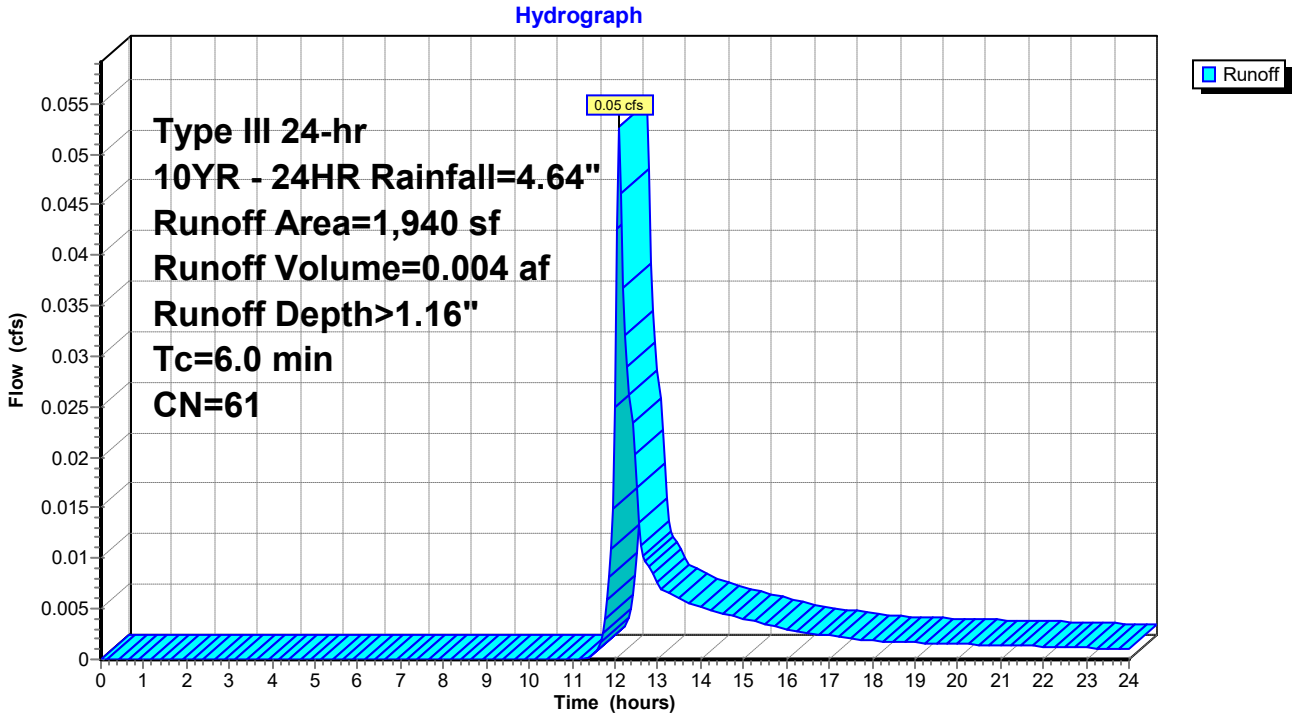
Runoff = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
1,940	61	>75% Grass cover, Good, HSG B
1,940		100.00% Pervious Area

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

Subcatchment 64S: Gravel Wetland #104



Summary for Subcatchment 65S: Rain Garden #105

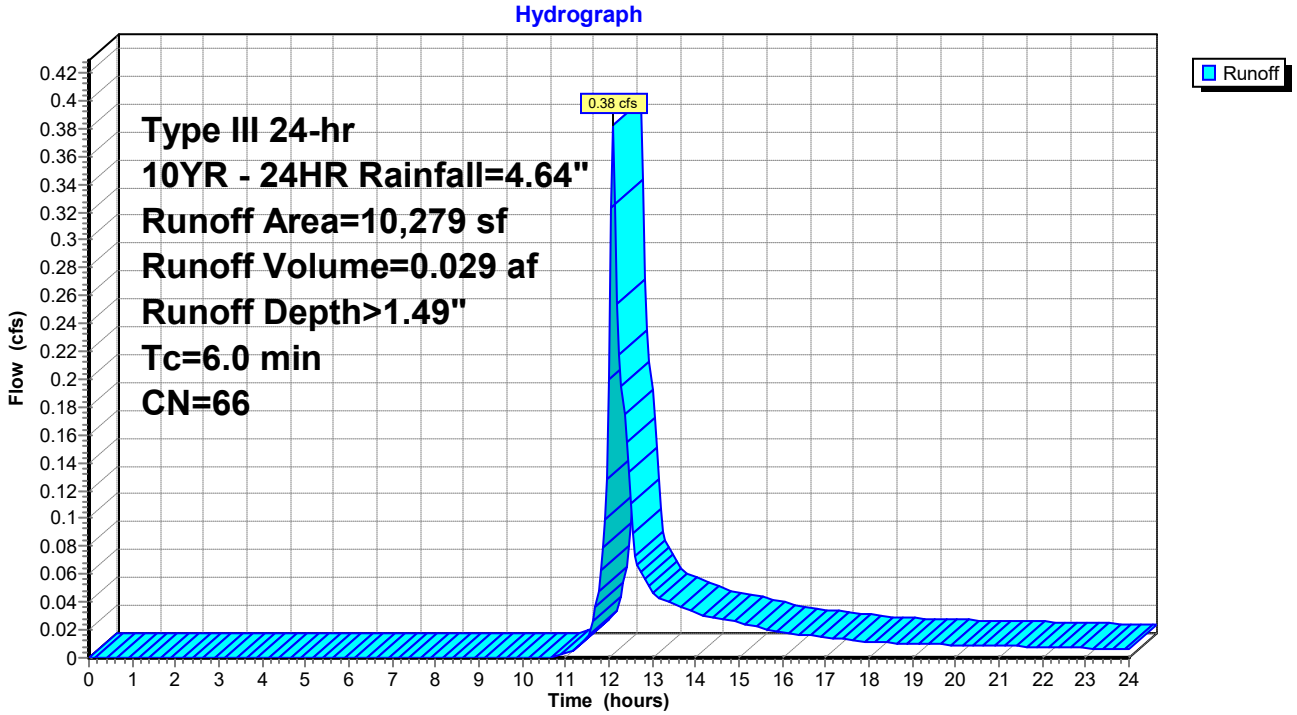
Runoff = 0.38 cfs @ 12.10 hrs, Volume= 0.029 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
6,561	61	>75% Grass cover, Good, HSG B
40	98	Paved parking, HSG B
3,644	74	>75% Grass cover, Good, HSG C
34	98	Paved parking, HSG C
10,279	66	Weighted Average
10,205		99.28% Pervious Area
74		0.72% Impervious Area

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

Subcatchment 65S: Rain Garden #105



Summary for Subcatchment 66S: Rain Garden #106

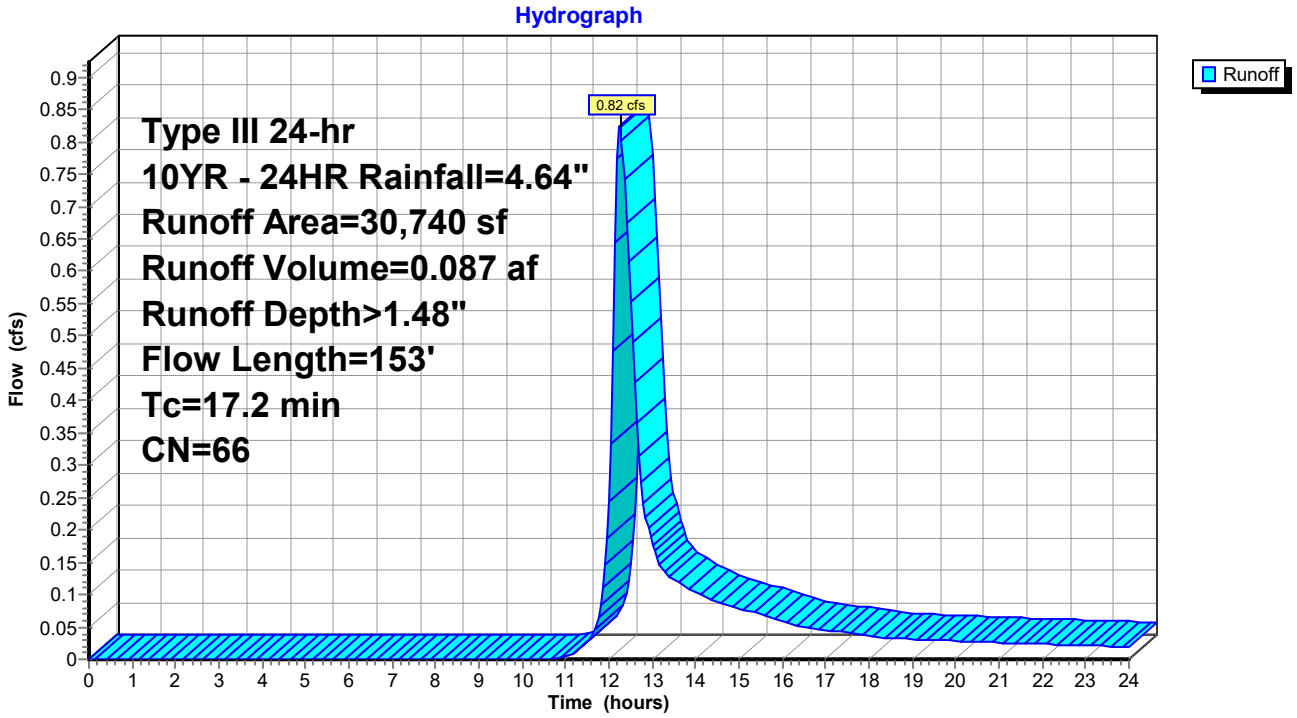
Runoff = 0.82 cfs @ 12.26 hrs, Volume= 0.087 af, Depth> 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
23,922	61	>75% Grass cover, Good, HSG B
1,728	98	Roofs, HSG B
659	96	Gravel surface, HSG B
4,369	74	>75% Grass cover, Good, HSG C
62	96	Gravel surface, HSG C
30,740	66	Weighted Average
29,012		94.38% Pervious Area
1,728		5.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	55	0.0636	0.16		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.08"
9.7	45	0.0111	0.08		**Sheet Flow, Segment #2** Grass: Dense n= 0.240 P2= 3.08"
1.8	53	0.0050	0.49		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
17.2	153	Total			

Subcatchment 66S: Rain Garden #106



Summary for Subcatchment 67S: Rain Garden #107

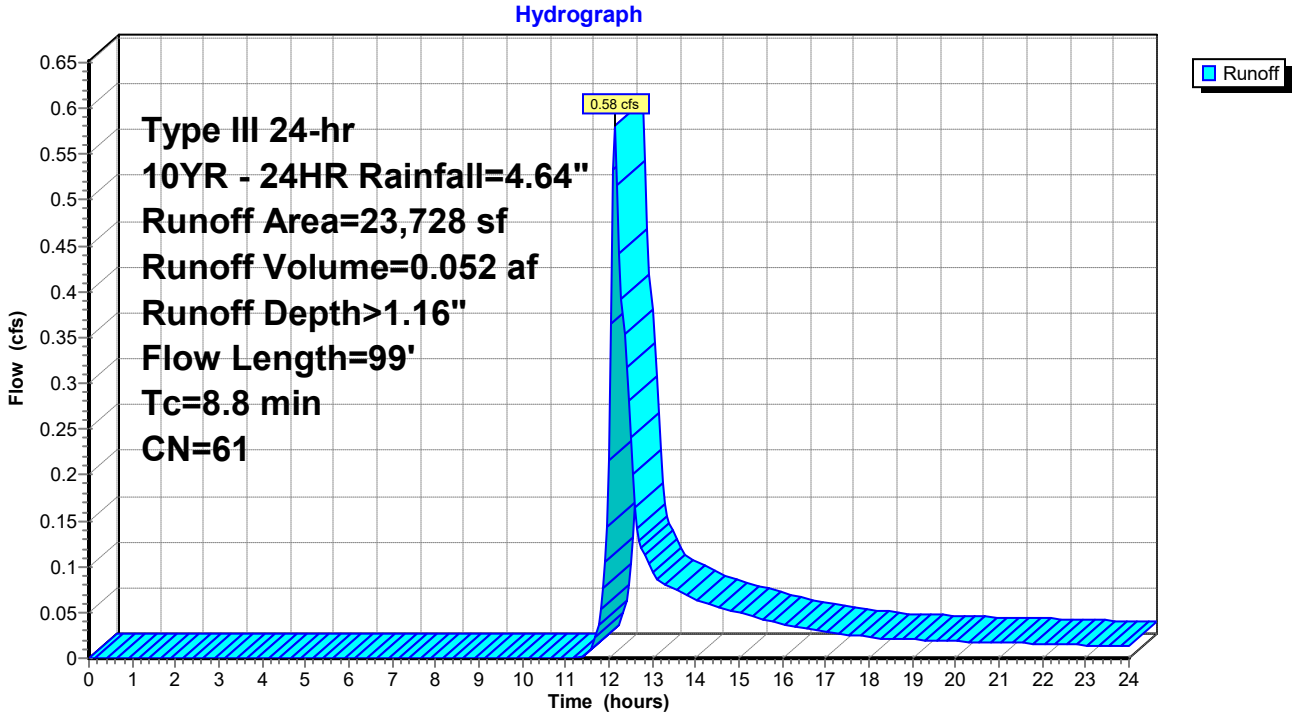
Runoff = 0.58 cfs @ 12.15 hrs, Volume= 0.052 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
23,728	61	>75% Grass cover, Good, HSG B
23,728		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	16	0.0625	0.18		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.08"
0.5	9	0.3300	0.32		**Sheet Flow, Segment #2** Grass: Short n= 0.150 P2= 3.08"
5.2	47	0.0223	0.15		**Sheet Flow, Segment #3** Grass: Short n= 0.150 P2= 3.08"
0.6	12	0.3300	0.34		**Sheet Flow, Segment #4** Grass: Short n= 0.150 P2= 3.08"
1.0	15	0.1330	0.24		**Sheet Flow, Segement #5** Grass: Short n= 0.150 P2= 3.08"
8.8	99	Total			

Subcatchment 67S: Rain Garden #107



Summary for Subcatchment 68S: Rain Garden #108

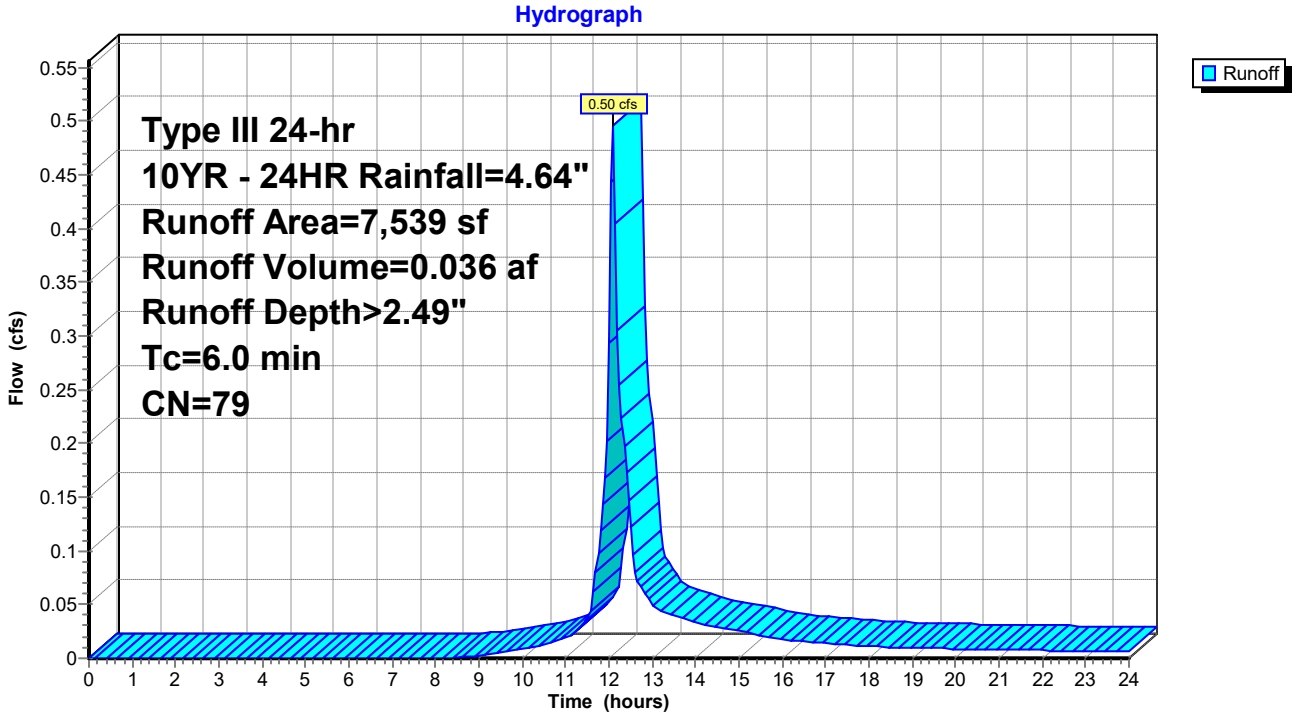
Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
3,580	98	Paved parking, HSG B
3,927	61	>75% Grass cover, Good, HSG B
32	96	Gravel surface, HSG B
7,539	79	Weighted Average
3,959		52.51% Pervious Area
3,580		47.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Segment 1**

Subcatchment 68S: Rain Garden #108



Summary for Subcatchment 70S: Detention Pond #110

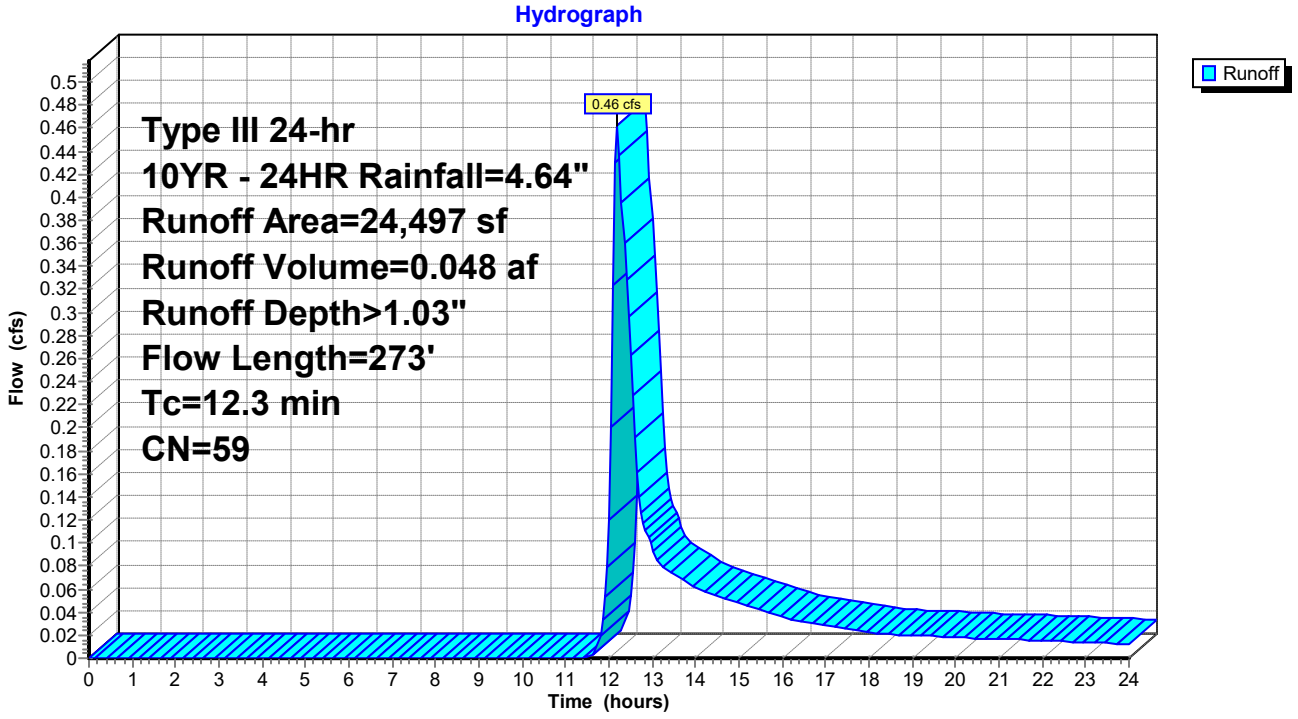
Runoff = 0.46 cfs @ 12.20 hrs, Volume= 0.048 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR - 24HR Rainfall=4.64"

Area (sf)	CN	Description
10,491	61	>75% Grass cover, Good, HSG B
11,470	55	Woods, Good, HSG B
1,904	74	>75% Grass cover, Good, HSG C
632	70	Woods, Good, HSG C
24,497	59	Weighted Average
24,497		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0550	0.17		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.08"
0.1	8	0.0550	1.64		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
2.5	165	0.0485	1.10		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
12.3	273	Total			

Subcatchment 70S: Detention Pond #110



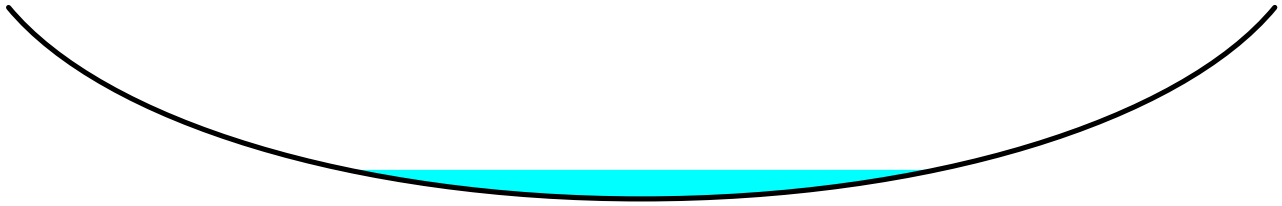
Summary for Reach 1R: Overland flow

Inflow = 0.79 cfs @ 12.39 hrs, Volume= 0.034 af
Outflow = 0.78 cfs @ 12.41 hrs, Volume= 0.034 af, Atten= 1%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.98 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 5.1 min

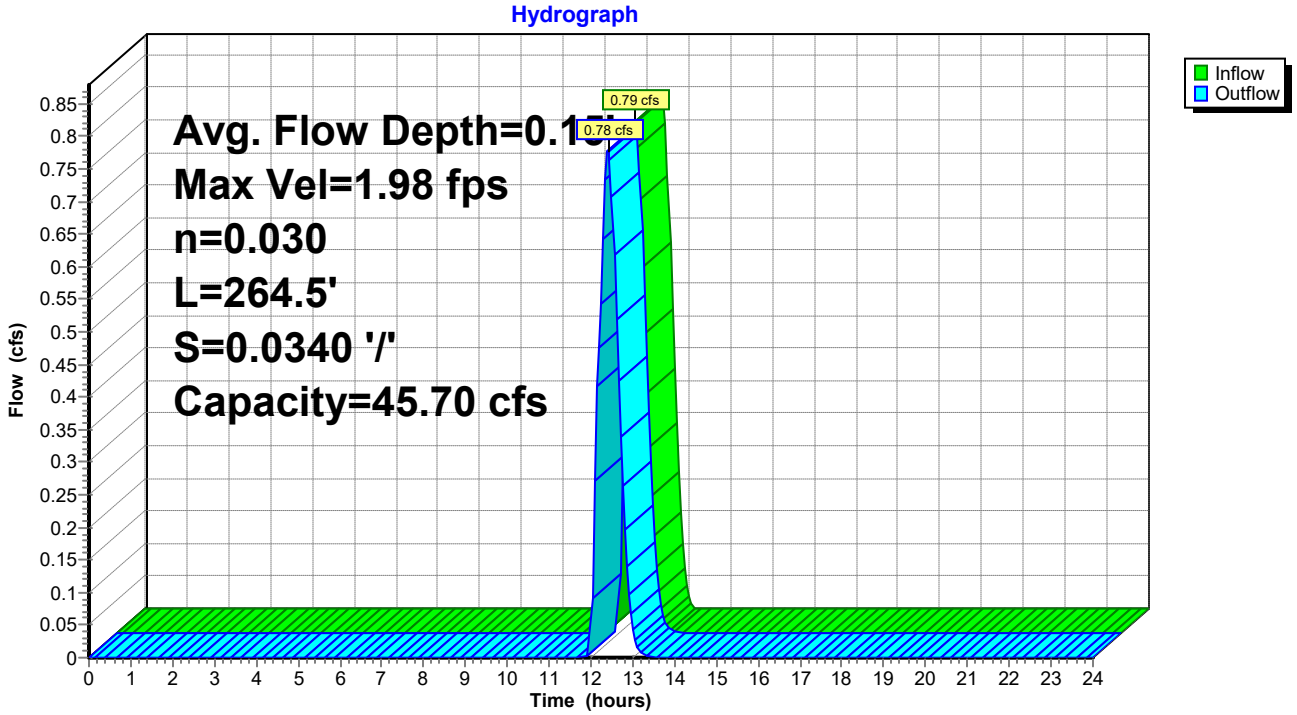
Peak Storage= 104 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 45.70 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 264.5' Slope= 0.0340 '/'
Inlet Invert= 228.00', Outlet Invert= 219.00'



‡

Reach 1R: Overland flow



Summary for Reach 2R: Reach 2

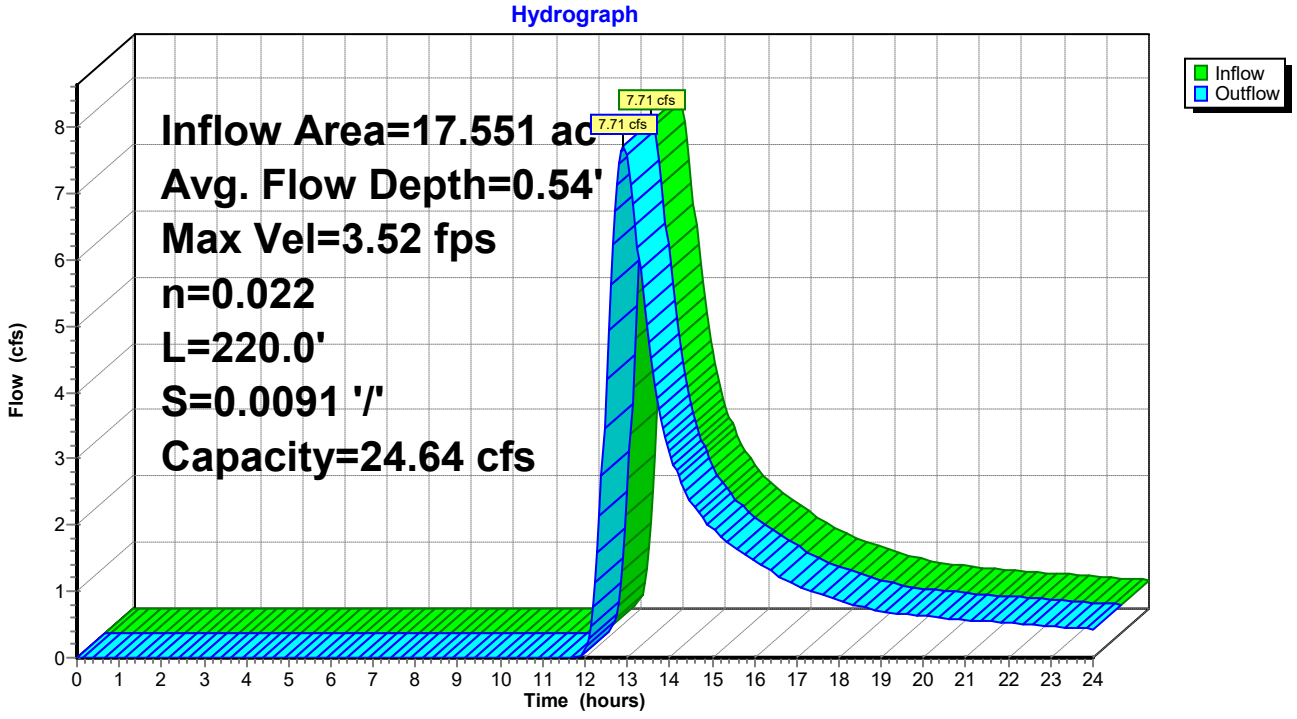
Inflow Area = 17.551 ac, 0.65% Impervious, Inflow Depth > 1.08" for 10YR - 24HR event
Inflow = 7.71 cfs @ 12.91 hrs, Volume= 1.573 af
Outflow = 7.71 cfs @ 12.92 hrs, Volume= 1.572 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 3.52 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.86 fps, Avg. Travel Time= 2.0 min

Peak Storage= 481 cf @ 12.92 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 24.64 cfs

3.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 7.00'
Length= 220.0' Slope= 0.0091 '/'
Inlet Invert= 202.00', Outlet Invert= 200.00'

Reach 2R: Reach 2



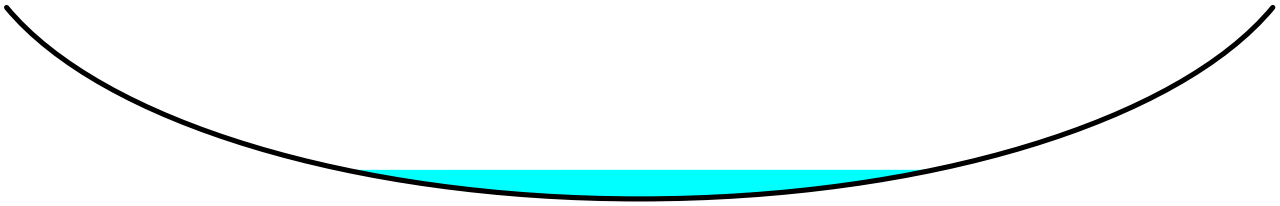
Summary for Reach 3R: Overland flow

Inflow Area = 6.353 ac, 13.96% Impervious, Inflow Depth > 1.09" for 10YR - 24HR event
Inflow = 1.50 cfs @ 13.13 hrs, Volume= 0.579 af
Outflow = 1.50 cfs @ 13.14 hrs, Volume= 0.579 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 3.82 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.71 fps, Avg. Travel Time= 0.4 min

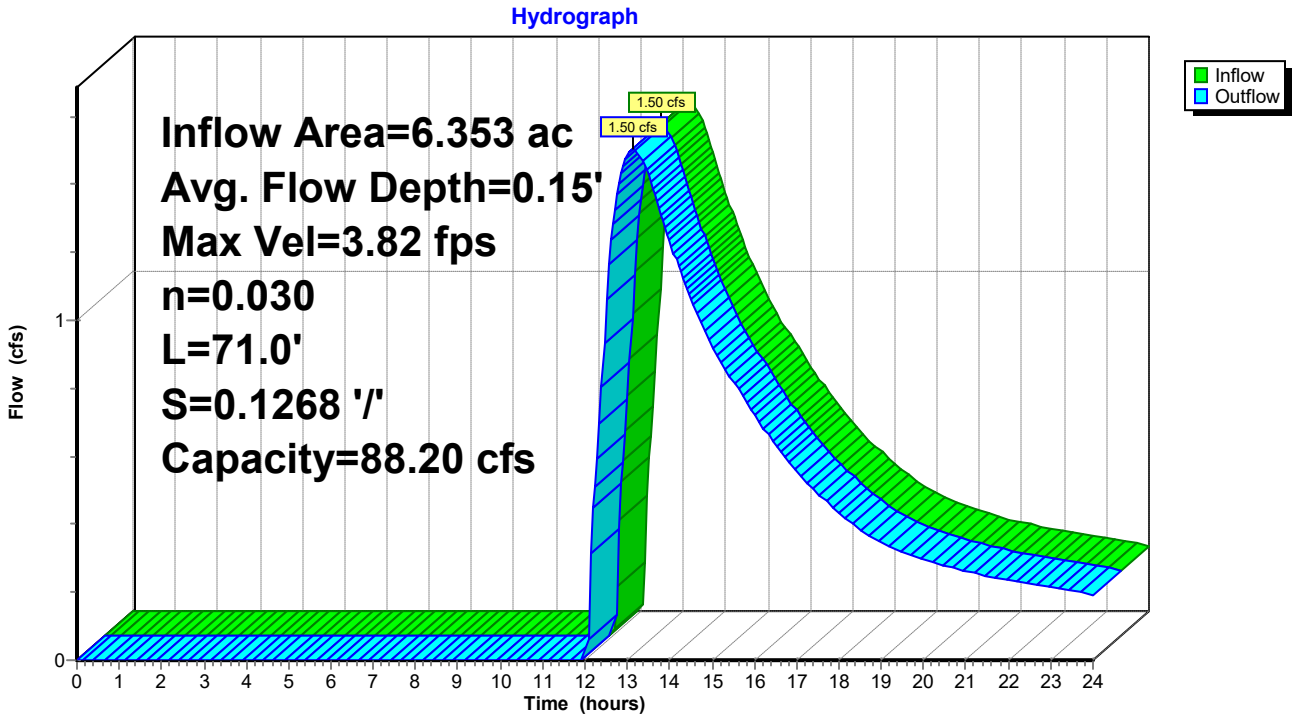
Peak Storage= 28 cf @ 13.14 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 88.20 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 71.0' Slope= 0.1268 '/'
Inlet Invert= 217.00', Outlet Invert= 208.00'



‡

Reach 3R: Overland flow



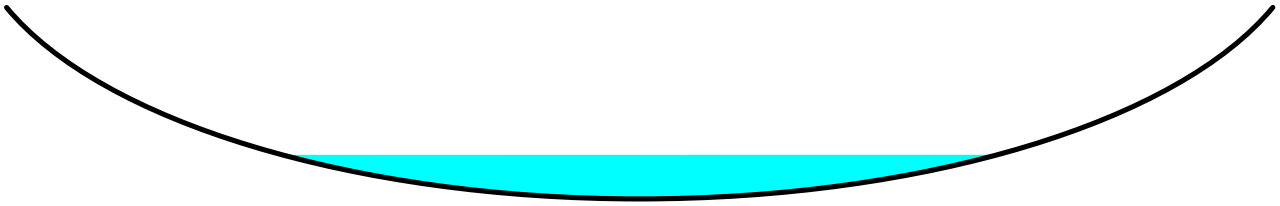
Summary for Reach 11R: Flow Through 8

Inflow Area = 1.938 ac, 13.47% Impervious, Inflow Depth > 0.45" for 10YR - 24HR event
Inflow = 0.33 cfs @ 12.62 hrs, Volume= 0.073 af
Outflow = 0.32 cfs @ 12.64 hrs, Volume= 0.073 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 0.88 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.53 fps, Avg. Travel Time= 2.4 min

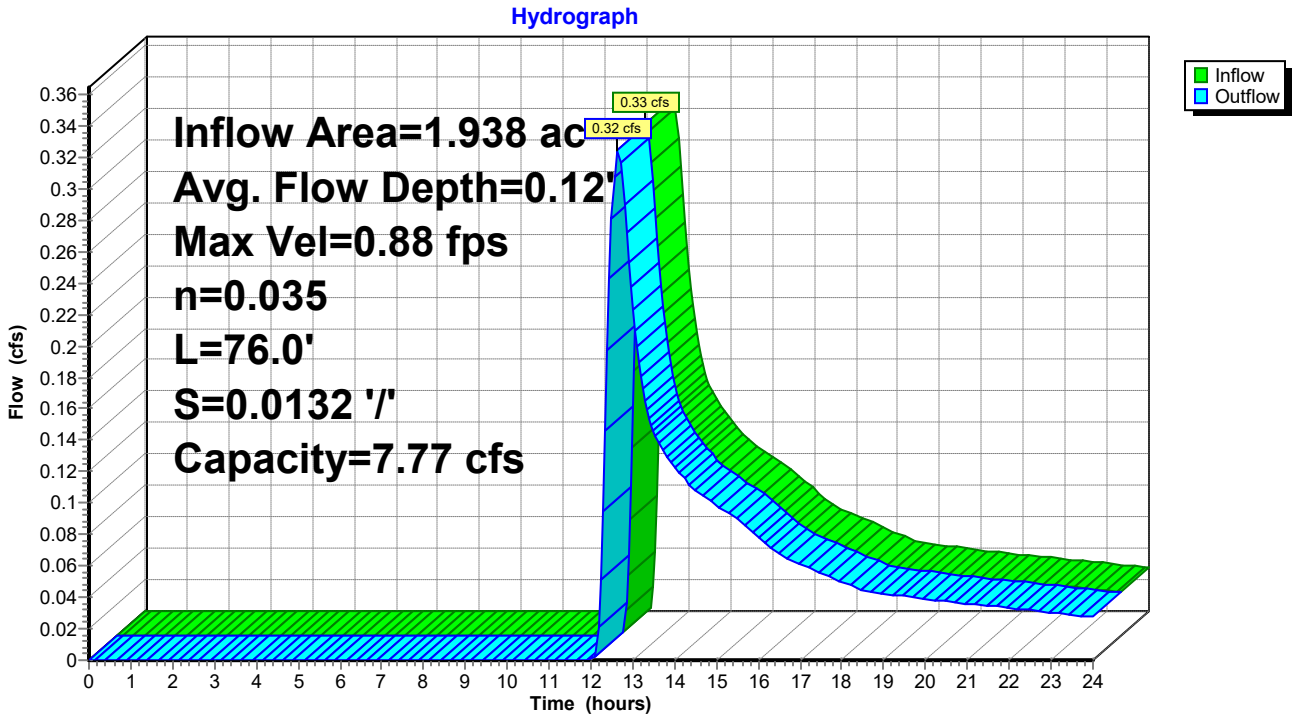
Peak Storage= 28 cf @ 12.64 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.50' Flow Area= 3.3 sf, Capacity= 7.77 cfs

10.00' x 0.50' deep Parabolic Channel, n= 0.035
Length= 76.0' Slope= 0.0132 '/'
Inlet Invert= 199.00', Outlet Invert= 198.00'



‡

Reach 11R: Flow Through 8



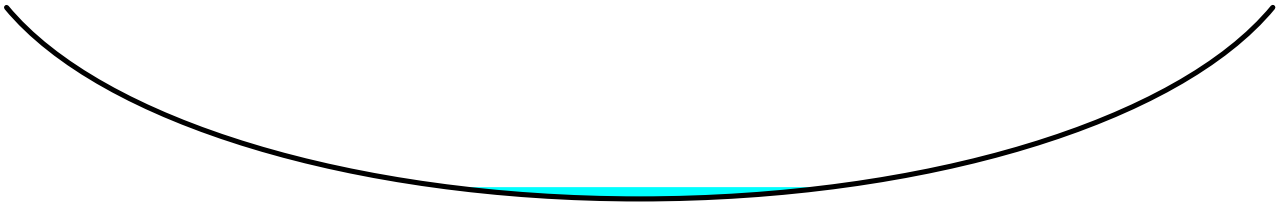
Summary for Reach 50R: Overland flow

Inflow Area = 1.865 ac, 24.57% Impervious, Inflow Depth > 0.90" for 10YR - 24HR event
Inflow = 0.47 cfs @ 12.26 hrs, Volume= 0.140 af
Outflow = 0.47 cfs @ 12.26 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.52 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.93 fps, Avg. Travel Time= 0.8 min

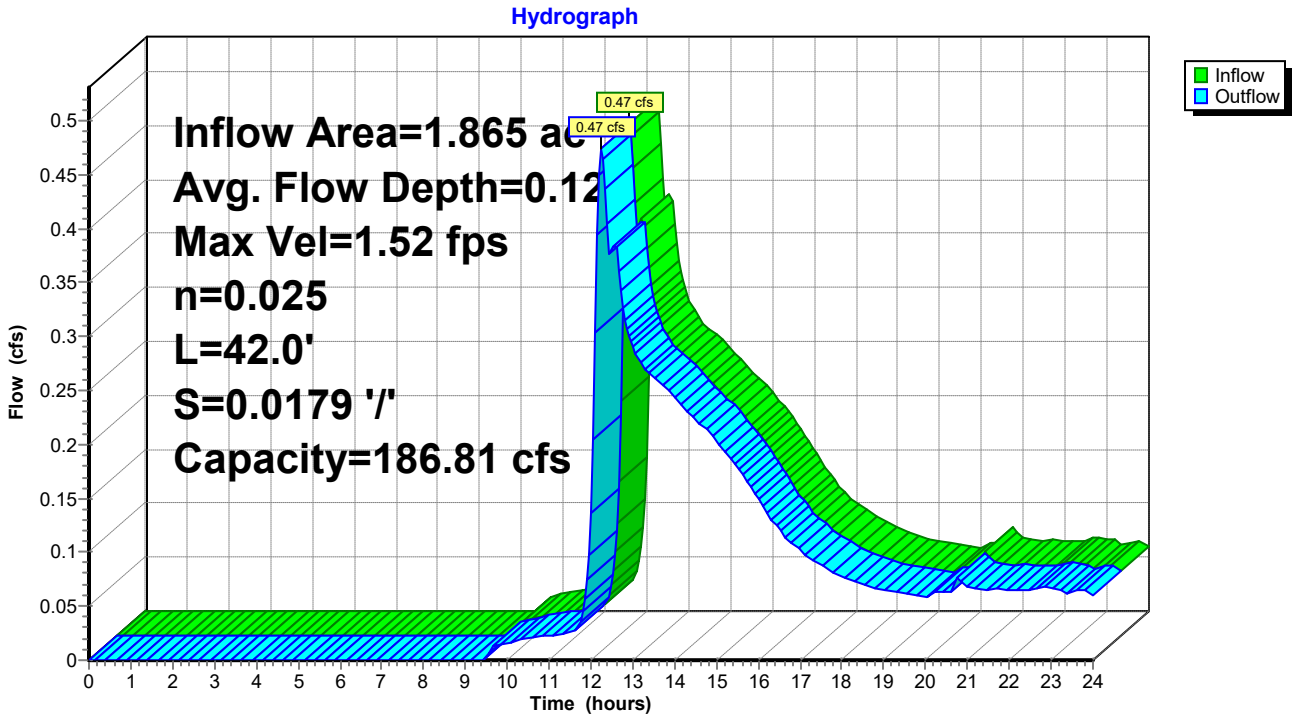
Peak Storage= 13 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 186.81 cfs

15.00' x 2.00' deep Parabolic Channel, n= 0.025 Earth, grassed & winding
Length= 42.0' Slope= 0.0179 '/'
Inlet Invert= 203.00', Outlet Invert= 202.25'



‡

Reach 50R: Overland flow



Summary for Reach 52R: Wetland Flow

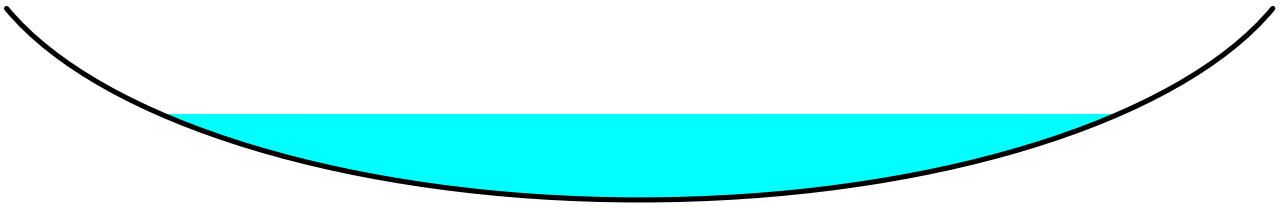
[62] Hint: Exceeded Reach 70R OUTLET depth by 0.14' @ 12.40 hrs

Inflow Area = 6.919 ac, 0.00% Impervious, Inflow Depth > 1.21" for 10YR - 24HR event
Inflow = 3.14 cfs @ 12.41 hrs, Volume= 0.695 af
Outflow = 3.14 cfs @ 12.42 hrs, Volume= 0.694 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.57 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 2.2 min

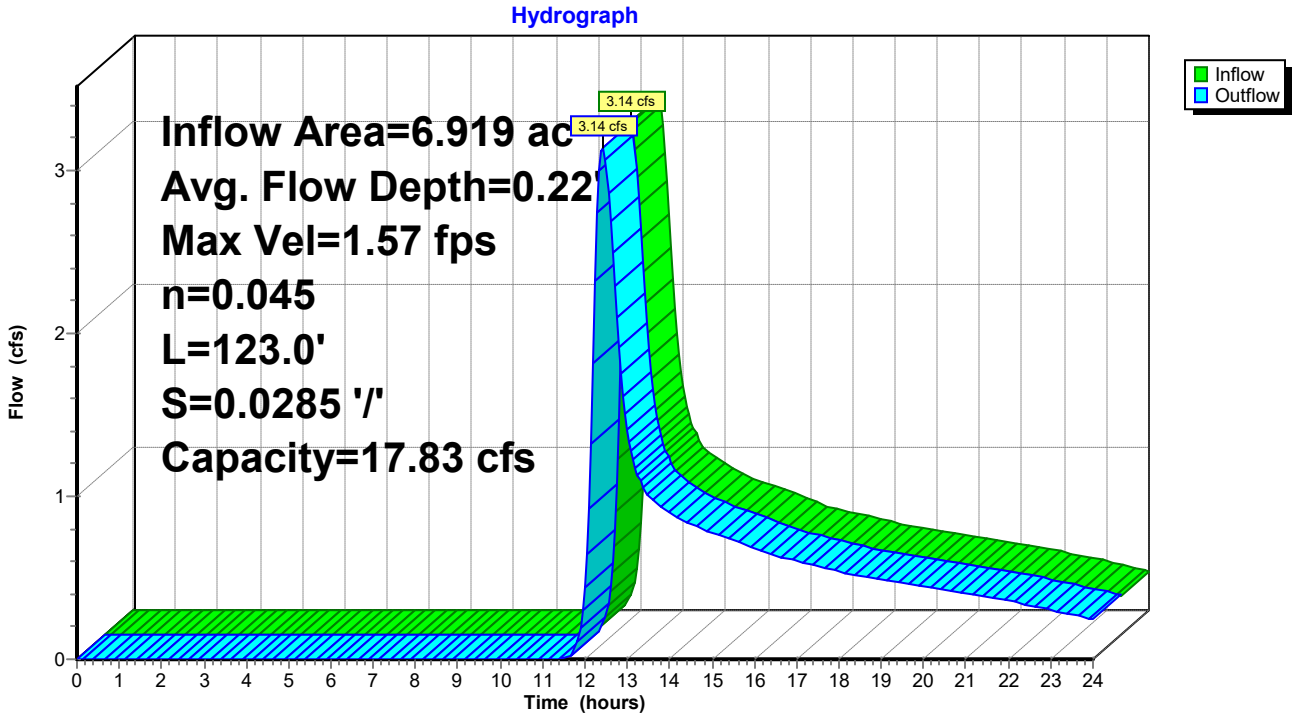
Peak Storage= 246 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 0.50' Flow Area= 6.7 sf, Capacity= 17.83 cfs

20.00' x 0.50' deep Parabolic Channel, n= 0.045
Length= 123.0' Slope= 0.0285 '/'
Inlet Invert= 212.50', Outlet Invert= 209.00'



‡

Reach 52R: Wetland Flow



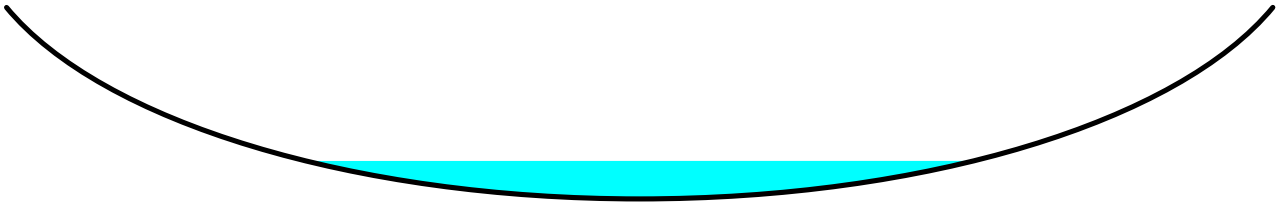
Summary for Reach 53R: Wetland Flow

Inflow Area = 0.605 ac, 0.00% Impervious, Inflow Depth > 1.41" for 10YR - 24HR event
Inflow = 0.62 cfs @ 12.32 hrs, Volume= 0.071 af
Outflow = 0.62 cfs @ 12.35 hrs, Volume= 0.071 af, Atten= 1%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.04 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 4.9 min

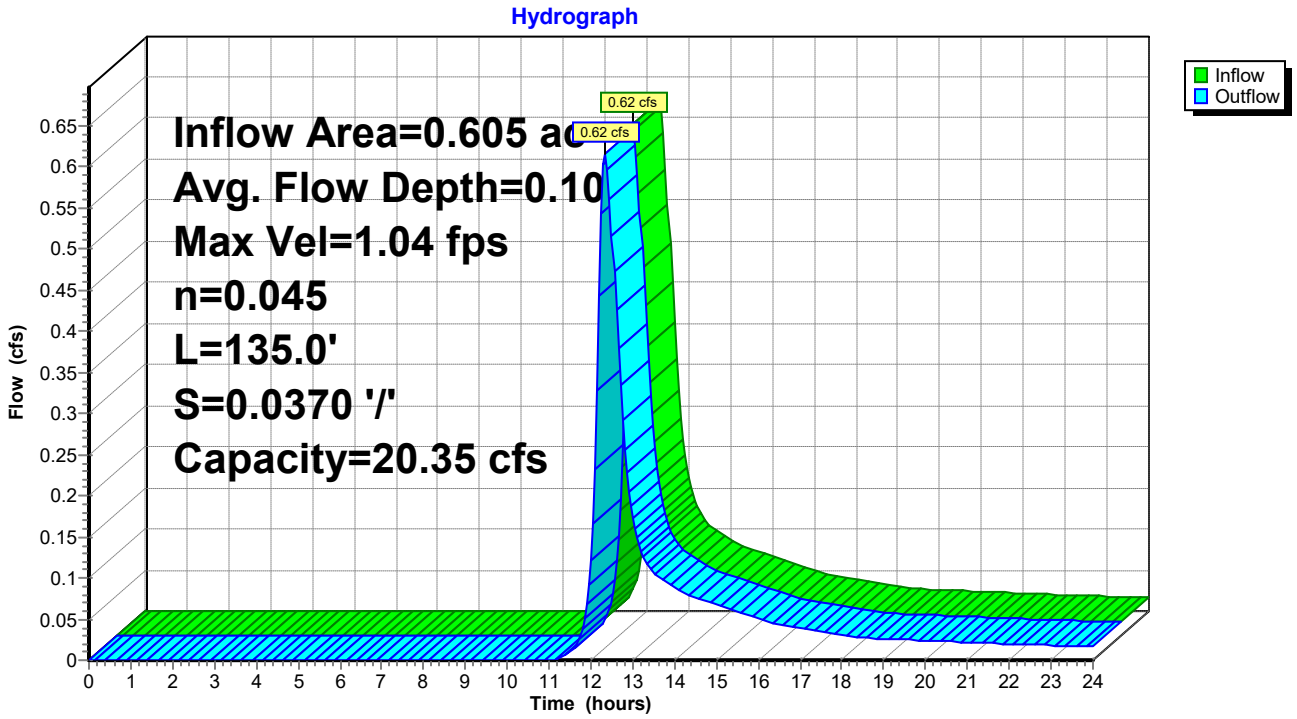
Peak Storage= 80 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 0.50' Flow Area= 6.7 sf, Capacity= 20.35 cfs

20.00' x 0.50' deep Parabolic Channel, n= 0.045
Length= 135.0' Slope= 0.0370 '/'
Inlet Invert= 214.00', Outlet Invert= 209.00'



‡

Reach 53R: Wetland Flow



Summary for Reach 54R: Combined Wetland Flow

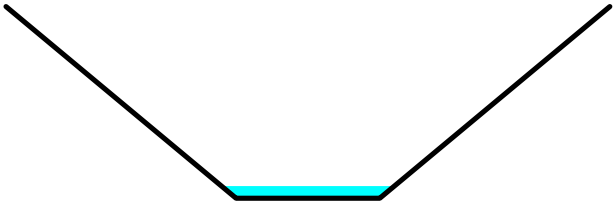
[62] Hint: Exceeded Reach 52R OUTLET depth by 0.03' @ 12.40 hrs
[62] Hint: Exceeded Reach 53R OUTLET depth by 0.16' @ 12.45 hrs

Inflow Area = 7.525 ac, 0.00% Impervious, Inflow Depth > 1.22" for 10YR - 24HR event
Inflow = 3.72 cfs @ 12.41 hrs, Volume= 0.765 af
Outflow = 3.72 cfs @ 12.41 hrs, Volume= 0.765 af, Atten= 0%, Lag= 0.2 min

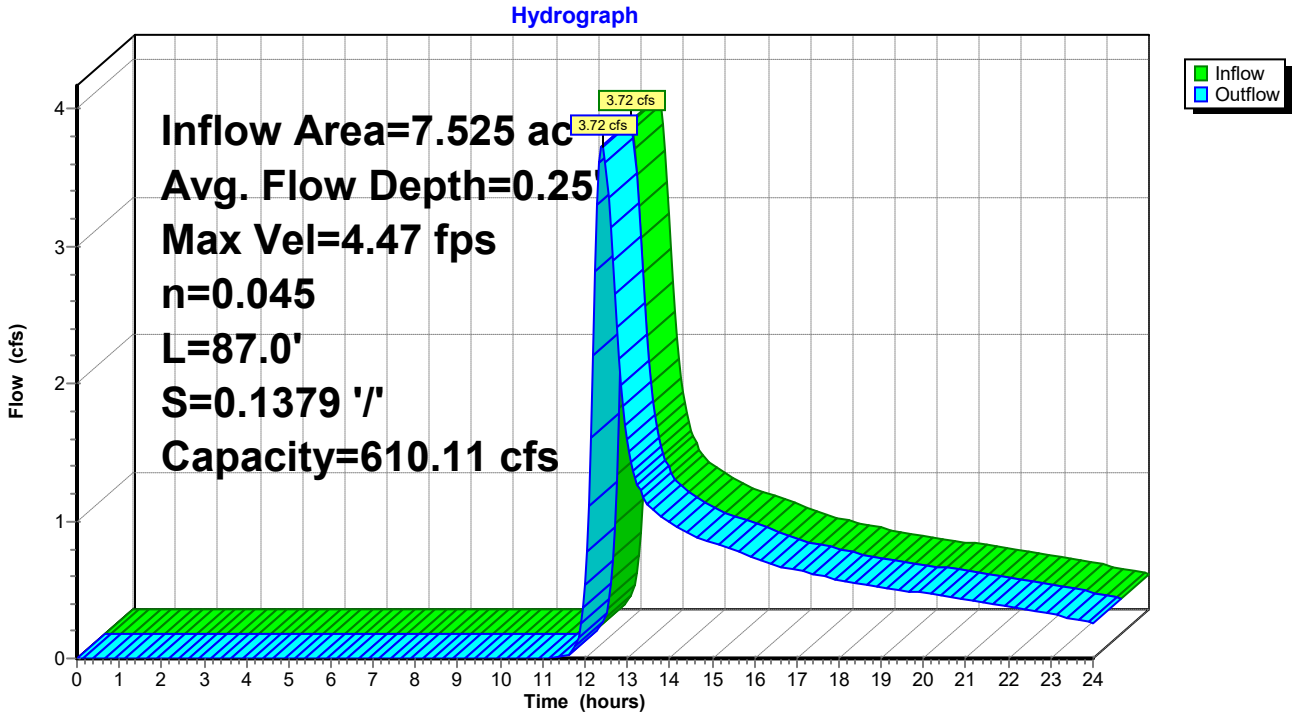
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 4.47 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.34 fps, Avg. Travel Time= 0.6 min

Peak Storage= 72 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 4.00' Flow Area= 31.2 sf, Capacity= 610.11 cfs

3.00' x 4.00' deep channel, n= 0.045
Side Slope Z-value= 1.2 '/' Top Width= 12.60'
Length= 87.0' Slope= 0.1379 '/'
Inlet Invert= 209.00', Outlet Invert= 197.00'



Reach 54R: Combined Wetland Flow



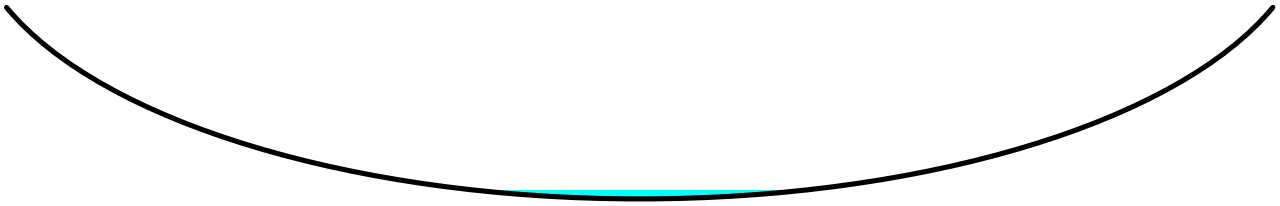
Summary for Reach 63R: Overland Flow

Inflow Area = 0.597 ac, 54.88% Impervious, Inflow Depth > 0.87" for 10YR - 24HR event
Inflow = 0.06 cfs @ 16.26 hrs, Volume= 0.043 af
Outflow = 0.06 cfs @ 16.29 hrs, Volume= 0.043 af, Atten= 0%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 0.68 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 4.3 min

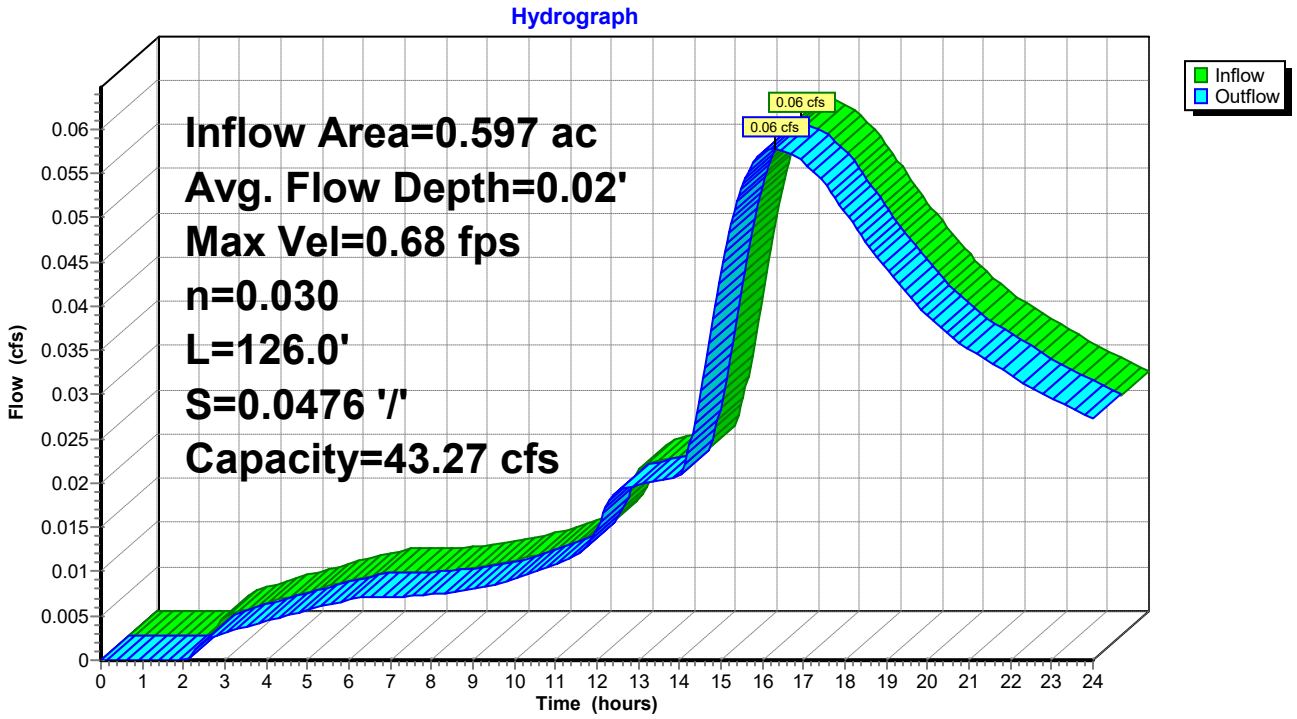
Peak Storage= 11 cf @ 16.29 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.50' Flow Area= 8.3 sf, Capacity= 43.27 cfs

25.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 126.0' Slope= 0.0476 '/'
Inlet Invert= 211.00', Outlet Invert= 205.00'



‡

Reach 63R: Overland Flow



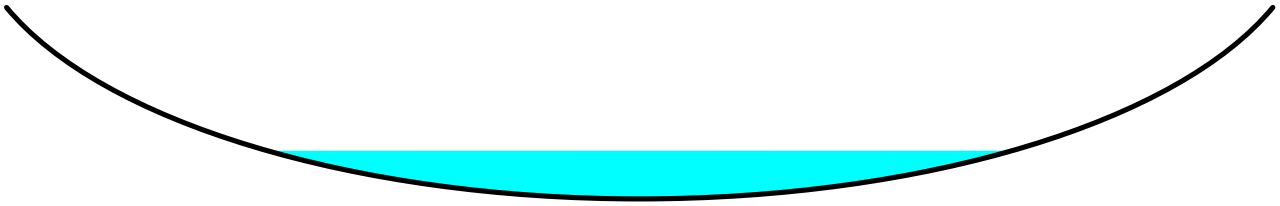
Summary for Reach 65R: Overland Flow

Inflow Area = 2.473 ac, 53.60% Impervious, Inflow Depth > 1.87" for 10YR - 24HR event
Inflow = 1.17 cfs @ 12.66 hrs, Volume= 0.386 af
Outflow = 1.13 cfs @ 12.79 hrs, Volume= 0.385 af, Atten= 3%, Lag= 7.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.34 fps, Min. Travel Time= 4.3 min
Avg. Velocity = 0.83 fps, Avg. Travel Time= 6.8 min

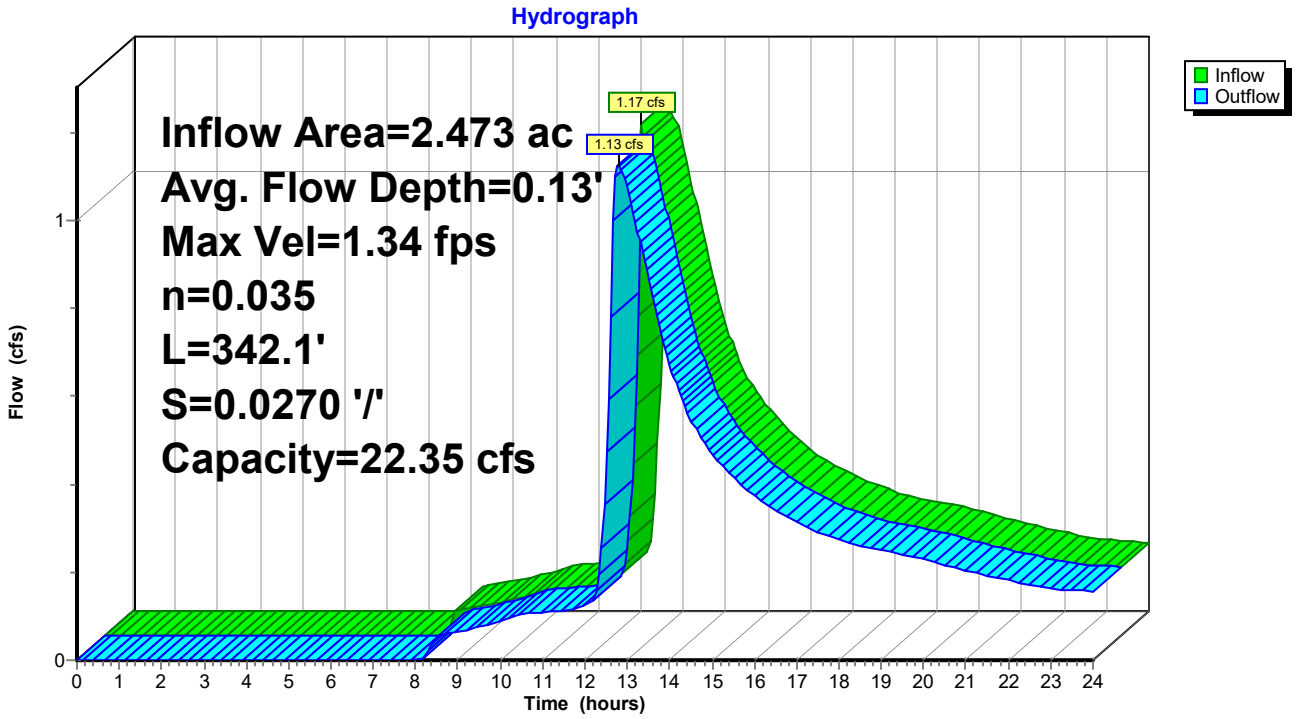
Peak Storage= 288 cf @ 12.79 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 6.7 sf, Capacity= 22.35 cfs

20.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 342.1' Slope= 0.0270 '/'
Inlet Invert= 212.50', Outlet Invert= 203.25'



‡

Reach 65R: Overland Flow



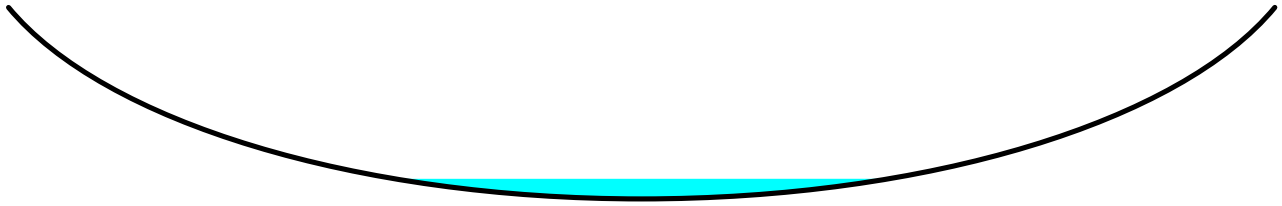
Summary for Reach 66R: Overland Flow

Inflow Area = 1.305 ac, 35.12% Impervious, Inflow Depth > 0.82" for 10YR - 24HR event
Inflow = 0.19 cfs @ 13.23 hrs, Volume= 0.089 af
Outflow = 0.19 cfs @ 13.24 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.65 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.18 fps, Avg. Travel Time= 0.7 min

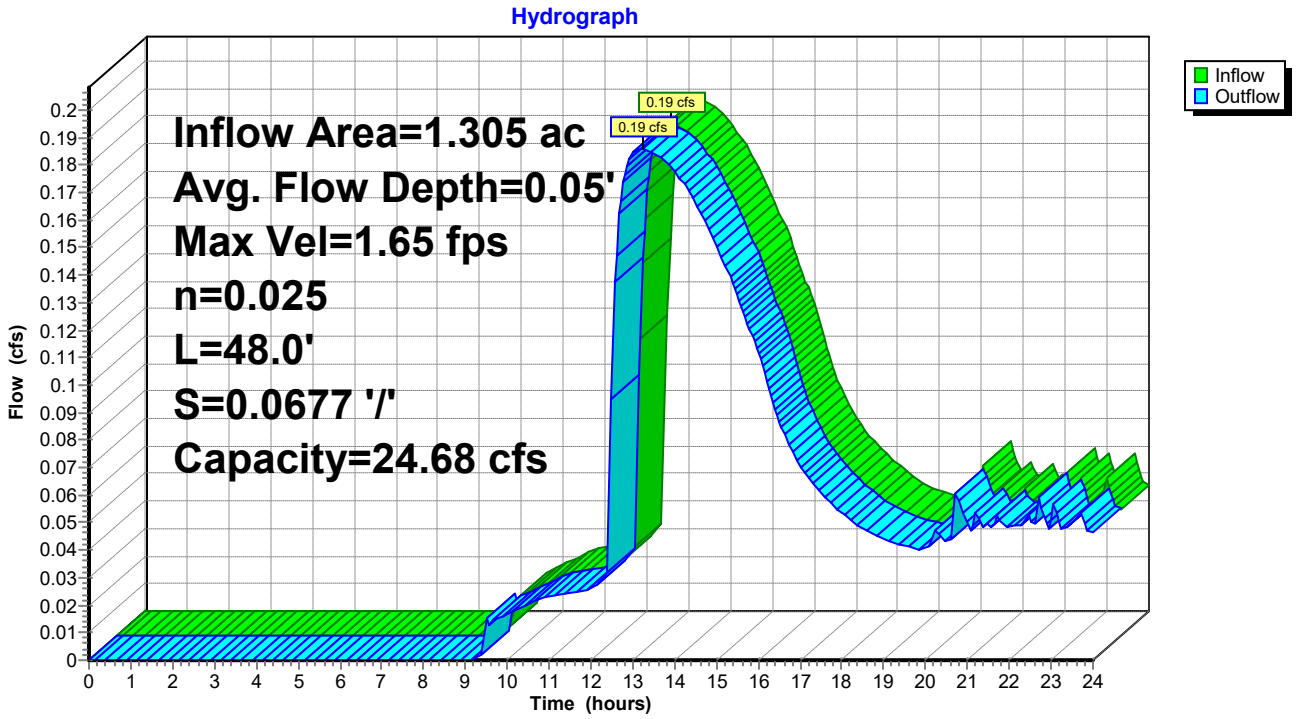
Peak Storage= 5 cf @ 13.24 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 0.50' Flow Area= 3.3 sf, Capacity= 24.68 cfs

10.00' x 0.50' deep Parabolic Channel, n= 0.025 Earth, grassed & winding
Length= 48.0' Slope= 0.0677 '/'
Inlet Invert= 211.00', Outlet Invert= 207.75'



‡

Reach 66R: Overland Flow



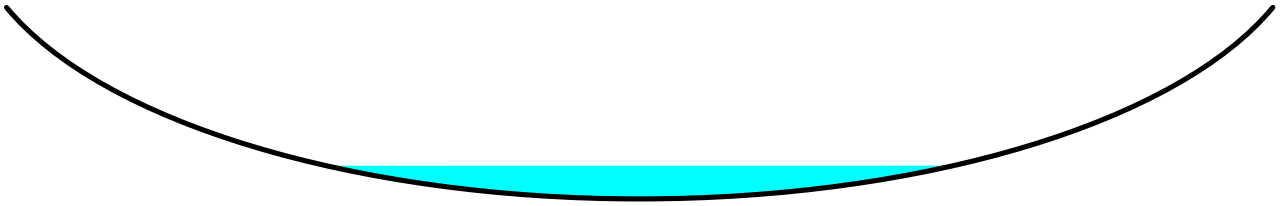
Summary for Reach 67aR: Overland flow

Inflow Area = 6.353 ac, 13.96% Impervious, Inflow Depth > 1.03" for 10YR - 24HR event
Inflow = 1.49 cfs @ 13.17 hrs, Volume= 0.546 af
Outflow = 1.49 cfs @ 13.17 hrs, Volume= 0.546 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 3.09 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.18 fps, Avg. Travel Time= 0.4 min

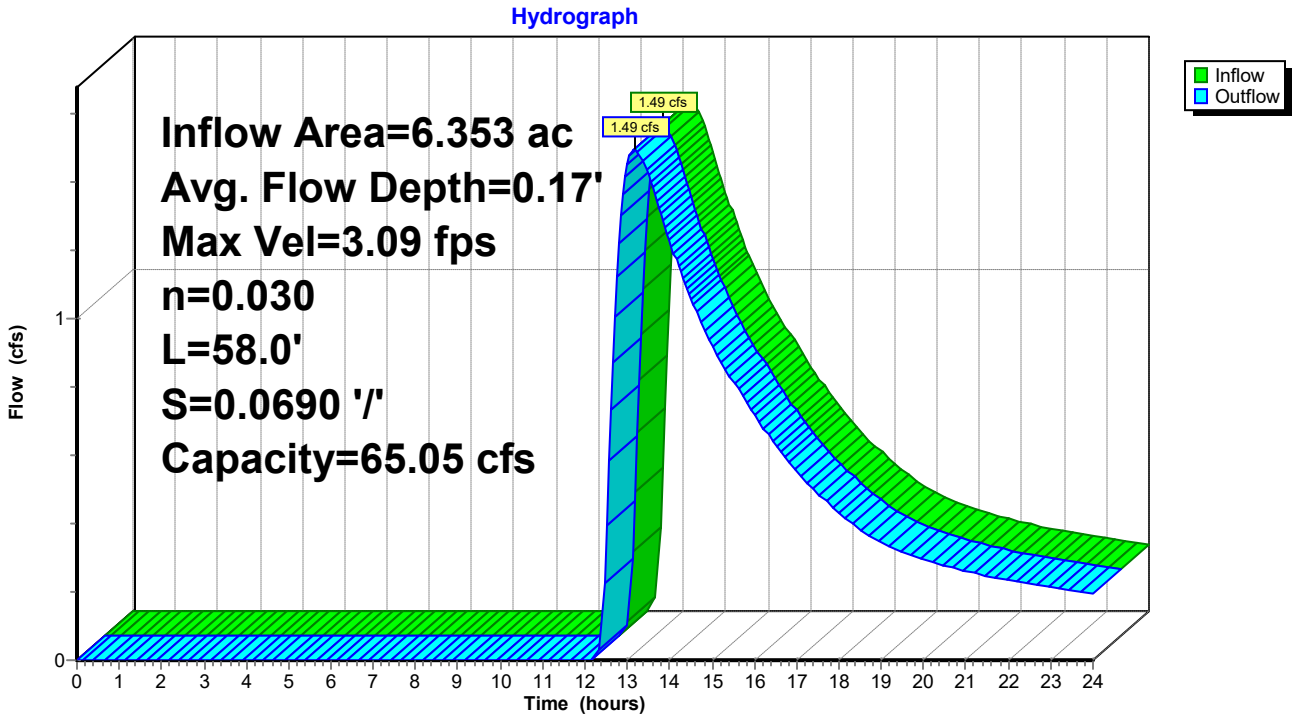
Peak Storage= 28 cf @ 13.17 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 65.05 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 58.0' Slope= 0.0690 '/'
Inlet Invert= 223.00', Outlet Invert= 219.00'



‡

Reach 67aR: Overland flow



Summary for Reach 67bR: Overland flow

[62] Hint: Exceeded Reach 1R OUTLET depth by 0.20' @ 13.45 hrs
[62] Hint: Exceeded Reach 67aR OUTLET depth by 0.13' @ 12.30 hrs

Inflow Area = 6.353 ac, 13.96% Impervious, Inflow Depth > 1.09" for 10YR - 24HR event
Inflow = 1.50 cfs @ 13.12 hrs, Volume= 0.580 af
Outflow = 1.50 cfs @ 13.13 hrs, Volume= 0.579 af, Atten= 0%, Lag= 0.9 min

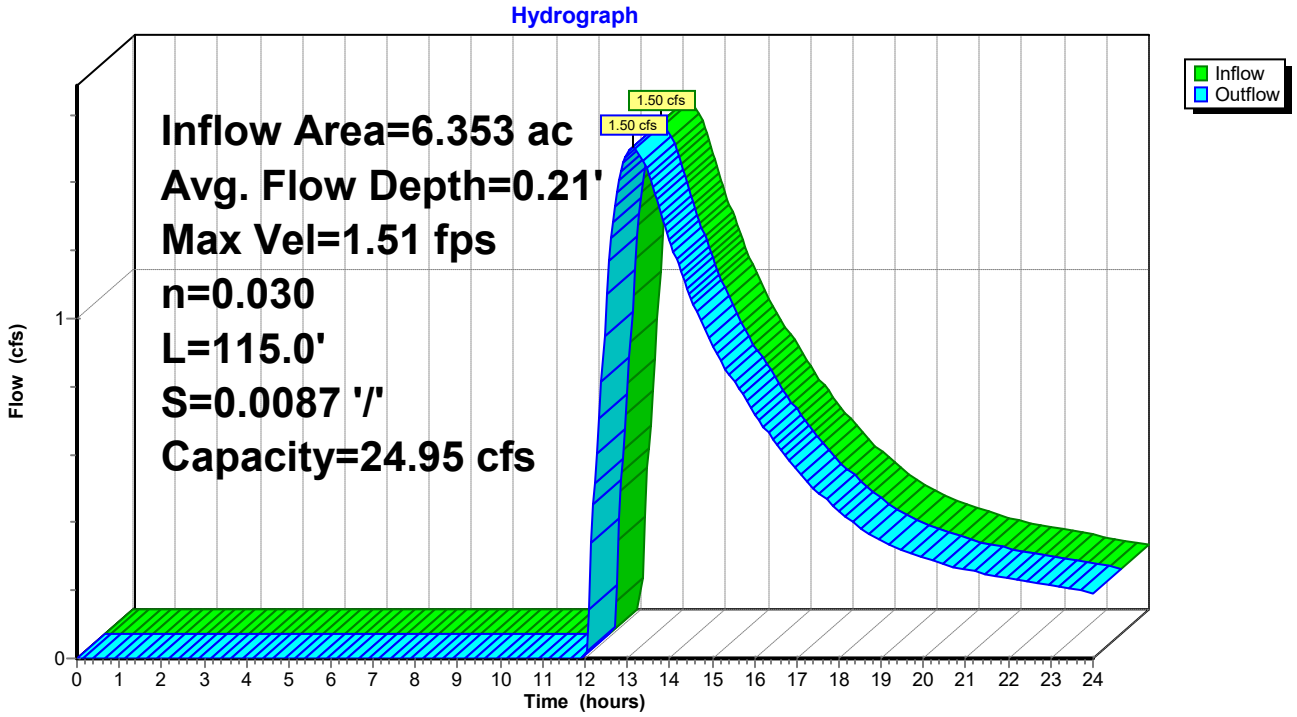
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.51 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 1.9 min

Peak Storage= 115 cf @ 13.13 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 24.95 cfs

4.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 10.00'
Length= 115.0' Slope= 0.0087 '/'
Inlet Invert= 219.00', Outlet Invert= 218.00'

‡

Reach 67bR: Overland flow



Summary for Reach 69R: Overland Flow

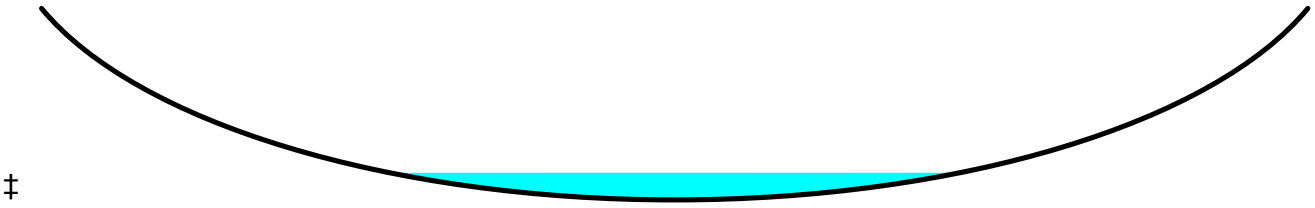
[61] Hint: Exceeded Reach 3R outlet invert by 0.14' @ 13.15 hrs

Inflow Area = 6.353 ac, 13.96% Impervious, Inflow Depth > 1.09" for 10YR - 24HR event
Inflow = 1.50 cfs @ 13.14 hrs, Volume= 0.579 af
Outflow = 1.50 cfs @ 13.15 hrs, Volume= 0.578 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.67 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 1.2 min

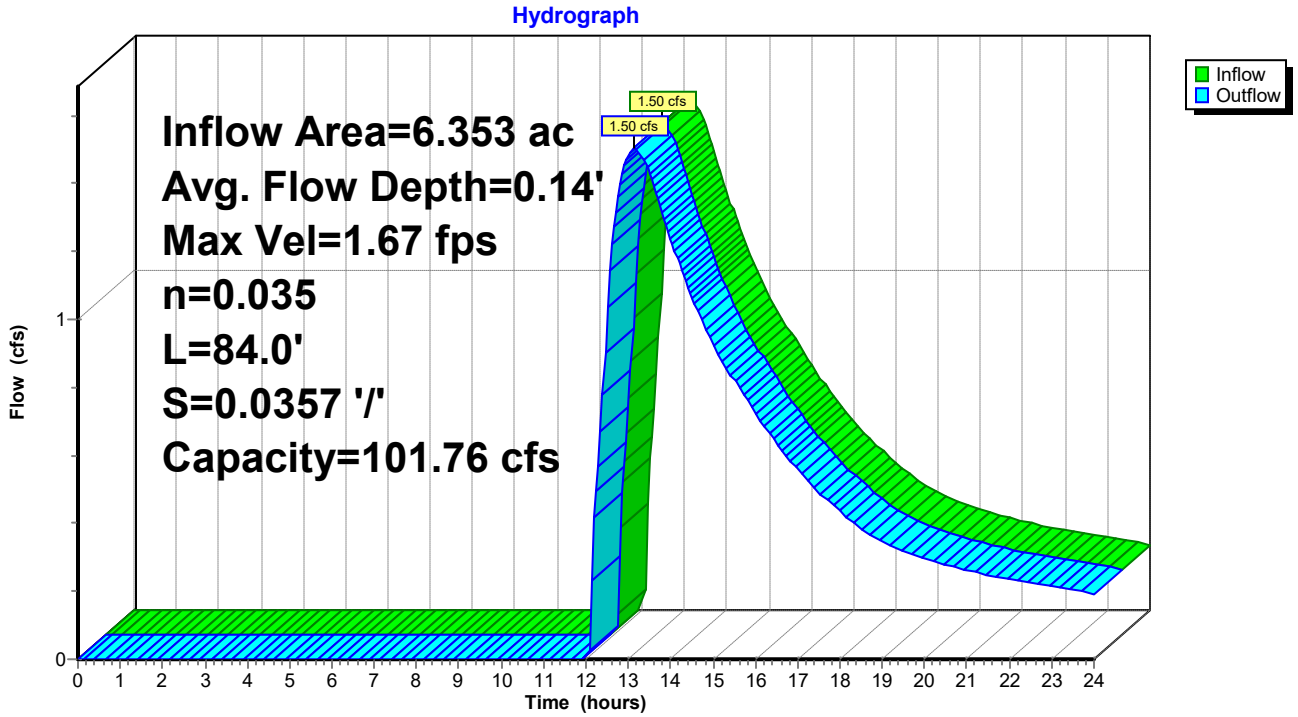
Peak Storage= 76 cf @ 13.15 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 101.76 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.035
Length= 84.0' Slope= 0.0357 '/'
Inlet Invert= 208.00', Outlet Invert= 205.00'



‡

Reach 69R: Overland Flow



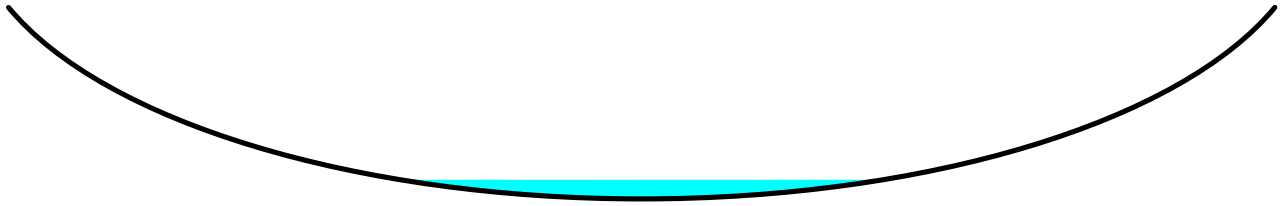
Summary for Reach 70R: Overland Flow From Det #110

Inflow Area = 3.325 ac, 0.00% Impervious, Inflow Depth > 1.20" for 10YR - 24HR event
Inflow = 0.42 cfs @ 14.18 hrs, Volume= 0.332 af
Outflow = 0.42 cfs @ 14.19 hrs, Volume= 0.332 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Max. Velocity= 1.99 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.81 fps, Avg. Travel Time= 0.6 min

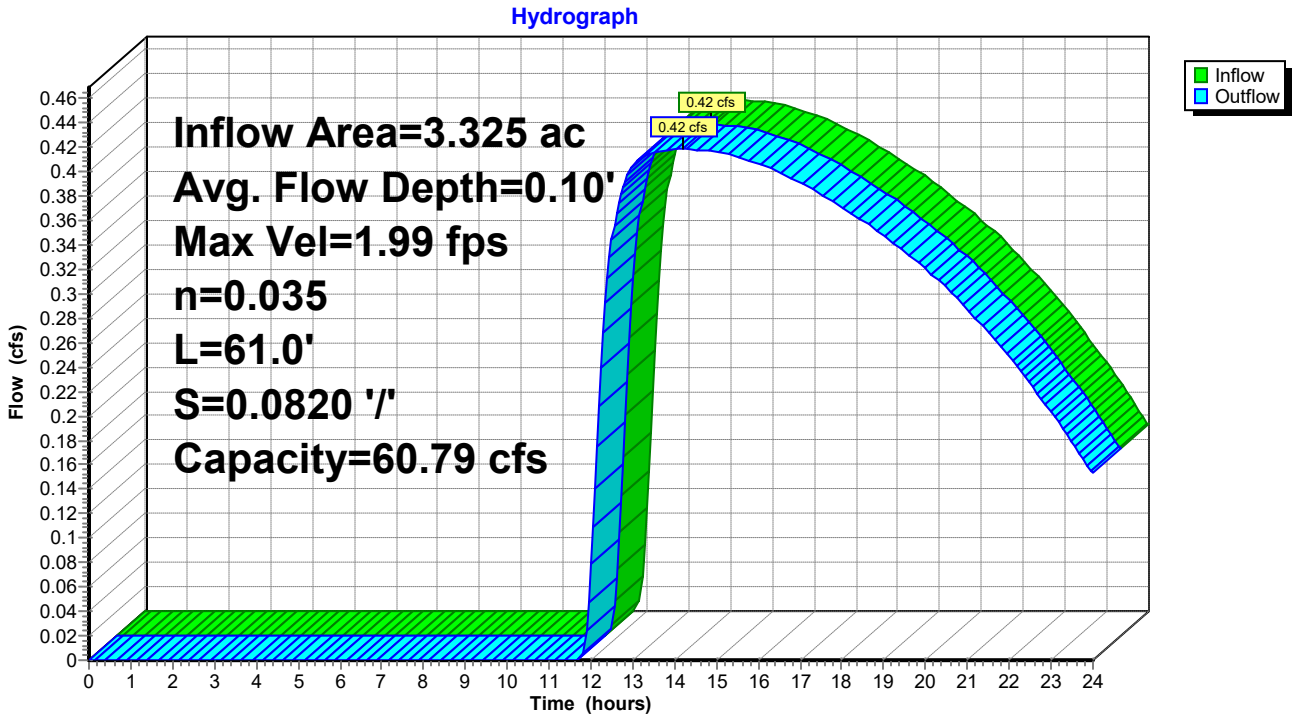
Peak Storage= 13 cf @ 14.19 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 60.79 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 61.0' Slope= 0.0820 '/'
Inlet Invert= 217.50', Outlet Invert= 212.50'



‡

Reach 70R: Overland Flow From Det #110



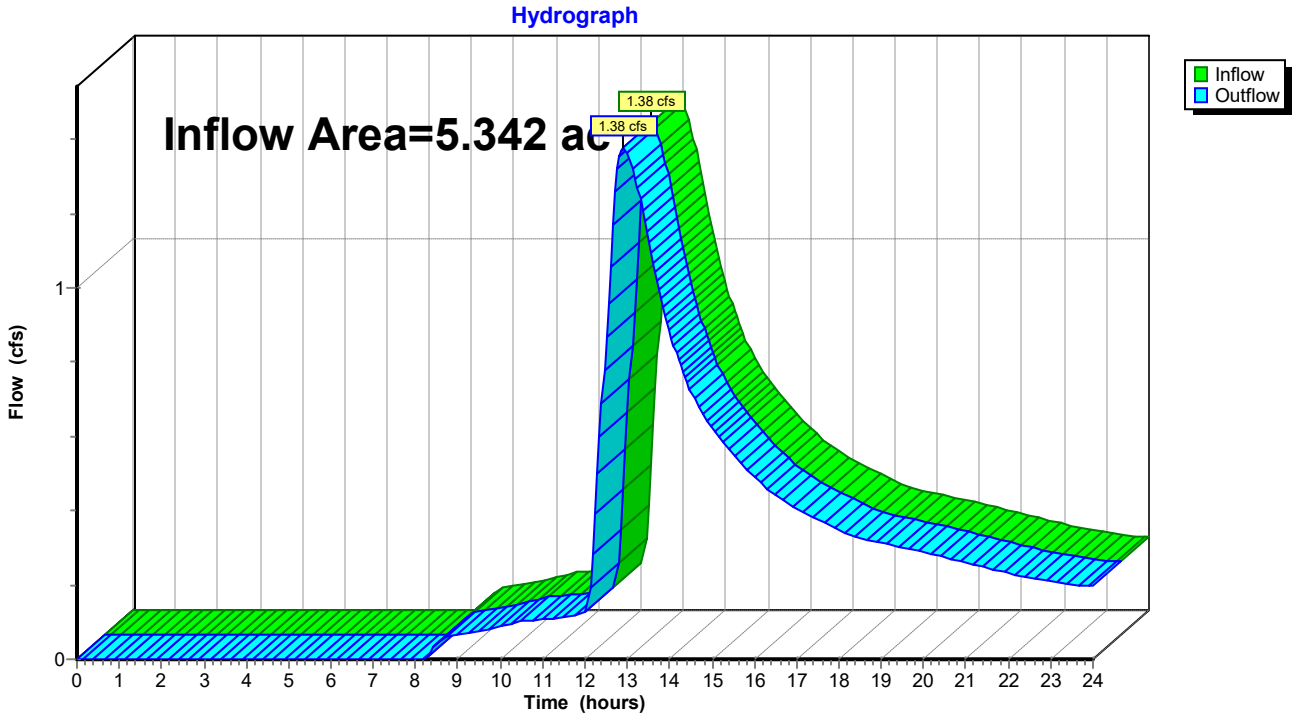
Summary for Reach 100R: Reach 100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.342 ac, 27.28% Impervious, Inflow Depth > 1.11" for 10YR - 24HR event
Inflow = 1.38 cfs @ 12.92 hrs, Volume= 0.493 af
Outflow = 1.38 cfs @ 12.92 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 100R: Reach 100



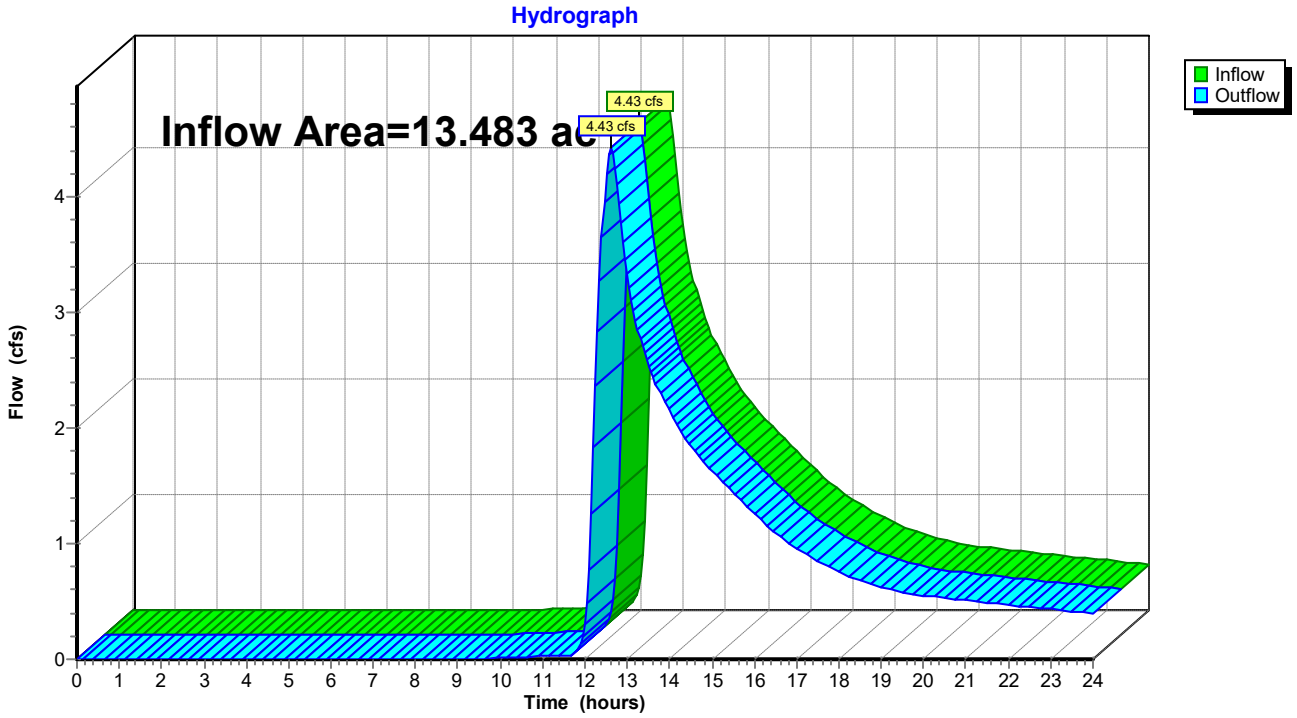
Summary for Reach 200R: Reach 200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.483 ac, 10.78% Impervious, Inflow Depth > 1.05" for 10YR - 24HR event
Inflow = 4.43 cfs @ 12.60 hrs, Volume= 1.176 af
Outflow = 4.43 cfs @ 12.60 hrs, Volume= 1.176 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 200R: Reach 200



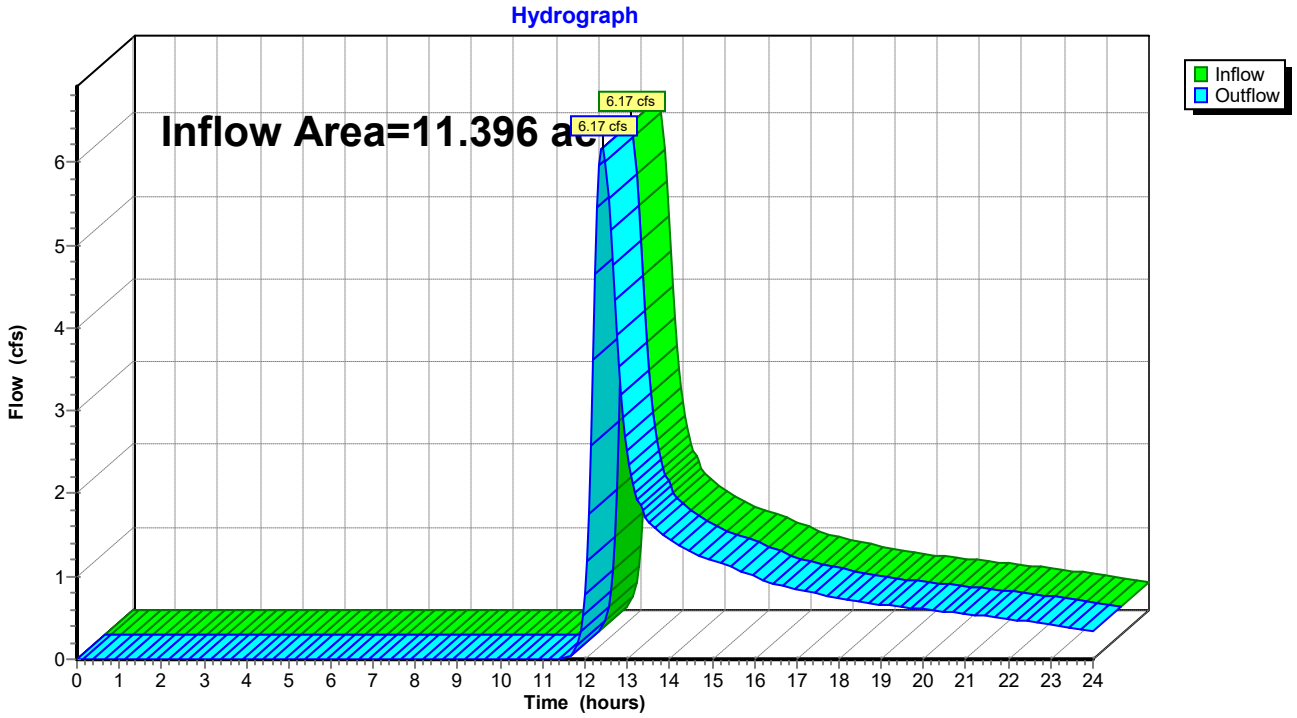
Summary for Reach 300R: Reach 300

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.396 ac, 0.00% Impervious, Inflow Depth > 1.15" for 10YR - 24HR event
Inflow = 6.17 cfs @ 12.41 hrs, Volume= 1.096 af
Outflow = 6.17 cfs @ 12.41 hrs, Volume= 1.096 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 300R: Reach 300



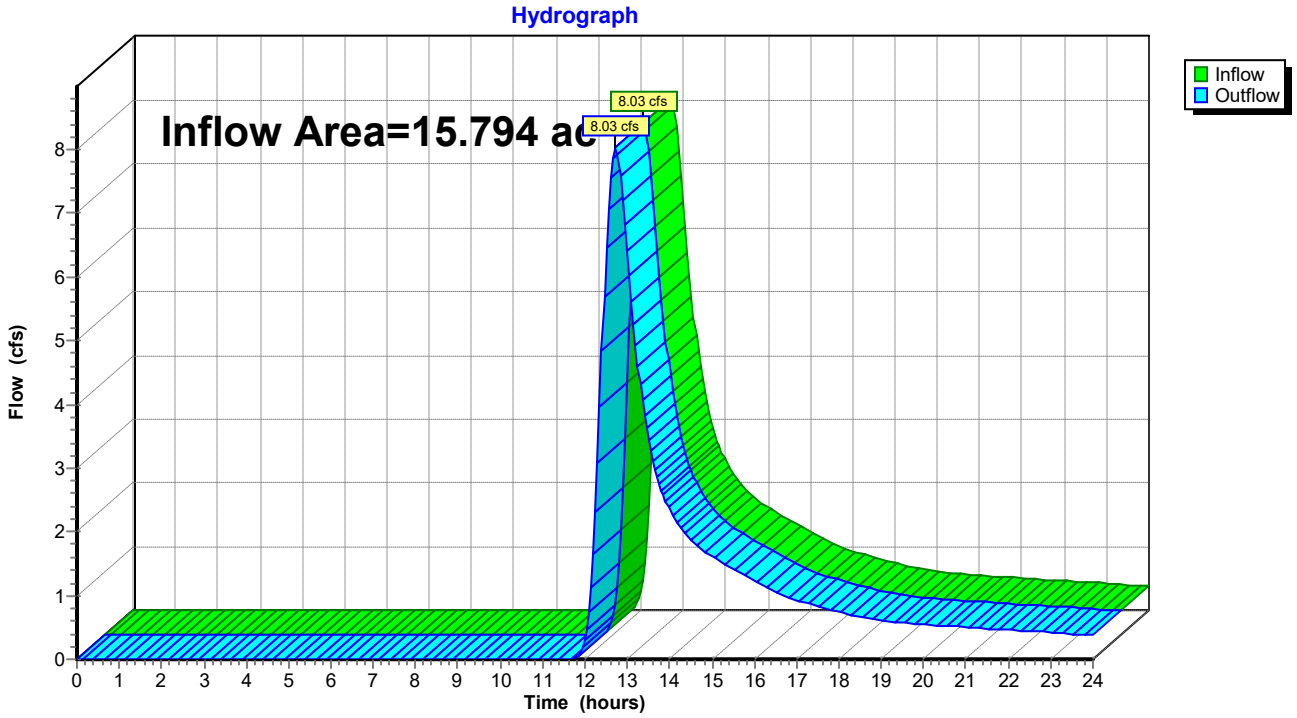
Summary for Reach 400R: Reach 400

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 15.794 ac, 0.00% Impervious, Inflow Depth > 1.08" for 10YR - 24HR event
Inflow = 8.03 cfs @ 12.72 hrs, Volume= 1.422 af
Outflow = 8.03 cfs @ 12.72 hrs, Volume= 1.422 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 400R: Reach 400



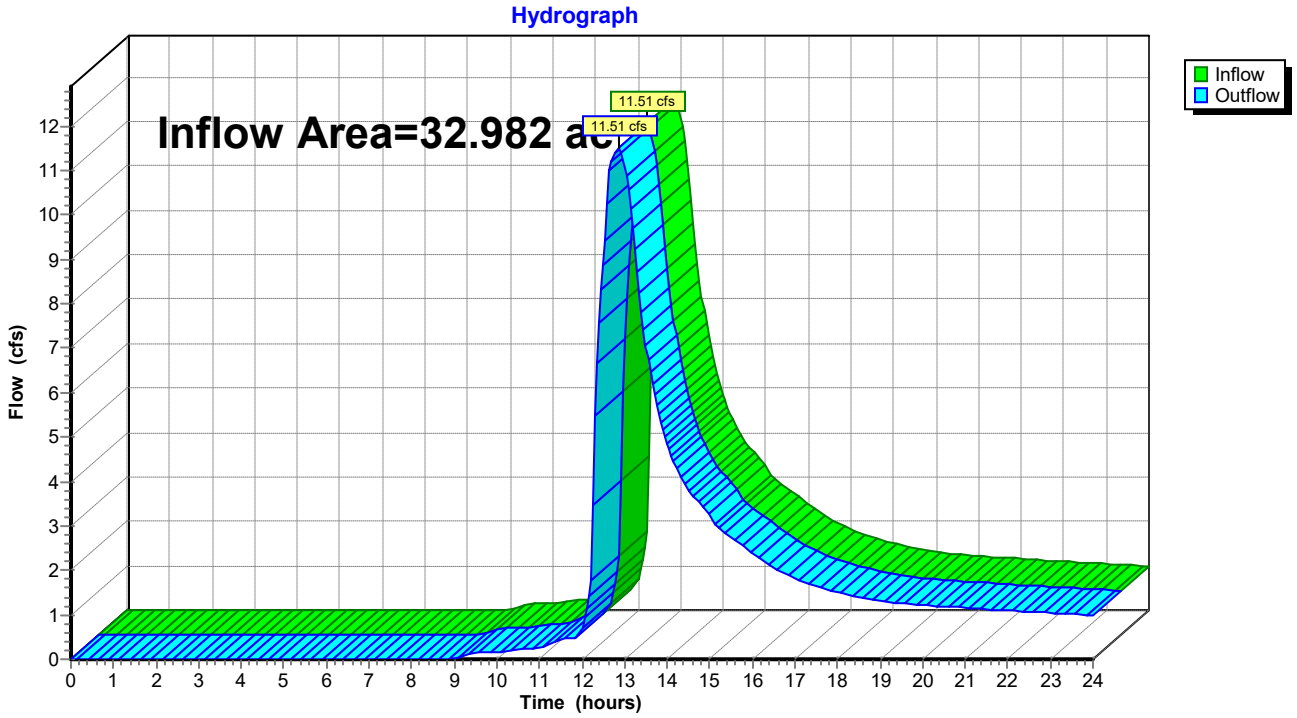
Summary for Reach 800R: Svenson Pond

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 32.982 ac, 8.41% Impervious, Inflow Depth > 1.00" for 10YR - 24HR event
Inflow = 11.51 cfs @ 12.85 hrs, Volume= 2.748 af
Outflow = 11.51 cfs @ 12.85 hrs, Volume= 2.748 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Reach 800R: Svenson Pond



Summary for Pond 1P: Drop Inlet

Inflow Area = 6.114 ac, 5.36% Impervious, Inflow Depth > 1.06" for 10YR - 24HR event
Inflow = 3.38 cfs @ 12.52 hrs, Volume= 0.542 af
Outflow = 3.37 cfs @ 12.52 hrs, Volume= 0.542 af, Atten= 0%, Lag= 0.0 min
Primary = 3.37 cfs @ 12.52 hrs, Volume= 0.542 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 202.85' @ 12.57 hrs Surf.Area= 3 sf Storage= 7 cf
Flood Elev= 205.00' Surf.Area= 31 sf Storage= 16 cf

Plug-Flow detention time= 0.0 min calculated for 0.542 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (908.9 - 908.9)

Volume	Invert	Avail.Storage	Storage Description
#1	200.75'	12 cf	**2.00'D x 3.75'H 2' Drop Inlet**
#2	204.75'	4 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		16 cf	Total Available Storage

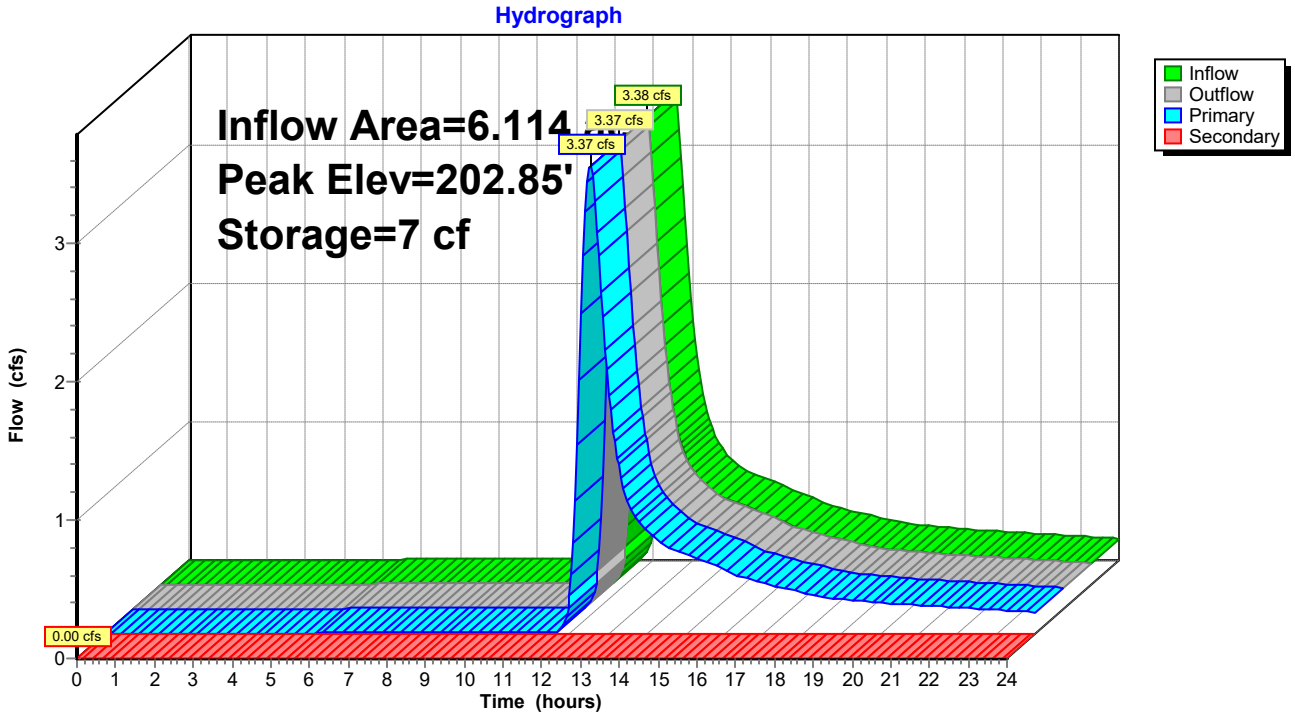
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
204.75	7	9.5	0	0	7
205.00	28	18.7	4	4	28

Device	Routing	Invert	Outlet Devices
#1	Primary	200.75'	**15.0" Round 15" HDPE N-12** L= 11.5' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 200.75' / 200.40' S= 0.0304 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Secondary	204.75'	**15.0' long x 4.0' breadth Ponding Outlet** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=3.68 cfs @ 12.52 hrs HW=202.77' TW=202.27' (Dynamic Tailwater)
1=15" HDPE N-12 (Inlet Controls 3.68 cfs @ 3.00 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=200.75' TW=200.00' (Dynamic Tailwater)
2=Ponding Outlet (Controls 0.00 cfs)

Pond 1P: Drop Inlet



Summary for Pond 2P: Prop. 18" Cross Culvert

Inflow Area = 21.541 ac, 3.27% Impervious, Inflow Depth > 0.95" for 10YR - 24HR event
Inflow = 8.07 cfs @ 12.92 hrs, Volume= 1.704 af
Outflow = 8.04 cfs @ 12.96 hrs, Volume= 1.704 af, Atten= 0%, Lag= 2.3 min
Primary = 8.04 cfs @ 12.96 hrs, Volume= 1.704 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 199.74' @ 12.96 hrs Surf.Area= 683 sf Storage= 425 cf
Flood Elev= 202.50' Surf.Area= 11,939 sf Storage= 12,385 cf

Plug-Flow detention time= 0.5 min calculated for 1.700 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (922.3 - 921.8)

Volume	Invert	Avail.Storage	Storage Description
#1	198.10'	18,355 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

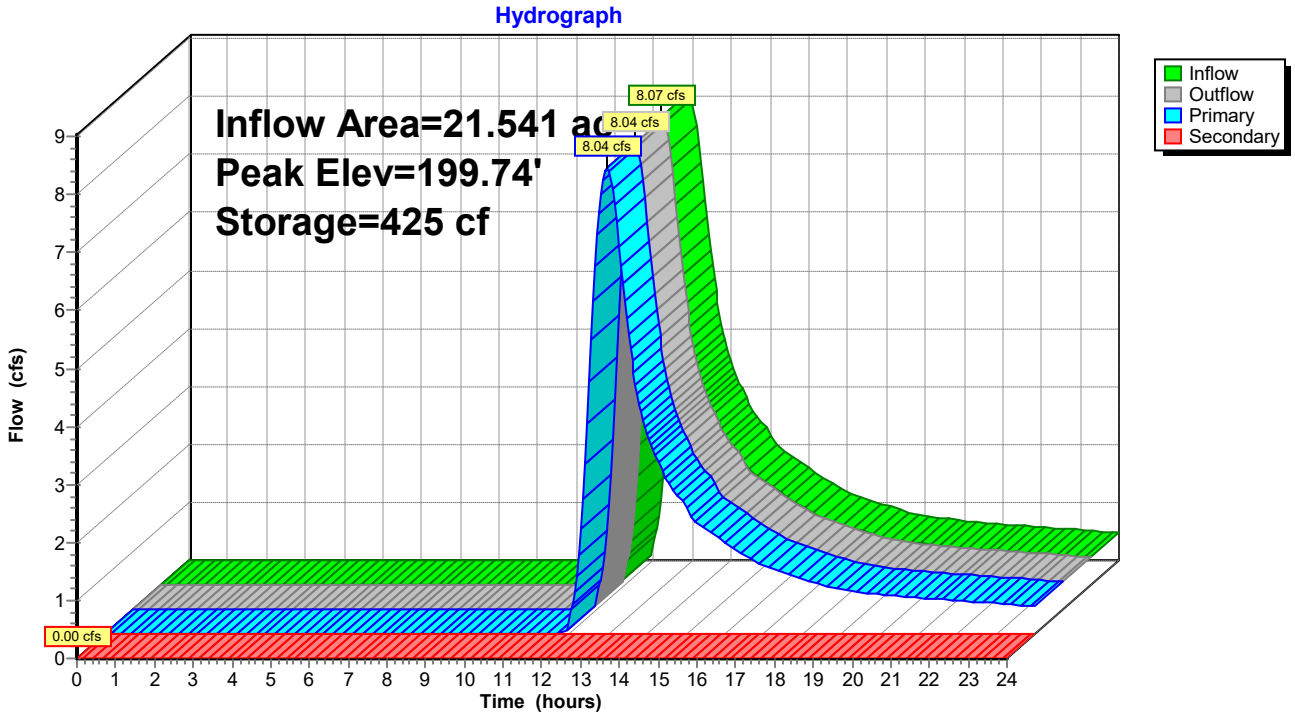
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
198.10	8	15.0	0	0	8
198.50	98	58.0	18	18	258
199.00	235	80.0	81	99	502
200.00	893	263.5	529	627	5,521
201.00	3,019	404.2	1,851	2,479	13,005
202.00	7,496	510.8	5,091	7,569	20,780
202.50	11,939	697.4	4,816	12,385	38,723
203.00	11,939	697.4	5,970	18,355	39,072

Device	Routing	Invert	Outlet Devices
#1	Primary	198.10'	**18.0" Round 18" HDPE N-12** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 198.10' / 197.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	202.77'	**50.0' long x 26.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=8.03 cfs @ 12.96 hrs HW=199.74' TW=198.44' (Dynamic Tailwater)
↑—**1=18" HDPE N-12** (Inlet Controls 8.03 cfs @ 4.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=198.10' TW=196.50' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Prop. 18" Cross Culvert



Summary for Pond 4P: Prop. CB#3

[80] Warning: Exceeded Pond 6P by 0.34' @ 12.60 hrs (3.45 cfs 0.034 af)

Inflow Area = 7.246 ac, 17.00% Impervious, Inflow Depth > 1.41" for 10YR - 24HR event
Inflow = 5.50 cfs @ 12.59 hrs, Volume= 0.854 af
Outflow = 5.50 cfs @ 12.59 hrs, Volume= 0.854 af, Atten= 0%, Lag= 0.0 min
Primary = 5.50 cfs @ 12.59 hrs, Volume= 0.854 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 201.68' @ 12.58 hrs Surf.Area= 13 sf Storage= 31 cf
Flood Elev= 202.53' Surf.Area= 17 sf Storage= 42 cf

Plug-Flow detention time= 0.2 min calculated for 0.854 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (866.5 - 866.4)

Volume	Invert	Avail.Storage	Storage Description
#1	199.20'	42 cf	**4.00'D x 3.33'H Basin**
#2	202.53'	277 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		319 cf	Total Available Storage

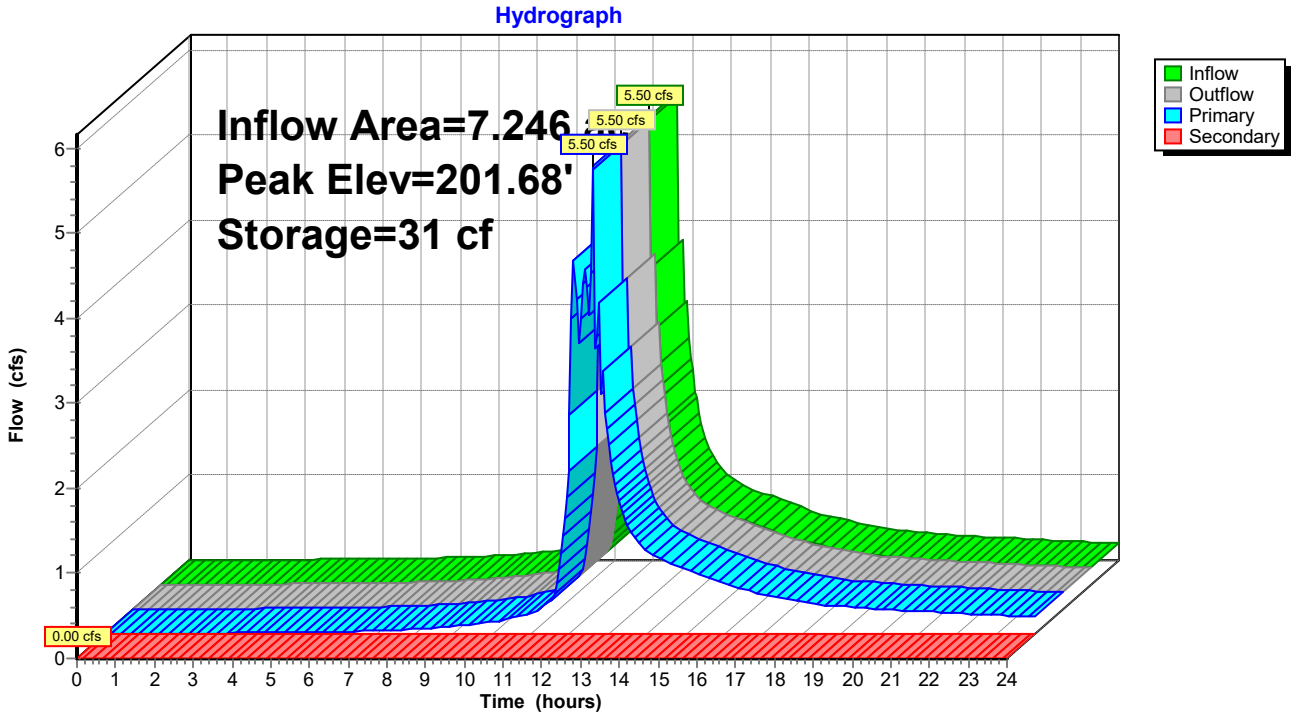
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
202.53	4	4.0	0	0	4
203.00	660	145.0	112	112	1,676
203.25	660	145.0	165	277	1,712

Device	Routing	Invert	Outlet Devices
#1	Primary	199.20'	**15.0" Round 15" HDPE N-12** L= 93.7' Ke= 0.500 Inlet / Outlet Invert= 199.20' / 198.70' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	202.53'	**2.0' long x 2.0' breadth Rim Overflow** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=4.15 cfs @ 12.59 hrs HW=201.61' TW=201.01' (Dynamic Tailwater)
1=15" HDPE N-12 (Outlet Controls 4.15 cfs @ 3.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=199.20' TW=196.50' (Dynamic Tailwater)
2=Rim Overflow (Controls 0.00 cfs)

Pond 4P: Prop. CB#3



Summary for Pond 6P: Inlet Depression

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 0.586 ac, 84.67% Impervious, Inflow Depth > 3.43" for 10YR - 24HR event
Inflow = 2.25 cfs @ 12.09 hrs, Volume= 0.167 af
Outflow = 1.98 cfs @ 12.12 hrs, Volume= 0.167 af, Atten= 12%, Lag= 1.7 min
Primary = 1.98 cfs @ 12.12 hrs, Volume= 0.167 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 201.55' @ 12.53 hrs Surf.Area= 678 sf Storage= 546 cf

Plug-Flow detention time= 5.5 min calculated for 0.167 af (100% of inflow)
Center-of-Mass det. time= 4.6 min (801.1 - 796.6)

Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	1,651 cf	**Open Storage (Irregular)** Listed below (Recalc)

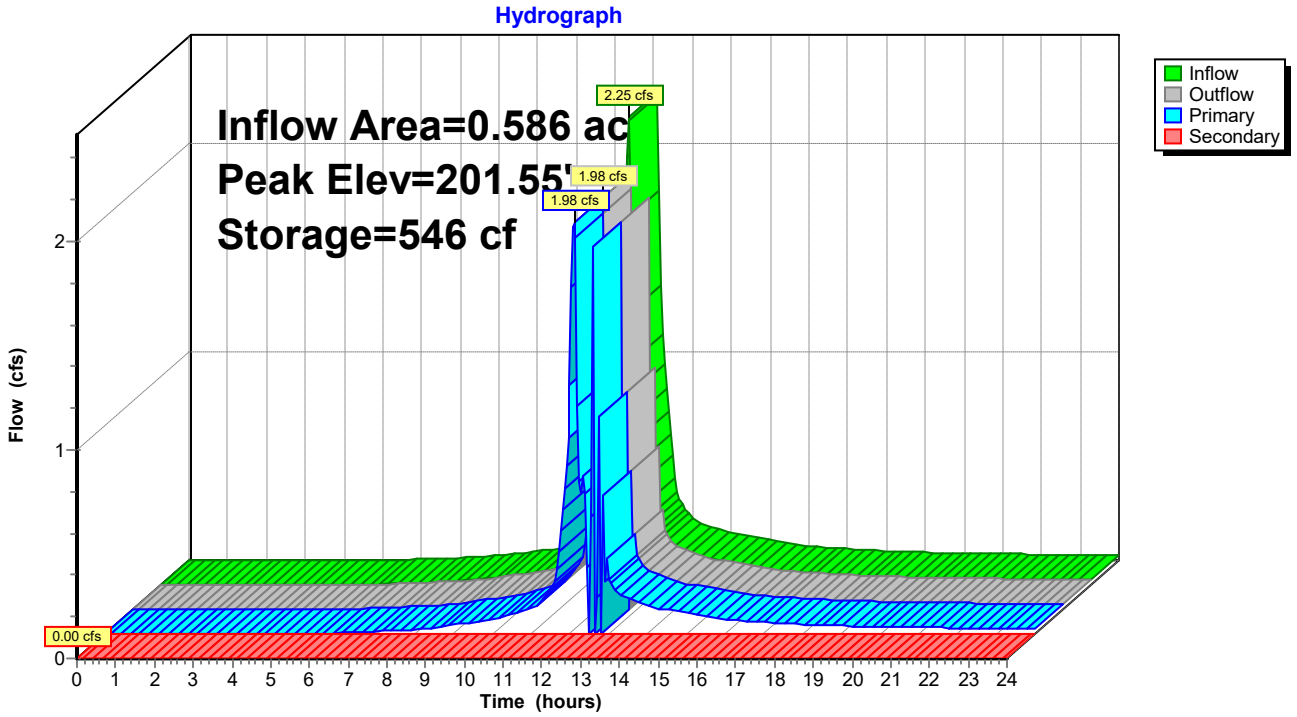
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
200.00	151	124.0	0	0	151
201.00	381	143.0	257	257	576
202.00	981	162.0	658	915	1,062
202.75	981	162.0	736	1,651	1,183

Device	Routing	Invert	Outlet Devices
#1	Primary	200.00'	**15.0" Round 15" HDPE N-12** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 200.00' / 199.30' S= 0.0233 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	202.00'	**12.0' long x 4.0' breadth Spillway** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.52 cfs @ 12.12 hrs HW=200.93' TW=200.79' (Dynamic Tailwater)
1=15" HDPE N-12 (Outlet Controls 1.52 cfs @ 2.15 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=200.00' TW=198.10' (Dynamic Tailwater)
2=Spillway (Controls 0.00 cfs)

Pond 6P: Inlet Depression



Summary for Pond 8P: 24" Cross Culvert

[62] Hint: Exceeded Reach 11R OUTLET depth by 0.35' @ 12.85 hrs

Inflow Area = 31.934 ac, 8.31% Impervious, Inflow Depth > 1.02" for 10YR - 24HR event
Inflow = 11.54 cfs @ 12.78 hrs, Volume= 2.716 af
Outflow = 11.43 cfs @ 12.85 hrs, Volume= 2.715 af, Atten= 1%, Lag= 4.1 min
Primary = 11.43 cfs @ 12.85 hrs, Volume= 2.715 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 198.46' @ 12.85 hrs Surf.Area= 1,993 sf Storage= 1,282 cf
Flood Elev= 199.55' Surf.Area= 3,482 sf Storage= 4,655 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.0 min (926.9 - 925.9)

Volume	Invert	Avail.Storage	Storage Description
#1	196.55'	6,222 cf	**Open Storage (Irregular)** Listed below (Recalc)

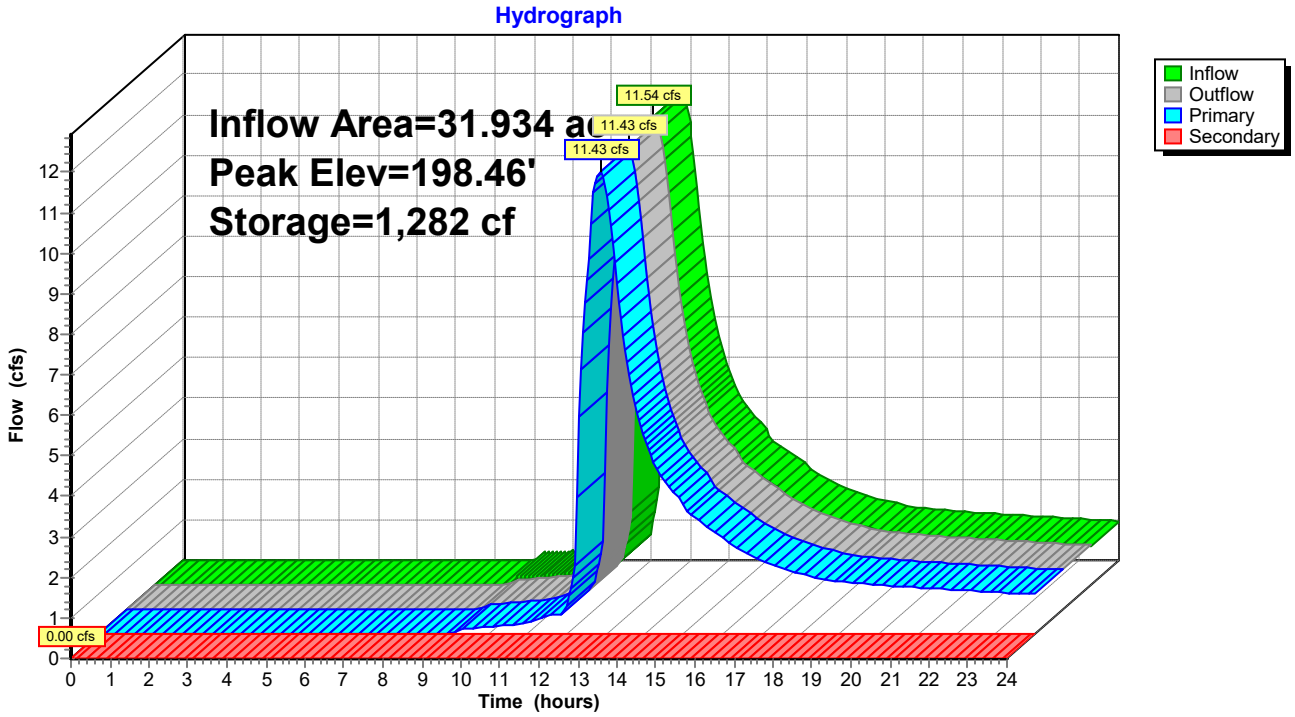
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
196.55	10	10.0	0	0	10
197.00	184	97.0	36	36	751
198.00	1,049	166.0	557	593	2,201
199.00	3,482	329.0	2,147	2,740	8,627
200.00	3,482	329.0	3,482	6,222	8,956

Device	Routing	Invert	Outlet Devices
#1	Primary	196.55'	**24.0" Round 24" HDPE N-12** L= 21.6' Ke= 0.500 Inlet / Outlet Invert= 196.55' / 196.44' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	199.55'	**100.0' long x 10.0' breadth Flow Over The Driveway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=11.43 cfs @ 12.85 hrs HW=198.46' TW=0.00' (Dynamic Tailwater)
1=24" HDPE N-12 (Barrel Controls 11.43 cfs @ 4.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=196.55' TW=0.00' (Dynamic Tailwater)
2=Flow Over The Driveway (Controls 0.00 cfs)

Pond 8P: 24" Cross Culvert



Summary for Pond 10P: Revised CB#10

[80] Warning: Exceeded Pond C30P by 0.04' @ 12.25 hrs (0.93 cfs 0.004 af)

Inflow Area = 6.452 ac, 8.17% Impervious, Inflow Depth > 1.14" for 10YR - 24HR event
Inflow = 3.60 cfs @ 12.50 hrs, Volume= 0.611 af
Outflow = 3.57 cfs @ 12.51 hrs, Volume= 0.611 af, Atten= 1%, Lag= 0.6 min
Primary = 3.57 cfs @ 12.51 hrs, Volume= 0.611 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 202.16' @ 12.53 hrs Surf.Area= 20 sf Storage= 41 cf
Flood Elev= 204.00' Surf.Area= 40 sf Storage= 77 cf

Plug-Flow detention time= 0.3 min calculated for 0.611 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (898.9 - 898.7)

Volume	Invert	Avail.Storage	Storage Description
#1	200.07'	77 cf	**5.00'D x 3.93'H 5' Structure**
#2	204.00'	109 cf	**Open Storage (Irregular)** Listed below (Recalc)
		186 cf	Total Available Storage

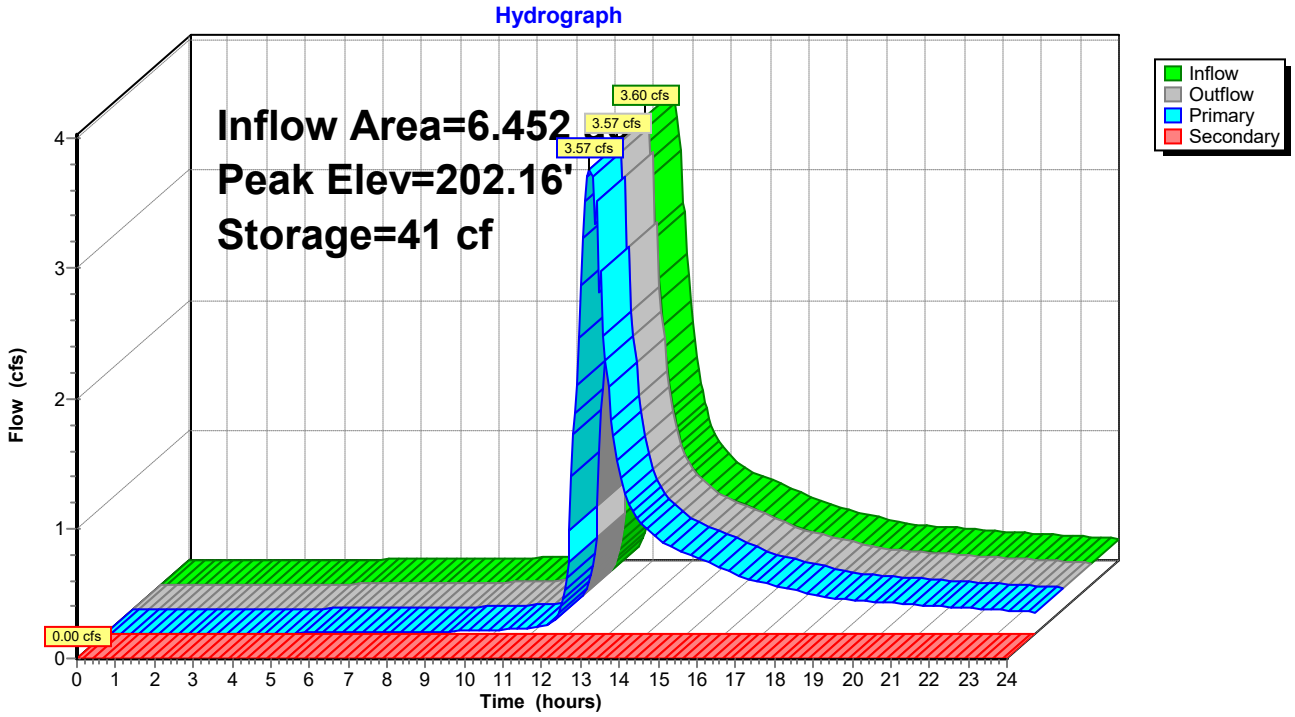
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
204.00	20	20.0	0	0	20
205.00	237	94.0	109	109	694

Device	Routing	Invert	Outlet Devices
#1	Primary	200.07'	**15.0" Round 15" HDPE N-12** L= 153.9' Ke= 0.500 Inlet / Outlet Invert= 200.07' / 199.30' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	204.00'	**2.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.85 cfs @ 12.51 hrs HW=202.10' TW=201.40' (Dynamic Tailwater)
1=15" HDPE N-12 (Outlet Controls 3.85 cfs @ 3.14 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=200.07' TW=199.20' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 10P: Revised CB#10



Summary for Pond 12P: Ex. CB#2

Inflow Area = 7.347 ac, 18.13% Impervious, Inflow Depth > 1.46" for 10YR - 24HR event
Inflow = 5.56 cfs @ 12.59 hrs, Volume= 0.891 af
Outflow = 5.54 cfs @ 12.59 hrs, Volume= 0.891 af, Atten= 0%, Lag= 0.0 min
Primary = 5.54 cfs @ 12.59 hrs, Volume= 0.891 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 201.06' @ 12.59 hrs Surf.Area= 13 sf Storage= 31 cf
Flood Elev= 203.38' Surf.Area= 17 sf Storage= 60 cf

Plug-Flow detention time= 0.3 min calculated for 0.891 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (861.9 - 861.7)

Volume	Invert	Avail.Storage	Storage Description
#1	198.60'	60 cf	**4.00'D x 4.78'H Basin**
#2	203.38'	8 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		68 cf	Total Available Storage

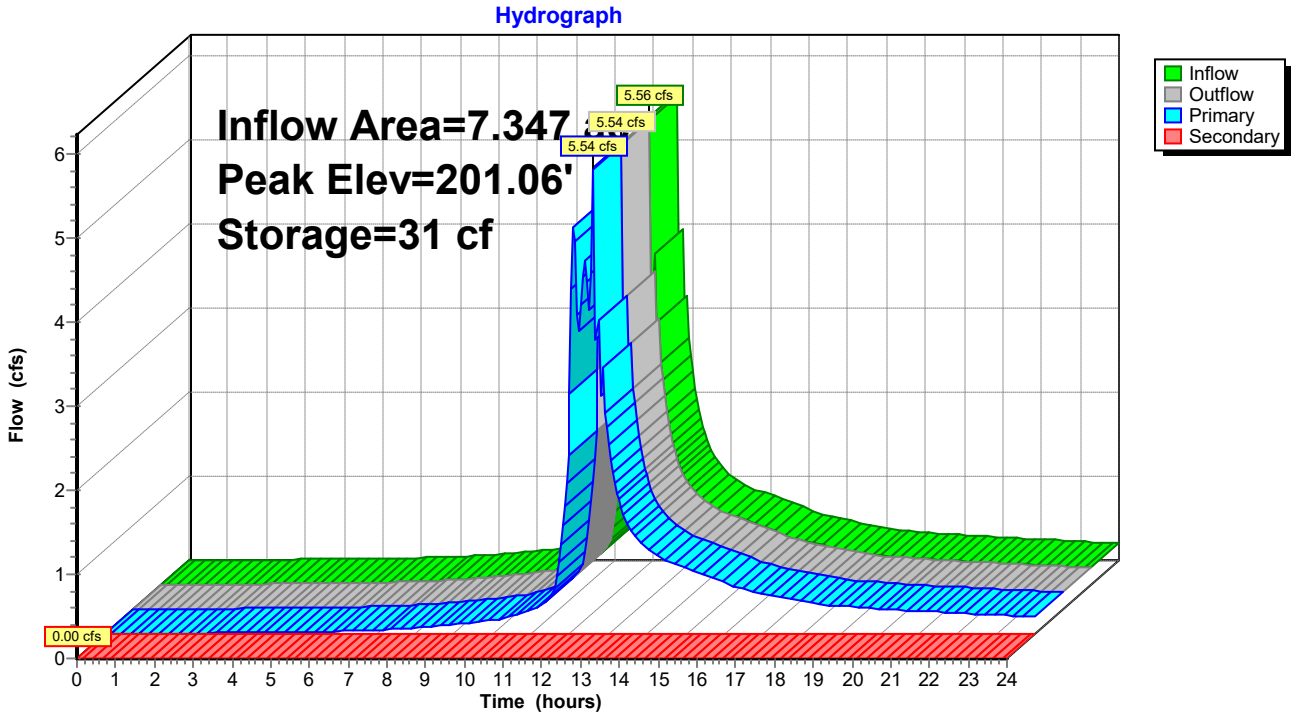
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.38	4	4.0	0	0	4
203.75	50	25.0	8	8	53

Device	Routing	Invert	Outlet Devices
#1	Primary	198.60'	**15.0" Round 15" HDPE N-12** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 198.60' / 198.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	203.38'	**2.0' long x 2.0' breadth Ponding Outlet** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=5.32 cfs @ 12.59 hrs HW=201.02' TW=200.21' (Dynamic Tailwater)
1=15" HDPE N-12 (Inlet Controls 5.32 cfs @ 4.33 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=198.60' TW=196.50' (Dynamic Tailwater)
2=Ponding Outlet (Controls 0.00 cfs)

Pond 12P: Ex. CB#2



Summary for Pond 13P: Infiltration Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=96)

Inflow Area = 0.684 ac, 30.66% Impervious, Inflow Depth > 0.92" for 10YR - 24HR event
Inflow = 0.47 cfs @ 12.21 hrs, Volume= 0.052 af
Outflow = 0.19 cfs @ 12.64 hrs, Volume= 0.052 af, Atten= 60%, Lag= 25.6 min
Discarded = 0.19 cfs @ 12.64 hrs, Volume= 0.052 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 203.16' @ 12.64 hrs Surf.Area= 2,691 sf Storage= 371 cf
Flood Elev= 203.50' Surf.Area= 4,691 sf Storage= 1,606 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 11.6 min (907.6 - 896.0)

Volume	Invert	Avail.Storage	Storage Description
#1	203.00'	3,001 cf	**Open Storage (Irregular)** Listed below (Recalc)

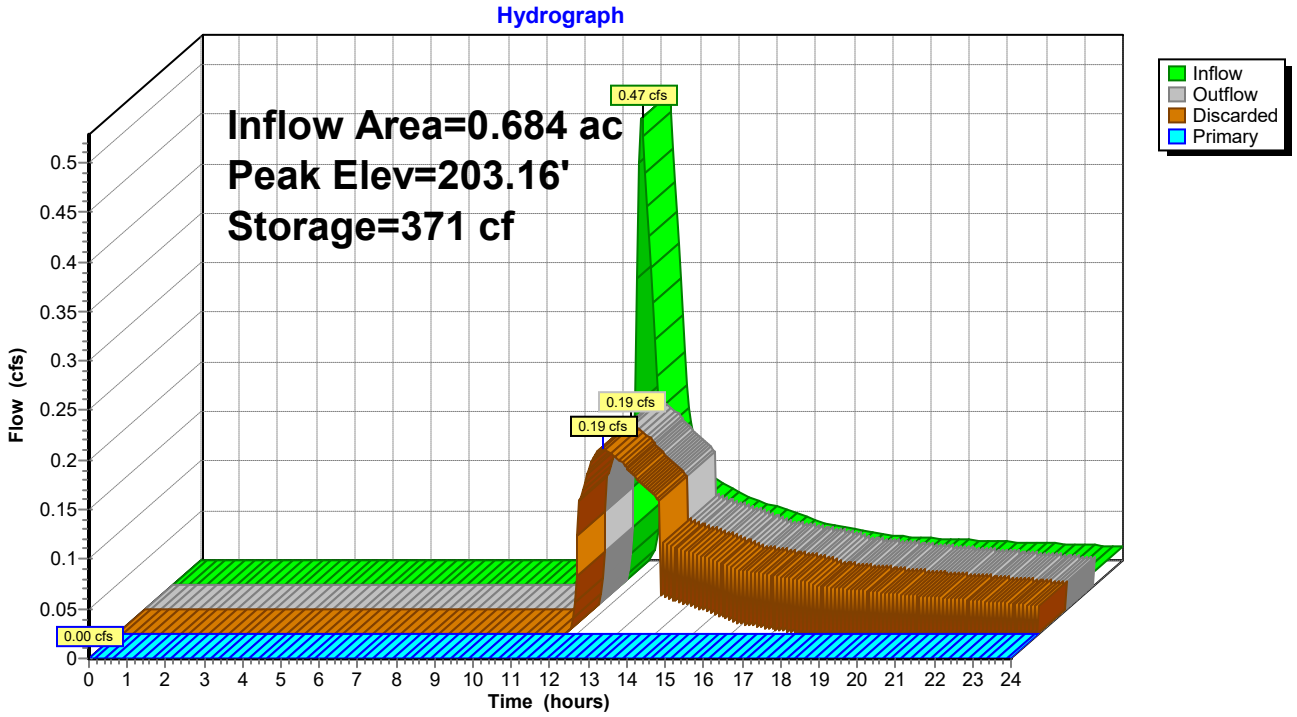
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.00	1,934	235.0	0	0	1,934
203.75	6,520	429.0	3,001	3,001	12,188

Device	Routing	Invert	Outlet Devices
#1	Discarded	203.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	203.35'	**5.0' 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=0.19 cfs @ 12.64 hrs HW=203.16' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=203.00' TW=201.50' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 13P: Infiltration Pond



Summary for Pond 14P: Ex. 15" Culvert

Inflow Area = 0.861 ac, 36.57% Impervious, Inflow Depth > 0.43" for 10YR - 24HR event
Inflow = 0.42 cfs @ 12.10 hrs, Volume= 0.031 af
Outflow = 0.26 cfs @ 12.16 hrs, Volume= 0.030 af, Atten= 38%, Lag= 3.6 min
Primary = 0.26 cfs @ 12.16 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 201.77' @ 12.39 hrs Surf.Area= 979 sf Storage= 205 cf
Flood Elev= 203.00' Surf.Area= 1,948 sf Storage= 2,162 cf

Plug-Flow detention time= 29.9 min calculated for 0.030 af (98% of inflow)
Center-of-Mass det. time= 20.6 min (861.1 - 840.6)

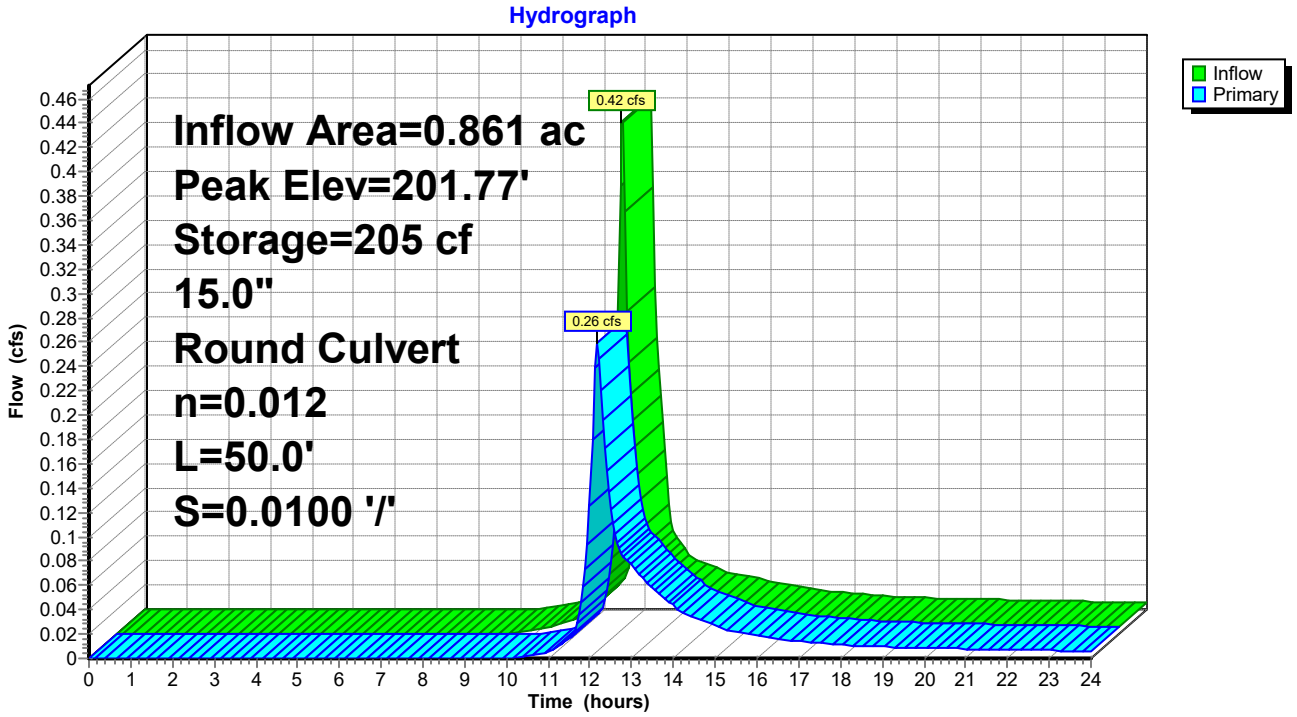
Volume	Invert	Avail.Storage	Storage Description
#1	201.50'	2,162 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
201.50	560	120.0	0	0	560
202.00	1,428	163.0	480	480	1,531
203.00	1,948	182.0	1,681	2,162	2,080

Device	Routing	Invert	Outlet Devices
#1	Primary	201.50'	**15.0" Round 15" HDPE N-12** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 201.50' / 201.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.26 cfs @ 12.16 hrs HW=201.76' TW=201.40' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Outlet Controls 0.26 cfs @ 2.14 fps)

Pond 14P: Ex. 15" Culvert



Summary for Pond 16P: Ex. 12" CMP

[62] Hint: Exceeded Reach 65R OUTLET depth by 0.72' @ 12.95 hrs

Inflow Area = 5.342 ac, 27.28% Impervious, Inflow Depth > 1.11" for 10YR - 24HR event
Inflow = 1.48 cfs @ 12.71 hrs, Volume= 0.494 af
Outflow = 1.38 cfs @ 12.92 hrs, Volume= 0.493 af, Atten= 7%, Lag= 12.4 min
Primary = 1.38 cfs @ 12.92 hrs, Volume= 0.493 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 204.10' @ 12.92 hrs Surf.Area= 1,763 sf Storage= 436 cf

Plug-Flow detention time= 4.0 min calculated for 0.492 af (100% of inflow)
Center-of-Mass det. time= 3.0 min (953.6 - 950.6)

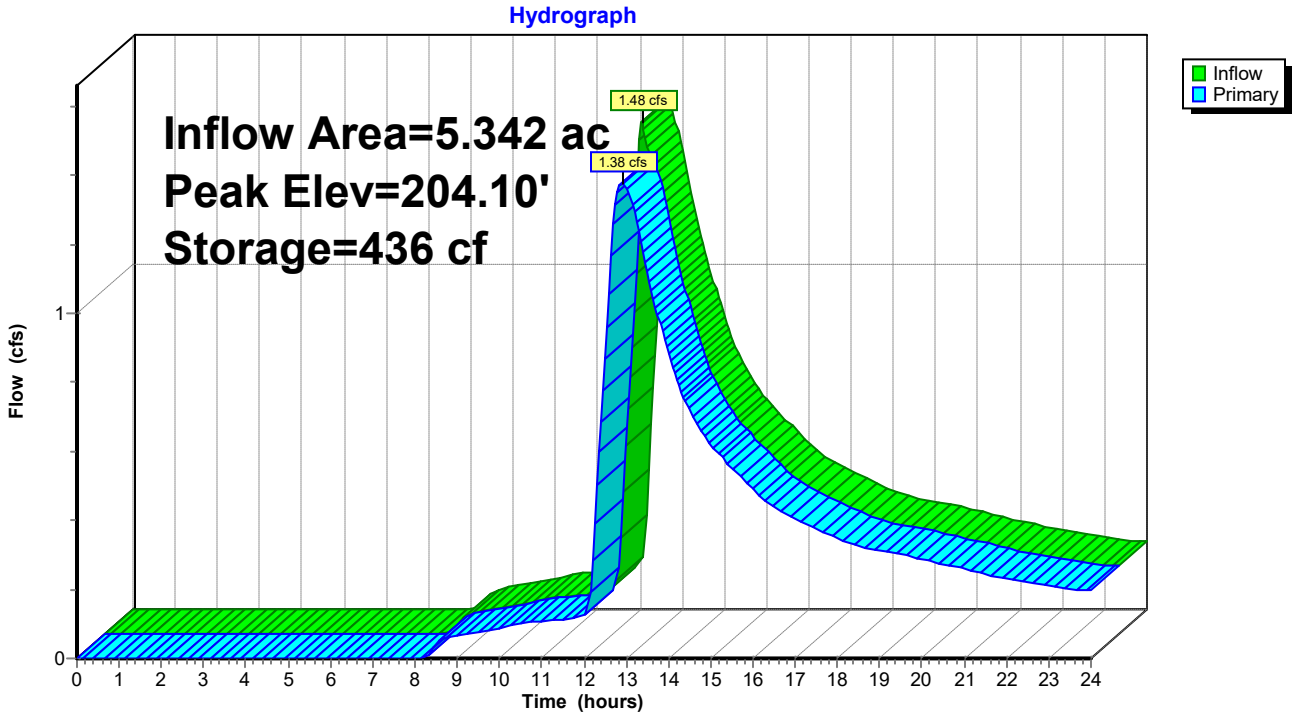
Volume	Invert	Avail.Storage	Storage Description
#1	203.25'	9,229 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.25	50	30.0	0	0	50
204.00	962	127.1	308	308	1,265
205.00	21,278	680.9	8,921	9,229	36,876

Device	Routing	Invert	Outlet Devices
#1	Primary	204.75'	**50.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Primary	203.25'	**12.0" Round 12" CMP** L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.25' / 203.05' S= 0.0100 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=1.38 cfs @ 12.92 hrs HW=204.10' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
2=12" CMP (Barrel Controls 1.38 cfs @ 2.62 fps)

Pond 16P: Ex. 12" CMP



Summary for Pond 17P: Prop. 24" HDPE N-12

[63] Warning: Exceeded Reach 50R INLET depth by 0.21' @ 12.60 hrs

Inflow Area = 13.483 ac, 10.78% Impervious, Inflow Depth > 1.05" for 10YR - 24HR event
Inflow = 4.45 cfs @ 12.57 hrs, Volume= 1.177 af
Outflow = 4.43 cfs @ 12.60 hrs, Volume= 1.176 af, Atten= 0%, Lag= 1.9 min
Primary = 4.43 cfs @ 12.60 hrs, Volume= 1.176 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 203.32' @ 12.60 hrs Surf.Area= 735 sf Storage= 306 cf
Flood Elev= 206.00' Surf.Area= 3,976 sf Storage= 4,672 cf

Plug-Flow detention time= 1.0 min calculated for 1.174 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (940.7 - 940.0)

Volume	Invert	Avail.Storage	Storage Description
#1	202.25'	4,672 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

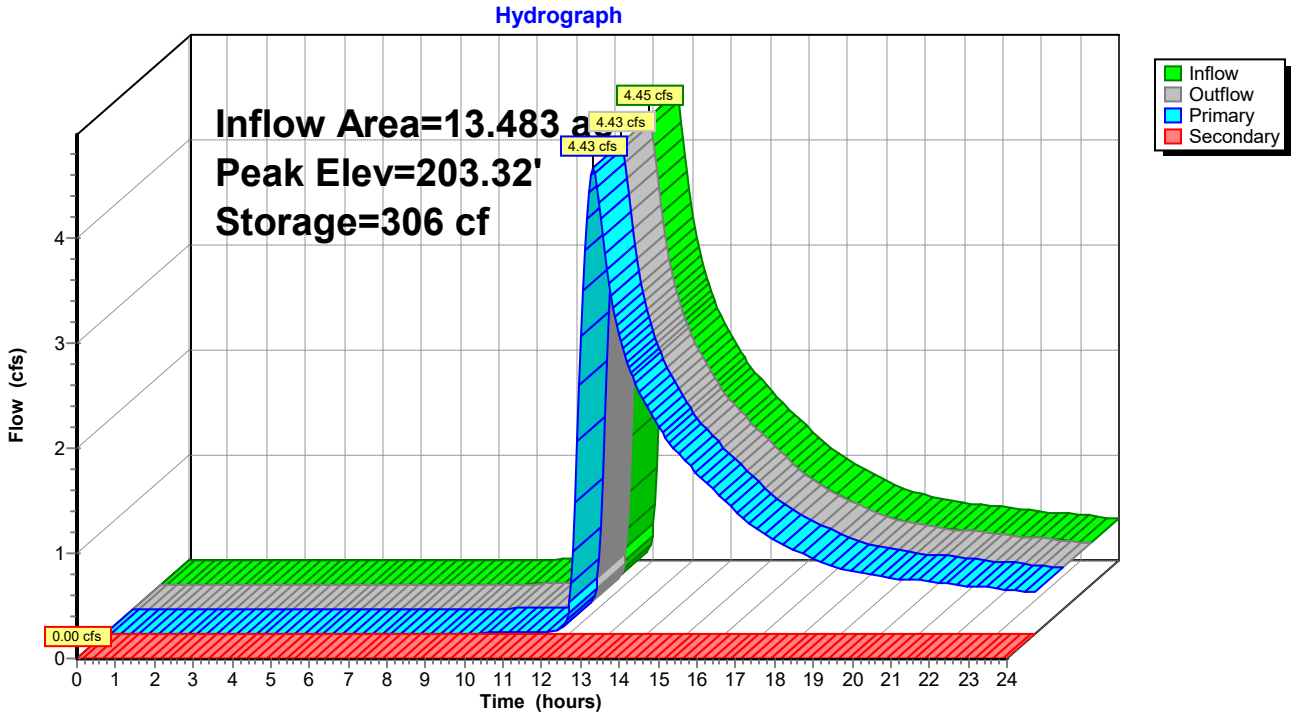
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
202.25	58	31.0	0	0	58
203.00	344	126.0	136	136	1,246
204.00	2,035	75.0	1,072	1,208	2,068
204.50	3,976	367.9	1,476	2,684	12,392
205.00	3,976	367.9	1,988	4,672	12,576

Device	Routing	Invert	Outlet Devices
#1	Secondary	204.50'	**15.0' long x 14.0' breadth Flow Over Roadway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#2	Primary	202.25'	**24.0" Round 24" HDPE N-12** L= 37.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 202.25' / 202.00' S= 0.0068 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.42 cfs @ 12.60 hrs HW=203.32' TW=0.00' (Dynamic Tailwater)
↑—**2=24" HDPE N-12** (Barrel Controls 4.42 cfs @ 3.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=202.25' TW=0.00' (Dynamic Tailwater)
↑—**1=Flow Over Roadway** (Controls 0.00 cfs)

Pond 17P: Prop. 24" HDPE N-12



Summary for Pond 18P: Box Culvert

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 11.396 ac, 0.00% Impervious, Inflow Depth > 1.15" for 10YR - 24HR event
Inflow = 6.17 cfs @ 12.41 hrs, Volume= 1.096 af
Outflow = 6.17 cfs @ 12.41 hrs, Volume= 1.096 af, Atten= 0%, Lag= 0.2 min
Primary = 6.17 cfs @ 12.41 hrs, Volume= 1.096 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 191.14' @ 12.41 hrs Surf.Area= 132 sf Storage= 59 cf

Plug-Flow detention time= 0.2 min calculated for 1.096 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (938.7 - 938.6)

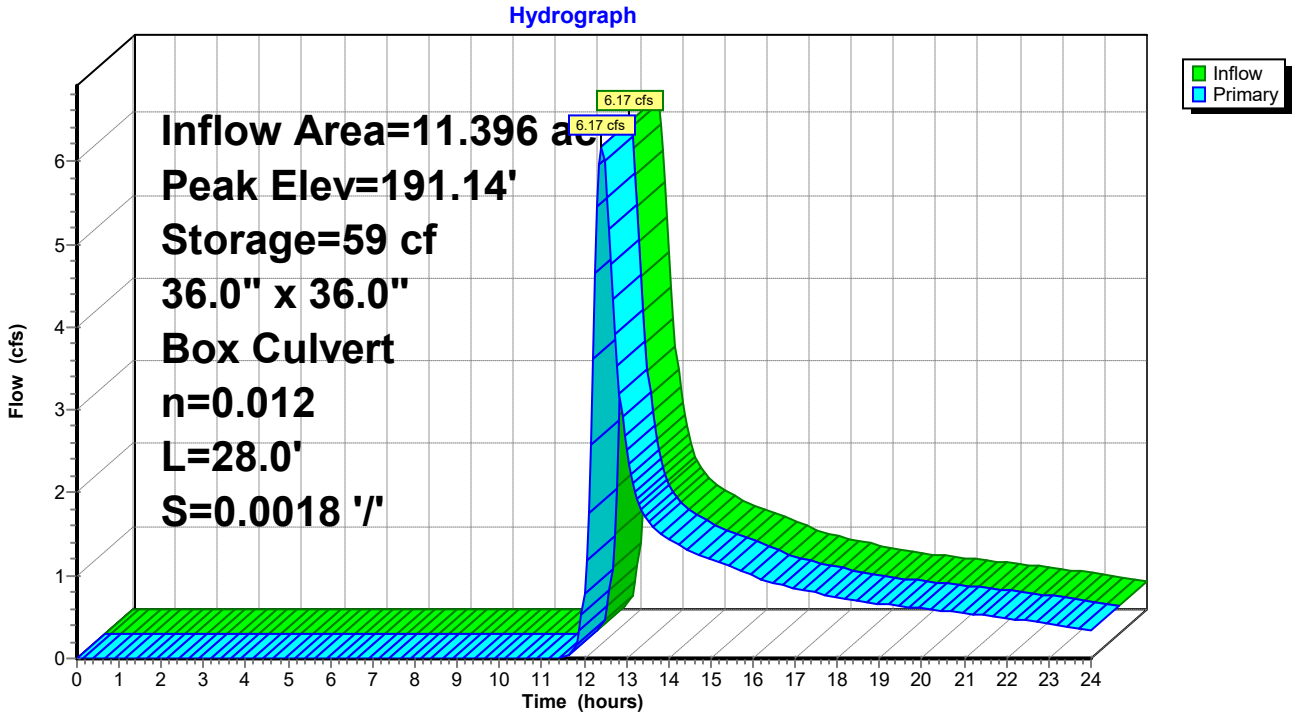
Volume	Invert	Avail.Storage	Storage Description
#1	190.25'	56,817 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
190.25	50	30.0	0	0	50
191.00	72	54.2	46	46	215
192.00	912	215.6	413	459	3,683
193.00	2,290	273.4	1,549	2,008	5,946
194.00	4,070	334.6	3,138	5,146	8,922
195.00	6,222	483.3	5,108	10,254	18,609
196.00	8,396	606.1	7,282	17,536	29,269
197.00	11,534	890.2	9,924	27,459	63,105
198.00	15,764	977.3	13,594	41,053	76,083
199.00	15,764	977.3	15,764	56,817	77,060

Device	Routing	Invert	Outlet Devices
#1	Primary	190.25'	**36.0" W x 36.0" H Box Box Culvert N-12** L= 28.0' Ke= 0.500 Inlet / Outlet Invert= 190.25' / 190.20' S= 0.0018 '/' Cc= 0.900 n= 0.012, Flow Area= 9.00 sf

Primary OutFlow Max=6.15 cfs @ 12.41 hrs HW=191.13' TW=0.00' (Dynamic Tailwater)
1=Box Culvert N-12 (Barrel Controls 6.15 cfs @ 3.09 fps)

Pond 18P: Box Culvert



Summary for Pond 19P: Box Culvert

Inflow Area = 15.794 ac, 0.00% Impervious, Inflow Depth > 1.08" for 10YR - 24HR event
Inflow = 8.03 cfs @ 12.72 hrs, Volume= 1.422 af
Outflow = 8.03 cfs @ 12.72 hrs, Volume= 1.422 af, Atten= 0%, Lag= 0.1 min
Primary = 8.03 cfs @ 12.72 hrs, Volume= 1.422 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 184.02' @ 12.72 hrs Surf.Area= 34 sf Storage= 18 cf

Plug-Flow detention time= 0.1 min calculated for 1.422 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (910.6 - 910.5)

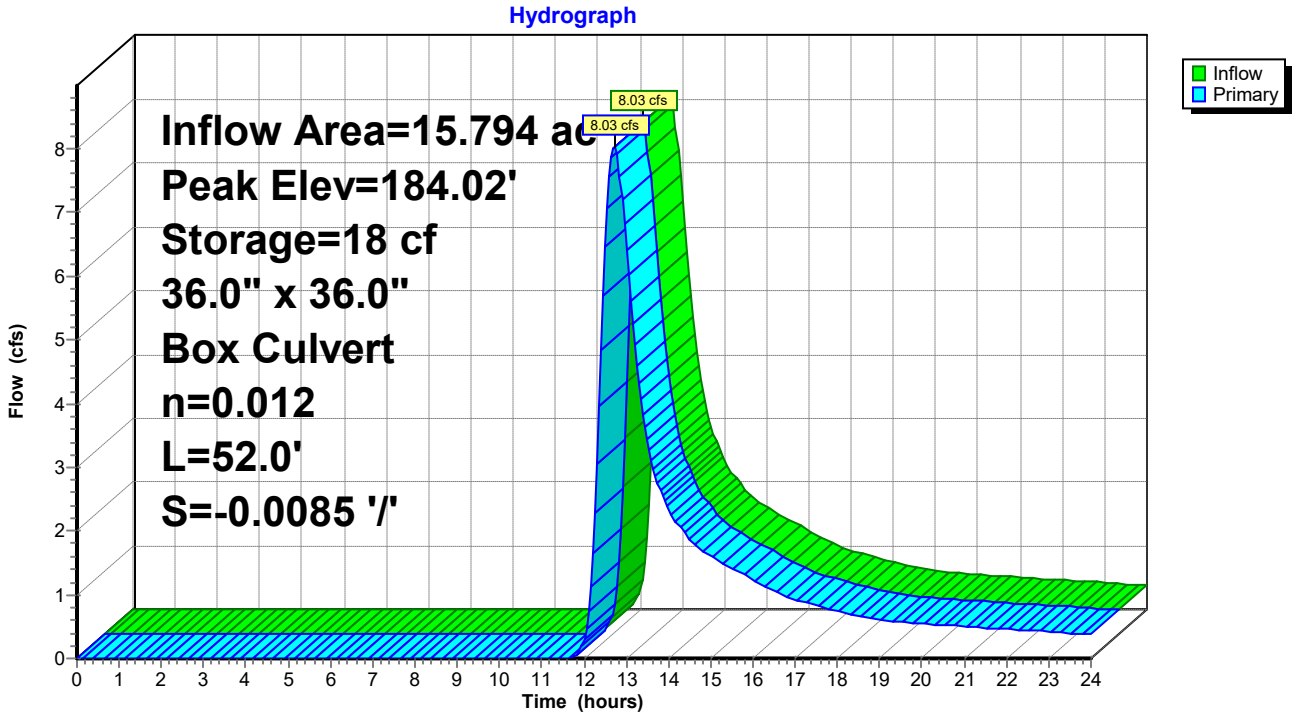
Volume	Invert	Avail.Storage	Storage Description
#1	182.69'	612 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
182.69	1	5.1	0	0	1
184.00	33	33.5	17	17	92
185.00	195	111.6	103	120	997
186.00	870	252.1	492	612	5,067

Device	Routing	Invert	Outlet Devices
#1	Primary	183.13'	**36.0" W x 36.0" H Box Box Culvert N-12** L= 52.0' Ke= 0.500 Inlet / Outlet Invert= 182.69' / 183.13' S= -0.0085 '/' Cc= 0.900 n= 0.012, Flow Area= 9.00 sf

Primary OutFlow Max=8.01 cfs @ 12.72 hrs HW=184.01' TW=0.00' (Dynamic Tailwater)
↑—**1=Box Culvert N-12** (Inlet Controls 8.01 cfs @ 3.02 fps)

Pond 19P: Box Culvert



Summary for Pond 47P: Inlet Sump High Point Drive

Inflow Area = 4.015 ac, 1.77% Impervious, Inflow Depth > 1.28" for 10YR - 24HR event
Inflow = 3.30 cfs @ 12.41 hrs, Volume= 0.427 af
Outflow = 3.30 cfs @ 12.42 hrs, Volume= 0.427 af, Atten= 0%, Lag= 0.7 min
Primary = 3.30 cfs @ 12.42 hrs, Volume= 0.427 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 237.61' @ 12.42 hrs Surf.Area= 287 sf Storage= 108 cf
Flood Elev= 239.50' Surf.Area= 1,677 sf Storage= 1,864 cf

Plug-Flow detention time= 0.5 min calculated for 0.427 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (886.6 - 886.2)

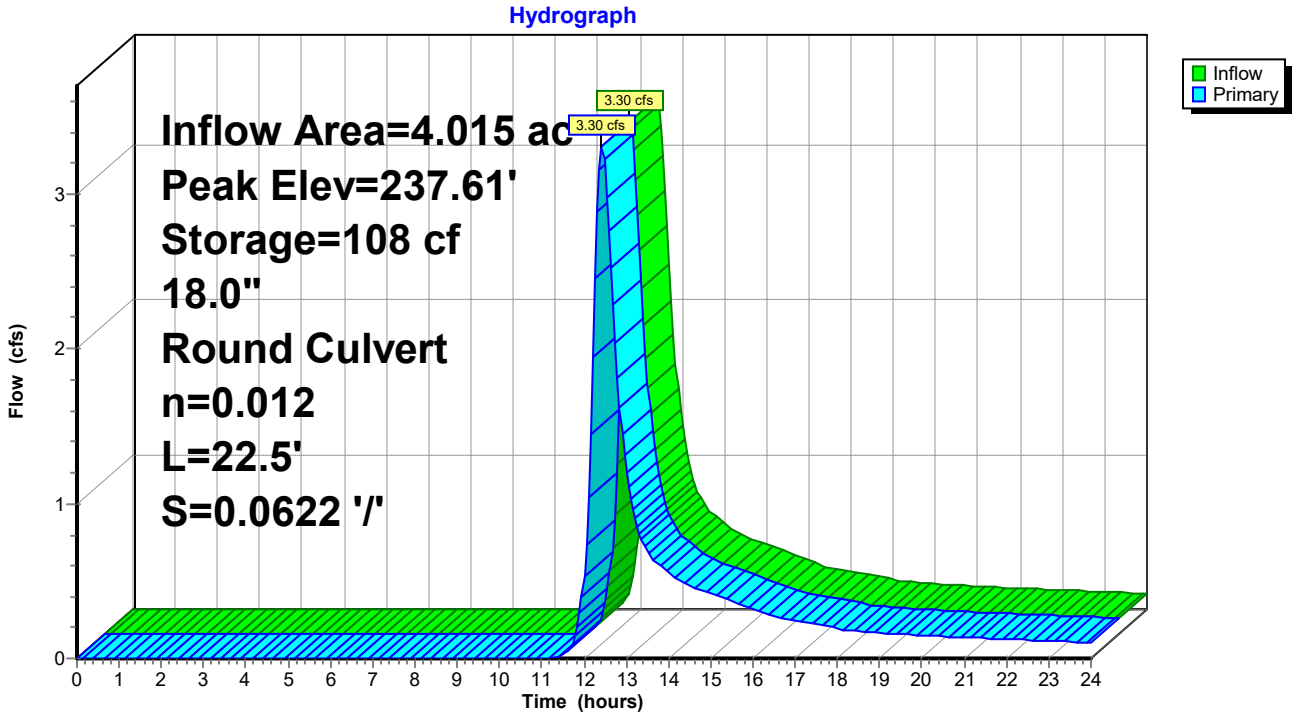
Volume	Invert	Avail.Storage	Storage Description
#1	236.75'	1,864 cf	**Ponding Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
236.75	27	29.5	0	0	27
237.00	61	36.0	11	11	62
238.00	520	219.2	253	264	3,784
239.00	1,268	257.5	867	1,130	5,257
239.50	1,677	278.6	734	1,864	6,167

Device	Routing	Invert	Outlet Devices
#1	Primary	236.75'	**18.0" Round 18" HDPE N-12** L= 22.5' Ke= 0.500 Inlet / Outlet Invert= 236.75' / 235.35' S= 0.0622 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.28 cfs @ 12.42 hrs HW=237.61' TW=233.91' (Dynamic Tailwater)
↑—**1=18" HDPE N-12** (Inlet Controls 3.28 cfs @ 3.15 fps)

Pond 47P: Inlet Sump High Point Drive



Summary for Pond 48P: High Point Drive Cul-de Sac

Inflow Area = 0.254 ac, 68.77% Impervious, Inflow Depth > 3.33" for 10YR - 24HR event
Inflow = 0.95 cfs @ 12.09 hrs, Volume= 0.070 af
Outflow = 0.92 cfs @ 12.11 hrs, Volume= 0.070 af, Atten= 4%, Lag= 1.4 min
Primary = 0.92 cfs @ 12.11 hrs, Volume= 0.070 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 236.45' @ 12.11 hrs Surf.Area= 322 sf Storage= 107 cf
Flood Elev= 239.40' Surf.Area= 3,796 sf Storage= 4,394 cf

Plug-Flow detention time= 5.0 min calculated for 0.070 af (100% of inflow)
Center-of-Mass det. time= 3.5 min (803.6 - 800.1)

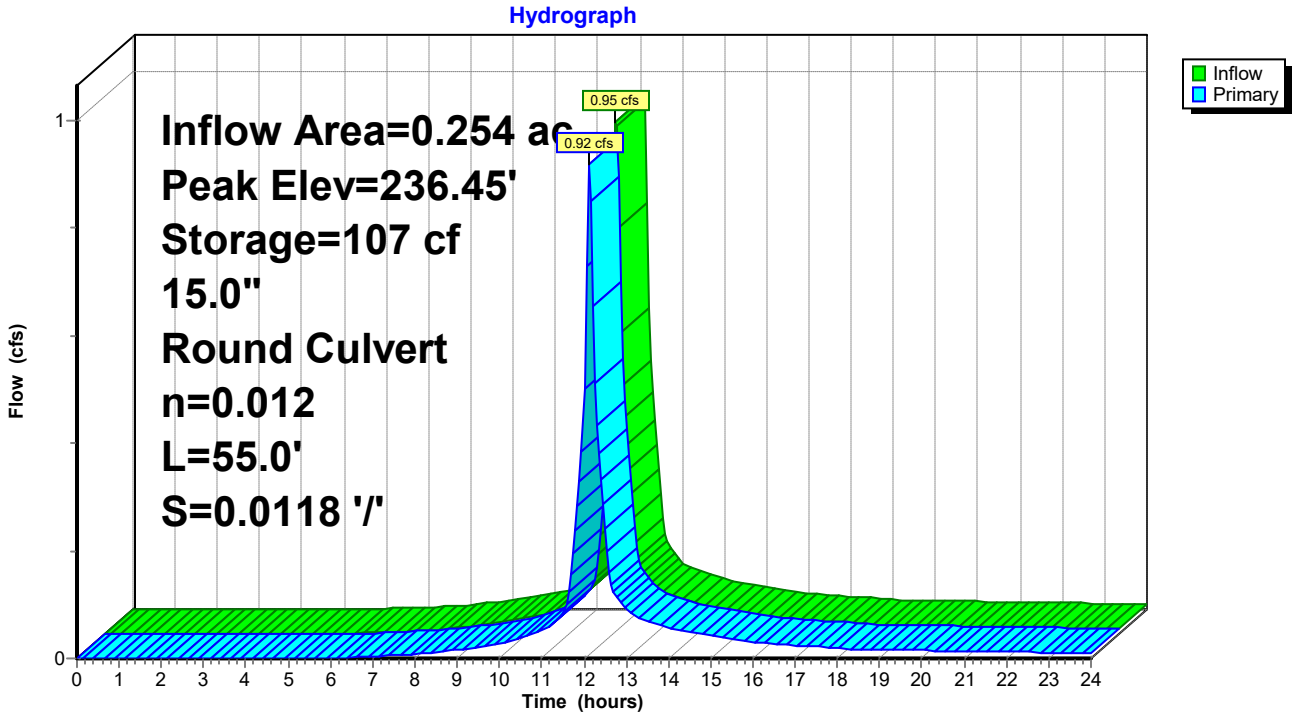
Volume	Invert	Avail.Storage	Storage Description
#1	236.00'	4,394 cf	**Ponding Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
236.00	159	51.4	0	0	159
237.00	595	93.0	354	354	642
238.00	1,192	128.9	876	1,230	1,286
239.00	2,663	183.2	1,879	3,109	2,644
239.40	3,796	224.9	1,285	4,394	4,000

Device	Routing	Invert	Outlet Devices
#1	Primary	236.00'	**15.0" Round 15" HDPE N-12** L= 55.0' Ke= 0.500 Inlet / Outlet Invert= 236.00' / 235.35' S= 0.0118 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.89 cfs @ 12.11 hrs HW=236.45' TW=233.80' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Inlet Controls 0.89 cfs @ 2.27 fps)

Pond 48P: High Point Drive Cul-de Sac



Summary for Pond 49P: Community Drive Cul-de Sac

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=12)

Inflow Area = 0.456 ac, 64.00% Impervious, Inflow Depth > 3.13" for 10YR - 24HR event
Inflow = 1.62 cfs @ 12.09 hrs, Volume= 0.119 af
Outflow = 0.32 cfs @ 12.03 hrs, Volume= 0.026 af, Atten= 80%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.16 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 218.09' @ 22.59 hrs Surf.Area= 5,219 sf Storage= 4,057 cf
Flood Elev= 219.00' Surf.Area= 9,135 sf Storage= 10,484 cf

Plug-Flow detention time= 146.9 min calculated for 0.026 af (22% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

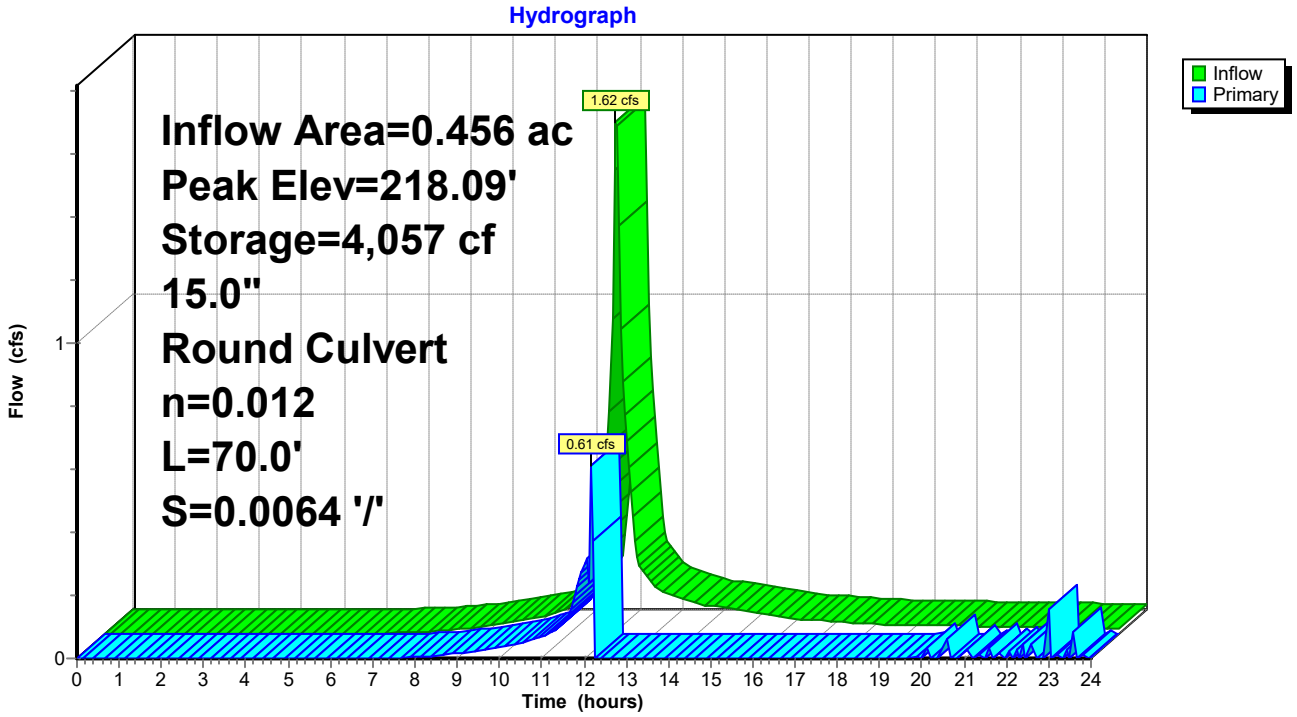
Volume	Invert	Avail.Storage	Storage Description
#1	216.75'	10,484 cf	**Ponding Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.75	743	119.9	0	0	743
217.00	1,891	164.0	318	318	1,740
218.00	4,879	247.9	3,269	3,587	4,498
219.00	9,135	339.4	6,897	10,484	8,784

Device	Routing	Invert	Outlet Devices
#1	Primary	216.75'	**15.0" Round 15" HDPE N-12** L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 216.75' / 216.30' S= 0.0064 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.16 hrs HW=217.39' TW=217.42' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Controls 0.00 cfs)

Pond 49P: Community Drive Cul-de Sac



Summary for Pond 50P: 15" HDPE (Access Road)

Inflow Area = 1.865 ac, 24.57% Impervious, Inflow Depth > 0.90" for 10YR - 24HR event
Inflow = 0.48 cfs @ 12.24 hrs, Volume= 0.140 af
Outflow = 0.47 cfs @ 12.26 hrs, Volume= 0.140 af, Atten= 0%, Lag= 1.0 min
Primary = 0.47 cfs @ 12.26 hrs, Volume= 0.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 203.62' @ 12.26 hrs Surf.Area= 137 sf Storage= 41 cf
Flood Elev= 206.00' Surf.Area= 400 sf Storage= 399 cf

Plug-Flow detention time= 2.3 min calculated for 0.140 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (942.0 - 940.6)

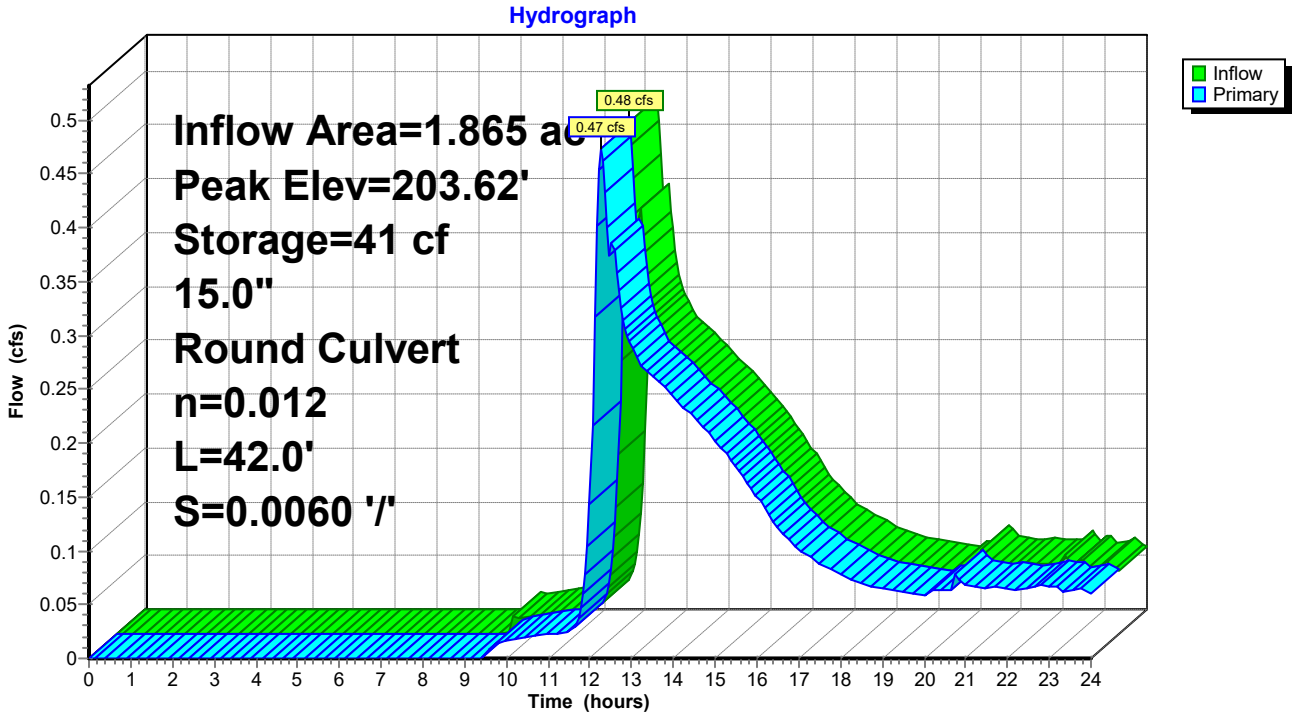
Volume	Invert	Avail.Storage	Storage Description
#1	203.25'	399 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.25	88	38.0	0	0	88
204.00	200	60.0	105	105	263
205.00	400	100.0	294	399	779

Device	Routing	Invert	Outlet Devices
#1	Primary	203.25'	**15.0" Round 15" HDPE N-12** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.25' / 203.00' S= 0.0060 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.47 cfs @ 12.26 hrs HW=203.61' TW=203.12' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Barrel Controls 0.47 cfs @ 2.38 fps)

Pond 50P: 15" HDPE (Access Road)



Summary for Pond 51P: Outlet Pond

Inflow Area = 0.442 ac, 52.66% Impervious, Inflow Depth > 1.87" for 10YR - 24HR event
Inflow = 0.54 cfs @ 12.33 hrs, Volume= 0.069 af
Outflow = 0.34 cfs @ 12.64 hrs, Volume= 0.048 af, Atten= 37%, Lag= 19.0 min
Primary = 0.34 cfs @ 12.64 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 214.04' @ 12.64 hrs Surf.Area= 875 sf Storage= 923 cf
Flood Elev= 215.00' Surf.Area= 875 sf Storage= 1,767 cf

Plug-Flow detention time= 175.2 min calculated for 0.048 af (70% of inflow)
Center-of-Mass det. time= 70.4 min (949.3 - 878.9)

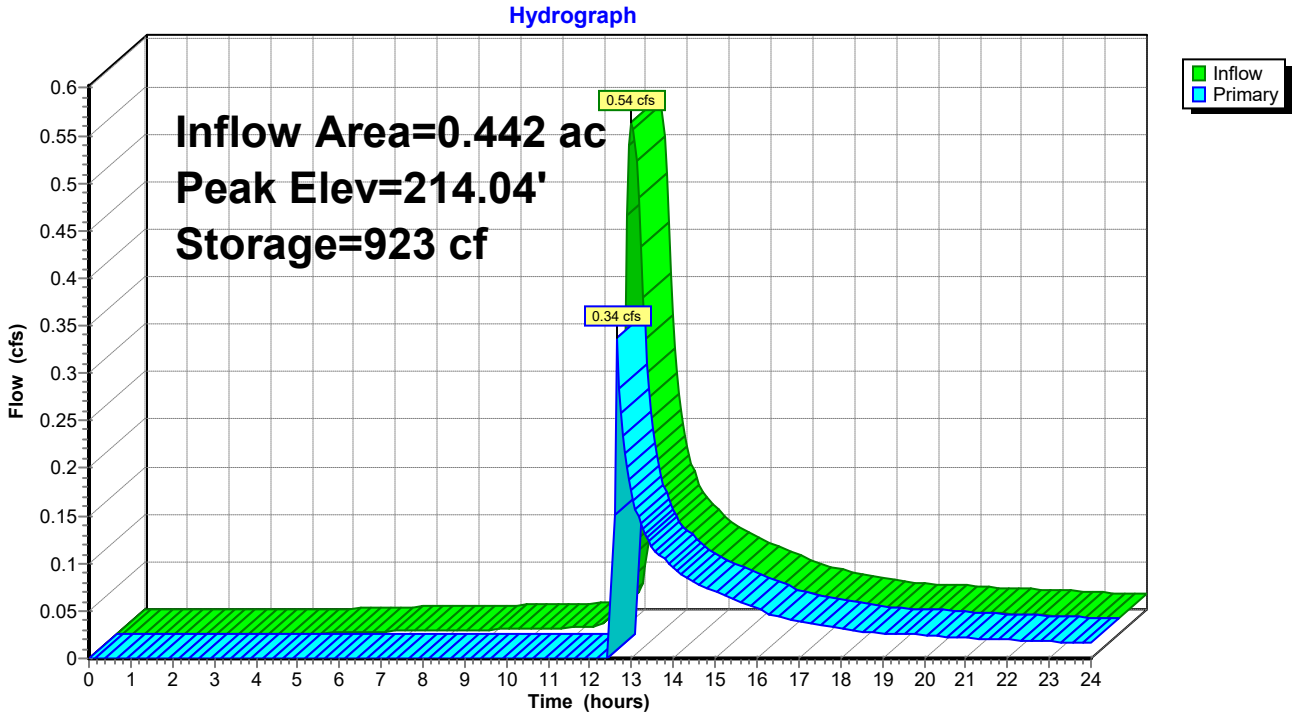
Volume	Invert	Avail.Storage	Storage Description
#1	212.00'	1,767 cf	**Ponding Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.00	75	42.5	0	0	75
213.00	455	174.0	238	238	2,343
214.00	875	185.8	654	892	2,726
215.00	875	185.8	875	1,767	2,912

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**20.0' long x 2.0' breadth Level Spreader** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.33 cfs @ 12.64 hrs HW=214.04' TW=212.62' (Dynamic Tailwater)
↑—**1=Level Spreader** (Weir Controls 0.33 cfs @ 0.48 fps)

Pond 51P: Outlet Pond



Summary for Pond 52P: S Wetland Crossing 24" RCP

Inflow Area = 3.594 ac, 0.00% Impervious, Inflow Depth > 1.21" for 10YR - 24HR event
Inflow = 2.83 cfs @ 12.39 hrs, Volume= 0.363 af
Outflow = 2.83 cfs @ 12.40 hrs, Volume= 0.363 af, Atten= 0%, Lag= 0.3 min
Primary = 2.83 cfs @ 12.40 hrs, Volume= 0.363 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 214.10' @ 12.40 hrs Surf.Area= 134 sf Storage= 39 cf
Flood Elev= 217.00' Surf.Area= 5,218 sf Storage= 7,230 cf

Plug-Flow detention time= 0.2 min calculated for 0.363 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (888.4 - 888.2)

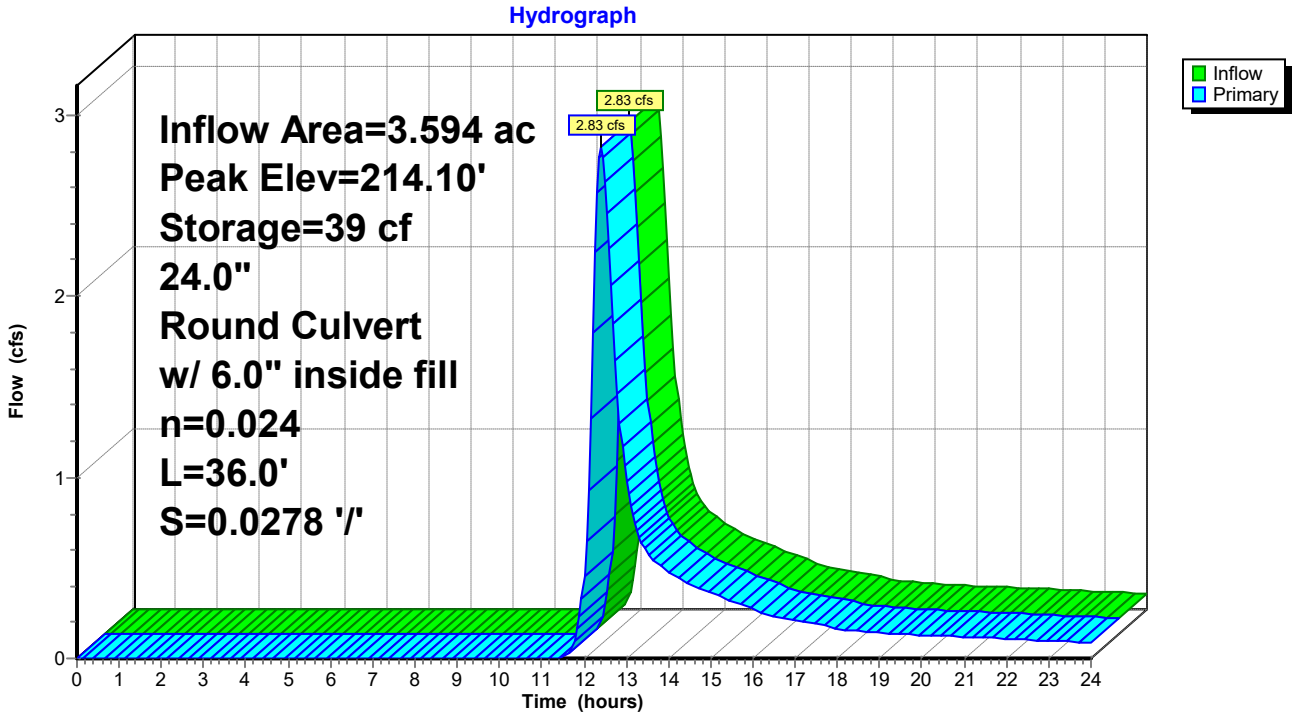
Volume	Invert	Avail.Storage	Storage Description
#1	213.50'	9,839 cf	**Ponding Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
213.50	22	26.8	0	0	22
214.00	97	51.8	28	28	180
215.00	761	152.6	377	404	1,822
216.00	3,629	290.4	2,017	2,421	6,685
216.50	5,218	306.3	2,200	4,621	7,455
217.50	5,218	306.3	5,218	9,839	7,761

Device	Routing	Invert	Outlet Devices
#1	Primary	213.50'	**24.0" Round 24" HDPE N-12 6" Bury w/ 6.0" inside fill** L= 36.0' Ke= 0.500 Inlet / Outlet Invert= 213.00' / 212.00' S= 0.0278 '/' Cc= 0.900 n= 0.024, Flow Area= 2.53 sf

Primary OutFlow Max=2.83 cfs @ 12.40 hrs HW=214.10' TW=212.72' (Dynamic Tailwater)
1=24" HDPE N-12 6" Bury (Inlet Controls 2.83 cfs @ 2.45 fps)

Pond 52P: S Wetland Crossing 24" RCP



Summary for Pond 53P: N Wetland Crossing 24" RCP

Inflow Area = 0.605 ac, 0.00% Impervious, Inflow Depth > 1.41" for 10YR - 24HR event
Inflow = 0.62 cfs @ 12.31 hrs, Volume= 0.071 af
Outflow = 0.62 cfs @ 12.32 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.2 min
Primary = 0.62 cfs @ 12.32 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 215.72' @ 12.32 hrs Surf.Area= 45 sf Storage= 7 cf

Plug-Flow detention time= 0.3 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (876.3 - 876.1)

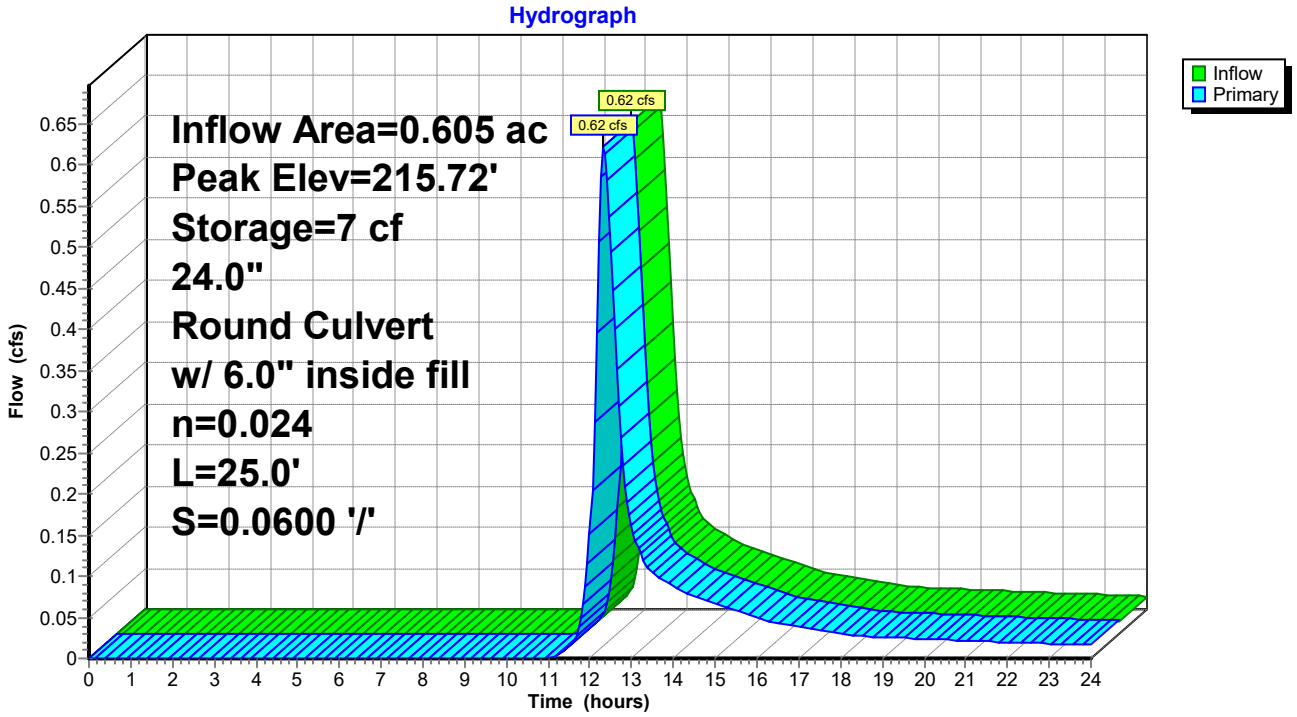
Volume	Invert	Avail.Storage	Storage Description
#1	215.50'	1,811 cf	**Ponding Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
215.50	20	22.1	0	0	20
216.00	88	44.4	25	25	139
216.50	1,467	201.6	319	344	3,217
217.50	1,467	201.6	1,467	1,811	3,419

Device	Routing	Invert	Outlet Devices
#1	Primary	215.50'	**24.0" Round 24" HDPE N-12 6" Bury w/ 6.0" inside fill** L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 215.00' / 213.50' S= 0.0600 '/' Cc= 0.900 n= 0.024, Flow Area= 2.53 sf

Primary OutFlow Max=0.62 cfs @ 12.32 hrs HW=215.72' TW=214.10' (Dynamic Tailwater)
↑—**1=24" HDPE N-12 6" Bury** (Inlet Controls 0.62 cfs @ 1.50 fps)

Pond 53P: N Wetland Crossing 24" RCP



Summary for Pond 54P: Inlet Sump Detention Pond #110

Inflow Area = 2.763 ac, 0.00% Impervious, Inflow Depth > 1.28" for 10YR - 24HR event
Inflow = 2.33 cfs @ 12.39 hrs, Volume= 0.294 af
Outflow = 2.32 cfs @ 12.41 hrs, Volume= 0.293 af, Atten= 0%, Lag= 1.3 min
Primary = 2.32 cfs @ 12.41 hrs, Volume= 0.293 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 225.70' @ 12.41 hrs Surf.Area= 430 sf Storage= 241 cf
Flood Elev= 227.00' Surf.Area= 834 sf Storage= 1,049 cf

Plug-Flow detention time= 3.5 min calculated for 0.293 af (100% of inflow)
Center-of-Mass det. time= 2.1 min (887.2 - 885.1)

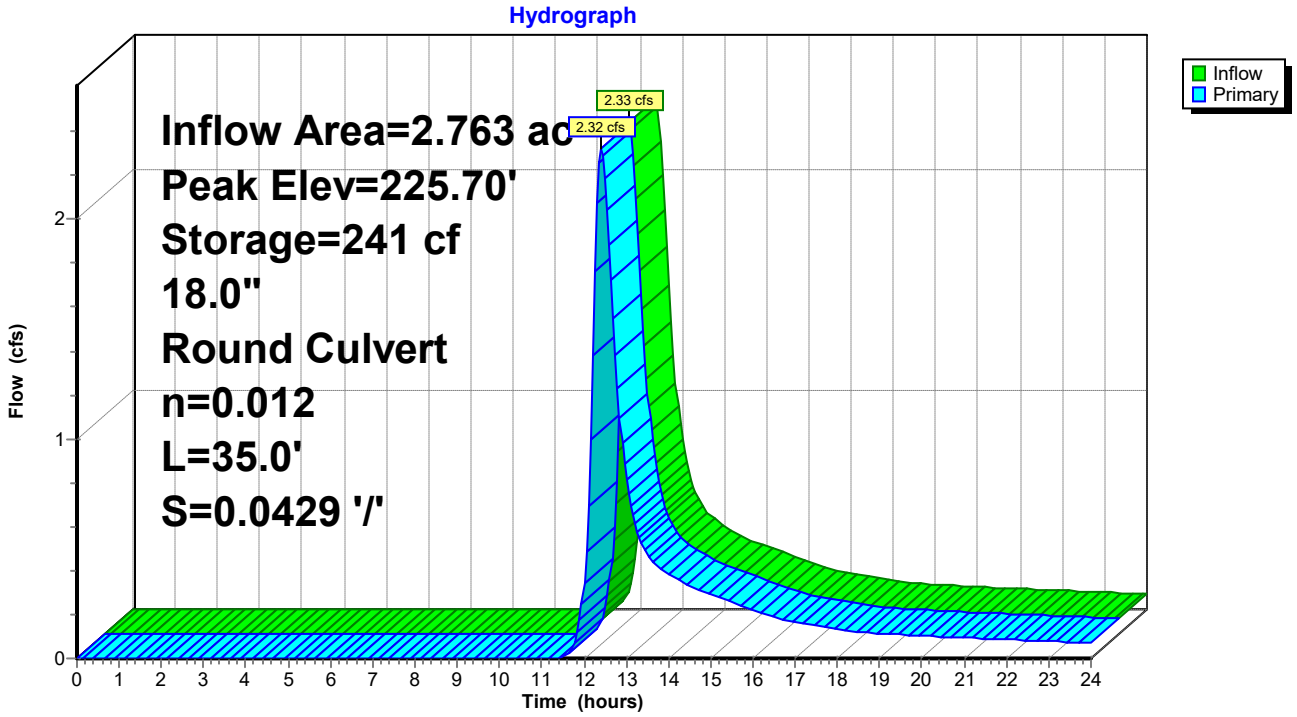
Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	1,049 cf	**Ponding Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.00	262	67.8	0	0	262
226.00	514	92.8	381	381	591
227.00	834	115.0	668	1,049	973

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**18.0" Round 18" HDPE N-12** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 225.00' / 223.50' S= 0.0429 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.32 cfs @ 12.41 hrs HW=225.70' TW=219.44' (Dynamic Tailwater)
1=18" HDPE N-12 (Inlet Controls 2.32 cfs @ 2.85 fps)

Pond 54P: Inlet Sump Detention Pond #110



Summary for Pond 55P: Drop Inlet #55

Inflow Area = 1.406 ac, 32.60% Impervious, Inflow Depth > 0.84" for 10YR - 24HR event
Inflow = 0.20 cfs @ 13.05 hrs, Volume= 0.098 af
Outflow = 0.20 cfs @ 13.04 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 13.04 hrs, Volume= 0.098 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 203.99' @ 12.95 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 207.25' Surf.Area= 0.000 ac Storage= 0.000 af

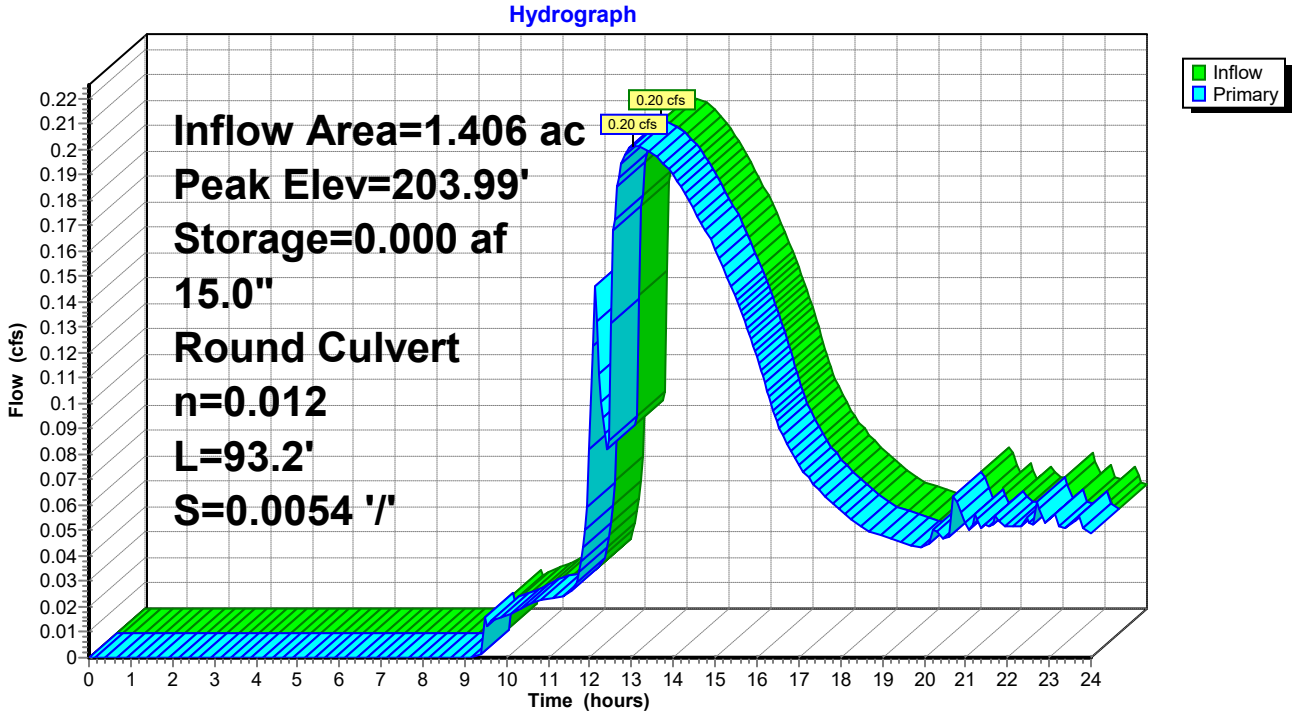
Plug-Flow detention time= 0.1 min calculated for 0.098 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (963.1 - 963.0)

Volume	Invert	Avail.Storage	Storage Description
#1	203.75'	0.000 af	**2.00'D x 3.50'H 2' Drop Inlet**

Device	Routing	Invert	Outlet Devices
#1	Primary	203.75'	**15.0" Round 15" HDPE N-12** L= 93.2' Ke= 0.500 Inlet / Outlet Invert= 203.75' / 203.25' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.20 cfs @ 13.04 hrs HW=203.99' TW=203.53' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Outlet Controls 0.20 cfs @ 1.84 fps)

Pond 55P: Drop Inlet #55



Summary for Pond 56P: CB #56

Inflow Area = 0.387 ac, 0.00% Impervious, Inflow Depth > 1.15" for 10YR - 24HR event
Inflow = 0.34 cfs @ 12.25 hrs, Volume= 0.037 af
Outflow = 0.34 cfs @ 12.25 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.1 min
Primary = 0.34 cfs @ 12.25 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 224.82' @ 12.21 hrs Surf.Area= 13 sf Storage= 4 cf
Flood Elev= 230.00' Surf.Area= 207 sf Storage= 153 cf

Plug-Flow detention time= 0.5 min calculated for 0.037 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (884.7 - 884.4)

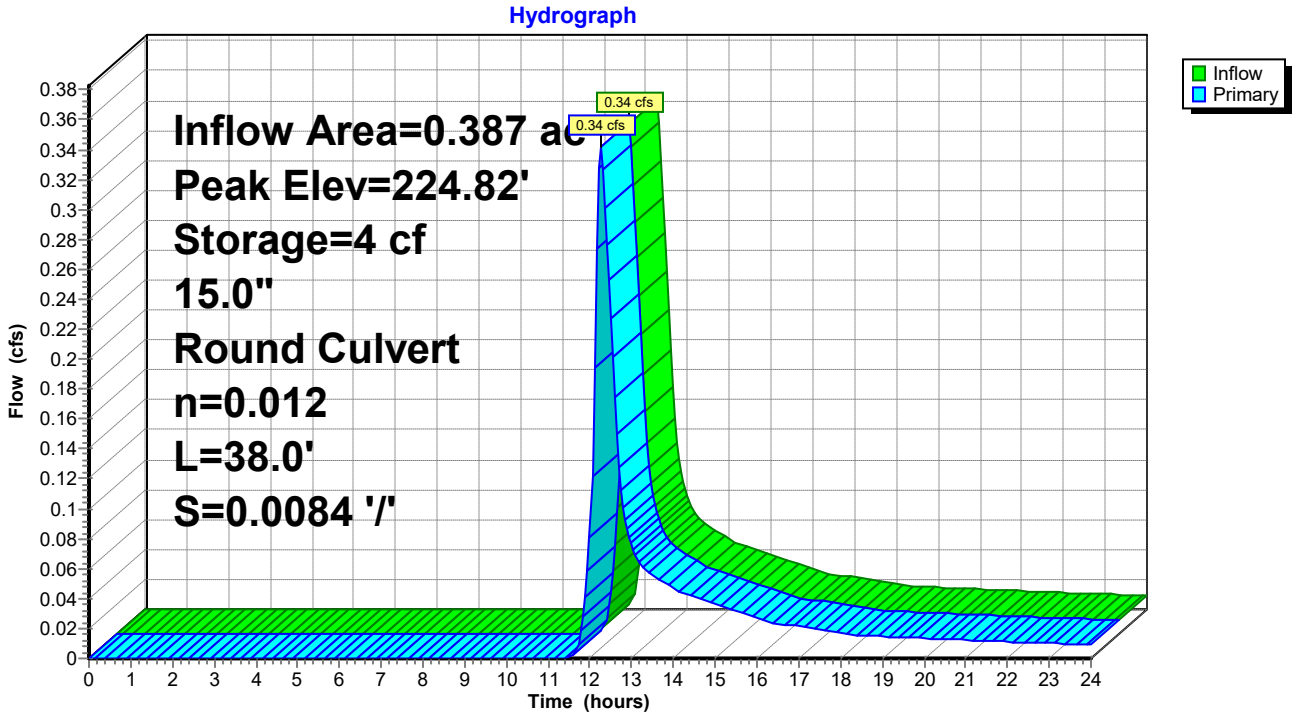
Volume	Invert	Avail.Storage	Storage Description
#1	224.50'	57 cf	**4.00'D x 4.50'H 4' Structure**
#2	229.00'	96 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		153 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
229.00	25	19.0	0	0	25
230.00	194	81.0	96	96	521

Device	Routing	Invert	Outlet Devices
#1	Primary	224.50'	**15.0" Round 15" HDPE N-12** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 224.50' / 224.18' S= 0.0084 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.34 cfs @ 12.25 hrs HW=224.82' TW=224.58' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Outlet Controls 0.34 cfs @ 2.08 fps)

Pond 56P: CB #56



Summary for Pond 101P: Ex. Rain Garden #101

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=46)

Inflow Area = 1.269 ac, 46.37% Impervious, Inflow Depth > 1.09" for 10YR - 24HR event
Inflow = 1.41 cfs @ 12.10 hrs, Volume= 0.115 af
Outflow = 0.31 cfs @ 12.59 hrs, Volume= 0.096 af, Atten= 78%, Lag= 29.2 min
Primary = 0.31 cfs @ 12.59 hrs, Volume= 0.096 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 201.70' @ 12.59 hrs Surf.Area= 1,323 sf Storage= 1,915 cf
Flood Elev= 203.00' Surf.Area= 3,677 sf Storage= 5,022 cf

Plug-Flow detention time= 125.9 min calculated for 0.096 af (84% of inflow)
Center-of-Mass det. time= 57.4 min (893.5 - 836.1)

Volume	Invert	Avail.Storage	Storage Description
#1	198.50'	384 cf	**Stone Bed (Irregular)** Listed below (Recalc) -Impervious 959 cf Overall x 40.0% Voids
#2	199.50'	288 cf	**Bio Media (Irregular)** Listed below -Impervious 1,439 cf Overall x 20.0% Voids
#3	201.00'	3,722 cf	**Open Storage (Irregular)** Listed below (Recalc)
#4	200.00'	629 cf	**Forebay (Irregular)** Listed below (Recalc) -Impervious
		5,022 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
198.50	959	250.0	0	0	959
199.50	959	250.0	959	959	1,209

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
199.50	959	250.0	0	0	959
201.00	959	250.0	1,439	1,439	1,334

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
201.00	959	250.0	0	0	959
202.00	1,494	284.0	1,217	1,217	2,428
203.00	3,677	596.0	2,505	3,722	24,281

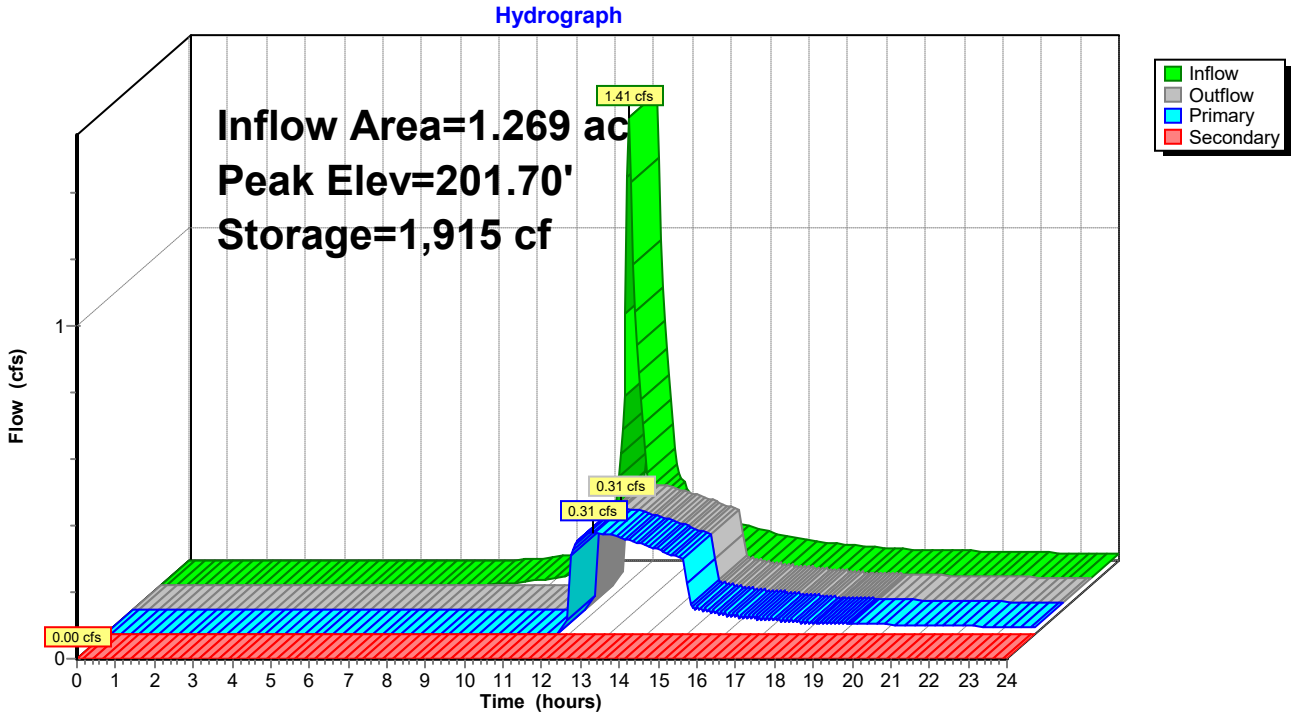
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
200.00	55	35.0	0	0	55
201.00	281	320.0	153	153	8,108
202.00	702	445.0	476	629	15,727

Device	Routing	Invert	Outlet Devices
#1	Secondary	202.50'	**20.0' long x 4.0' breadth E-Spillway** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Primary	198.50'	**6.0" Round 6" U.D.** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 198.50' / 198.30' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	201.00'	**10.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.31 cfs @ 12.59 hrs HW=201.70' TW=199.30' (Dynamic Tailwater)
└─**2=6" U.D.** (Passes 0.31 cfs of 1.45 cfs potential flow)
└─**3=Exfiltration** (Exfiltration Controls 0.31 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=198.50' TW=198.10' (Dynamic Tailwater)
└─**1=E-Spillway** (Controls 0.00 cfs)

Pond 101P: Ex. Rain Garden #101



Summary for Pond 102P: Ex. Rain Garden #102

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=19)

Inflow Area = 7.863 ac, 19.58% Impervious, Inflow Depth > 1.44" for 10YR - 24HR event
Inflow = 5.70 cfs @ 12.59 hrs, Volume= 0.946 af
Outflow = 5.02 cfs @ 12.61 hrs, Volume= 0.902 af, Atten= 12%, Lag= 1.0 min
Primary = 0.46 cfs @ 12.05 hrs, Volume= 0.520 af
Secondary = 4.56 cfs @ 12.61 hrs, Volume= 0.382 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 200.21' @ 12.61 hrs Surf.Area= 1,994 sf Storage= 6,283 cf
Flood Elev= 200.50' Surf.Area= 1,994 sf Storage= 7,317 cf

Plug-Flow detention time= 93.4 min calculated for 0.902 af (95% of inflow)
Center-of-Mass det. time= 68.9 min (931.4 - 862.5)

Volume	Invert	Avail.Storage	Storage Description
#1	196.50'	798 cf	**Stone Base (Irregular)** Listed below (Recalc) -Impervious 1,994 cf Overall x 40.0% Voids
#2	197.50'	598 cf	**Bio Media (Irregular)** Listed below (Recalc) 2,991 cf Overall x 20.0% Voids
#3	199.00'	4,816 cf	**Open Storage (Irregular)** Listed below (Recalc) -Impervious
#4	197.00'	1,106 cf	**Forebay (Irregular)** Listed below (Recalc) -Impervious
		7,317 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
196.50	1,994	198.7	0	0	1,994
197.50	1,994	198.7	1,994	1,994	2,193

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
197.50	1,994	198.7	0	0	1,994
199.00	1,994	198.7	2,991	2,991	2,292

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
199.00	2,793	272.2	0	0	2,793
200.00	3,352	285.2	3,068	3,068	3,433
200.50	3,640	291.5	1,748	4,816	3,757

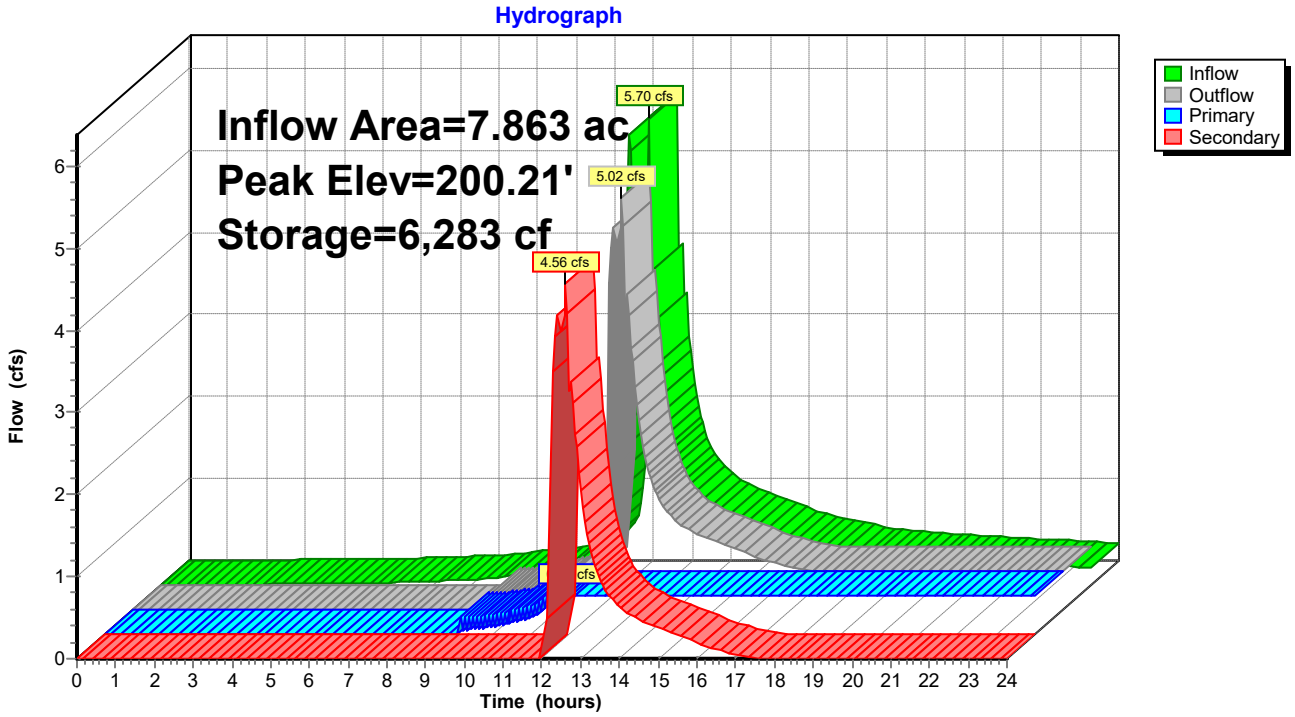
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
197.00	336	93.0	0	0	336
198.00	547	108.0	437	437	596
199.00	798	127.0	669	1,106	970

Device	Routing	Invert	Outlet Devices
#1	Primary	196.50'	**6.0" Round 6" U.D.** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 196.50' / 196.40' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Device 1	197.50'	**10.000 in/hr Exfil. To UD over Surface area**
#3	Secondary	200.00'	**20.0' long x 4.0' breadth E-Spillway** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.46 cfs @ 12.05 hrs HW=199.21' TW=197.02' (Dynamic Tailwater)
└─**1=6" U.D.** (Passes 0.46 cfs of 1.38 cfs potential flow)
└─**2=Exfil. To UD** (Exfiltration Controls 0.46 cfs)

Secondary OutFlow Max=4.48 cfs @ 12.61 hrs HW=200.21' TW=198.33' (Dynamic Tailwater)
└─**3=E-Spillway** (Weir Controls 4.48 cfs @ 1.08 fps)

Pond 102P: Ex. Rain Garden #102



Summary for Pond 103P: Gravel Wetland #103

[80] Warning: Exceeded Pond D01P by 0.02' @ 19.80 hrs (0.80 cfs 0.064 af)

Inflow Area = 0.597 ac, 54.88% Impervious, Inflow Depth > 2.77" for 10YR - 24HR event
Inflow = 1.80 cfs @ 12.09 hrs, Volume= 0.138 af
Outflow = 0.06 cfs @ 16.26 hrs, Volume= 0.043 af, Atten= 97%, Lag= 249.8 min
Primary = 0.02 cfs @ 16.26 hrs, Volume= 0.026 af
Secondary = 0.04 cfs @ 16.26 hrs, Volume= 0.017 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 214.39' @ 16.26 hrs Surf.Area= 4,285 sf Storage= 4,346 cf
Flood Elev= 216.00' Surf.Area= 5,387 sf Storage= 9,384 cf

Plug-Flow detention time= 355.3 min calculated for 0.043 af (31% of inflow)
Center-of-Mass det. time= 204.8 min (1,004.8 - 800.1)

Volume	Invert	Avail.Storage	Storage Description
#1	211.67'	32 cf	**4.00'D x 2.57'H 4' Outlet Structure**
#2	212.00'	547 cf	**Cell 1 (Irregular)** Listed below (Recalc)
#3	212.00'	555 cf	**Cell 2 (Irregular)** Listed below (Recalc)
#4	213.00'	7,939 cf	**Open Water Storage (Irregular)** Listed below (Recalc)
#5	212.00'	311 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
		9,384 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.00	429	77.7	0	0	429
213.00	674	96.1	547	547	698

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.00	426	79.3	0	0	426
213.00	695	98.2	555	555	707

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
213.00	1,515	153.7	0	0	1,515
214.00	2,371	195.9	1,927	1,927	2,702
215.00	2,986	214.9	2,673	4,600	3,356
216.00	3,705	237.6	3,339	7,939	4,204

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.00	47	26.8	0	0	47
213.00	147	45.3	92	92	159
214.00	300	63.8	219	311	329

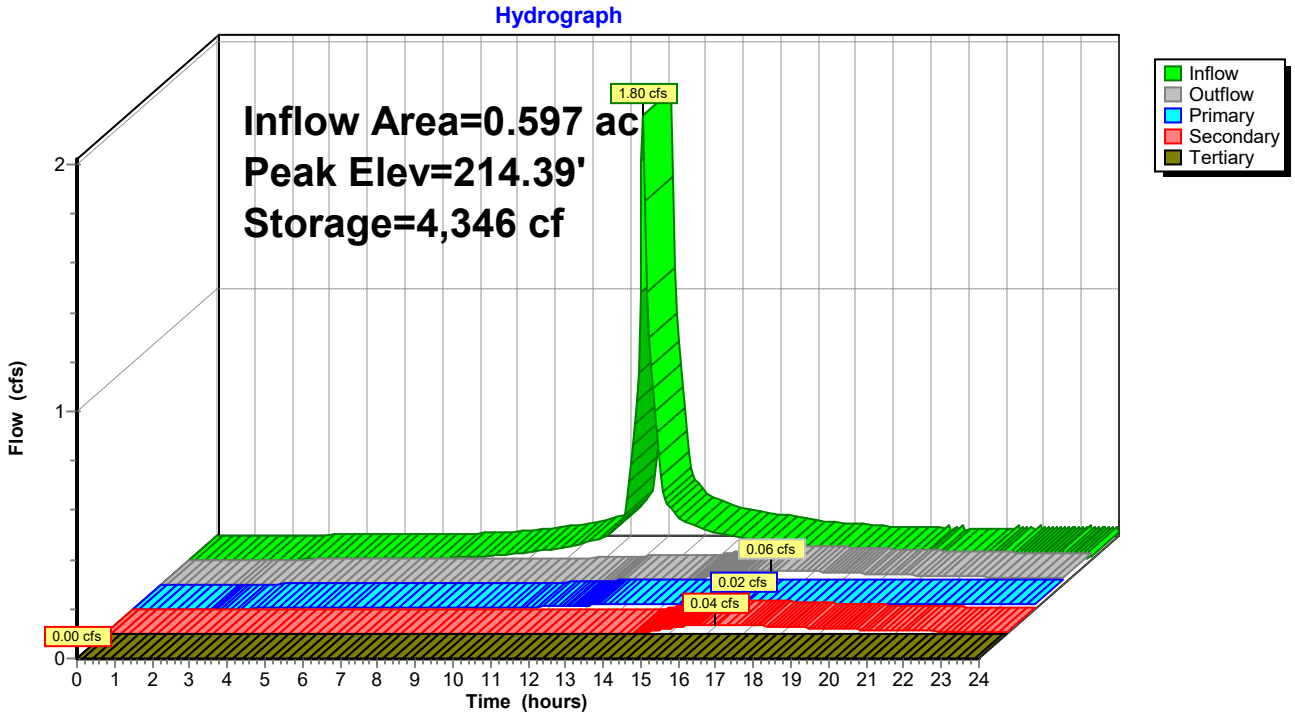
Device	Routing	Invert	Outlet Devices
#1	Primary	211.67'	**15.0" Round 6" N-12 HDPE** L= 15.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.67' / 211.00' S= 0.0432 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	211.67'	**15.0" Round 15" N-12 HDPE** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.67' / 211.00' S= 0.0335 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#3	Device 1	211.67'	**0.7" Vert. 0.75" Orifice Goose Neck** C= 0.600
#4	Device 2	214.25'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 2	215.45'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#6	Tertiary	215.50'	**5.0' long x 7.0' breadth 5' Emergency Spillway** 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) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.02 cfs @ 16.26 hrs HW=214.39' TW=211.02' (Dynamic Tailwater)
└─**1=6" N-12 HDPE** (Passes 0.02 cfs of 8.56 cfs potential flow)
  └─**3=0.75" Orifice Goose Neck** (Orifice Controls 0.02 cfs @ 7.90 fps)

Secondary OutFlow Max=0.04 cfs @ 16.26 hrs HW=214.39' TW=211.02' (Dynamic Tailwater)
└─**2=15" N-12 HDPE** (Passes 0.04 cfs of 8.56 cfs potential flow)
  ├─**4=3" Orifice** (Orifice Controls 0.04 cfs @ 1.28 fps)
  └─**5=48" Structure** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.67' TW=211.00' (Dynamic Tailwater)
└─**6=5' Emergency Spillway** (Controls 0.00 cfs)

Pond 103P: Gravel Wetland #103



Summary for Pond 104P: Gravel Wetland #104

[80] Warning: Exceeded Pond C31P by 0.02' @ 19.75 hrs (0.93 cfs 0.075 af)

Inflow Area = 0.377 ac, 61.80% Impervious, Inflow Depth > 3.03" for 10YR - 24HR event
Inflow = 1.26 cfs @ 12.09 hrs, Volume= 0.095 af
Outflow = 0.50 cfs @ 12.34 hrs, Volume= 0.063 af, Atten= 60%, Lag= 15.1 min
Primary = 0.01 cfs @ 12.34 hrs, Volume= 0.012 af
Secondary = 0.49 cfs @ 12.34 hrs, Volume= 0.050 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 216.40' @ 12.34 hrs Surf.Area= 2,269 sf Storage= 1,750 cf
Flood Elev= 217.00' Surf.Area= 2,491 sf Storage= 2,555 cf

Plug-Flow detention time= 173.7 min calculated for 0.062 af (66% of inflow)
Center-of-Mass det. time= 74.7 min (879.1 - 804.4)

Volume	Invert	Avail.Storage	Storage Description
#1	213.67'	34 cf	**4.00'D x 2.73'H 4' Outlet Structure**
#2	214.00'	567 cf	**Cell #1 (Irregular)** Listed below (Recalc)
#3	214.00'	471 cf	**Cell #2 (Irregular)** Listed below (Recalc)
#4	214.00'	217 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#5	216.00'	1,266 cf	**Open Water Storage (Irregular)** Listed below (Recalc)
		2,555 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
214.00	159	49.1	0	0	159
215.00	278	64.5	216	216	309
216.00	430	80.0	351	567	502

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
214.00	117	45.4	0	0	117
215.00	231	61.8	171	171	267
216.00	375	76.7	300	471	445

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
214.00	20	20.0	0	0	20
215.00	104	48.3	57	57	178
216.00	224	63.8	160	217	327

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	1,092	171.9	0	0	1,092
217.00	1,449	184.5	1,266	1,266	1,491

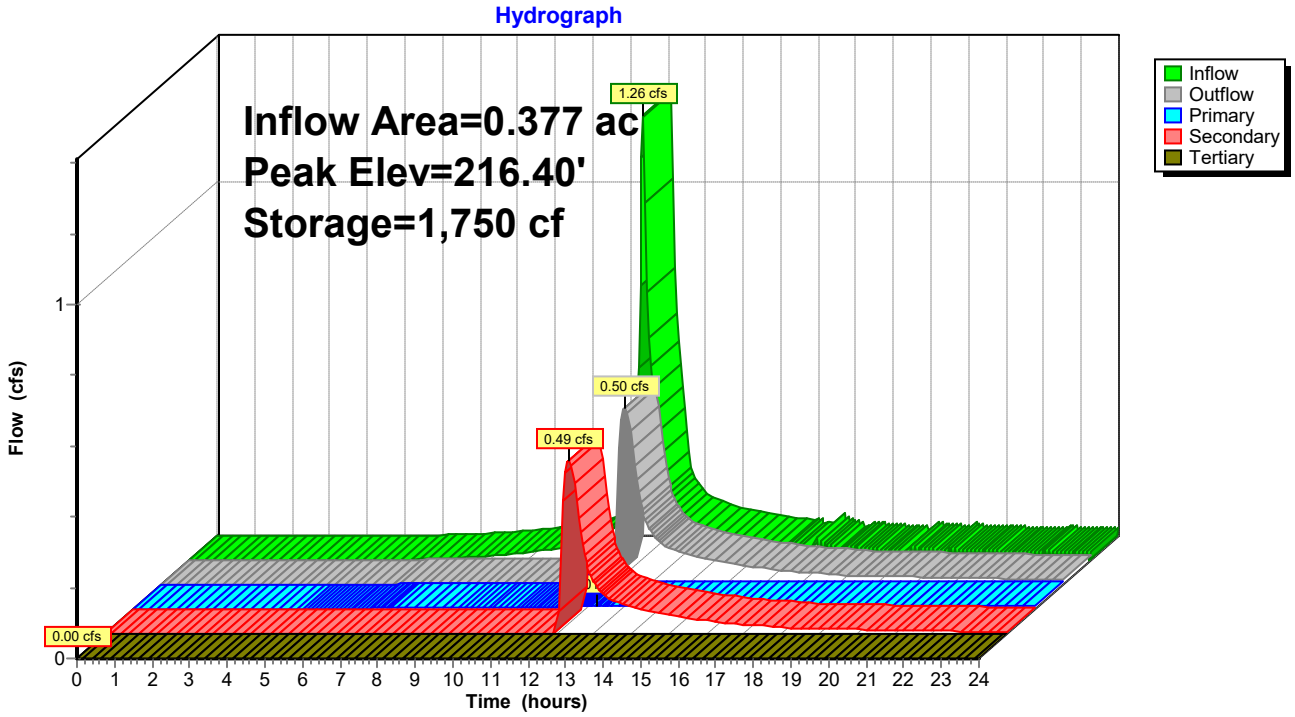
Device	Routing	Invert	Outlet Devices
#1	Primary	213.67'	**6.0" Round 6" N-12 HDPE** L= 15.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.67' / 213.00' S= 0.0427 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	213.67'	**15.0" Round 15" N-12 HDPE** L= 16.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.67' / 213.00' S= 0.0406 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#3	Device 1	213.67'	**0.5" Vert. 0.50" Orifice Goose Neck** C= 0.600
#4	Device 2	216.10'	**12.0" W x 3.0" H Vert. 3" X 12" Box Orifice** C= 0.600
#5	Device 2	216.40'	**48.0" Horiz. 12" Horizontal Orifice** C= 0.600 Limited to weir flow at low heads
#6	Tertiary	216.50'	**5.0' long x 7.0' breadth E-Spillway** 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) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.01 cfs @ 12.34 hrs HW=216.40' TW=213.50' (Dynamic Tailwater)
└─**1=6" N-12 HDPE** (Passes 0.01 cfs of 1.49 cfs potential flow)
  └─**3=0.50" Orifice Goose Neck** (Orifice Controls 0.01 cfs @ 7.92 fps)

Secondary OutFlow Max=0.49 cfs @ 12.34 hrs HW=216.40' TW=213.50' (Dynamic Tailwater)
└─**2=15" N-12 HDPE** (Passes 0.49 cfs of 8.57 cfs potential flow)
  ├─**4=3" X 12" Box Orifice** (Orifice Controls 0.49 cfs @ 1.95 fps)
  └─**5=12" Horizontal Orifice** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=213.67' TW=212.00' (Dynamic Tailwater)
└─**6=E-Spillway** (Controls 0.00 cfs)

Pond 104P: Gravel Wetland #104



Summary for Pond 105P: Rain Garden #105

[80] Warning: Exceeded Pond C35P by 0.02' @ 22.70 hrs (0.85 cfs 0.206 af)
[80] Warning: Exceeded Pond C39P by 0.01' @ 18.00 hrs (0.72 cfs 0.129 af)

Inflow Area = 2.031 ac, 53.81% Impervious, Inflow Depth > 2.83" for 10YR - 24HR event
Inflow = 4.36 cfs @ 12.09 hrs, Volume= 0.479 af
Outflow = 0.90 cfs @ 12.90 hrs, Volume= 0.338 af, Atten= 79%, Lag= 48.4 min
Primary = 0.90 cfs @ 12.90 hrs, Volume= 0.338 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 218.85' @ 12.90 hrs Surf.Area= 1,035 sf Storage= 8,297 cf
Flood Elev= 220.50' Surf.Area= 1,035 sf Storage= 15,999 cf

Plug-Flow detention time= 221.5 min calculated for 0.338 af (71% of inflow)
Center-of-Mass det. time= 112.1 min (948.3 - 836.2)

Volume	Invert	Avail.Storage	Storage Description
#1	212.50'	414 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 1,035 cf Overall x 40.0% Voids
#2	213.50'	414 cf	**Bio-media (Irregular)** Listed below (Recalc) 2,070 cf Overall x 20.0% Voids
#3	215.75'	3,420 cf	**RG Cell (Irregular)** Listed below (Recalc) -Impervious
#4	218.00'	10,238 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	215.50'	52 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 259 cf Overall x 20.0% Voids
#6	216.00'	454 cf	**Sediment Forebay #1 (Irregular)** Listed below (Recalc) -Impervious
#7	216.00'	677 cf	**Sediment Forebay #2 (Irregular)** Listed below (Recalc) -Impervious
#8	218.00'	330 cf	**Sediment Forebay #3 (Irregular)** Listed below (Recalc) -Impervious
		15,999 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.50	1,035	147.0	0	0	1,035
213.50	1,035	147.0	1,035	1,035	1,182

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
213.50	1,035	147.0	0	0	1,035
215.50	1,035	147.0	2,070	2,070	1,329

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
215.75	1,035	147.0	0	0	1,035
216.00	1,148	152.3	273	273	1,167
217.00	1,567	170.9	1,352	1,625	1,672
218.00	2,033	190.7	1,795	3,420	2,269

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
218.00	2,898	222.9	0	0	2,898
219.00	3,889	244.5	3,381	3,381	3,735
220.00	4,805	306.0	4,339	7,720	6,443
220.50	5,271	315.8	2,518	10,238	6,952

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
215.50	1,035	147.0	0	0	1,035
215.75	1,035	147.0	259	259	1,072

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	85	42.0	0	0	85
217.00	220	61.0	147	147	249
218.00	402	79.4	306	454	466

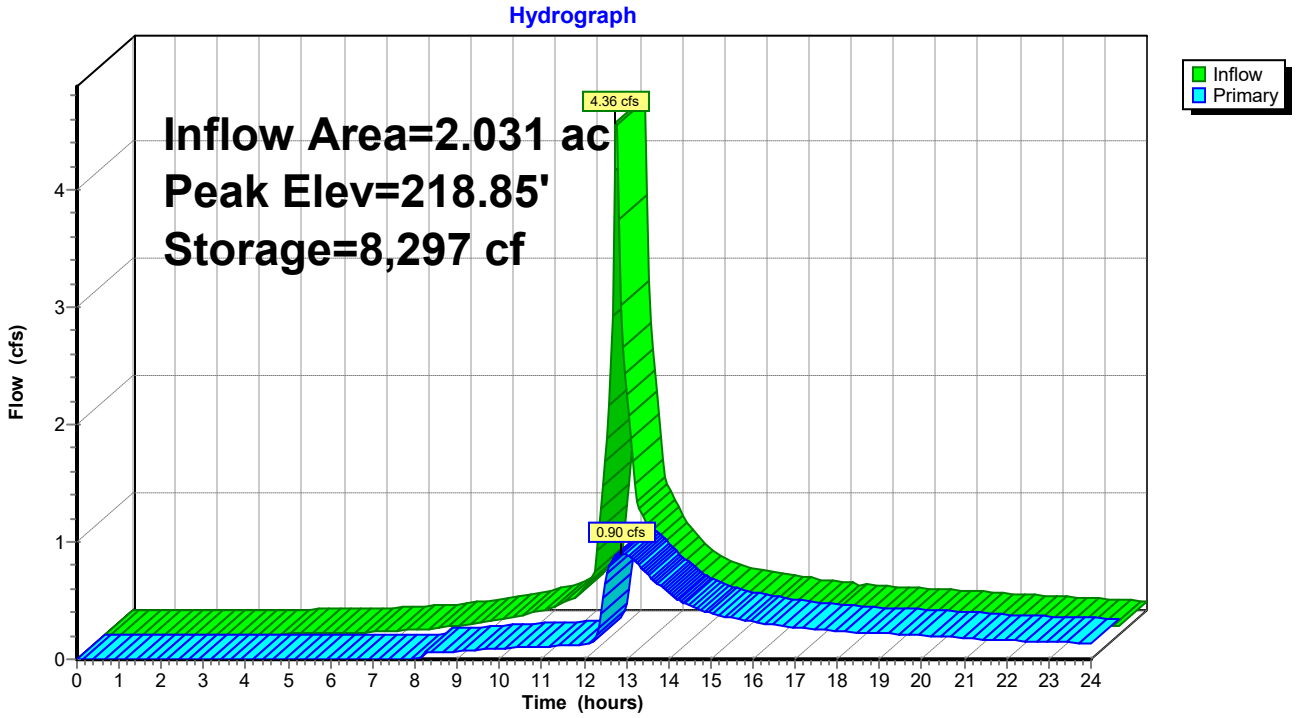
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	147	59.8	0	0	147
217.00	331	79.4	233	233	375
218.00	568	99.2	444	677	670

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
218.00	33	20.7	0	0	33
219.00	153	47.3	86	86	181
220.00	350	74.0	245	330	446

Device	Routing	Invert	Outlet Devices
#1	Primary	212.50'	**18.0" Round 18" HDPE N-12** L= 91.5' Ke= 0.500 Inlet / Outlet Invert= 212.50' / 212.00' S= 0.0055 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	212.50'	**1.5" Vert. 1.50" Orifice** C= 0.600
#3	Device 2	213.50'	**10.000 in/hr Exfiltration over Surface area**
#4	Device 1	219.95'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#5	Device 1	218.25'	**3.0" Vert. 3" Orifice** C= 0.600
#6	Device 1	218.50'	**6.0" Vert. 6" Orifice (2) X 2.00** C= 0.600
#7	Device 1	219.00'	**6.0" Vert. 6" Orifice (2) X 2.00** C= 0.600
#8	Device 1	219.45'	**12.0" W x 6.0" H Vert. 6"X12" Box Orifice** C= 0.600

Primary OutFlow Max=0.90 cfs @ 12.90 hrs HW=218.85' TW=212.62' (Dynamic Tailwater)
- **1=18" HDPE N-12** (Passes 0.90 cfs of 19.17 cfs potential flow)
  - **2=1.50" Orifice** (Orifice Controls 0.15 cfs @ 12.01 fps)
    - **3=Exfiltration** (Passes 0.15 cfs of 0.24 cfs potential flow)
  - **4=48" Structure** (Controls 0.00 cfs)
  - **5=3" Orifice** (Orifice Controls 0.16 cfs @ 3.31 fps)
  - **6=6" Orifice (2)** (Orifice Controls 0.59 cfs @ 2.01 fps)
  - **7=6" Orifice (2)** (Controls 0.00 cfs)
  - **8=6"X12" Box Orifice** (Controls 0.00 cfs)

Pond 105P: Rain Garden #105



Summary for Pond 106P: Rain Garden #106

[80] Warning: Exceeded Pond 49P by 0.80' @ 12.95 hrs (5.18 cfs 2.026 af)
[80] Warning: Exceeded Pond C41P by 0.02' @ 22.65 hrs (0.90 cfs 0.284 af)

Inflow Area = 1.305 ac, 35.12% Impervious, Inflow Depth > 1.51" for 10YR - 24HR event
Inflow = 1.71 cfs @ 12.16 hrs, Volume= 0.164 af
Outflow = 0.19 cfs @ 13.23 hrs, Volume= 0.089 af, Atten= 89%, Lag= 64.2 min
Primary = 0.19 cfs @ 13.23 hrs, Volume= 0.089 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 218.55' @ 13.23 hrs Surf.Area= 525 sf Storage= 3,802 cf
Flood Elev= 220.00' Surf.Area= 525 sf Storage= 7,955 cf

Plug-Flow detention time= 271.7 min calculated for 0.089 af (54% of inflow)
Center-of-Mass det. time= 137.9 min (972.1 - 834.2)

Volume	Invert	Avail.Storage	Storage Description
#1	212.75'	210 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 525 cf Overall x 40.0% Voids
#2	213.75'	210 cf	**Bio-media (Irregular)** Listed below (Recalc) 1,050 cf Overall x 20.0% Voids
#3	216.00'	1,936 cf	**Rain Garden Cell (Irregular)** Listed below (Recalc) -Impervious
#4	218.00'	4,709 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	215.75'	26 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 131 cf Overall x 20.0% Voids
#6	216.00'	864 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		7,955 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.75	525	89.9	0	0	525
213.75	525	89.9	525	525	615

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
213.75	525	89.9	0	0	525
215.75	525	89.9	1,050	1,050	705

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	525	89.9	0	0	525
217.00	985	123.1	743	743	1,098
218.00	1,413	148.2	1,193	1,936	1,656

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
218.00	525	89.9	0	0	525
219.00	2,819	223.0	1,520	1,520	3,843
220.00	3,573	254.3	3,189	4,709	5,055

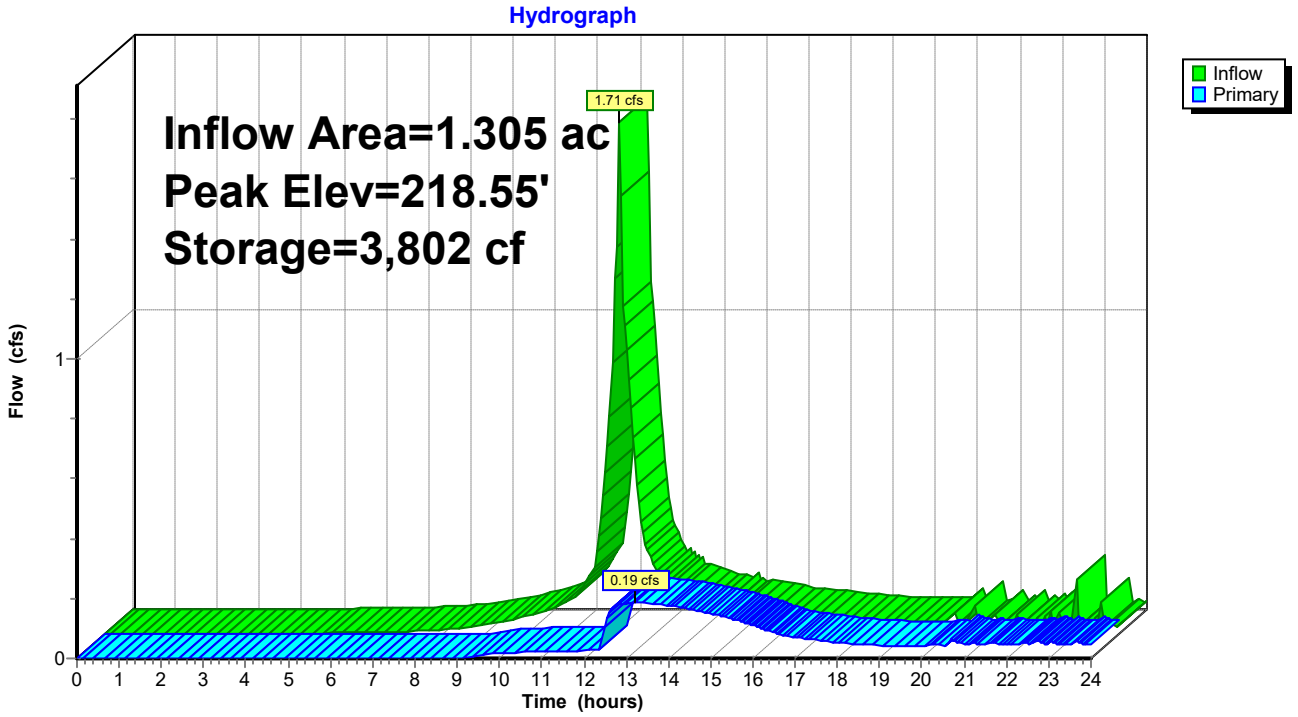
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
215.75	525	89.9	0	0	525
216.00	525	89.9	131	131	547

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	236	56.5	0	0	236
217.00	420	74.7	324	324	437
218.00	671	96.6	541	864	748

Device	Routing	Invert	Outlet Devices
#1	Primary	212.75'	**15.0" Round 15" HDPE N-12** L= 95.0' Ke= 0.500 Inlet / Outlet Invert= 212.75' / 211.00' S= 0.0184 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	212.75'	**0.7" Vert. 0.75" Orifice** C= 0.600
#3	Device 2	213.75'	**10.000 in/hr Exfiltration over Surface area**
#4	Device 1	218.00'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 1	218.75'	**4.0" Vert. 4" Orifice** C= 0.600
#6	Device 1	219.75'	**48.0" Horiz. 48" Top Structure** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.19 cfs @ 13.23 hrs HW=218.55' TW=211.05' (Dynamic Tailwater)
- **1=15" HDPE N-12** (Passes 0.19 cfs of 13.44 cfs potential flow)
  - **2=0.75" Orifice** (Orifice Controls 0.03 cfs @ 11.57 fps)
    - **3=Exfiltration** (Passes 0.03 cfs of 0.12 cfs potential flow)
  - **4=3" Orifice** (Orifice Controls 0.15 cfs @ 3.16 fps)
  - **5=4" Orifice** (Controls 0.00 cfs)
  - **6=48" Top Structure** (Controls 0.00 cfs)

Pond 106P: Rain Garden #106



Summary for Pond 107P: Rain Garden #107

Inflow Area = 6.353 ac, 13.96% Impervious, Inflow Depth > 1.57" for 10YR - 24HR event
Inflow = 5.75 cfs @ 12.18 hrs, Volume= 0.831 af
Outflow = 1.51 cfs @ 13.17 hrs, Volume= 0.564 af, Atten= 74%, Lag= 59.6 min
Discarded = 0.02 cfs @ 10.55 hrs, Volume= 0.018 af
Primary = 1.49 cfs @ 13.17 hrs, Volume= 0.546 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 228.77' @ 13.17 hrs Surf.Area= 2,300 sf Storage= 16,012 cf
Flood Elev= 231.00' Surf.Area= 2,300 sf Storage= 34,921 cf

Plug-Flow detention time= 221.4 min calculated for 0.563 af (68% of inflow)
Center-of-Mass det. time= 114.0 min (974.1 - 860.1)

Volume	Invert	Avail.Storage	Storage Description
#1	222.75'	920 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 2,300 cf Overall x 40.0% Voids
#2	223.75'	920 cf	**Bio-media (Irregular)** Listed below (Recalc) 4,600 cf Overall x 20.0% Voids
#3	225.75'	115 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 575 cf Overall x 20.0% Voids
#4	226.00'	14,259 cf	**Infiltration Cell Storage (Irregular)** Listed below (Recalc) -Impervious
#5	229.00'	17,353 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#6	227.00'	641 cf	**Sediment Forebay #1 (Irregular)** Listed below (Recalc) -Impervious
#7	227.00'	714 cf	**Sediment Forebay #2 (Irregular)** Listed below (Recalc) -Impervious
		34,921 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
222.75	2,300	194.0	0	0	2,300
223.75	2,300	194.0	2,300	2,300	2,494

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
223.75	2,300	194.0	0	0	2,300
225.75	2,300	194.0	4,600	4,600	2,688

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.75	2,300	194.0	0	0	2,300
226.00	2,300	194.0	575	575	2,349

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
226.00	3,712	241.0	0	0	3,712
227.00	4,380	262.0	4,041	4,041	4,589
228.00	5,101	282.0	4,736	8,777	5,497
229.00	5,871	302.0	5,481	14,259	6,471

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
229.00	7,610	343.5	0	0	7,610
230.00	8,668	362.0	8,133	8,133	8,707
231.00	9,783	381.1	9,220	17,353	9,896

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
227.00	115	41.3	0	0	115
228.00	312	74.3	205	205	424
229.00	571	103.5	435	641	847

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
227.00	144	49.8	0	0	144
228.00	345	81.0	237	237	475
229.00	622	111.6	477	714	954

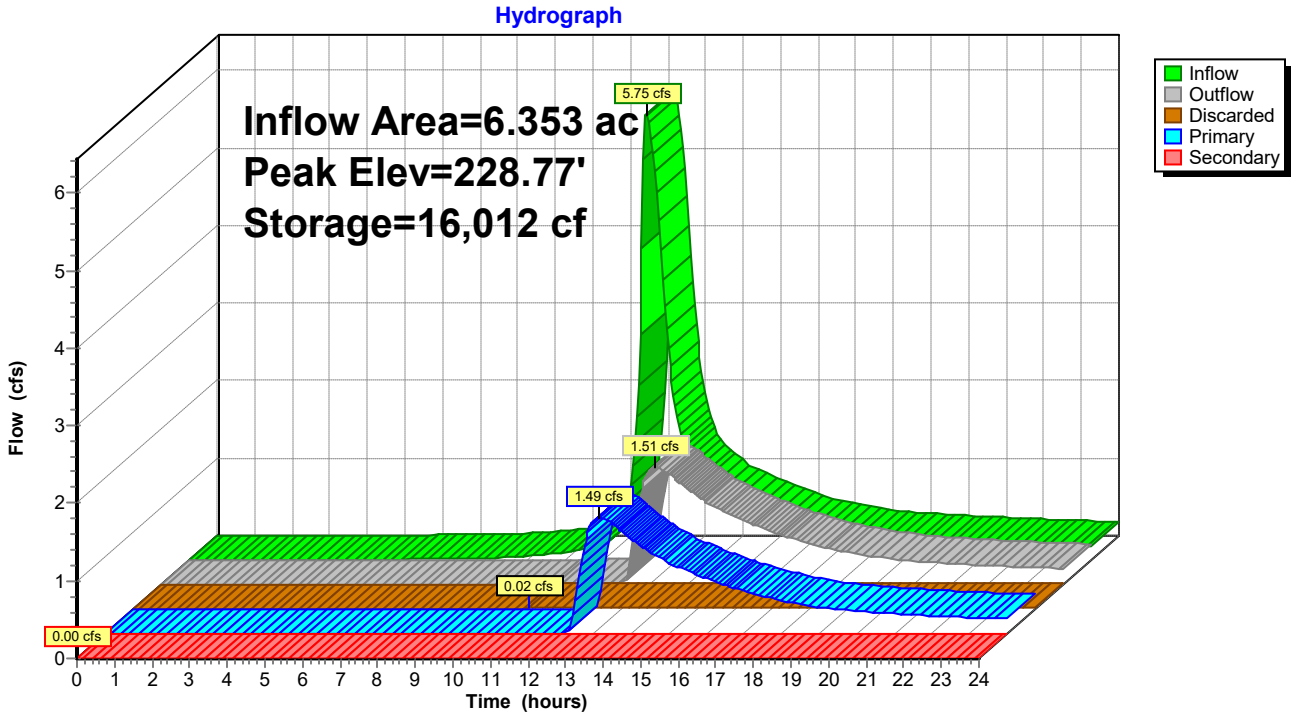
Device	Routing	Invert	Outlet Devices
#1	Primary	223.50'	**15.0" Round 15" HDPE N-12** L= 27.5' Ke= 0.500 Inlet / Outlet Invert= 223.50' / 223.00' S= 0.0182 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Discarded	223.75'	**0.300 in/hr Exfiltration over Surface area**
#3	Device 1	227.75'	**4.0" Vert. 4" Orifice** C= 0.600
#4	Device 1	228.00'	**6.0" Vert. 6" Orifice** C= 0.600
#5	Device 1	228.40'	**8.0" Vert. 8" Orifice** C= 0.600
#6	Device 1	230.40'	**12.0" Horiz. 12" Horizontal Orifice** C= 0.600 Limited to weir flow at low heads
#7	Secondary	230.50'	**10.0' long x 11.0' breadth 10' Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Discarded OutFlow Max=0.02 cfs @ 10.55 hrs HW=223.76' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=1.49 cfs @ 13.17 hrs HW=228.77' TW=223.17' (Dynamic Tailwater)
└**1=15" HDPE N-12** (Passes 1.49 cfs of 12.74 cfs potential flow)
- **3=4" Orifice** (Orifice Controls 0.39 cfs @ 4.46 fps)
- **4=6" Orifice** (Orifice Controls 0.68 cfs @ 3.49 fps)
- **5=8" Orifice** (Orifice Controls 0.42 cfs @ 2.08 fps)
- **6=12" Horizontal Orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=222.75' TW=223.00' (Dynamic Tailwater)
└**7=10' Emergency Spillway** (Controls 0.00 cfs)

Pond 107P: Rain Garden #107



Summary for Pond 108P: Rain Garden #108

Inflow Area = 0.173 ac, 47.49% Impervious, Inflow Depth > 2.49" for 10YR - 24HR event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af
Outflow = 0.02 cfs @ 18.45 hrs, Volume= 0.024 af, Atten= 95%, Lag= 381.4 min
Primary = 0.02 cfs @ 18.45 hrs, Volume= 0.024 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 206.24' @ 15.21 hrs Surf.Area= 530 sf Storage= 953 cf
Flood Elev= 207.00' Surf.Area= 530 sf Storage= 2,072 cf

Plug-Flow detention time= 354.8 min calculated for 0.024 af (66% of inflow)
Center-of-Mass det. time= 253.6 min (1,080.9 - 827.2)

Volume	Invert	Avail.Storage	Storage Description
#1	202.50'	212 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 530 cf Overall x 40.0% Voids
#2	203.50'	212 cf	**Bio-media (Irregular)** Listed below (Recalc) 1,060 cf Overall x 20.0% Voids
#3	205.50'	27 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 133 cf Overall x 20.0% Voids
#4	205.75'	1,550 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	205.75'	72 cf	**Forebay (Irregular)** Listed below (Recalc) -Impervious
		2,072 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
202.50	530	89.7	0	0	530
203.50	530	89.7	530	530	620

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.50	530	89.7	0	0	530
205.50	530	89.7	1,060	1,060	709

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.50	530	89.7	0	0	530
205.75	530	89.7	133	133	552

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.75	530	89.7	0	0	530
206.00	1,050	140.4	194	194	1,459
206.50	1,297	161.2	586	779	1,964
207.00	1,800	205.6	771	1,550	3,263

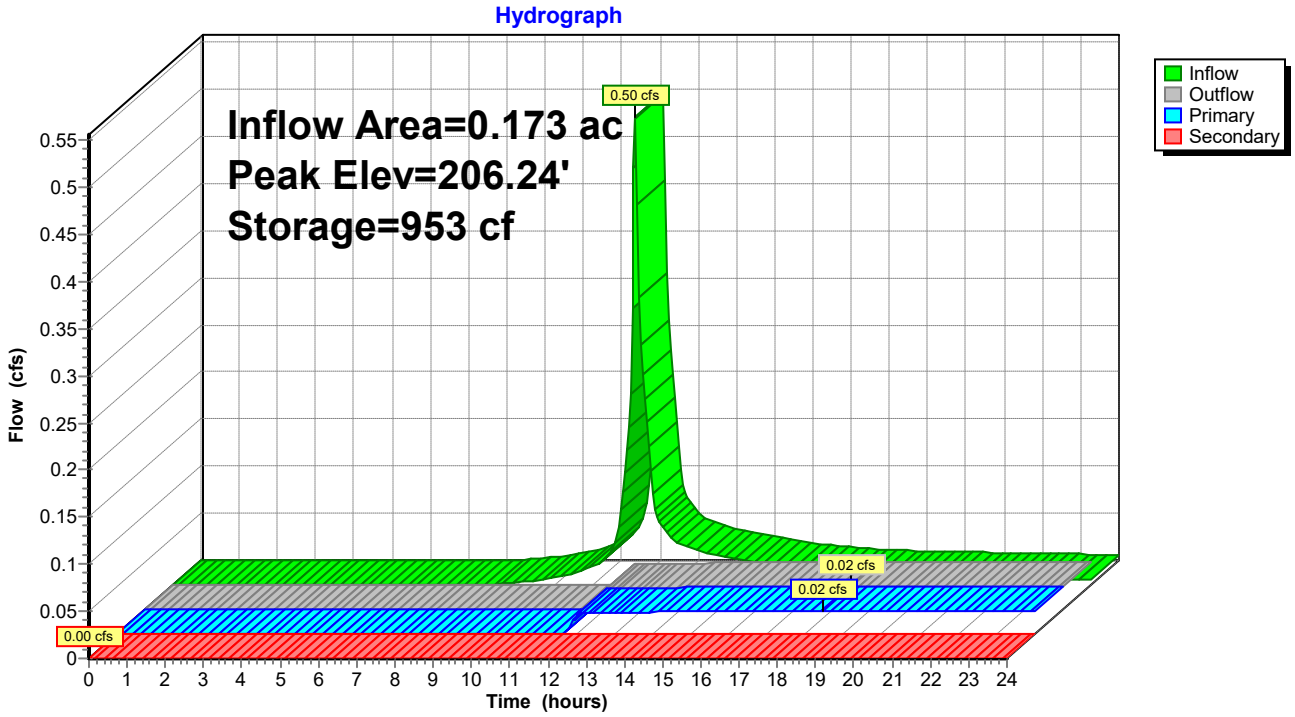
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.75	62	28.3	0	0	62
206.00	83	32.5	18	18	84
206.50	133	41.4	54	72	139

Device	Routing	Invert	Outlet Devices
#1	Primary	202.50'	**6.0" Round 6" HDPE N-12 UD** L= 22.5' Ke= 0.500 Inlet / Outlet Invert= 202.50' / 202.25' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Device 1	202.50'	**0.7" Vert. 0.75" Orifice** C= 0.600
#3	Device 2	203.50'	**10.000 in/hr Exfiltration over Surface area**
#4	Device 2	206.40'	**24.0" Horiz. 24" Drop Inlet** C= 0.600 Limited to weir flow at low heads
#5	Secondary	206.50'	**10.0' long x 7.0' breadth 10' Emergency spillway** 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) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.02 cfs @ 18.45 hrs HW=206.16' TW=202.63' (Dynamic Tailwater)
↑**1=6" HDPE N-12 UD** (Passes 0.02 cfs of 1.68 cfs potential flow)
↑**2=0.75" Orifice** (Orifice Controls 0.02 cfs @ 9.05 fps)
3=Exfiltration (Passes 0.02 cfs of 0.12 cfs potential flow)
4=24" Drop Inlet (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=202.50' TW=202.25' (Dynamic Tailwater)
↑**5=10' Emergency spillway** (Controls 0.00 cfs)

Pond 108P: Rain Garden #108



Summary for Pond 109P: Stormtech Detention Pond #109

Inflow Area = 0.804 ac, 40.14% Impervious, Inflow Depth > 2.37" for 10YR - 24HR event
Inflow = 1.78 cfs @ 12.10 hrs, Volume= 0.159 af
Outflow = 0.52 cfs @ 12.54 hrs, Volume= 0.156 af, Atten= 71%, Lag= 26.4 min
Primary = 0.52 cfs @ 12.54 hrs, Volume= 0.156 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 221.83' @ 12.54 hrs Surf.Area= 1,483 sf Storage= 2,436 cf
Flood Elev= 223.50' Surf.Area= 1,483 sf Storage= 3,531 cf

Plug-Flow detention time= 115.5 min calculated for 0.156 af (98% of inflow)
Center-of-Mass det. time= 105.8 min (921.5 - 815.7)

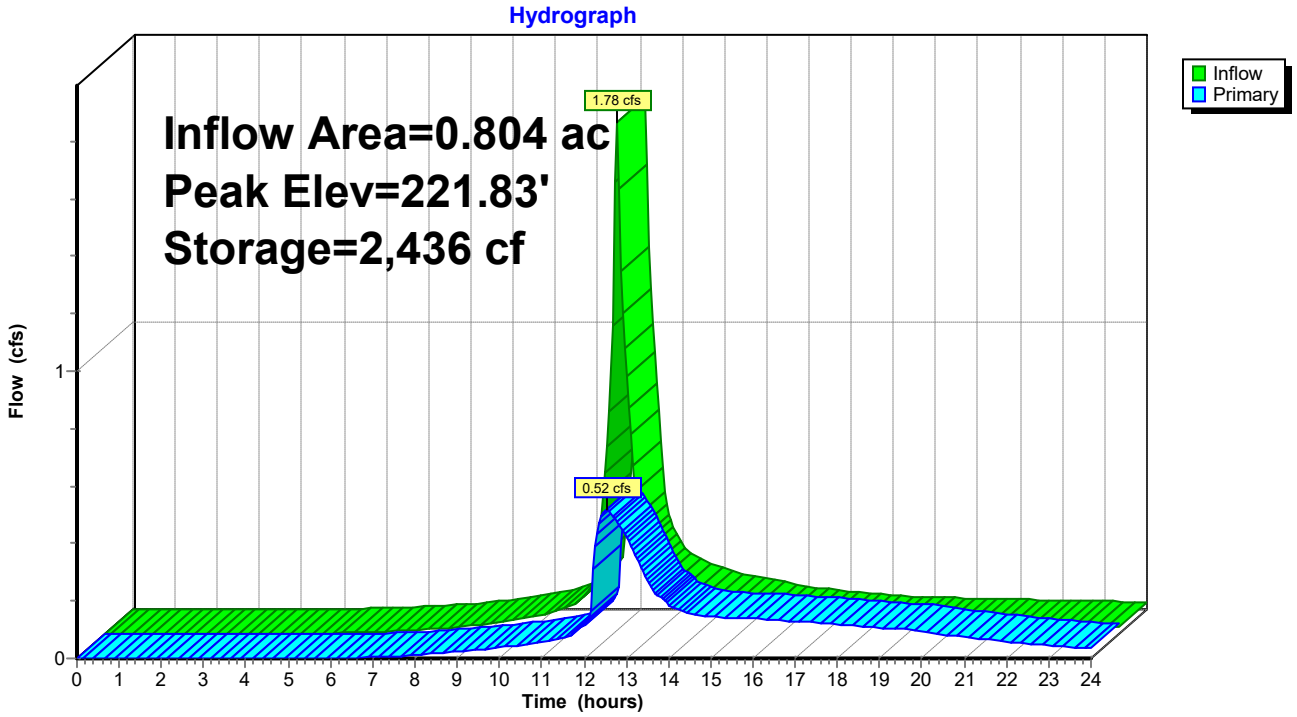
Volume	Invert	Avail.Storage	Storage Description
#1	218.90'	82 cf	**4.00'D x 6.50'H 4' Structure**
#2	219.00'	2,095 cf	**Stone Storage (Irregular)** Listed below (Recalc) 6,615 cf Overall - 1,378 cf Embedded = 5,237 cf x 40.0% Voids
#3	220.00'	1,378 cf	**ADS_StormTech SC-740 +Cap** x 30 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		3,555 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.00	1,470	156.0	0	0	1,470
223.50	1,470	156.0	6,615	6,615	2,172

Device	Routing	Invert	Outlet Devices
#1	Primary	218.90'	**15.0" Round 15" HDPE N-12** L= 32.0' Ke= 0.500 Inlet / Outlet Invert= 218.90' / 218.50' S= 0.0125 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	219.00'	**2.0" Vert. 2" Orifice** C= 0.600
#3	Device 1	221.00'	**4.0" Vert. 4" Orifice** C= 0.600
#4	Device 1	222.00'	**6.0" Vert. 6" Orifice (2) X 2.00** C= 0.600
#5	Device 1	222.75'	**15.0" Horiz. 15" Horizontal Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.52 cfs @ 12.54 hrs HW=221.83' TW=218.78' (Dynamic Tailwater)
- **1=15" HDPE N-12** (Passes 0.52 cfs of 8.97 cfs potential flow)
  - **2=2" Orifice** (Orifice Controls 0.17 cfs @ 7.98 fps)
  - **3=4" Orifice** (Orifice Controls 0.34 cfs @ 3.92 fps)
  - **4=6" Orifice (2)** (Controls 0.00 cfs)
  - **5=15" Horizontal Orifice** (Controls 0.00 cfs)

Pond 109P: Stormtech Detention Pond #109



Summary for Pond 110P: Detention Pond #110

Inflow Area = 3.325 ac, 0.00% Impervious, Inflow Depth > 1.23" for 10YR - 24HR event
Inflow = 2.65 cfs @ 12.39 hrs, Volume= 0.342 af
Outflow = 0.42 cfs @ 14.18 hrs, Volume= 0.332 af, Atten= 84%, Lag= 107.4 min
Primary = 0.42 cfs @ 14.18 hrs, Volume= 0.332 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 220.77' @ 14.18 hrs Surf.Area= 5,144 sf Storage= 5,939 cf
Flood Elev= 224.00' Surf.Area= 8,531 sf Storage= 20,244 cf

Plug-Flow detention time= 170.9 min calculated for 0.331 af (97% of inflow)
Center-of-Mass det. time= 155.5 min (1,042.9 - 887.4)

Volume	Invert	Avail.Storage	Storage Description
#1	217.50'	2,079 cf	**Detention Area (Irregular)** Listed below (Recalc)
#2	217.50'	483 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#3	219.50'	17,681 cf	**Open Water Storage (Irregular)** Listed below (Recalc)
		20,244 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
217.50	608	91.8	0	0	608
218.00	744	101.3	337	337	762
219.00	1,298	134.0	1,008	1,346	1,385
219.50	1,644	152.0	734	2,079	1,801

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
217.50	89	39.4	0	0	89
218.00	152	49.6	60	60	165
219.00	327	71.8	234	294	387
219.50	434	82.0	190	483	518

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.50	2,290	188.9	0	0	2,290
220.00	2,581	198.3	1,217	1,217	2,595
221.00	3,222	220.7	2,896	4,113	3,371
222.00	3,916	234.0	3,563	7,676	3,903
223.00	4,848	267.9	4,374	12,050	5,280
224.00	6,453	300.1	5,631	17,681	6,763

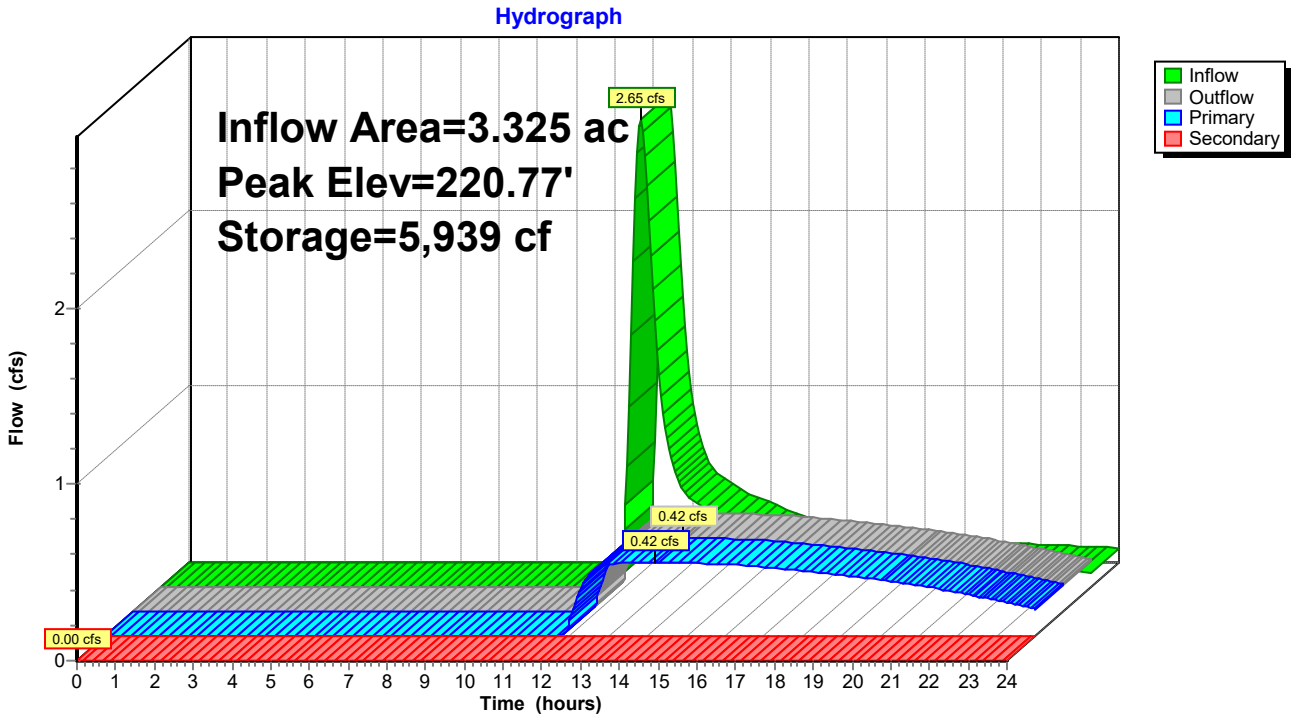
Device	Routing	Invert	Outlet Devices
#1	Primary	217.50'	**15.0" Round 15" HDPE N-12** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 217.50' / 217.00' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	217.50'	**3.0" Vert. 3" Orifice** C= 0.600
#3	Device 1	222.00'	**3.0" Vert. 3" Orifice** C= 0.600
#4	Device 1	223.40'	**48.0" Horiz. 48" Outlet Structure** C= 0.600

			Limited to weir flow at low heads
#5	Secondary	223.50'	**10.0' long x 7.0' breadth 10' Emergency Spillway**
			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) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.42 cfs @ 14.18 hrs HW=220.77' TW=217.60' (Dynamic Tailwater)
- **1=15" HDPE N-12** (Passes 0.42 cfs of 9.60 cfs potential flow)
  - **2=3" Orifice** (Orifice Controls 0.42 cfs @ 8.53 fps)
  - **3=3" Orifice** (Controls 0.00 cfs)
  - **4=48" Outlet Structure** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=217.50' TW=217.50' (Dynamic Tailwater)
- **5=10' Emergency Spillway** (Controls 0.00 cfs)

Pond 110P: Detention Pond #110



Summary for Pond C30P: CB #30

[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[80] Warning: Exceeded Pond 1P by 0.02' @ 12.65 hrs (0.81 cfs 0.003 af)

Inflow Area = 6.238 ac, 6.84% Impervious, Inflow Depth > 1.12" for 10YR - 24HR event
Inflow = 3.47 cfs @ 12.51 hrs, Volume= 0.580 af
Outflow = 3.48 cfs @ 12.51 hrs, Volume= 0.580 af, Atten= 0%, Lag= 0.0 min
Primary = 3.48 cfs @ 12.51 hrs, Volume= 0.580 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 202.42' @ 12.62 hrs Surf.Area= 20 sf Storage= 42 cf
Flood Elev= 204.00' Surf.Area= 38 sf Storage= 73 cf

Plug-Flow detention time= 0.3 min calculated for 0.580 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (901.3 - 901.1)

Volume	Invert	Avail.Storage	Storage Description
#1	200.30'	73 cf	**5.00'D x 3.70'H 5' Structure**
#2	204.00'	53 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)
		126 cf	Total Available Storage

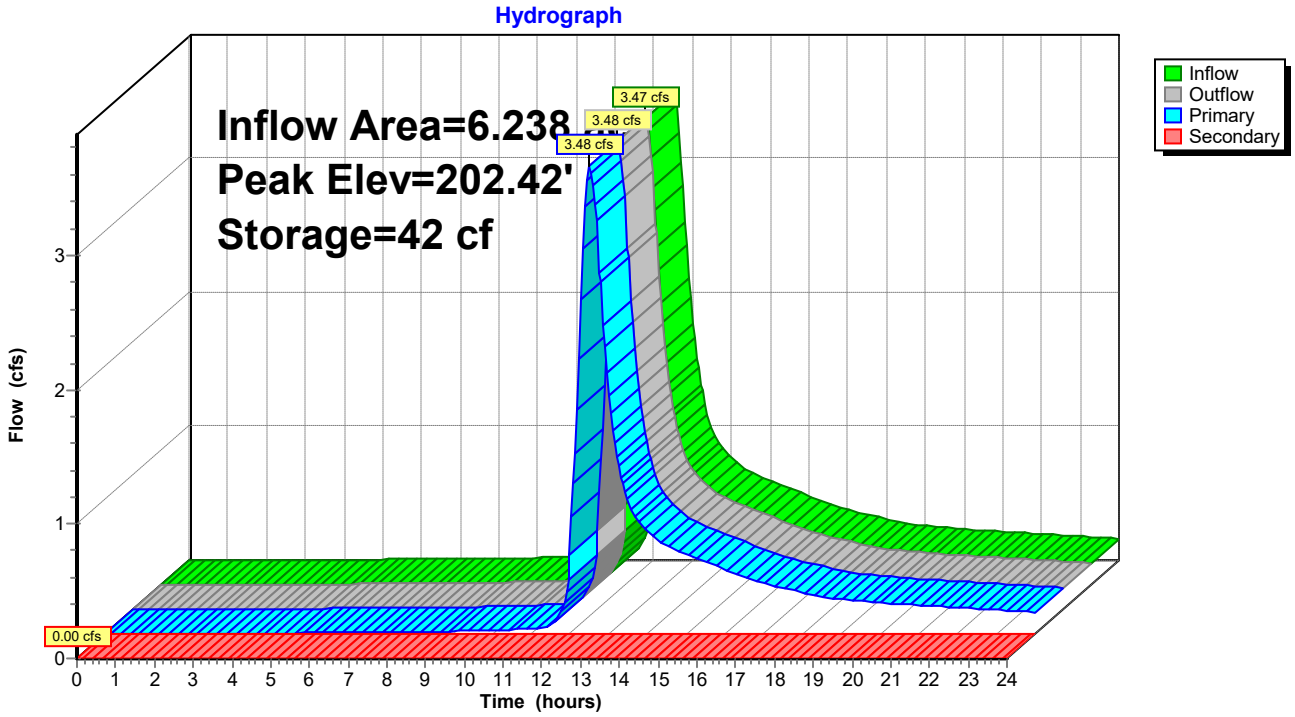
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
204.00	18	18.0	0	0	18
204.50	237	94.0	53	53	696

Device	Routing	Invert	Outlet Devices
#1	Primary	200.30'	**15.0" Round 15" HDPE N-12** L= 23.0' Ke= 0.500 Inlet / Outlet Invert= 200.30' / 200.17' S= 0.0057 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	204.25'	**2.0' long x 2.0' breadth Ponding Outlet** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=2.41 cfs @ 12.51 hrs HW=202.26' TW=202.10' (Dynamic Tailwater)
1=15" HDPE N-12 (Inlet Controls 2.41 cfs @ 1.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=200.30' TW=200.00' (Dynamic Tailwater)
2=Ponding Outlet (Controls 0.00 cfs)

Pond C30P: CB #30



Summary for Pond C31P: CB #31

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=39)
[80] Warning: Exceeded Pond C32P by 0.19' @ 12.10 hrs (2.58 cfs 0.363 af)

Inflow Area = 0.332 ac, 70.09% Impervious, Inflow Depth > 3.30" for 10YR - 24HR event
Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.091 af
Outflow = 1.21 cfs @ 12.09 hrs, Volume= 0.091 af, Atten= 1%, Lag= 0.0 min
Primary = 1.21 cfs @ 12.09 hrs, Volume= 0.091 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 216.40' @ 12.33 hrs Surf.Area= 13 sf Storage= 28 cf
Flood Elev= 217.85' Surf.Area= 13 sf Storage= 46 cf

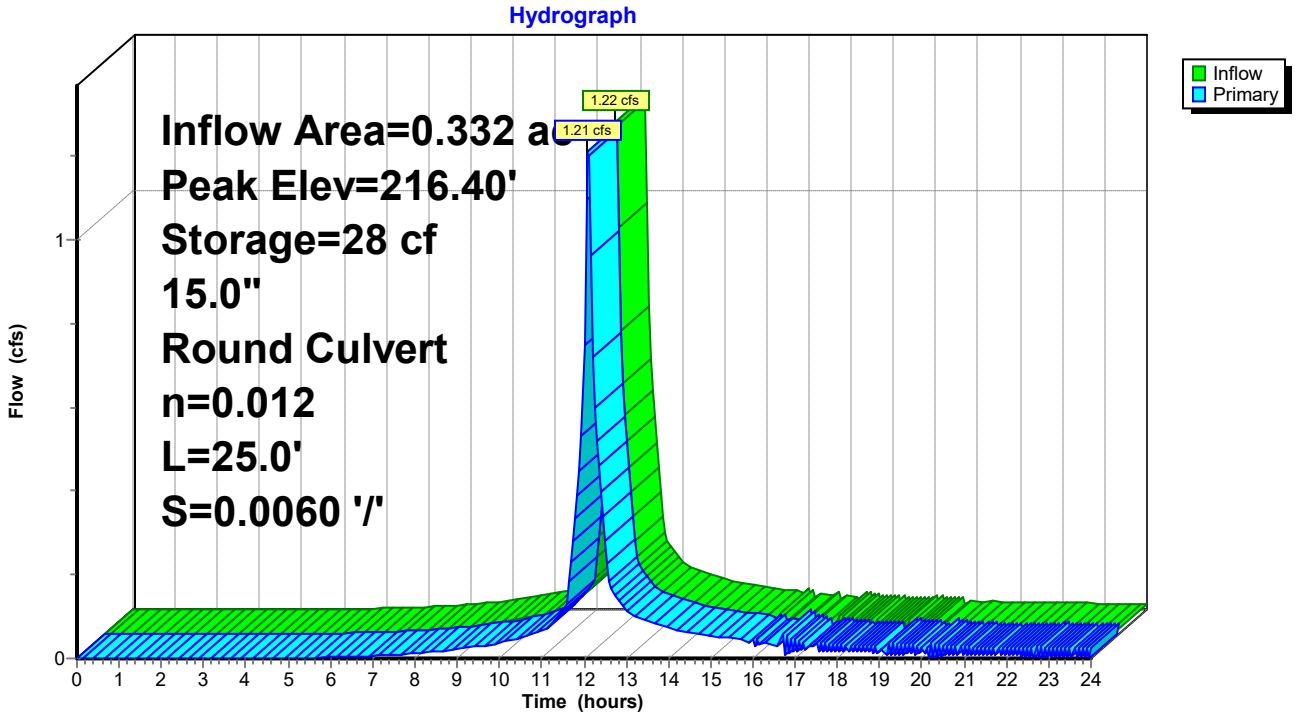
Plug-Flow detention time= 5.0 min calculated for 0.091 af (99% of inflow)
Center-of-Mass det. time= 0.8 min (800.8 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	214.15'	46 cf	**4.00'D x 3.65'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	214.15'	**15.0" Round 15" HDPE N-12** L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 214.15' / 214.00' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.21 cfs @ 12.09 hrs HW=216.10' TW=216.05' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Inlet Controls 1.21 cfs @ 0.99 fps)

Pond C31P: CB #31



Summary for Pond C32P: CB #32

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=45)

Inflow Area = 0.176 ac, 61.20% Impervious, Inflow Depth > 3.03" for 10YR - 24HR event
Inflow = 0.61 cfs @ 12.09 hrs, Volume= 0.045 af
Outflow = 0.60 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 2%, Lag= 0.0 min
Primary = 0.60 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 216.40' @ 12.38 hrs Surf.Area= 13 sf Storage= 25 cf
Flood Elev= 217.85' Surf.Area= 13 sf Storage= 43 cf

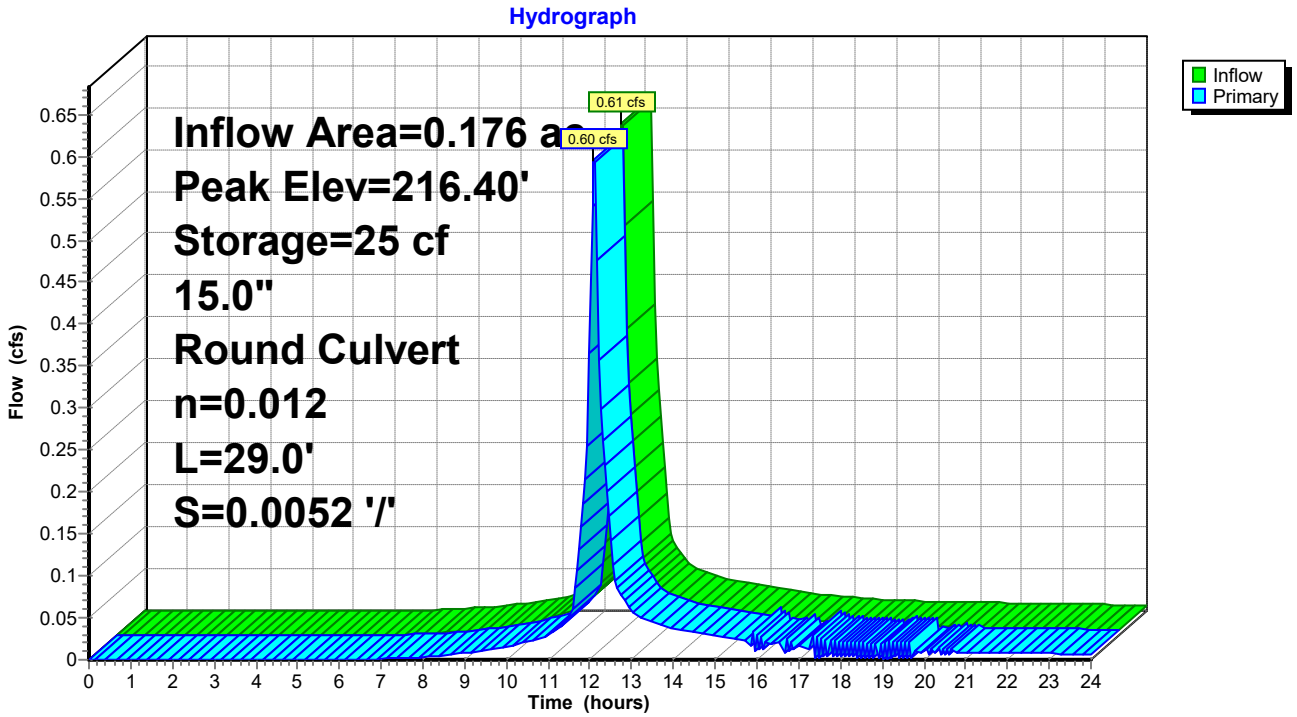
Plug-Flow detention time= 8.4 min calculated for 0.044 af (99% of inflow)
Center-of-Mass det. time= 1.3 min (811.3 - 810.0)

Volume	Invert	Avail.Storage	Storage Description
#1	214.40'	43 cf	**4.00'D x 3.40'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	214.40'	**15.0" Round 15" HDPE N-12** L= 29.0' Ke= 0.500 Inlet / Outlet Invert= 214.40' / 214.25' S= 0.0052 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=215.91' TW=216.10' (Dynamic Tailwater)
1=15" HDPE N-12 (Controls 0.00 cfs)

Pond C32P: CB #32



Summary for Pond C33P: CB #33

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=46)

Inflow Area = 0.334 ac, 62.46% Impervious, Inflow Depth > 2.94" for 10YR - 24HR event
Inflow = 1.12 cfs @ 12.09 hrs, Volume= 0.082 af
Outflow = 1.12 cfs @ 12.09 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 1.12 cfs @ 12.09 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 214.39' @ 16.30 hrs Surf.Area= 13 sf Storage= 24 cf
Flood Elev= 215.90' Surf.Area= 13 sf Storage= 43 cf

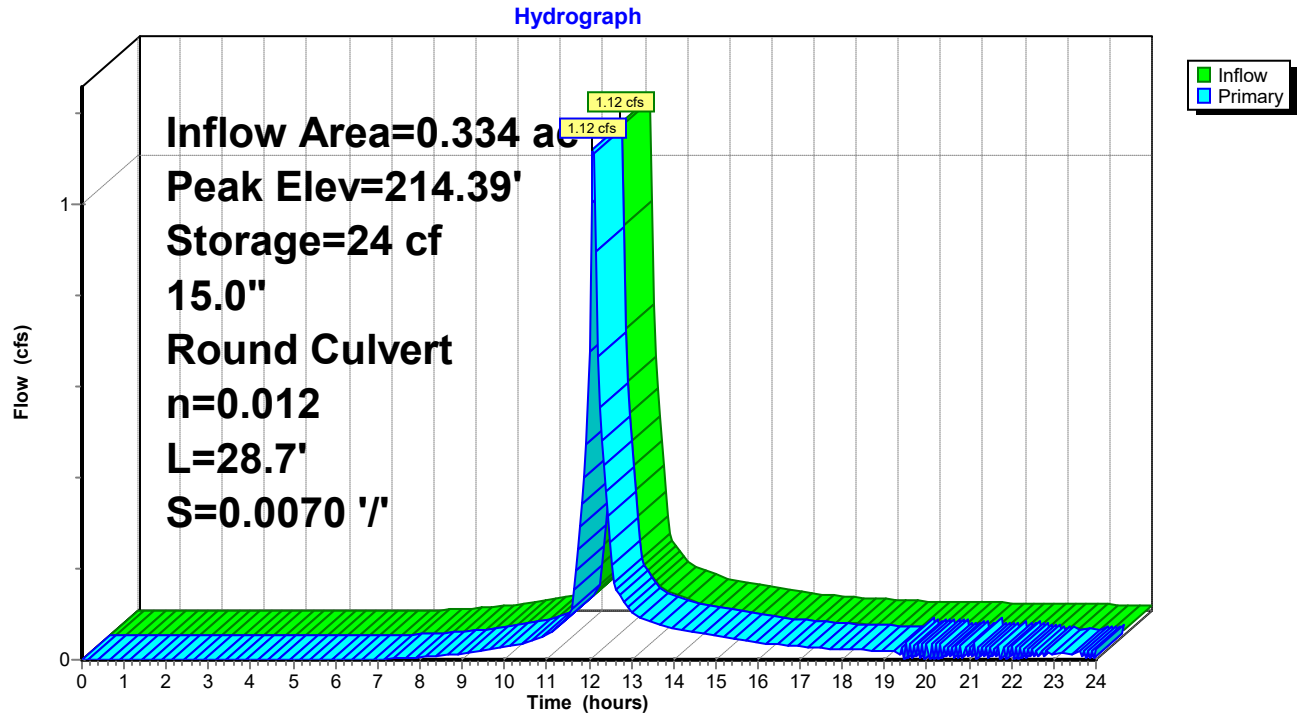
Plug-Flow detention time= 4.7 min calculated for 0.081 af (99% of inflow)
Center-of-Mass det. time= 0.8 min (813.8 - 813.0)

Volume	Invert	Avail.Storage	Storage Description
#1	212.50'	43 cf	**4.00'D x 3.40'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	212.50'	**15.0" Round 15" HDPE N-12** L= 28.7' Ke= 0.500 Inlet / Outlet Invert= 212.50' / 212.30' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=213.40' TW=213.44' (Dynamic Tailwater)
1=15" HDPE N-12 (Controls 0.00 cfs)

Pond C33P: CB #33



Summary for Pond C34P: CB #34

Inflow Area = 0.119 ac,100.00% Impervious, Inflow Depth > 4.40" for 10YR - 24HR event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.043 af
Outflow = 0.53 cfs @ 12.09 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.1 min
Primary = 0.53 cfs @ 12.09 hrs, Volume= 0.043 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 216.89' @ 12.09 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 220.05' Surf.Area= 13 sf Storage= 44 cf

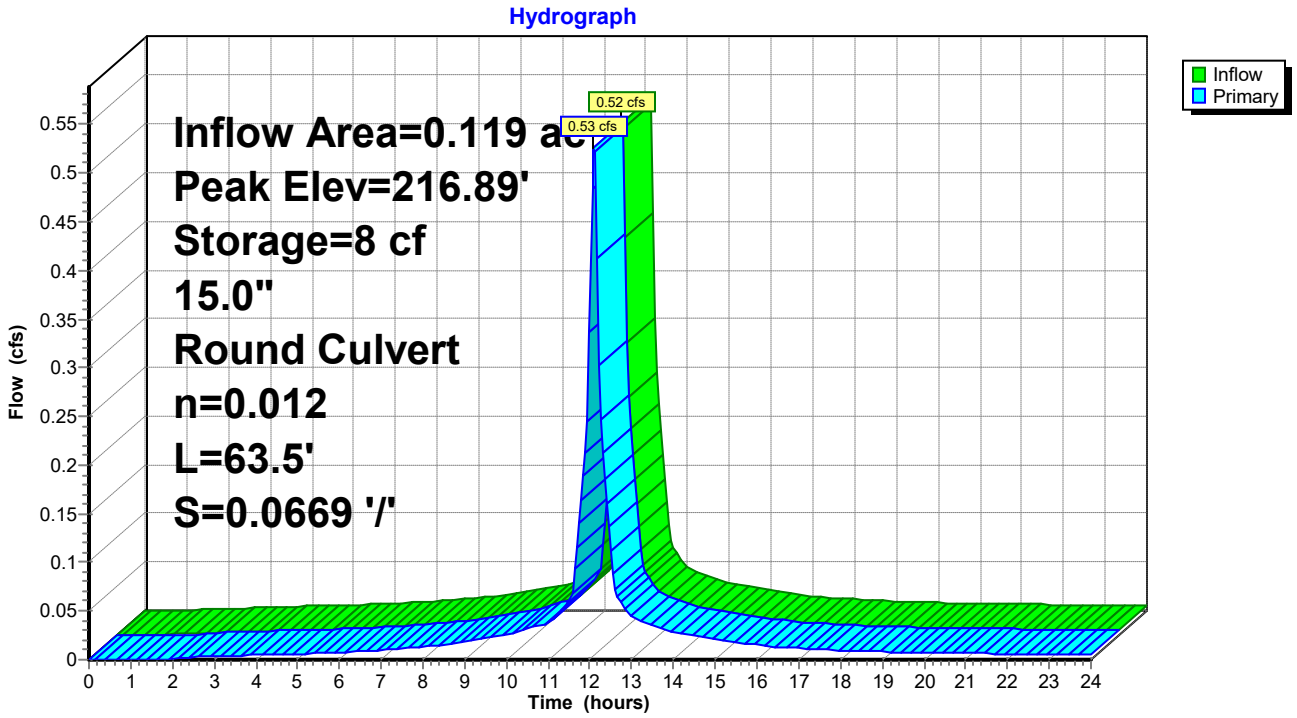
Plug-Flow detention time= 3.1 min calculated for 0.043 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (750.5 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1	216.25'	44 cf	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	216.55'	**15.0" Round 15" HDPE N-12** L= 63.5' Ke= 0.500 Inlet / Outlet Invert= 216.55' / 212.30' S= 0.0669 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.51 cfs @ 12.09 hrs HW=216.88' TW=213.43' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Inlet Controls 0.51 cfs @ 1.96 fps)

Pond C34P: CB #34



Summary for Pond C35P: CB #35

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=38)

Inflow Area = 0.179 ac, 68.21% Impervious, Inflow Depth > 3.23" for 10YR - 24HR event
Inflow = 0.66 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.64 cfs @ 12.09 hrs, Volume= 0.048 af, Atten= 3%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.09 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 218.85' @ 12.90 hrs Surf.Area= 13 sf Storage= 28 cf
Flood Elev= 220.10' Surf.Area= 13 sf Storage= 44 cf

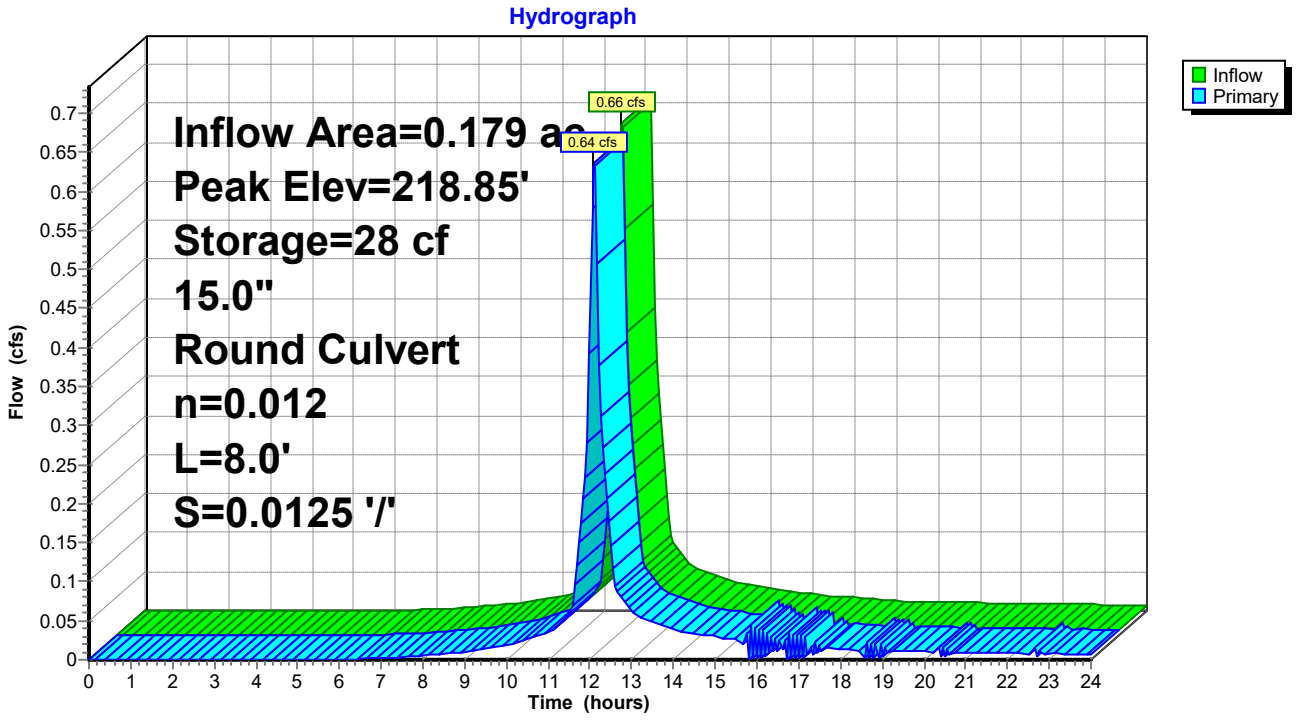
Plug-Flow detention time= 9.2 min calculated for 0.048 af (98% of inflow)
Center-of-Mass det. time= 1.4 min (804.9 - 803.5)

Volume	Invert	Avail.Storage	Storage Description
#1	216.60'	44 cf	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	216.60'	**15.0" Round 15" HDPE N-12** L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 216.60' / 216.50' S= 0.0125 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.69 cfs @ 12.09 hrs HW=217.75' TW=217.74' (Dynamic Tailwater)
1=15" HDPE N-12 (Inlet Controls 0.69 cfs @ 0.58 fps)

Pond C35P: CB #35



Summary for Pond C36P: CB #36

Inflow Area = 0.683 ac, 34.85% Impervious, Inflow Depth > 2.23" for 10YR - 24HR event
Inflow = 1.37 cfs @ 12.10 hrs, Volume= 0.127 af
Outflow = 1.37 cfs @ 12.10 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.1 min
Primary = 1.37 cfs @ 12.10 hrs, Volume= 0.127 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 224.70' @ 12.10 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 227.58' Surf.Area= 13 sf Storage= 44 cf

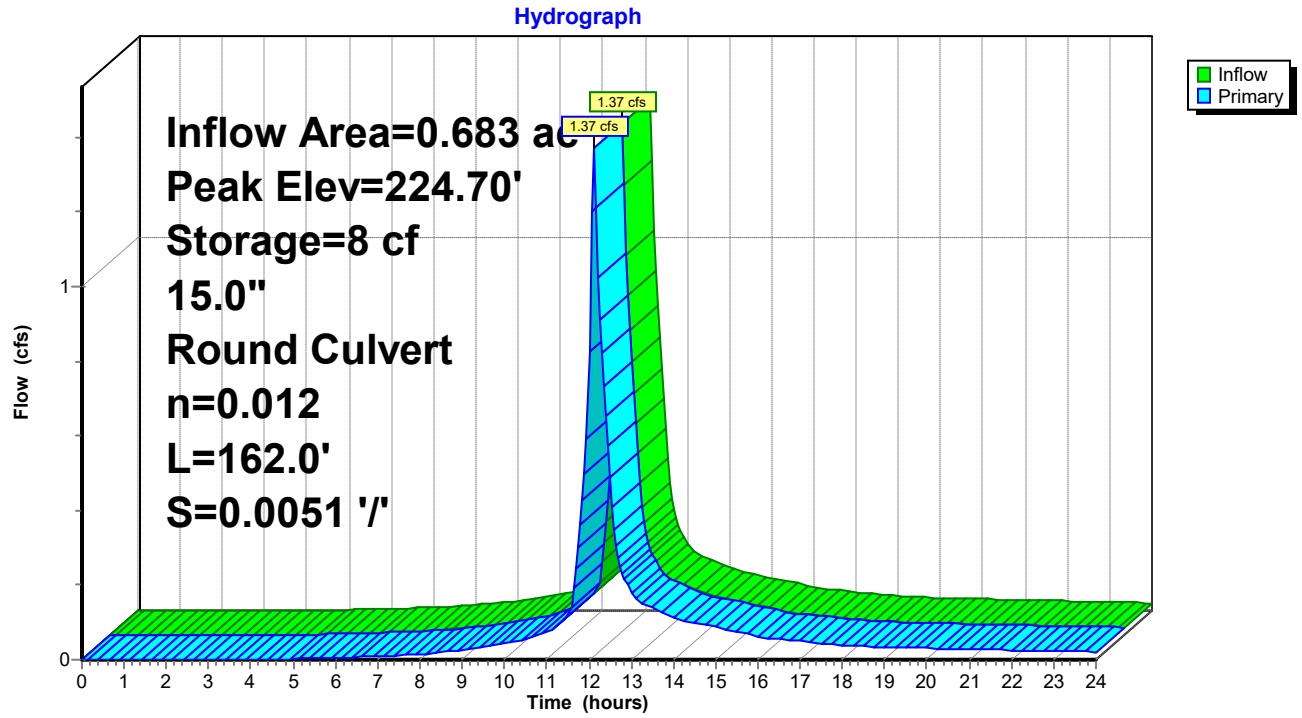
Plug-Flow detention time= 0.3 min calculated for 0.127 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (817.2 - 817.0)

Volume	Invert	Avail.Storage	Storage Description
#1	224.08'	44 cf	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.08'	**15.0" Round 15" HDPE N-12** L= 162.0' Ke= 0.500 Inlet / Outlet Invert= 224.08' / 223.25' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.37 cfs @ 12.10 hrs HW=224.70' TW=222.70' (Dynamic Tailwater)
↳**1=15" HDPE N-12** (Barrel Controls 1.37 cfs @ 3.31 fps)

Pond C36P: CB #36



Summary for Pond C37P: CB #37

Inflow Area = 0.804 ac, 40.14% Impervious, Inflow Depth > 2.38" for 10YR - 24HR event
Inflow = 1.81 cfs @ 12.10 hrs, Volume= 0.159 af
Outflow = 1.81 cfs @ 12.10 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.0 min
Primary = 1.81 cfs @ 12.10 hrs, Volume= 0.159 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 222.70' @ 12.10 hrs Surf.Area= 13 sf Storage= 9 cf
Flood Elev= 230.05' Surf.Area= 13 sf Storage= 101 cf

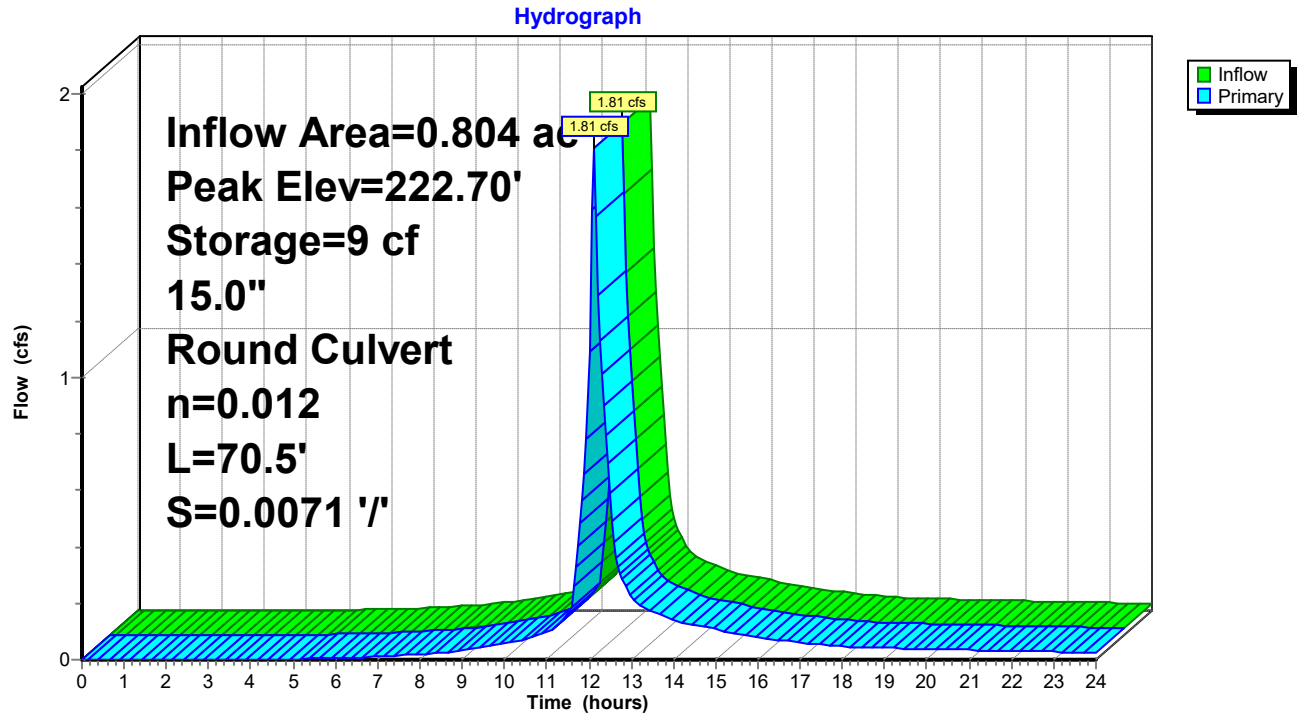
Plug-Flow detention time= 0.3 min calculated for 0.159 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (814.6 - 814.4)

Volume	Invert	Avail.Storage	Storage Description
#1	222.00'	101 cf	**4.00'D x 8.05'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	222.00'	**15.0" Round 15" HDPE N-12** L= 70.5' Ke= 0.500 Inlet / Outlet Invert= 222.00' / 221.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.80 cfs @ 12.10 hrs HW=222.70' TW=220.90' (Dynamic Tailwater)
↳**1=15" HDPE N-12** (Barrel Controls 1.80 cfs @ 3.71 fps)

Pond C37P: CB #37



Summary for Pond C38P: CB #38

Inflow Area = 0.206 ac, 76.16% Impervious, Inflow Depth > 3.43" for 10YR - 24HR event
Inflow = 0.79 cfs @ 12.09 hrs, Volume= 0.059 af
Outflow = 0.79 cfs @ 12.09 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.1 min
Primary = 0.79 cfs @ 12.09 hrs, Volume= 0.059 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 219.97' @ 12.09 hrs Surf.Area= 13 sf Storage= 5 cf
Flood Elev= 225.05' Surf.Area= 13 sf Storage= 69 cf

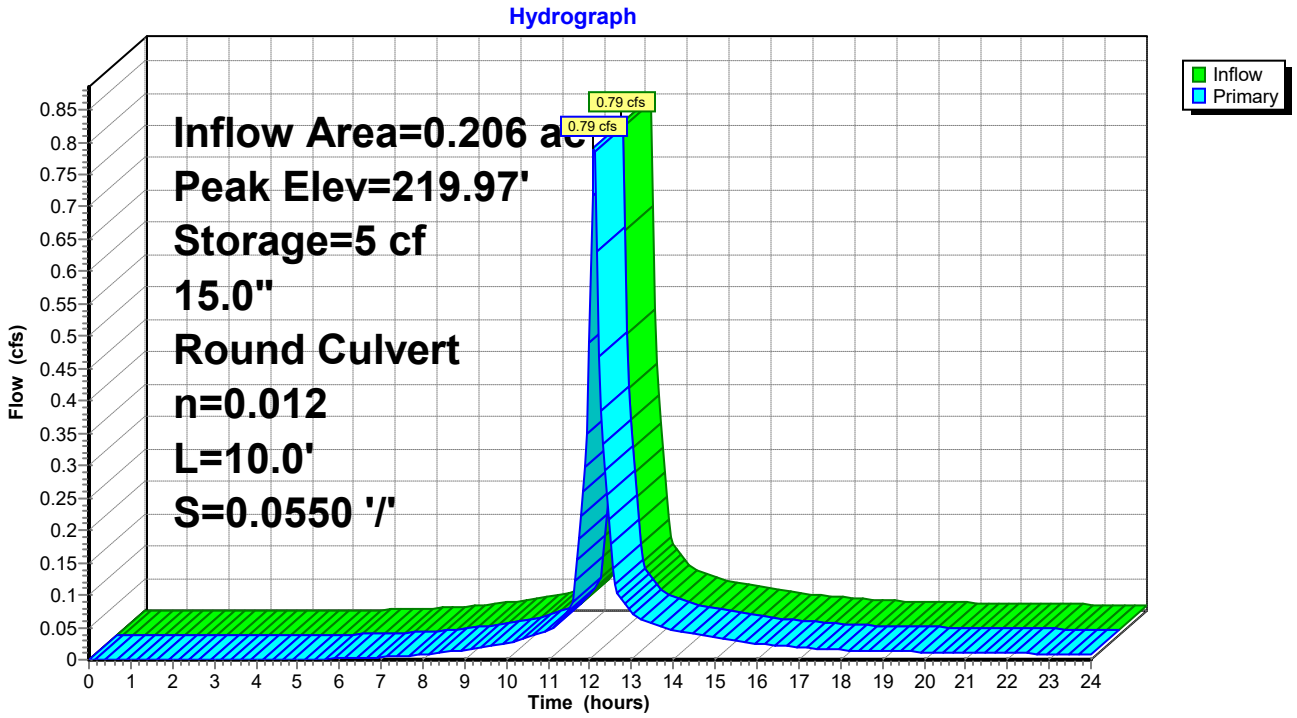
Plug-Flow detention time= 0.4 min calculated for 0.059 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (796.8 - 796.6)

Volume	Invert	Avail.Storage	Storage Description
#1	219.55'	69 cf	**4.00'D x 5.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	219.55'	**15.0" Round 15" HDPE N-12** L= 10.0' Ke= 0.500 Inlet / Outlet Invert= 219.55' / 219.00' S= 0.0550 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.77 cfs @ 12.09 hrs HW=219.96' TW=217.74' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Inlet Controls 0.77 cfs @ 2.19 fps)

Pond C38P: CB #38



Summary for Pond C39P: CB #39

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=16)
[80] Warning: Exceeded Pond C40P by 0.15' @ 12.20 hrs (0.78 cfs 0.148 af)

Inflow Area = 0.269 ac, 73.80% Impervious, Inflow Depth > 3.40" for 10YR - 24HR event
Inflow = 1.00 cfs @ 12.09 hrs, Volume= 0.076 af
Outflow = 0.99 cfs @ 12.09 hrs, Volume= 0.076 af, Atten= 1%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.09 hrs, Volume= 0.076 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 218.85' @ 12.90 hrs Surf.Area= 13 sf Storage= 23 cf
Flood Elev= 221.05' Surf.Area= 13 sf Storage= 50 cf

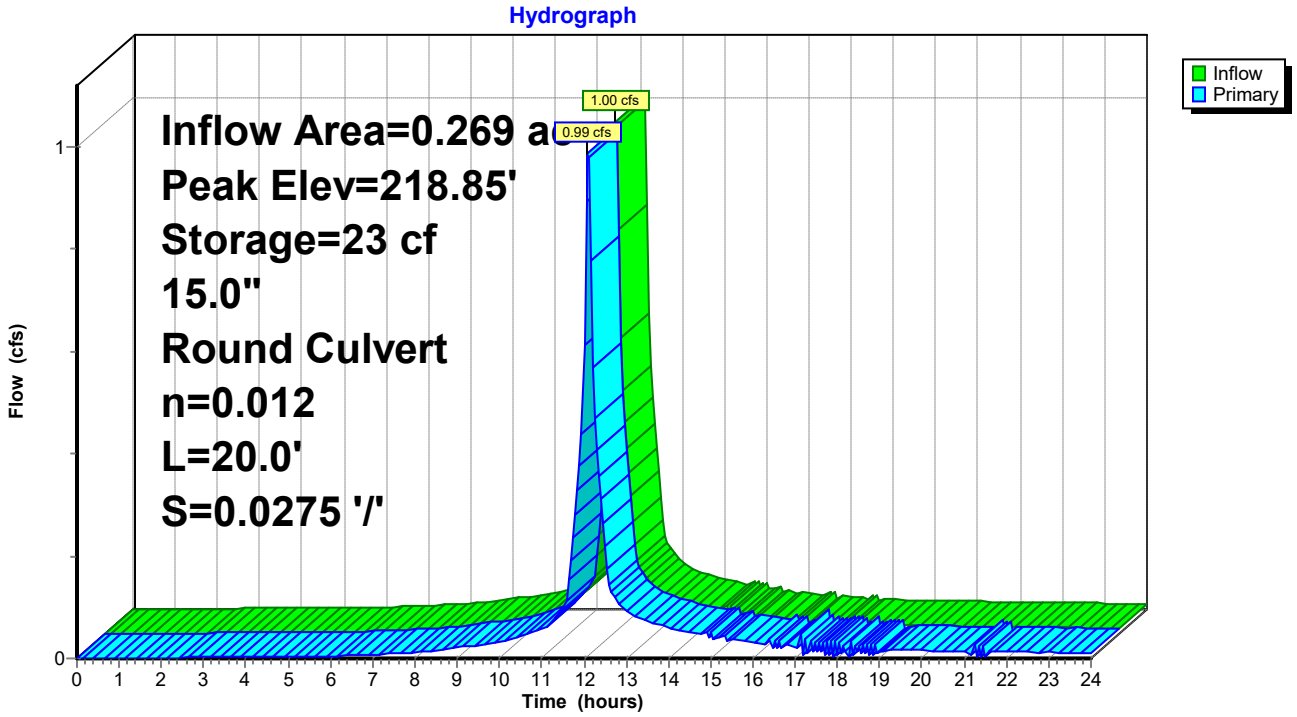
Plug-Flow detention time= 4.7 min calculated for 0.075 af (99% of inflow)
Center-of-Mass det. time= 0.4 min (789.5 - 789.1)

Volume	Invert	Avail.Storage	Storage Description
#1	217.05'	50 cf	**4.00'D x 4.00'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	217.05'	**15.0" Round 15" HDPE N-12** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 217.05' / 216.50' S= 0.0275 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.00 cfs @ 12.09 hrs HW=217.83' TW=217.74' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Outlet Controls 1.00 cfs @ 1.77 fps)

Pond C39P: CB #39



Summary for Pond C40P: CB #40

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=54)

Inflow Area = 0.074 ac,100.00% Impervious, Inflow Depth > 4.40" for 10YR - 24HR event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.1 min
Primary = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 218.85' @ 12.95 hrs Surf.Area= 13 sf Storage= 16 cf
Flood Elev= 221.10' Surf.Area= 13 sf Storage= 44 cf

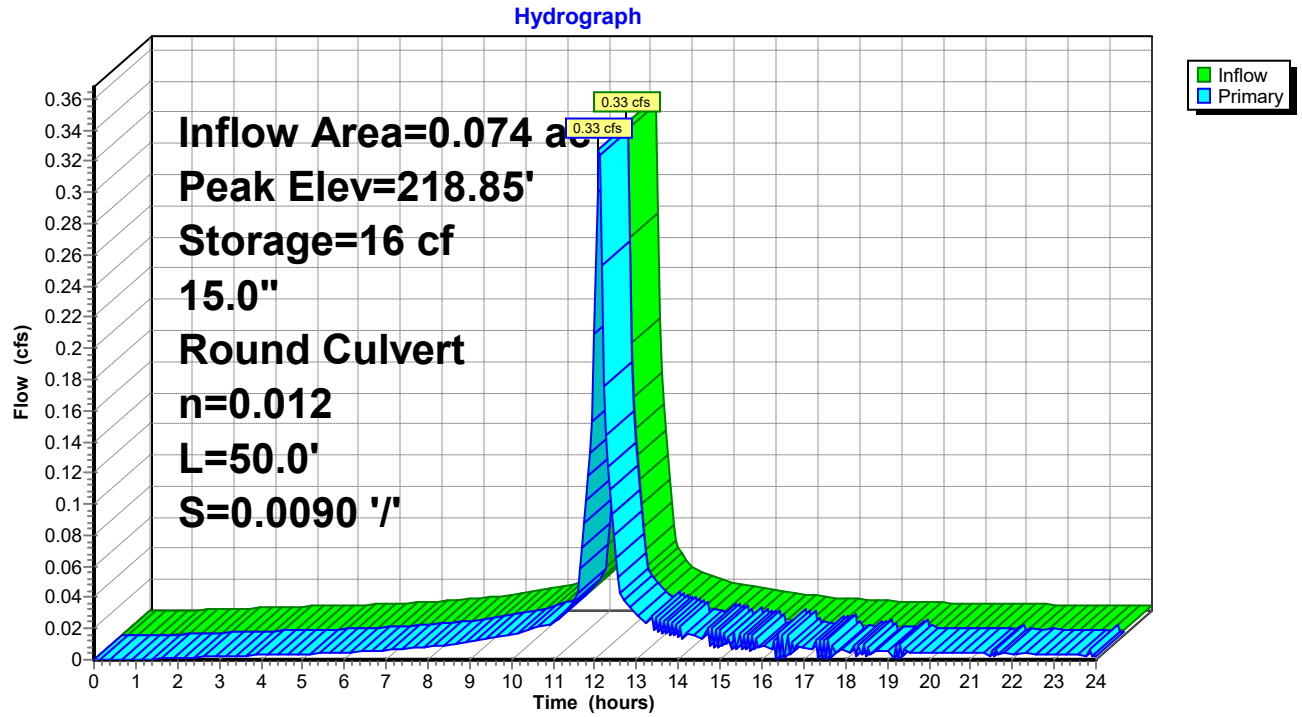
Plug-Flow detention time= 8.0 min calculated for 0.027 af (99% of inflow)
Center-of-Mass det. time= 2.3 min (751.2 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1	217.60'	44 cf	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	217.60'	**15.0" Round 15" HDPE N-12** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 217.60' / 217.15' S= 0.0090 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.19 cfs @ 12.09 hrs HW=217.92' TW=217.82' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Outlet Controls 0.19 cfs @ 1.19 fps)

Pond C40P: CB #40



Summary for Pond C41P: CB #41

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=15)
[80] Warning: Exceeded Pond C42P by 0.16' @ 12.20 hrs (1.48 cfs 0.511 af)

Inflow Area = 0.143 ac, 88.46% Impervious, Inflow Depth > 3.84" for 10YR - 24HR event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.58 cfs @ 12.09 hrs, Volume= 0.045 af, Atten= 2%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.09 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 218.55' @ 13.21 hrs Surf.Area= 13 sf Storage= 30 cf
Flood Elev= 220.20' Surf.Area= 13 sf Storage= 50 cf

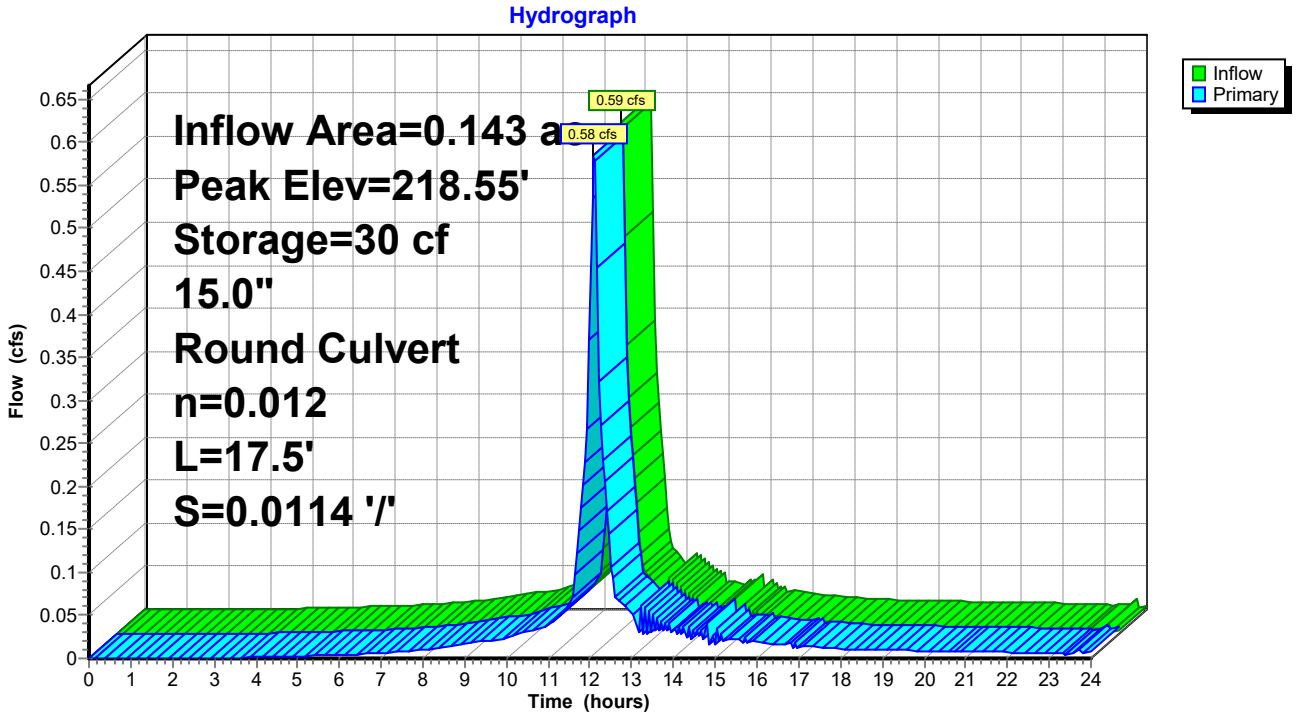
Plug-Flow detention time= 9.1 min calculated for 0.045 af (99% of inflow)
Center-of-Mass det. time= 1.3 min (779.5 - 778.3)

Volume	Invert	Avail.Storage	Storage Description
#1	216.20'	50 cf	**4.00'D x 4.00'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	216.20'	**15.0" Round 15" HDPE N-12** L= 17.5' Ke= 0.500 Inlet / Outlet Invert= 216.20' / 216.00' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.88 cfs @ 12.09 hrs HW=217.24' TW=217.21' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Outlet Controls 0.88 cfs @ 1.09 fps)

Pond C41P: CB #41



Summary for Pond C42P: CB #42

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=43)

Inflow Area = 0.076 ac, 84.85% Impervious, Inflow Depth > 3.74" for 10YR - 24HR event
Inflow = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.31 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 2%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.09 hrs, Volume= 0.023 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 218.56' @ 13.29 hrs Surf.Area= 13 sf Storage= 23 cf
Flood Elev= 220.20' Surf.Area= 13 sf Storage= 44 cf

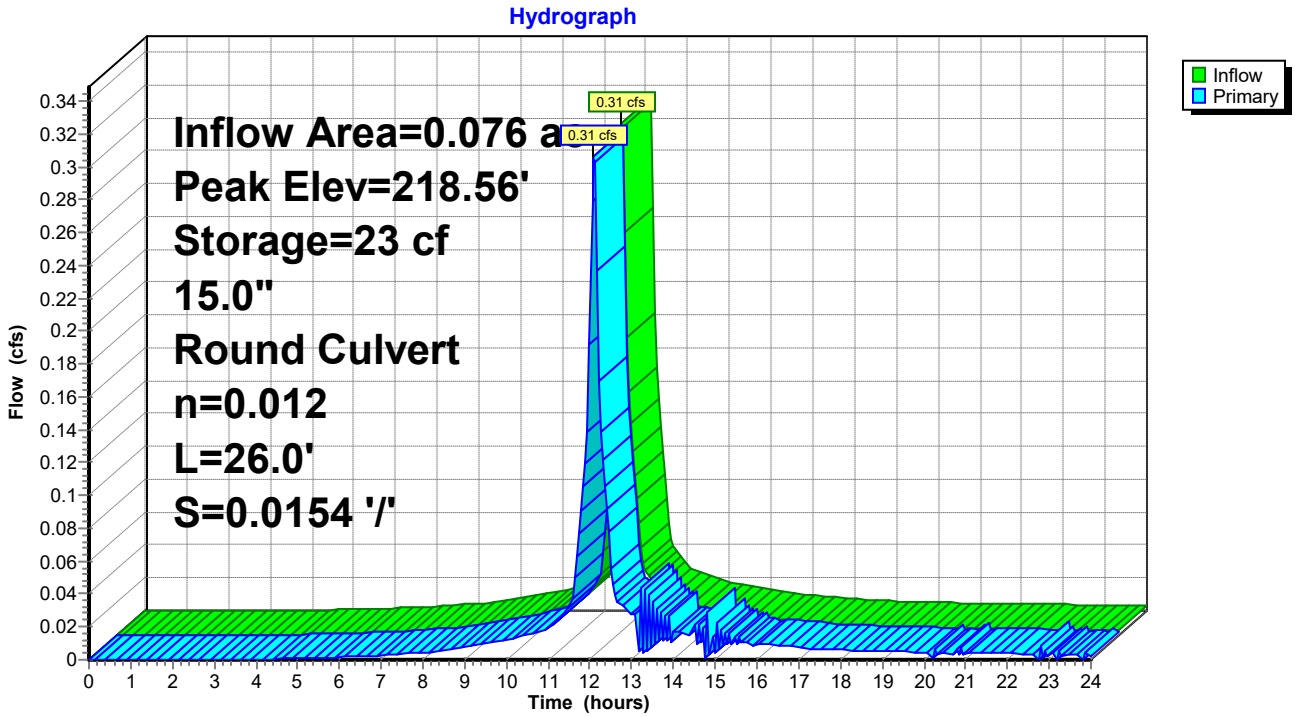
Plug-Flow detention time= 15.1 min calculated for 0.023 af (98% of inflow)
Center-of-Mass det. time= 1.9 min (786.6 - 784.6)

Volume	Invert	Avail.Storage	Storage Description
#1	216.70'	44 cf	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	216.70'	**15.0" Round 15" HDPE N-12** L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 216.70' / 216.30' S= 0.0154 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=217.14' TW=217.24' (Dynamic Tailwater)
1=15" HDPE N-12 (Controls 0.00 cfs)

Pond C42P: CB #42



Summary for Pond C43P: CB #43

Inflow Area = 0.337 ac, 86.27% Impervious, Inflow Depth > 3.95" for 10YR - 24HR event
Inflow = 1.43 cfs @ 12.09 hrs, Volume= 0.111 af
Outflow = 1.43 cfs @ 12.09 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.1 min
Primary = 1.43 cfs @ 12.09 hrs, Volume= 0.111 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 227.78' @ 12.09 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 230.70' Surf.Area= 13 sf Storage= 44 cf

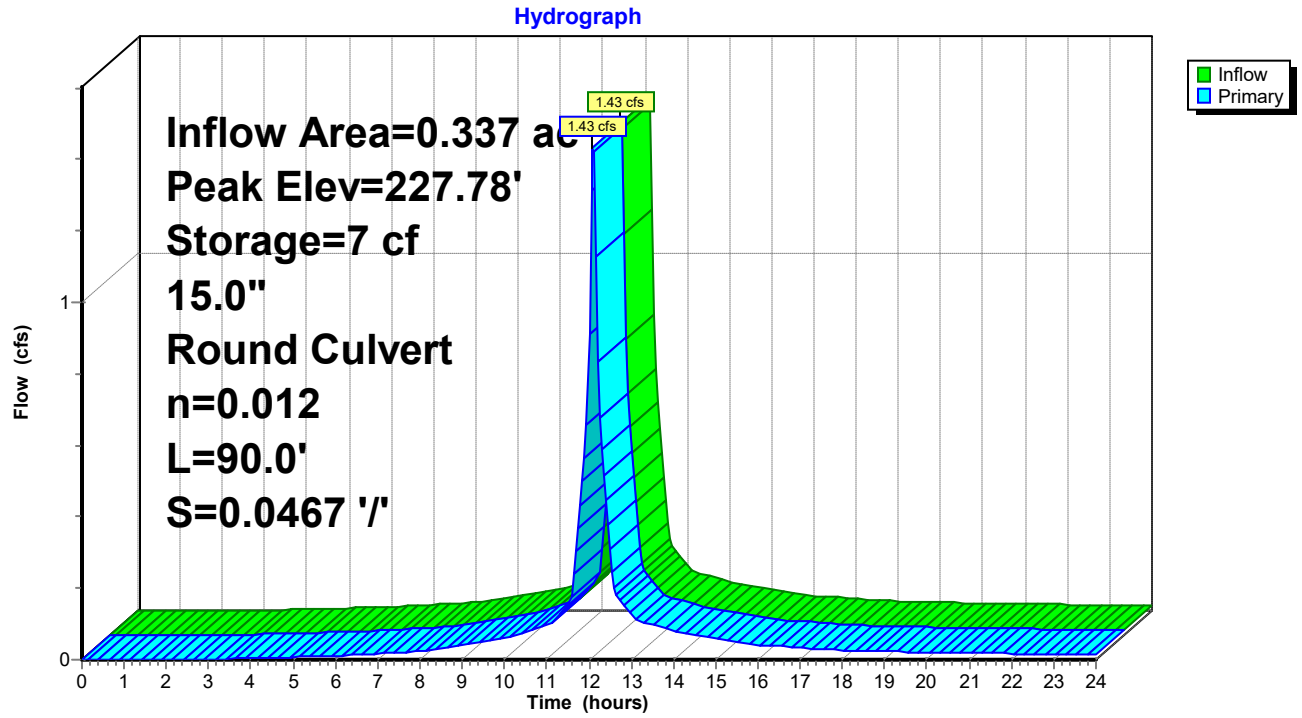
Plug-Flow detention time= 0.3 min calculated for 0.111 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (775.4 - 775.2)

Volume	Invert	Avail.Storage	Storage Description
#1	227.20'	44 cf	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	227.20'	**15.0" Round 15" HDPE N-12** L= 90.0' Ke= 0.500 Inlet / Outlet Invert= 227.20' / 223.00' S= 0.0467 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.39 cfs @ 12.09 hrs HW=227.77' TW=217.73' (Dynamic Tailwater)
1=15" HDPE N-12 (Inlet Controls 1.39 cfs @ 2.57 fps)

Pond C43P: CB #43



Summary for Pond C44P: CB #44

Inflow Area = 1.313 ac, 32.14% Impervious, Inflow Depth > 2.15" for 10YR - 24HR event
Inflow = 2.57 cfs @ 12.18 hrs, Volume= 0.235 af
Outflow = 2.57 cfs @ 12.18 hrs, Volume= 0.235 af, Atten= 0%, Lag= 0.1 min
Primary = 2.57 cfs @ 12.18 hrs, Volume= 0.235 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 230.10' @ 12.18 hrs Surf.Area= 13 sf Storage= 11 cf
Flood Elev= 235.25' Surf.Area= 13 sf Storage= 75 cf

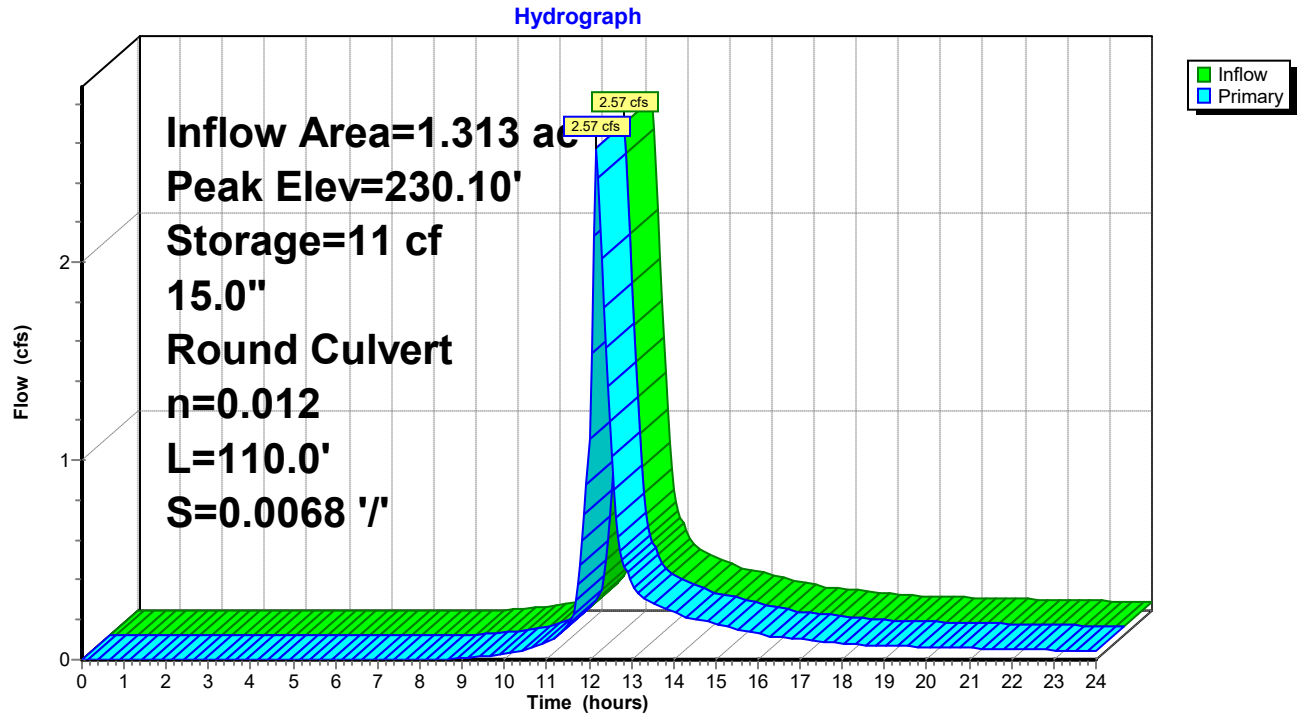
Plug-Flow detention time= 0.2 min calculated for 0.235 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (842.4 - 842.3)

Volume	Invert	Avail.Storage	Storage Description
#1	229.25'	75 cf	**4.00'D x 6.00'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	229.25'	**15.0" Round 15" HDPE N-12** L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 229.25' / 228.50' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.54 cfs @ 12.18 hrs HW=230.09' TW=227.16' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Barrel Controls 2.54 cfs @ 4.10 fps)

Pond C44P: CB #44



Summary for Pond C45P: CB #45

Inflow Area = 0.693 ac, 17.92% Impervious, Inflow Depth > 1.84" for 10YR - 24HR event
Inflow = 1.26 cfs @ 12.15 hrs, Volume= 0.107 af
Outflow = 1.26 cfs @ 12.15 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.1 min
Primary = 1.26 cfs @ 12.15 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 231.10' @ 12.16 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 235.00' Surf.Area= 364 sf Storage= 202 cf

Plug-Flow detention time= 0.3 min calculated for 0.106 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (851.9 - 851.7)

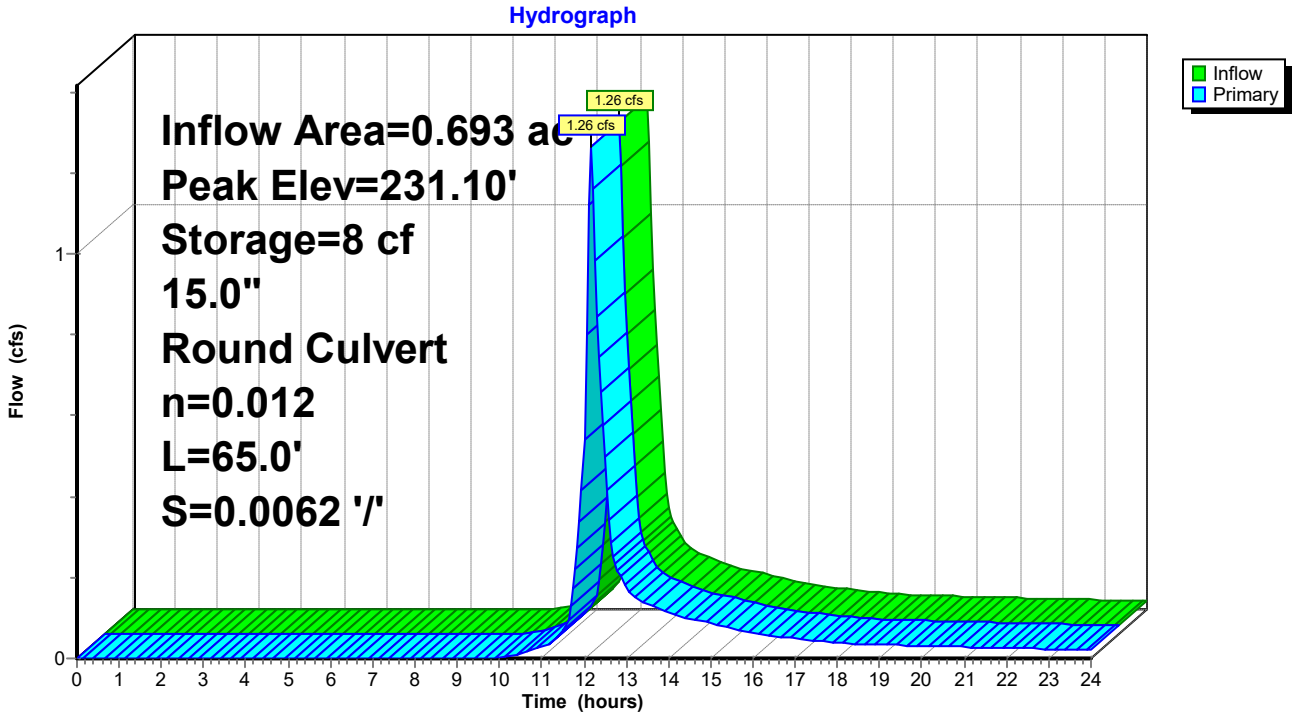
Volume	Invert	Avail.Storage	Storage Description
#1	230.50'	44 cf	**4.00'D x 3.50'H 4' Structure**
#2	234.00'	158 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		202 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
234.00	27	30.0	0	0	27
235.00	351	95.9	158	158	690

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**15.0" Round 15" HDPE N-12** L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.10' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.23 cfs @ 12.15 hrs HW=231.10' TW=230.60' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Outlet Controls 1.23 cfs @ 3.13 fps)

Pond C45P: CB #45



Summary for Pond C46P: CB #46

Inflow Area = 4.495 ac, 10.34% Impervious, Inflow Depth > 1.54" for 10YR - 24HR event
Inflow = 3.93 cfs @ 12.39 hrs, Volume= 0.578 af
Outflow = 3.93 cfs @ 12.39 hrs, Volume= 0.578 af, Atten= 0%, Lag= 0.0 min
Primary = 3.14 cfs @ 12.39 hrs, Volume= 0.544 af
Secondary = 0.79 cfs @ 12.39 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 233.92' @ 12.39 hrs Surf.Area= 20 sf Storage= 18 cf
Flood Elev= 240.72' Surf.Area= 20 sf Storage= 152 cf

Plug-Flow detention time= 0.2 min calculated for 0.576 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (858.6 - 858.4)

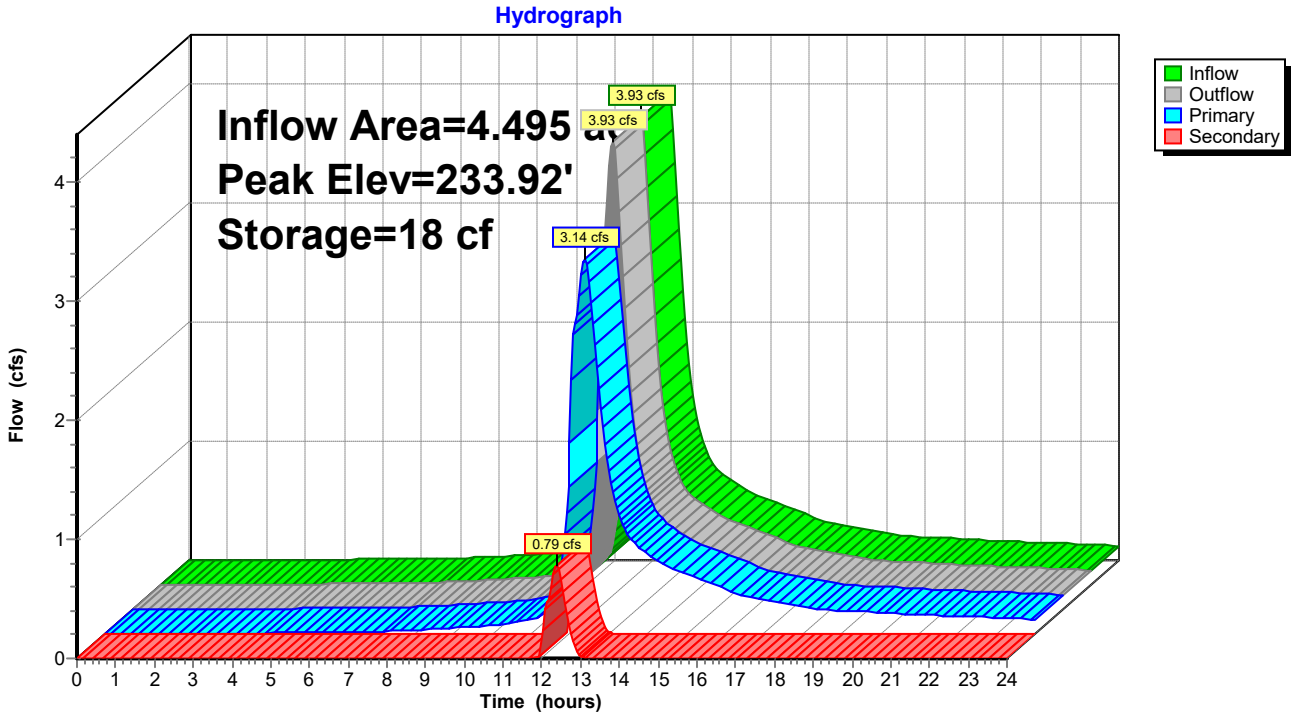
Volume	Invert	Avail.Storage	Storage Description
#1	233.00'	152 cf	**5.00'D x 7.72'H 5 Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	233.00'	**15.0" Round 15" HDPE N-12** L= 105.0' Ke= 0.500 Inlet / Outlet Invert= 233.00' / 228.10' S= 0.0467 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	233.50'	**15.0" Round 15" HDPE N-12** L= 55.0' Ke= 0.500 Inlet / Outlet Invert= 233.50' / 229.00' S= 0.0818 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.13 cfs @ 12.39 hrs HW=233.91' TW=228.93' (Dynamic Tailwater)
1=15" HDPE N-12 (Inlet Controls 3.13 cfs @ 3.26 fps)

Secondary OutFlow Max=0.78 cfs @ 12.39 hrs HW=233.91' TW=228.15' (Dynamic Tailwater)
2=15" HDPE N-12 (Inlet Controls 0.78 cfs @ 2.19 fps)

Pond C46P: CB #46



Summary for Pond D01P: DMH #1

[80] Warning: Exceeded Pond C33P by 0.09' @ 12.15 hrs (1.44 cfs 0.307 af)

Inflow Area = 0.453 ac, 72.29% Impervious, Inflow Depth > 3.31" for 10YR - 24HR event
Inflow = 1.64 cfs @ 12.09 hrs, Volume= 0.125 af
Outflow = 1.64 cfs @ 12.09 hrs, Volume= 0.124 af, Atten= 1%, Lag= 0.0 min
Primary = 1.64 cfs @ 12.09 hrs, Volume= 0.124 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 214.39' @ 16.25 hrs Surf.Area= 13 sf Storage= 28 cf
Flood Elev= 217.60' Surf.Area= 13 sf Storage= 68 cf

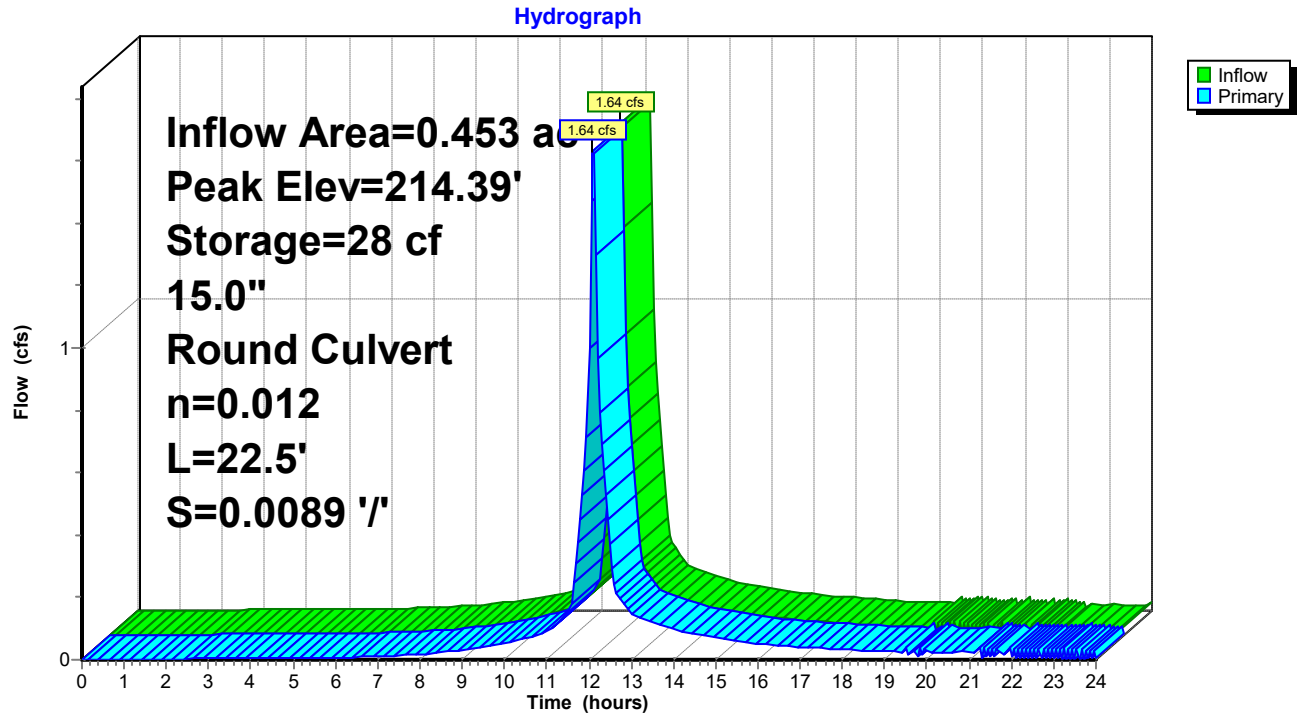
Plug-Flow detention time= 3.9 min calculated for 0.124 af (99% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	212.20'	68 cf	**4.00'D x 5.40'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	212.20'	**15.0" Round 15" HDPE N-12** L= 22.5' Ke= 0.500 Inlet / Outlet Invert= 212.20' / 212.00' S= 0.0089 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.61 cfs @ 12.09 hrs HW=213.44' TW=213.36' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Outlet Controls 1.61 cfs @ 1.65 fps)

Pond D01P: DMH #1



Summary for Pond D02P: DMH #2

Inflow Area = 0.804 ac, 40.14% Impervious, Inflow Depth > 2.38" for 10YR - 24HR event
Inflow = 1.81 cfs @ 12.10 hrs, Volume= 0.159 af
Outflow = 1.78 cfs @ 12.10 hrs, Volume= 0.159 af, Atten= 2%, Lag= 0.0 min
Primary = 1.78 cfs @ 12.10 hrs, Volume= 0.159 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 221.83' @ 12.54 hrs Surf.Area= 20 sf Storage= 36 cf
Flood Elev= 227.95' Surf.Area= 20 sf Storage= 156 cf

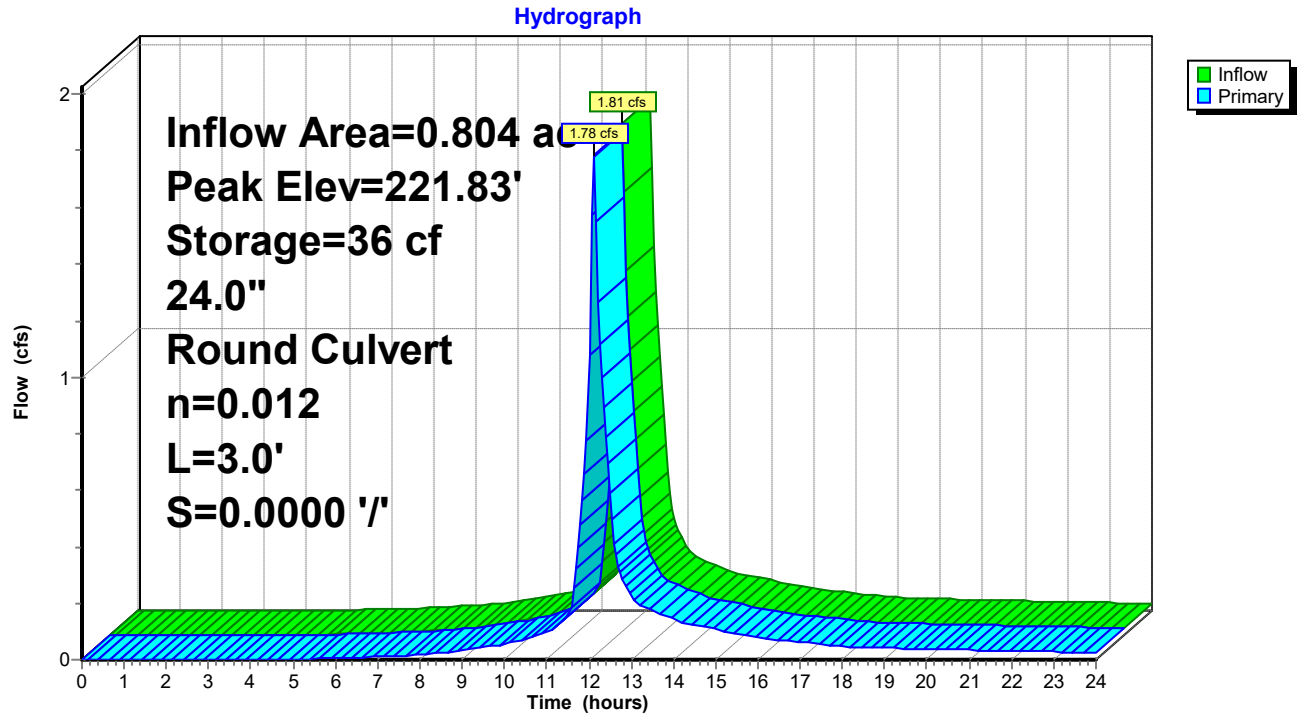
Plug-Flow detention time= 1.3 min calculated for 0.159 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (815.7 - 814.6)

Volume	Invert	Avail.Storage	Storage Description
#1	220.00'	156 cf	**5.00'D x 7.95'H 5' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	220.00'	**24.0" Round 24" HDPE N-12** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 220.00' / 220.00' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=1.82 cfs @ 12.10 hrs HW=220.90' TW=220.81' (Dynamic Tailwater)
1=24" HDPE N-12 (Outlet Controls 1.82 cfs @ 1.96 fps)

Pond D02P: DMH #2



Summary for Pond D03P: DMH #3

Inflow Area = 0.693 ac, 17.92% Impervious, Inflow Depth > 1.84" for 10YR - 24HR event
Inflow = 1.26 cfs @ 12.15 hrs, Volume= 0.107 af
Outflow = 1.26 cfs @ 12.15 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.1 min
Primary = 1.26 cfs @ 12.15 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 230.60' @ 12.16 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 238.00' Surf.Area= 13 sf Storage= 101 cf

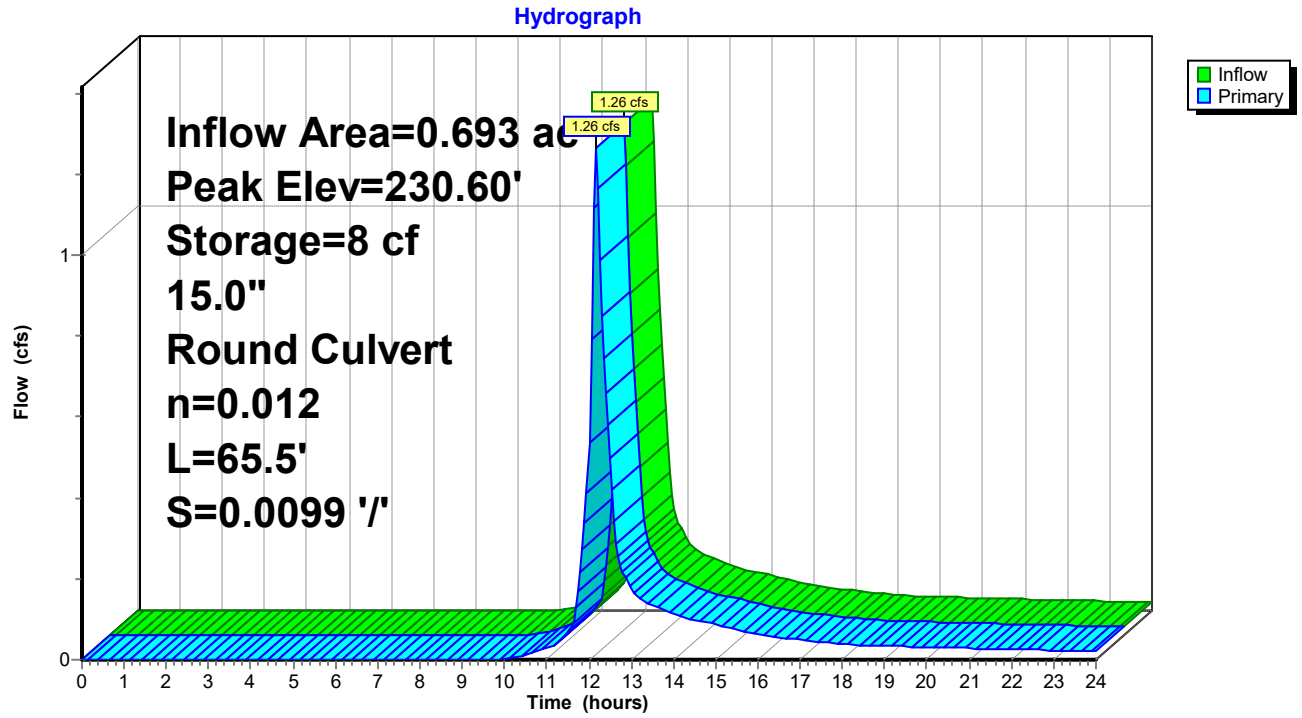
Plug-Flow detention time= 0.3 min calculated for 0.107 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (852.1 - 851.9)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	101 cf	**4.00'D x 8.00'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	230.00'	**15.0" Round 15" HDPE N-12** L= 65.5' Ke= 0.500 Inlet / Outlet Invert= 230.00' / 229.35' S= 0.0099 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.25 cfs @ 12.15 hrs HW=230.60' TW=230.09' (Dynamic Tailwater)
↳**1=15" HDPE N-12** (Outlet Controls 1.25 cfs @ 3.16 fps)

Pond D03P: DMH #3



Summary for Pond D04P: DMH #4

Inflow Area = 4.495 ac, 10.34% Impervious, Inflow Depth > 1.45" for 10YR - 24HR event
Inflow = 3.14 cfs @ 12.39 hrs, Volume= 0.544 af
Outflow = 3.14 cfs @ 12.39 hrs, Volume= 0.544 af, Atten= 0%, Lag= 0.0 min
Primary = 3.14 cfs @ 12.39 hrs, Volume= 0.544 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 228.95' @ 12.68 hrs Surf.Area= 13 sf Storage= 12 cf
Flood Elev= 232.00' Surf.Area= 13 sf Storage= 50 cf

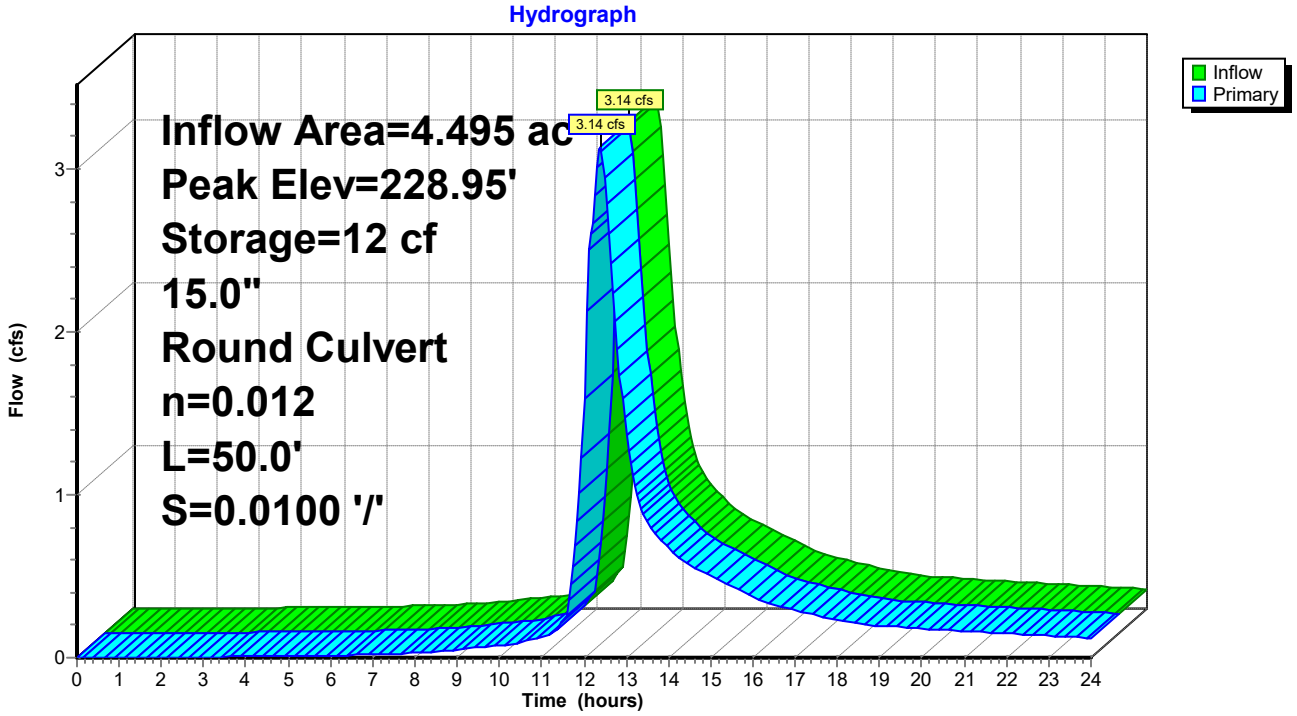
Plug-Flow detention time= 0.2 min calculated for 0.544 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (865.8 - 865.7)

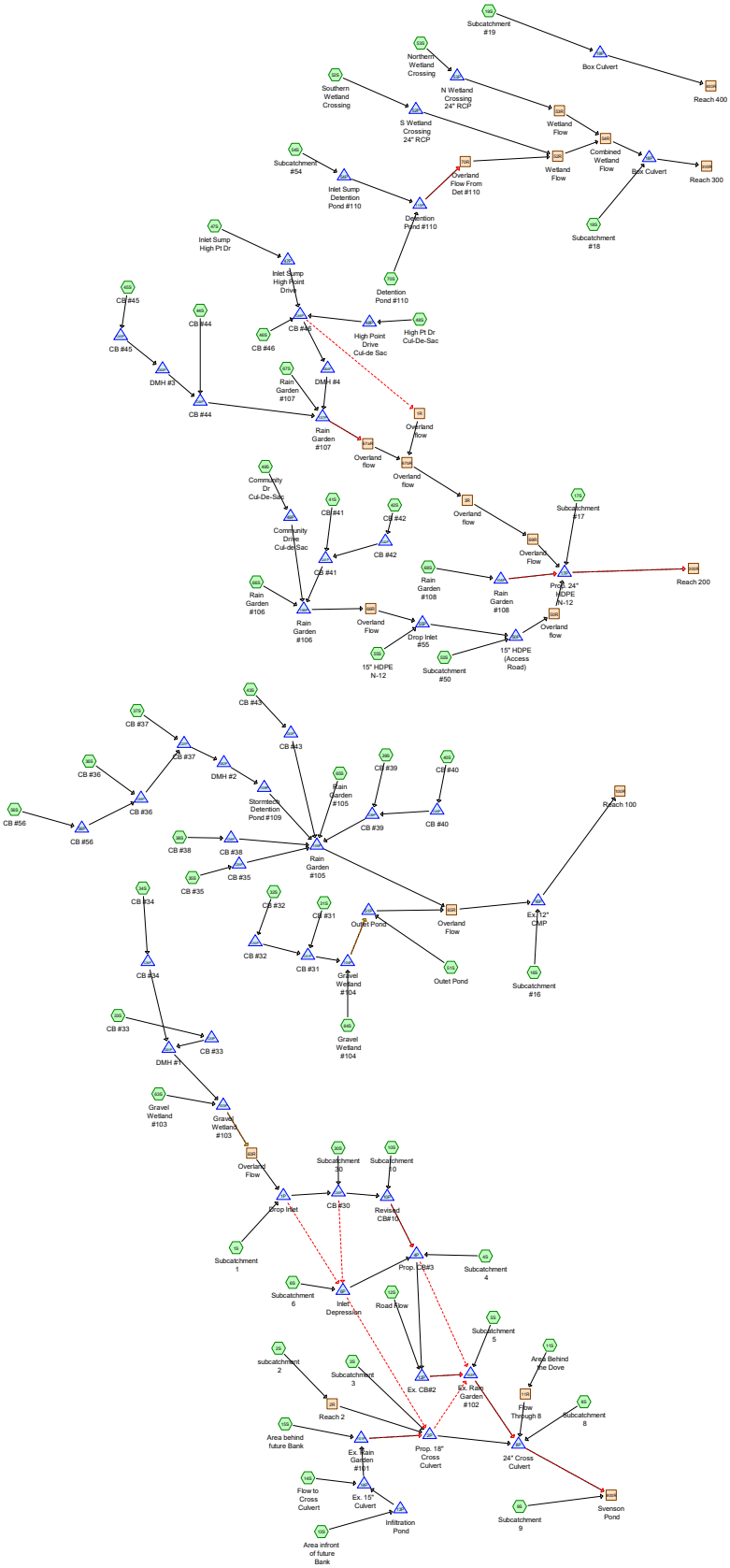
Volume	Invert	Avail.Storage	Storage Description
#1	228.00'	50 cf	**4.00'D x 4.00'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	228.00'	**15.0" Round 15" HDPE N-12** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 228.00' / 227.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.13 cfs @ 12.39 hrs HW=228.93' TW=227.95' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Barrel Controls 3.13 cfs @ 4.43 fps)

Pond D04P: DMH #4





Subcat Reach Pond Link

Routing Diagram for 20-097 Proposed Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

HydroCAD® 10.00-22 s/n 07605 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=240,329 sf 0.00% Impervious Runoff Depth>0.36"
Flow Length=1,542' Tc=32.6 min CN=60 Runoff=0.79 cfs 0.164 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>0.35"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=1.85 cfs 0.517 af

Subcatchment 3S: Subcatchment 3 Runoff Area=118,503 sf 0.00% Impervious Runoff Depth>0.00"
Flow Length=993' Tc=20.7 min CN=40 Runoff=0.00 cfs 0.000 af

Subcatchment 4S: Subcatchment 4 Runoff Area=9,068 sf 100.00% Impervious Runoff Depth>2.85"
Flow Length=207' Tc=6.0 min CN=98 Runoff=0.61 cfs 0.049 af

Subcatchment 5S: Subcatchment 5 Runoff Area=22,497 sf 40.08% Impervious Runoff Depth>0.47"
Flow Length=212' Tc=7.0 min CN=63 Runoff=0.18 cfs 0.020 af

Subcatchment 6S: Subcatchment 6 Runoff Area=25,520 sf 84.67% Impervious Runoff Depth>1.97"
Tc=6.0 min CN=89 Runoff=1.32 cfs 0.096 af

Subcatchment 8S: Subcatchment 8 Runoff Area=25,776 sf 25.48% Impervious Runoff Depth>0.19"
Flow Length=152' Tc=10.4 min CN=54 Runoff=0.04 cfs 0.009 af

Subcatchment 9S: Subcatchment 9 Runoff Area=45,641 sf 11.38% Impervious Runoff Depth>0.04"
Flow Length=259' Tc=13.4 min CN=46 Runoff=0.01 cfs 0.004 af

Subcatchment 10S: Subcatchment 10 Runoff Area=9,312 sf 47.01% Impervious Runoff Depth>0.76"
Tc=6.0 min CN=70 Runoff=0.17 cfs 0.014 af

Subcatchment 11S: Area Behind the Dove Runoff Area=84,440 sf 13.47% Impervious Runoff Depth>0.07"
Flow Length=636' Tc=29.3 min CN=48 Runoff=0.02 cfs 0.011 af

Subcatchment 12S: Road Flow Runoff Area=4,388 sf 100.00% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=98 Runoff=0.29 cfs 0.024 af

Subcatchment 13S: Area infront of future Runoff Area=29,777 sf 30.66% Impervious Runoff Depth>0.27"
Flow Length=175' Tc=12.4 min CN=57 Runoff=0.08 cfs 0.015 af

Subcatchment 14S: Flow to Cross Culvert Runoff Area=7,713 sf 59.39% Impervious Runoff Depth>0.96"
Tc=6.0 min CN=74 Runoff=0.18 cfs 0.014 af

Subcatchment 15S: Area behind future Runoff Area=17,796 sf 67.02% Impervious Runoff Depth>1.25"
Tc=6.0 min CN=79 Runoff=0.58 cfs 0.042 af

Subcatchment 16S: Subcatchment #16 Runoff Area=124,974 sf 4.60% Impervious Runoff Depth>0.07"
Flow Length=344' Tc=16.5 min CN=48 Runoff=0.03 cfs 0.017 af

Subcatchment 17S: Subcatchment #17 Runoff Area=221,822 sf 0.52% Impervious Runoff Depth>0.33"
Flow Length=590' Tc=32.1 min CN=59 Runoff=0.63 cfs 0.138 af

Subcatchment 18S: Subcatchment #18 Runoff Area=168,645 sf 0.00% Impervious Runoff Depth>0.33"
Flow Length=451' Tc=24.9 min CN=59 Runoff=0.52 cfs 0.106 af

Subcatchment 19S: Subcatchment #19 Runoff Area=687,994 sf 0.00% Impervious Runoff Depth>0.36"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=1.90 cfs 0.468 af

Subcatchment 30S: Subcatchment 30 Runoff Area=5,396 sf 79.95% Impervious Runoff Depth>2.14"
Tc=6.0 min CN=91 Runoff=0.30 cfs 0.022 af

Subcatchment 31S: CB #31 Runoff Area=6,793 sf 80.13% Impervious Runoff Depth>2.14"
Tc=6.0 min CN=91 Runoff=0.38 cfs 0.028 af

Subcatchment 32S: CB #32 Runoff Area=7,675 sf 61.20% Impervious Runoff Depth>1.65"
Tc=6.0 min CN=85 Runoff=0.34 cfs 0.024 af

Subcatchment 33S: CB #33 Runoff Area=14,563 sf 62.46% Impervious Runoff Depth>1.58"
Tc=6.0 min CN=84 Runoff=0.61 cfs 0.044 af

Subcatchment 34S: CB #34 Runoff Area=5,164 sf 100.00% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.028 af

Subcatchment 35S: CB #35 Runoff Area=7,817 sf 68.21% Impervious Runoff Depth>1.81"
Tc=6.0 min CN=87 Runoff=0.37 cfs 0.027 af

Subcatchment 36S: CB #36 Runoff Area=12,881 sf 80.50% Impervious Runoff Depth>2.14"
Tc=6.0 min CN=91 Runoff=0.72 cfs 0.053 af

Subcatchment 37S: CB #37 Runoff Area=5,252 sf 70.16% Impervious Runoff Depth>1.81"
Tc=6.0 min CN=87 Runoff=0.25 cfs 0.018 af

Subcatchment 38S: CB #38 Runoff Area=8,972 sf 76.16% Impervious Runoff Depth>1.97"
Tc=6.0 min CN=89 Runoff=0.46 cfs 0.034 af

Subcatchment 39S: CB #39 Runoff Area=8,469 sf 63.81% Impervious Runoff Depth>1.65"
Tc=6.0 min CN=85 Runoff=0.37 cfs 0.027 af

Subcatchment 40S: CB #40 Runoff Area=3,230 sf 100.00% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af

Subcatchment 41S: CB #41 Runoff Area=2,930 sf 92.56% Impervious Runoff Depth>2.53"
Tc=6.0 min CN=95 Runoff=0.18 cfs 0.014 af

Subcatchment 42S: CB #42 Runoff Area=3,320 sf 84.85% Impervious Runoff Depth>2.24"
Tc=6.0 min CN=92 Runoff=0.19 cfs 0.014 af

Subcatchment 43S: CB #43 Runoff Area=14,691 sf 86.27% Impervious Runoff Depth>2.43"
Tc=6.0 min CN=94 Runoff=0.90 cfs 0.068 af

Subcatchment 44S: CB #44 Runoff Area=27,005 sf 48.05% Impervious Runoff Depth>1.24"
Flow Length=493' Tc=14.6 min CN=79 Runoff=0.67 cfs 0.064 af

Subcatchment 45S: CB #45 Runoff Area=30,206 sf 17.92% Impervious Runoff Depth>0.80"
Flow Length=265' Tc=10.2 min CN=71 Runoff=0.50 cfs 0.047 af

Subcatchment 46S: CB #46 Runoff Area=9,814 sf 97.25% Impervious Runoff Depth>2.74"
Tc=6.0 min CN=97 Runoff=0.65 cfs 0.051 af

Subcatchment 47S: Inlet Sump High Pt Dr Runoff Area=174,905 sf 1.77% Impervious Runoff Depth>0.46"
Flow Length=862' Tc=26.2 min CN=63 Runoff=0.94 cfs 0.155 af

Subcatchment 48S: High Pt Dr Cul-De-Sac Runoff Area=11,063 sf 68.77% Impervious Runoff Depth>1.89"
Tc=6.0 min CN=88 Runoff=0.55 cfs 0.040 af

Subcatchment 49S: Community Dr Runoff Area=19,859 sf 64.00% Impervious Runoff Depth>1.73"
Tc=6.0 min CN=86 Runoff=0.91 cfs 0.066 af

Subcatchment 50S: Subcatchment #50 Runoff Area=20,009 sf 0.00% Impervious Runoff Depth>0.36"
Flow Length=209' Tc=15.8 min CN=60 Runoff=0.08 cfs 0.014 af

Subcatchment 51S: Outet Pond Runoff Area=2,846 sf 0.00% Impervious Runoff Depth>0.40"
Tc=6.0 min CN=61 Runoff=0.02 cfs 0.002 af

Subcatchment 52S: Southern Wetland Runoff Area=156,553 sf 0.00% Impervious Runoff Depth>0.43"
Flow Length=971' Tc=24.9 min CN=62 Runoff=0.75 cfs 0.128 af

Subcatchment 53S: Northern Wetland Runoff Area=26,372 sf 0.00% Impervious Runoff Depth>0.54"
Flow Length=497' Tc=20.6 min CN=65 Runoff=0.19 cfs 0.027 af

Subcatchment 54S: Subcatchment #54 Runoff Area=120,358 sf 0.00% Impervious Runoff Depth>0.46"
Flow Length=1,059' Tc=24.7 min CN=63 Runoff=0.66 cfs 0.107 af

Subcatchment 55S: 15" HDPE N-12 Runoff Area=4,389 sf 0.00% Impervious Runoff Depth>0.40"
Tc=6.0 min CN=61 Runoff=0.03 cfs 0.003 af

Subcatchment 56S: CB #56 Runoff Area=16,876 sf 0.00% Impervious Runoff Depth>0.39"
Flow Length=247' Tc=15.6 min CN=61 Runoff=0.08 cfs 0.013 af

Subcatchment 63S: Gravel Wetland #103 Runoff Area=6,291 sf 0.30% Impervious Runoff Depth>0.40"
Tc=6.0 min CN=61 Runoff=0.04 cfs 0.005 af

Subcatchment 64S: Gravel Wetland #104 Runoff Area=1,940 sf 0.00% Impervious Runoff Depth>0.40"
Tc=6.0 min CN=61 Runoff=0.01 cfs 0.001 af

Subcatchment 65S: Rain Garden #105 Runoff Area=10,279 sf 0.72% Impervious Runoff Depth>0.58"
Tc=6.0 min CN=66 Runoff=0.13 cfs 0.011 af

Subcatchment 66S: Rain Garden #106 Runoff Area=30,740 sf 5.62% Impervious Runoff Depth>0.58"
Flow Length=153' Tc=17.2 min CN=66 Runoff=0.27 cfs 0.034 af

Subcatchment 67S: Rain Garden #107 Runoff Area=23,728 sf 0.00% Impervious Runoff Depth>0.39"
Flow Length=99' Tc=8.8 min CN=61 Runoff=0.13 cfs 0.018 af

Subcatchment 68S: Rain Garden #108 Runoff Area=7,539 sf 47.49% Impervious Runoff Depth>1.25"
Tc=6.0 min CN=79 Runoff=0.24 cfs 0.018 af

Subcatchment 70S: Detention Pond #110 Runoff Area=24,497 sf 0.00% Impervious Runoff Depth>0.33"
Flow Length=273' Tc=12.3 min CN=59 Runoff=0.09 cfs 0.015 af

Reach 1R: Overland flow Avg. Flow Depth=0.01' Max Vel=0.43 fps Inflow=0.01 cfs 0.000 af
n=0.030 L=264.5' S=0.0340 '/' Capacity=45.70 cfs Outflow=0.00 cfs 0.000 af

Reach 2R: Reach 2 Avg. Flow Depth=0.24' Max Vel=2.23 fps Inflow=1.85 cfs 0.517 af
n=0.022 L=220.0' S=0.0091 '/' Capacity=24.64 cfs Outflow=1.84 cfs 0.516 af

Reach 3R: Overland flow Avg. Flow Depth=0.06' Max Vel=2.00 fps Inflow=0.18 cfs 0.105 af
n=0.030 L=71.0' S=0.1268 '/' Capacity=88.20 cfs Outflow=0.18 cfs 0.105 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.03' Max Vel=0.36 fps Inflow=0.02 cfs 0.011 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=0.02 cfs 0.011 af

Reach 50R: Overland flow Avg. Flow Depth=0.07' Max Vel=1.02 fps Inflow=0.13 cfs 0.046 af
n=0.025 L=42.0' S=0.0179 '/' Capacity=186.81 cfs Outflow=0.13 cfs 0.046 af

Reach 52R: Wetland Flow Avg. Flow Depth=0.13' Max Vel=1.08 fps Inflow=0.92 cfs 0.247 af
n=0.045 L=123.0' S=0.0285 '/' Capacity=17.83 cfs Outflow=0.92 cfs 0.246 af

Reach 53R: Wetland Flow Avg. Flow Depth=0.06' Max Vel=0.73 fps Inflow=0.19 cfs 0.027 af
n=0.045 L=135.0' S=0.0370 '/' Capacity=20.35 cfs Outflow=0.19 cfs 0.027 af

Reach 54R: Combined Wetland Flow Avg. Flow Depth=0.12' Max Vel=2.87 fps Inflow=1.10 cfs 0.273 af
n=0.045 L=87.0' S=0.1379 '/' Capacity=610.11 cfs Outflow=1.10 cfs 0.273 af

Reach 63R: Overland Flow Avg. Flow Depth=0.01' Max Vel=0.48 fps Inflow=0.02 cfs 0.022 af
n=0.030 L=126.0' S=0.0476 '/' Capacity=43.27 cfs Outflow=0.02 cfs 0.021 af

Reach 65R: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.72 fps Inflow=0.15 cfs 0.155 af
n=0.035 L=342.1' S=0.0270 '/' Capacity=22.35 cfs Outflow=0.15 cfs 0.154 af

Reach 66R: Overland Flow Avg. Flow Depth=0.02' Max Vel=0.93 fps Inflow=0.03 cfs 0.029 af
n=0.025 L=48.0' S=0.0677 '/' Capacity=24.68 cfs Outflow=0.03 cfs 0.029 af

Reach 67aR: Overland flow Avg. Flow Depth=0.07' Max Vel=1.62 fps Inflow=0.18 cfs 0.106 af
n=0.030 L=58.0' S=0.0690 '/' Capacity=65.05 cfs Outflow=0.18 cfs 0.106 af

Reach 67bR: Overland flow Avg. Flow Depth=0.06' Max Vel=0.70 fps Inflow=0.18 cfs 0.106 af
n=0.030 L=115.0' S=0.0087 '/' Capacity=24.95 cfs Outflow=0.18 cfs 0.105 af

Reach 69R: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.88 fps Inflow=0.18 cfs 0.105 af
n=0.035 L=84.0' S=0.0357 '/' Capacity=101.76 cfs Outflow=0.18 cfs 0.105 af

Reach 70R: Overland Flow From Det Avg. Flow Depth=0.08' Max Vel=1.69 fps Inflow=0.24 cfs 0.119 af
n=0.035 L=61.0' S=0.0820 '/' Capacity=60.79 cfs Outflow=0.24 cfs 0.119 af

Reach 100R: Reach 100 Inflow=0.17 cfs 0.170 af
Outflow=0.17 cfs 0.170 af

Reach 200R: Reach 200 Inflow=0.75 cfs 0.302 af
Outflow=0.75 cfs 0.302 af

Reach 300R: Reach 300 Inflow=1.62 cfs 0.379 af
Outflow=1.62 cfs 0.379 af

Reach 400R: Reach 400 Inflow=1.90 cfs 0.468 af
Outflow=1.90 cfs 0.468 af

Reach 800R: Svenson Pond Inflow=2.42 cfs 0.965 af
Outflow=2.42 cfs 0.965 af

Pond 1P: Drop Inlet Peak Elev=201.20' Storage=1 cf Inflow=0.80 cfs 0.186 af
Primary=0.80 cfs 0.186 af Secondary=0.00 cfs 0.000 af Outflow=0.80 cfs 0.186 af

Pond 2P: Prop. 18" Cross Culvert Peak Elev=198.74' Storage=48 cf Inflow=1.94 cfs 0.553 af
Primary=1.94 cfs 0.553 af Secondary=0.00 cfs 0.000 af Outflow=1.94 cfs 0.553 af

Pond 4P: Prop. CB#3 Peak Elev=200.14' Storage=12 cf Inflow=2.35 cfs 0.367 af
Primary=2.35 cfs 0.367 af Secondary=0.00 cfs 0.000 af Outflow=2.35 cfs 0.367 af

Pond 6P: Inlet Depression Peak Elev=200.56' Storage=116 cf Inflow=1.32 cfs 0.096 af
Primary=1.26 cfs 0.096 af Secondary=0.00 cfs 0.000 af Outflow=1.26 cfs 0.096 af

Pond 8P: 24" Cross Culvert Peak Elev=197.32' Storage=125 cf Inflow=2.42 cfs 0.962 af
Primary=2.42 cfs 0.961 af Secondary=0.00 cfs 0.000 af Outflow=2.42 cfs 0.961 af

Pond 10P: Revised CB#10 Peak Elev=200.60' Storage=10 cf Inflow=0.88 cfs 0.222 af
Primary=0.88 cfs 0.221 af Secondary=0.00 cfs 0.000 af Outflow=0.88 cfs 0.221 af

Pond 12P: Ex. CB#2 Peak Elev=200.03' Storage=18 cf Inflow=2.64 cfs 0.391 af
Primary=2.64 cfs 0.391 af Secondary=0.00 cfs 0.000 af Outflow=2.64 cfs 0.391 af

Pond 13P: Infiltration Pond Peak Elev=203.00' Storage=0 cf Inflow=0.08 cfs 0.015 af
Discarded=0.08 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.015 af

Pond 14P: Ex. 15" Culvert Peak Elev=201.65' Storage=102 cf Inflow=0.18 cfs 0.014 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=0.11 cfs 0.014 af

Pond 16P: Ex. 12" CMP Peak Elev=203.52' Storage=37 cf Inflow=0.17 cfs 0.171 af
Outflow=0.17 cfs 0.170 af

Pond 17P: Prop. 24" HDPE N-12 Peak Elev=202.65' Storage=45 cf Inflow=0.75 cfs 0.303 af
Primary=0.75 cfs 0.302 af Secondary=0.00 cfs 0.000 af Outflow=0.75 cfs 0.302 af

Pond 18P: Box Culvert Peak Elev=190.61' Storage=20 cf Inflow=1.62 cfs 0.379 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=1.62 cfs 0.379 af

Pond 19P: Box Culvert Peak Elev=183.47' Storage=5 cf Inflow=1.90 cfs 0.468 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=1.90 cfs 0.468 af

Pond 47P: Inlet Sump High Point Drive Peak Elev=237.18' Storage=26 cf Inflow=0.94 cfs 0.155 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0622 '/' Outflow=0.94 cfs 0.155 af

Pond 48P: High Point Drive Cul-de Sac Peak Elev=236.34' Storage=72 cf Inflow=0.55 cfs 0.040 af
15.0" Round Culvert n=0.012 L=55.0' S=0.0118 '/' Outflow=0.53 cfs 0.040 af

Pond 49P: Community Drive Cul-de Sac Peak Elev=217.59' Storage=1,888 cf Inflow=0.91 cfs 0.066 af
15.0" Round Culvert n=0.012 L=70.0' S=0.0064 '/' Outflow=0.47 cfs 0.023 af

Pond 50P: 15" HDPE (Access Road) Peak Elev=203.43' Storage=18 cf Inflow=0.13 cfs 0.047 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0060 '/' Outflow=0.13 cfs 0.046 af

Pond 51P: Outlet Pond Peak Elev=214.00' Storage=895 cf Inflow=0.05 cfs 0.023 af
Outflow=0.01 cfs 0.002 af

Pond 52P: S Wetland Crossing 24" RCP Peak Elev=213.75' Storage=9 cf Inflow=0.75 cfs 0.128 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=36.0' S=0.0278 '/' Outflow=0.75 cfs 0.128 af

Pond 53P: N Wetland Crossing 24" RCP Peak Elev=215.60' Storage=3 cf Inflow=0.19 cfs 0.027 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=25.0' S=0.0600 '/' Outflow=0.19 cfs 0.027 af

Pond 54P: Inlet Sump Detention Pond #110 Peak Elev=225.36' Storage=107 cf Inflow=0.66 cfs 0.107 af
18.0" Round Culvert n=0.012 L=35.0' S=0.0429 '/' Outflow=0.65 cfs 0.106 af

Pond 55P: Drop Inlet #55 Peak Elev=203.87' Storage=0.000 af Inflow=0.05 cfs 0.033 af
15.0" Round Culvert n=0.012 L=93.2' S=0.0054 '/' Outflow=0.05 cfs 0.033 af

Pond 56P: CB #56 Peak Elev=224.65' Storage=2 cf Inflow=0.08 cfs 0.013 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0084 '/' Outflow=0.08 cfs 0.013 af

Pond 101P: Ex. Rain Garden #101 Peak Elev=201.06' Storage=905 cf Inflow=0.65 cfs 0.056 af
Primary=0.23 cfs 0.037 af Secondary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.037 af

Pond 102P: Ex. Rain Garden #102 Peak Elev=200.02' Storage=5,628 cf Inflow=2.81 cfs 0.411 af
Primary=0.46 cfs 0.383 af Secondary=0.11 cfs 0.005 af Outflow=0.57 cfs 0.388 af

Pond 103P: Gravel Wetland #103 Peak Elev=213.61' Storage=2,410 cf Inflow=0.98 cfs 0.076 af
Primary=0.02 cfs 0.022 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.022 af

Pond 104P: Gravel Wetland #104 Peak Elev=216.15' Storage=1,450 cf Inflow=0.70 cfs 0.053 af
Primary=0.01 cfs 0.011 af Secondary=0.03 cfs 0.009 af Tertiary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.020 af

Pond 105P: Rain Garden #105 Peak Elev=218.30' Storage=6,366 cf Inflow=2.55 cfs 0.266 af
Outflow=0.15 cfs 0.153 af

Pond 106P: Rain Garden #106 Peak Elev=217.62' Storage=2,504 cf Inflow=0.94 cfs 0.085 af
Outflow=0.03 cfs 0.029 af

Pond 107P: Rain Garden #107 Peak Elev=228.07' Storage=11,584 cf Inflow=2.43 cfs 0.374 af
Discarded=0.02 cfs 0.016 af Primary=0.18 cfs 0.106 af Secondary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.122 af

Pond 108P: Rain Garden #108 Peak Elev=205.16' Storage=388 cf Inflow=0.24 cfs 0.018 af
Primary=0.02 cfs 0.013 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.013 af

Pond 109P: Stormtech Detention Pond #109 Peak Elev=220.76' Storage=1,403 cf Inflow=0.98 cfs 0.084 af
Outflow=0.14 cfs 0.082 af

Pond 110P: Detention Pond #110 Peak Elev=218.70' Storage=1,182 cf Inflow=0.73 cfs 0.121 af
Primary=0.24 cfs 0.119 af Secondary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.119 af

Pond C30P: CB #30 Peak Elev=200.82' Storage=10 cf Inflow=0.84 cfs 0.208 af
Primary=0.84 cfs 0.208 af Secondary=0.00 cfs 0.000 af Outflow=0.84 cfs 0.208 af

Pond C31P: CB #31 Peak Elev=216.15' Storage=25 cf Inflow=0.70 cfs 0.052 af
15.0" Round Culvert n=0.012 L=25.0' S=0.0060 '/' Outflow=0.69 cfs 0.051 af

Pond C32P: CB #32 Peak Elev=216.15' Storage=22 cf Inflow=0.34 cfs 0.024 af
15.0" Round Culvert n=0.012 L=29.0' S=0.0052 '/' Outflow=0.33 cfs 0.024 af

Pond C33P: CB #33 Peak Elev=213.61' Storage=14 cf Inflow=0.61 cfs 0.044 af
15.0" Round Culvert n=0.012 L=28.7' S=0.0070 '/' Outflow=0.61 cfs 0.044 af

Pond C34P: CB #34 Peak Elev=216.82' Storage=7 cf Inflow=0.35 cfs 0.028 af
15.0" Round Culvert n=0.012 L=63.5' S=0.0669 '/' Outflow=0.35 cfs 0.028 af

Pond C35P: CB #35 Peak Elev=218.29' Storage=21 cf Inflow=0.37 cfs 0.027 af
15.0" Round Culvert n=0.012 L=8.0' S=0.0125 '/' Outflow=0.37 cfs 0.027 af

Pond C36P: CB #36 Peak Elev=224.52' Storage=6 cf Inflow=0.73 cfs 0.066 af
15.0" Round Culvert n=0.012 L=162.0' S=0.0051 '/' Outflow=0.73 cfs 0.066 af

Pond C37P: CB #37 Peak Elev=222.49' Storage=6 cf Inflow=0.98 cfs 0.084 af
15.0" Round Culvert n=0.012 L=70.5' S=0.0071 '/' Outflow=0.98 cfs 0.084 af

Pond C38P: CB #38 Peak Elev=219.87' Storage=4 cf Inflow=0.46 cfs 0.034 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0550 '/' Outflow=0.46 cfs 0.034 af

Pond C39P: CB #39 Peak Elev=218.30' Storage=16 cf Inflow=0.59 cfs 0.044 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0275 '/' Outflow=0.59 cfs 0.044 af

Pond C40P: CB #40 Peak Elev=218.30' Storage=9 cf Inflow=0.22 cfs 0.018 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0090 '/' Outflow=0.22 cfs 0.017 af

Pond C41P: CB #41 Peak Elev=217.61' Storage=18 cf Inflow=0.38 cfs 0.028 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0114 '/' Outflow=0.37 cfs 0.028 af

Pond C42P: CB #42 Peak Elev=217.62' Storage=12 cf Inflow=0.19 cfs 0.014 af
15.0" Round Culvert n=0.012 L=26.0' S=0.0154 '/' Outflow=0.19 cfs 0.014 af

Pond C43P: CB #43 Peak Elev=227.65' Storage=6 cf Inflow=0.90 cfs 0.068 af
15.0" Round Culvert n=0.012 L=90.0' S=0.0467 '/' Outflow=0.90 cfs 0.068 af

Pond C44P: CB #44 Peak Elev=229.78' Storage=7 cf Inflow=1.15 cfs 0.111 af
15.0" Round Culvert n=0.012 L=110.0' S=0.0068 '/' Outflow=1.15 cfs 0.111 af

Pond C45P: CB #45 Peak Elev=230.86' Storage=4 cf Inflow=0.50 cfs 0.047 af
15.0" Round Culvert n=0.012 L=65.0' S=0.0062 '/' Outflow=0.50 cfs 0.046 af

Pond C46P: CB #46 Peak Elev=233.54' Storage=11 cf Inflow=1.27 cfs 0.246 af
Primary=1.27 cfs 0.246 af Secondary=0.01 cfs 0.000 af Outflow=1.27 cfs 0.246 af

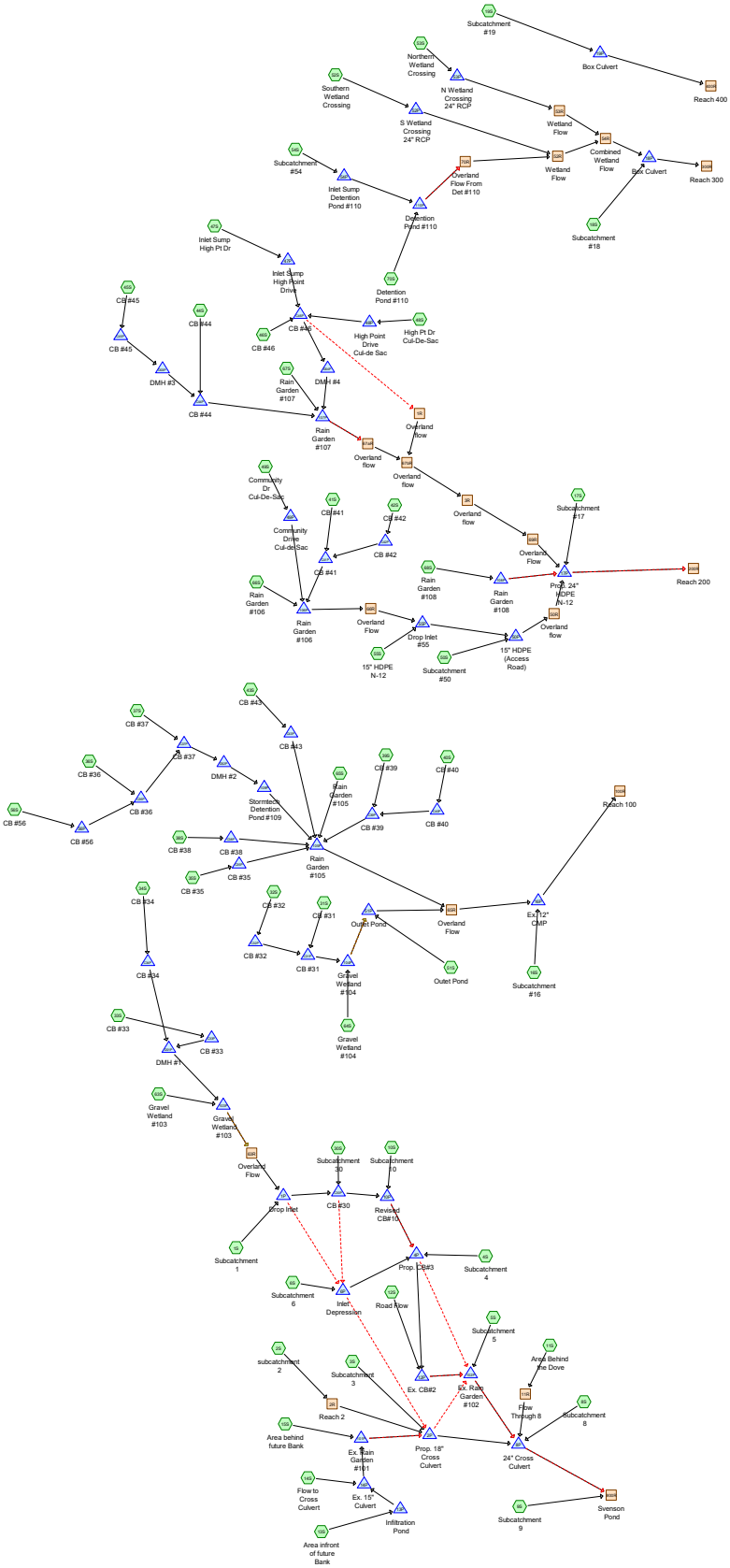
Pond D01P: DMH #1 Peak Elev=213.61' Storage=18 cf Inflow=0.95 cfs 0.072 af
15.0" Round Culvert n=0.012 L=22.5' S=0.0089 '/' Outflow=0.95 cfs 0.071 af

Pond D02P: DMH #2 Peak Elev=220.76' Storage=15 cf Inflow=0.98 cfs 0.084 af
24.0" Round Culvert n=0.012 L=3.0' S=0.0000 '/' Outflow=0.98 cfs 0.084 af

Pond D03P: DMH #3 Peak Elev=230.34' Storage=4 cf Inflow=0.50 cfs 0.046 af
15.0" Round Culvert n=0.012 L=65.5' S=0.0099 '/' Outflow=0.50 cfs 0.046 af

Pond D04P: DMH #4 Peak Elev=228.54' Storage=7 cf Inflow=1.27 cfs 0.246 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=1.27 cfs 0.246 af

Total Runoff Area = 78.998 ac Runoff Volume = 2.948 af Average Runoff Depth = 0.45"
92.80% Pervious = 73.313 ac 7.20% Impervious = 5.685 ac



Subcat Reach Pond Link

Routing Diagram for 20-097 Proposed Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

HydroCAD® 10.00-22 s/n 07605 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=240,329 sf 0.00% Impervious Runoff Depth>1.09"
Flow Length=1,542' Tc=32.6 min CN=60 Runoff=3.36 cfs 0.499 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>1.08"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=7.71 cfs 1.573 af

Subcatchment 3S: Subcatchment 3 Runoff Area=118,503 sf 0.00% Impervious Runoff Depth>0.16"
Flow Length=993' Tc=20.7 min CN=40 Runoff=0.06 cfs 0.036 af

Subcatchment 4S: Subcatchment 4 Runoff Area=9,068 sf 100.00% Impervious Runoff Depth>4.40"
Flow Length=207' Tc=6.0 min CN=98 Runoff=0.92 cfs 0.076 af

Subcatchment 5S: Subcatchment 5 Runoff Area=22,497 sf 40.08% Impervious Runoff Depth>1.28"
Flow Length=212' Tc=7.0 min CN=63 Runoff=0.68 cfs 0.055 af

Subcatchment 6S: Subcatchment 6 Runoff Area=25,520 sf 84.67% Impervious Runoff Depth>3.43"
Tc=6.0 min CN=89 Runoff=2.25 cfs 0.167 af

Subcatchment 8S: Subcatchment 8 Runoff Area=25,776 sf 25.48% Impervious Runoff Depth>0.75"
Flow Length=152' Tc=10.4 min CN=54 Runoff=0.31 cfs 0.037 af

Subcatchment 9S: Subcatchment 9 Runoff Area=45,641 sf 11.38% Impervious Runoff Depth>0.37"
Flow Length=259' Tc=13.4 min CN=46 Runoff=0.15 cfs 0.033 af

Subcatchment 10S: Subcatchment 10 Runoff Area=9,312 sf 47.01% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=70 Runoff=0.43 cfs 0.032 af

Subcatchment 11S: Area Behind the Dove Runoff Area=84,440 sf 13.47% Impervious Runoff Depth>0.45"
Flow Length=636' Tc=29.3 min CN=48 Runoff=0.33 cfs 0.073 af

Subcatchment 12S: Road Flow Runoff Area=4,388 sf 100.00% Impervious Runoff Depth>4.40"
Tc=6.0 min CN=98 Runoff=0.45 cfs 0.037 af

Subcatchment 13S: Area infront of future Runoff Area=29,777 sf 30.66% Impervious Runoff Depth>0.92"
Flow Length=175' Tc=12.4 min CN=57 Runoff=0.47 cfs 0.052 af

Subcatchment 14S: Flow to Cross Culvert Runoff Area=7,713 sf 59.39% Impervious Runoff Depth>2.08"
Tc=6.0 min CN=74 Runoff=0.42 cfs 0.031 af

Subcatchment 15S: Area behind future Runoff Area=17,796 sf 67.02% Impervious Runoff Depth>2.49"
Tc=6.0 min CN=79 Runoff=1.17 cfs 0.085 af

Subcatchment 16S: Subcatchment #16 Runoff Area=124,974 sf 4.60% Impervious Runoff Depth>0.46"
Flow Length=344' Tc=16.5 min CN=48 Runoff=0.57 cfs 0.109 af

Subcatchment 17S: Subcatchment #17 Runoff Area=221,822 sf 0.52% Impervious Runoff Depth>1.03"
Flow Length=590' Tc=32.1 min CN=59 Runoff=2.89 cfs 0.435 af

Subcatchment 18S: Subcatchment #18 Runoff Area=168,645 sf 0.00% Impervious Runoff Depth>1.03"
Flow Length=451' Tc=24.9 min CN=59 Runoff=2.45 cfs 0.332 af

Subcatchment 19S: Subcatchment #19 Runoff Area=687,994 sf 0.00% Impervious Runoff Depth>1.08"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=8.03 cfs 1.422 af

Subcatchment 30S: Subcatchment 30 Runoff Area=5,396 sf 79.95% Impervious Runoff Depth>3.63"
Tc=6.0 min CN=91 Runoff=0.50 cfs 0.037 af

Subcatchment 31S: CB #31 Runoff Area=6,793 sf 80.13% Impervious Runoff Depth>3.63"
Tc=6.0 min CN=91 Runoff=0.62 cfs 0.047 af

Subcatchment 32S: CB #32 Runoff Area=7,675 sf 61.20% Impervious Runoff Depth>3.03"
Tc=6.0 min CN=85 Runoff=0.61 cfs 0.045 af

Subcatchment 33S: CB #33 Runoff Area=14,563 sf 62.46% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=84 Runoff=1.12 cfs 0.082 af

Subcatchment 34S: CB #34 Runoff Area=5,164 sf 100.00% Impervious Runoff Depth>4.40"
Tc=6.0 min CN=98 Runoff=0.52 cfs 0.043 af

Subcatchment 35S: CB #35 Runoff Area=7,817 sf 68.21% Impervious Runoff Depth>3.23"
Tc=6.0 min CN=87 Runoff=0.66 cfs 0.048 af

Subcatchment 36S: CB #36 Runoff Area=12,881 sf 80.50% Impervious Runoff Depth>3.63"
Tc=6.0 min CN=91 Runoff=1.18 cfs 0.089 af

Subcatchment 37S: CB #37 Runoff Area=5,252 sf 70.16% Impervious Runoff Depth>3.23"
Tc=6.0 min CN=87 Runoff=0.44 cfs 0.032 af

Subcatchment 38S: CB #38 Runoff Area=8,972 sf 76.16% Impervious Runoff Depth>3.43"
Tc=6.0 min CN=89 Runoff=0.79 cfs 0.059 af

Subcatchment 39S: CB #39 Runoff Area=8,469 sf 63.81% Impervious Runoff Depth>3.03"
Tc=6.0 min CN=85 Runoff=0.67 cfs 0.049 af

Subcatchment 40S: CB #40 Runoff Area=3,230 sf 100.00% Impervious Runoff Depth>4.40"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.027 af

Subcatchment 41S: CB #41 Runoff Area=2,930 sf 92.56% Impervious Runoff Depth>4.06"
Tc=6.0 min CN=95 Runoff=0.29 cfs 0.023 af

Subcatchment 42S: CB #42 Runoff Area=3,320 sf 84.85% Impervious Runoff Depth>3.74"
Tc=6.0 min CN=92 Runoff=0.31 cfs 0.024 af

Subcatchment 43S: CB #43 Runoff Area=14,691 sf 86.27% Impervious Runoff Depth>3.95"
Tc=6.0 min CN=94 Runoff=1.43 cfs 0.111 af

Subcatchment 44S: CB #44 Runoff Area=27,005 sf 48.05% Impervious Runoff Depth>2.49"
Flow Length=493' Tc=14.6 min CN=79 Runoff=1.38 cfs 0.129 af

Subcatchment 45S: CB #45 Runoff Area=30,206 sf 17.92% Impervious Runoff Depth>1.84"
Flow Length=265' Tc=10.2 min CN=71 Runoff=1.26 cfs 0.107 af

Subcatchment 46S: CB #46 Runoff Area=9,814 sf 97.25% Impervious Runoff Depth>4.29"
Tc=6.0 min CN=97 Runoff=0.99 cfs 0.080 af

Subcatchment 47S: Inlet Sump High Pt Dr Runoff Area=174,905 sf 1.77% Impervious Runoff Depth>1.28"
Flow Length=862' Tc=26.2 min CN=63 Runoff=3.30 cfs 0.427 af

Subcatchment 48S: High Pt Dr Cul-De-Sac Runoff Area=11,063 sf 68.77% Impervious Runoff Depth>3.33"
Tc=6.0 min CN=88 Runoff=0.95 cfs 0.070 af

Subcatchment 49S: Community Dr Runoff Area=19,859 sf 64.00% Impervious Runoff Depth>3.13"
Tc=6.0 min CN=86 Runoff=1.62 cfs 0.119 af

Subcatchment 50S: Subcatchment #50 Runoff Area=20,009 sf 0.00% Impervious Runoff Depth>1.09"
Flow Length=209' Tc=15.8 min CN=60 Runoff=0.37 cfs 0.042 af

Subcatchment 51S: Outet Pond Runoff Area=2,846 sf 0.00% Impervious Runoff Depth>1.16"
Tc=6.0 min CN=61 Runoff=0.08 cfs 0.006 af

Subcatchment 52S: Southern Wetland Runoff Area=156,553 sf 0.00% Impervious Runoff Depth>1.21"
Flow Length=971' Tc=24.9 min CN=62 Runoff=2.83 cfs 0.363 af

Subcatchment 53S: Northern Wetland Runoff Area=26,372 sf 0.00% Impervious Runoff Depth>1.41"
Flow Length=497' Tc=20.6 min CN=65 Runoff=0.62 cfs 0.071 af

Subcatchment 54S: Subcatchment #54 Runoff Area=120,358 sf 0.00% Impervious Runoff Depth>1.28"
Flow Length=1,059' Tc=24.7 min CN=63 Runoff=2.33 cfs 0.294 af

Subcatchment 55S: 15" HDPE N-12 Runoff Area=4,389 sf 0.00% Impervious Runoff Depth>1.16"
Tc=6.0 min CN=61 Runoff=0.12 cfs 0.010 af

Subcatchment 56S: CB #56 Runoff Area=16,876 sf 0.00% Impervious Runoff Depth>1.15"
Flow Length=247' Tc=15.6 min CN=61 Runoff=0.34 cfs 0.037 af

Subcatchment 63S: Gravel Wetland #103 Runoff Area=6,291 sf 0.30% Impervious Runoff Depth>1.16"
Tc=6.0 min CN=61 Runoff=0.17 cfs 0.014 af

Subcatchment 64S: Gravel Wetland #104 Runoff Area=1,940 sf 0.00% Impervious Runoff Depth>1.16"
Tc=6.0 min CN=61 Runoff=0.05 cfs 0.004 af

Subcatchment 65S: Rain Garden #105 Runoff Area=10,279 sf 0.72% Impervious Runoff Depth>1.49"
Tc=6.0 min CN=66 Runoff=0.38 cfs 0.029 af

Subcatchment 66S: Rain Garden #106 Runoff Area=30,740 sf 5.62% Impervious Runoff Depth>1.48"
Flow Length=153' Tc=17.2 min CN=66 Runoff=0.82 cfs 0.087 af

Subcatchment 67S: Rain Garden #107 Runoff Area=23,728 sf 0.00% Impervious Runoff Depth>1.16"
Flow Length=99' Tc=8.8 min CN=61 Runoff=0.58 cfs 0.052 af

Subcatchment 68S: Rain Garden #108 Runoff Area=7,539 sf 47.49% Impervious Runoff Depth>2.49"
Tc=6.0 min CN=79 Runoff=0.50 cfs 0.036 af

Subcatchment 70S: Detention Pond #110 Runoff Area=24,497 sf 0.00% Impervious Runoff Depth>1.03"
Flow Length=273' Tc=12.3 min CN=59 Runoff=0.46 cfs 0.048 af

Reach 1R: Overland flow Avg. Flow Depth=0.15' Max Vel=1.98 fps Inflow=0.79 cfs 0.034 af
n=0.030 L=264.5' S=0.0340 '/' Capacity=45.70 cfs Outflow=0.78 cfs 0.034 af

Reach 2R: Reach 2 Avg. Flow Depth=0.54' Max Vel=3.52 fps Inflow=7.71 cfs 1.573 af
n=0.022 L=220.0' S=0.0091 '/' Capacity=24.64 cfs Outflow=7.71 cfs 1.572 af

Reach 3R: Overland flow Avg. Flow Depth=0.15' Max Vel=3.82 fps Inflow=1.50 cfs 0.579 af
n=0.030 L=71.0' S=0.1268 '/' Capacity=88.20 cfs Outflow=1.50 cfs 0.579 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.12' Max Vel=0.88 fps Inflow=0.33 cfs 0.073 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=0.32 cfs 0.073 af

Reach 50R: Overland flow Avg. Flow Depth=0.12' Max Vel=1.52 fps Inflow=0.47 cfs 0.140 af
n=0.025 L=42.0' S=0.0179 '/' Capacity=186.81 cfs Outflow=0.47 cfs 0.140 af

Reach 52R: Wetland Flow Avg. Flow Depth=0.22' Max Vel=1.57 fps Inflow=3.14 cfs 0.695 af
n=0.045 L=123.0' S=0.0285 '/' Capacity=17.83 cfs Outflow=3.14 cfs 0.694 af

Reach 53R: Wetland Flow Avg. Flow Depth=0.10' Max Vel=1.04 fps Inflow=0.62 cfs 0.071 af
n=0.045 L=135.0' S=0.0370 '/' Capacity=20.35 cfs Outflow=0.62 cfs 0.071 af

Reach 54R: Combined Wetland Flow Avg. Flow Depth=0.25' Max Vel=4.47 fps Inflow=3.72 cfs 0.765 af
n=0.045 L=87.0' S=0.1379 '/' Capacity=610.11 cfs Outflow=3.72 cfs 0.765 af

Reach 63R: Overland Flow Avg. Flow Depth=0.02' Max Vel=0.68 fps Inflow=0.06 cfs 0.043 af
n=0.030 L=126.0' S=0.0476 '/' Capacity=43.27 cfs Outflow=0.06 cfs 0.043 af

Reach 65R: Overland Flow Avg. Flow Depth=0.13' Max Vel=1.34 fps Inflow=1.17 cfs 0.386 af
n=0.035 L=342.1' S=0.0270 '/' Capacity=22.35 cfs Outflow=1.13 cfs 0.385 af

Reach 66R: Overland Flow Avg. Flow Depth=0.05' Max Vel=1.65 fps Inflow=0.19 cfs 0.089 af
n=0.025 L=48.0' S=0.0677 '/' Capacity=24.68 cfs Outflow=0.19 cfs 0.089 af

Reach 67aR: Overland flow Avg. Flow Depth=0.17' Max Vel=3.09 fps Inflow=1.49 cfs 0.546 af
n=0.030 L=58.0' S=0.0690 '/' Capacity=65.05 cfs Outflow=1.49 cfs 0.546 af

Reach 67bR: Overland flow Avg. Flow Depth=0.21' Max Vel=1.51 fps Inflow=1.50 cfs 0.580 af
n=0.030 L=115.0' S=0.0087 '/' Capacity=24.95 cfs Outflow=1.50 cfs 0.579 af

Reach 69R: Overland Flow Avg. Flow Depth=0.14' Max Vel=1.67 fps Inflow=1.50 cfs 0.579 af
n=0.035 L=84.0' S=0.0357 '/' Capacity=101.76 cfs Outflow=1.50 cfs 0.578 af

Reach 70R: Overland Flow From Det Avg. Flow Depth=0.10' Max Vel=1.99 fps Inflow=0.42 cfs 0.332 af
n=0.035 L=61.0' S=0.0820 '/' Capacity=60.79 cfs Outflow=0.42 cfs 0.332 af

Reach 100R: Reach 100 Inflow=1.38 cfs 0.493 af
Outflow=1.38 cfs 0.493 af

Reach 200R: Reach 200 Inflow=4.43 cfs 1.176 af
Outflow=4.43 cfs 1.176 af

Reach 300R: Reach 300 Inflow=6.17 cfs 1.096 af
Outflow=6.17 cfs 1.096 af

Reach 400R: Reach 400 Inflow=8.03 cfs 1.422 af
Outflow=8.03 cfs 1.422 af

Reach 800R: Svenson Pond Inflow=11.51 cfs 2.748 af
Outflow=11.51 cfs 2.748 af

Pond 1P: Drop Inlet Peak Elev=202.85' Storage=7 cf Inflow=3.38 cfs 0.542 af
Primary=3.37 cfs 0.542 af Secondary=0.00 cfs 0.000 af Outflow=3.37 cfs 0.542 af

Pond 2P: Prop. 18" Cross Culvert Peak Elev=199.74' Storage=425 cf Inflow=8.07 cfs 1.704 af
Primary=8.04 cfs 1.704 af Secondary=0.00 cfs 0.000 af Outflow=8.04 cfs 1.704 af

Pond 4P: Prop. CB#3 Peak Elev=201.68' Storage=31 cf Inflow=5.50 cfs 0.854 af
Primary=5.50 cfs 0.854 af Secondary=0.00 cfs 0.000 af Outflow=5.50 cfs 0.854 af

Pond 6P: Inlet Depression Peak Elev=201.55' Storage=546 cf Inflow=2.25 cfs 0.167 af
Primary=1.98 cfs 0.167 af Secondary=0.00 cfs 0.000 af Outflow=1.98 cfs 0.167 af

Pond 8P: 24" Cross Culvert Peak Elev=198.46' Storage=1,282 cf Inflow=11.54 cfs 2.716 af
Primary=11.43 cfs 2.715 af Secondary=0.00 cfs 0.000 af Outflow=11.43 cfs 2.715 af

Pond 10P: Revised CB#10 Peak Elev=202.16' Storage=41 cf Inflow=3.60 cfs 0.611 af
Primary=3.57 cfs 0.611 af Secondary=0.00 cfs 0.000 af Outflow=3.57 cfs 0.611 af

Pond 12P: Ex. CB#2 Peak Elev=201.06' Storage=31 cf Inflow=5.56 cfs 0.891 af
Primary=5.54 cfs 0.891 af Secondary=0.00 cfs 0.000 af Outflow=5.54 cfs 0.891 af

Pond 13P: Infiltration Pond Peak Elev=203.16' Storage=371 cf Inflow=0.47 cfs 0.052 af
Discarded=0.19 cfs 0.052 af Primary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.052 af

Pond 14P: Ex. 15" Culvert Peak Elev=201.77' Storage=205 cf Inflow=0.42 cfs 0.031 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=0.26 cfs 0.030 af

Pond 16P: Ex. 12" CMP Peak Elev=204.10' Storage=436 cf Inflow=1.48 cfs 0.494 af
Outflow=1.38 cfs 0.493 af

Pond 17P: Prop. 24" HDPE N-12 Peak Elev=203.32' Storage=306 cf Inflow=4.45 cfs 1.177 af
Primary=4.43 cfs 1.176 af Secondary=0.00 cfs 0.000 af Outflow=4.43 cfs 1.176 af

Pond 18P: Box Culvert Peak Elev=191.14' Storage=59 cf Inflow=6.17 cfs 1.096 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=6.17 cfs 1.096 af

Pond 19P: Box Culvert Peak Elev=184.02' Storage=18 cf Inflow=8.03 cfs 1.422 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=8.03 cfs 1.422 af

Pond 47P: Inlet Sump High Point Drive Peak Elev=237.61' Storage=108 cf Inflow=3.30 cfs 0.427 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0622 '/' Outflow=3.30 cfs 0.427 af

Pond 48P: High Point Drive Cul-de Sac Peak Elev=236.45' Storage=107 cf Inflow=0.95 cfs 0.070 af
15.0" Round Culvert n=0.012 L=55.0' S=0.0118 '/' Outflow=0.92 cfs 0.070 af

Pond 49P: Community Drive Cul-de Sac Peak Elev=218.09' Storage=4,057 cf Inflow=1.62 cfs 0.119 af
15.0" Round Culvert n=0.012 L=70.0' S=0.0064 '/' Outflow=0.32 cfs 0.026 af

Pond 50P: 15" HDPE (Access Road) Peak Elev=203.62' Storage=41 cf Inflow=0.48 cfs 0.140 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0060 '/' Outflow=0.47 cfs 0.140 af

Pond 51P: Outlet Pond Peak Elev=214.04' Storage=923 cf Inflow=0.54 cfs 0.069 af
Outflow=0.34 cfs 0.048 af

Pond 52P: S Wetland Crossing 24" RCP Peak Elev=214.10' Storage=39 cf Inflow=2.83 cfs 0.363 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=36.0' S=0.0278 '/' Outflow=2.83 cfs 0.363 af

Pond 53P: N Wetland Crossing 24" RCP Peak Elev=215.72' Storage=7 cf Inflow=0.62 cfs 0.071 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=25.0' S=0.0600 '/' Outflow=0.62 cfs 0.071 af

Pond 54P: Inlet Sump Detention Pond #110 Peak Elev=225.70' Storage=241 cf Inflow=2.33 cfs 0.294 af
18.0" Round Culvert n=0.012 L=35.0' S=0.0429 '/' Outflow=2.32 cfs 0.293 af

Pond 55P: Drop Inlet #55 Peak Elev=203.99' Storage=0.000 af Inflow=0.20 cfs 0.098 af
15.0" Round Culvert n=0.012 L=93.2' S=0.0054 '/' Outflow=0.20 cfs 0.098 af

Pond 56P: CB #56 Peak Elev=224.82' Storage=4 cf Inflow=0.34 cfs 0.037 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0084 '/' Outflow=0.34 cfs 0.037 af

Pond 101P: Ex. Rain Garden #101 Peak Elev=201.70' Storage=1,915 cf Inflow=1.41 cfs 0.115 af
Primary=0.31 cfs 0.096 af Secondary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.096 af

Pond 102P: Ex. Rain Garden #102 Peak Elev=200.21' Storage=6,283 cf Inflow=5.70 cfs 0.946 af
Primary=0.46 cfs 0.520 af Secondary=4.56 cfs 0.382 af Outflow=5.02 cfs 0.902 af

Pond 103P: Gravel Wetland #103 Peak Elev=214.39' Storage=4,346 cf Inflow=1.80 cfs 0.138 af
Primary=0.02 cfs 0.026 af Secondary=0.04 cfs 0.017 af Tertiary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.043 af

Pond 104P: Gravel Wetland #104 Peak Elev=216.40' Storage=1,750 cf Inflow=1.26 cfs 0.095 af
Primary=0.01 cfs 0.012 af Secondary=0.49 cfs 0.050 af Tertiary=0.00 cfs 0.000 af Outflow=0.50 cfs 0.063 af

Pond 105P: Rain Garden #105 Peak Elev=218.85' Storage=8,297 cf Inflow=4.36 cfs 0.479 af
Outflow=0.90 cfs 0.338 af

Pond 106P: Rain Garden #106 Peak Elev=218.55' Storage=3,802 cf Inflow=1.71 cfs 0.164 af
Outflow=0.19 cfs 0.089 af

Pond 107P: Rain Garden #107 Peak Elev=228.77' Storage=16,012 cf Inflow=5.75 cfs 0.831 af
Discarded=0.02 cfs 0.018 af Primary=1.49 cfs 0.546 af Secondary=0.00 cfs 0.000 af Outflow=1.51 cfs 0.564 af

Pond 108P: Rain Garden #108 Peak Elev=206.24' Storage=953 cf Inflow=0.50 cfs 0.036 af
Primary=0.02 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.024 af

Pond 109P: Stormtech Detention Pond #109 Peak Elev=221.83' Storage=2,436 cf Inflow=1.78 cfs 0.159 af
Outflow=0.52 cfs 0.156 af

Pond 110P: Detention Pond #110 Peak Elev=220.77' Storage=5,939 cf Inflow=2.65 cfs 0.342 af
Primary=0.42 cfs 0.332 af Secondary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.332 af

Pond C30P: CB #30 Peak Elev=202.42' Storage=42 cf Inflow=3.47 cfs 0.580 af
Primary=3.48 cfs 0.580 af Secondary=0.00 cfs 0.000 af Outflow=3.48 cfs 0.580 af

Pond C31P: CB #31 Peak Elev=216.40' Storage=28 cf Inflow=1.22 cfs 0.091 af
15.0" Round Culvert n=0.012 L=25.0' S=0.0060 '/' Outflow=1.21 cfs 0.091 af

Pond C32P: CB #32 Peak Elev=216.40' Storage=25 cf Inflow=0.61 cfs 0.045 af
15.0" Round Culvert n=0.012 L=29.0' S=0.0052 '/' Outflow=0.60 cfs 0.044 af

Pond C33P: CB #33 Peak Elev=214.39' Storage=24 cf Inflow=1.12 cfs 0.082 af
15.0" Round Culvert n=0.012 L=28.7' S=0.0070 '/' Outflow=1.12 cfs 0.081 af

Pond C34P: CB #34 Peak Elev=216.89' Storage=8 cf Inflow=0.52 cfs 0.043 af
15.0" Round Culvert n=0.012 L=63.5' S=0.0669 '/' Outflow=0.53 cfs 0.043 af

Pond C35P: CB #35 Peak Elev=218.85' Storage=28 cf Inflow=0.66 cfs 0.048 af
15.0" Round Culvert n=0.012 L=8.0' S=0.0125 '/' Outflow=0.64 cfs 0.048 af

Pond C36P: CB #36 Peak Elev=224.70' Storage=8 cf Inflow=1.37 cfs 0.127 af
15.0" Round Culvert n=0.012 L=162.0' S=0.0051 '/' Outflow=1.37 cfs 0.127 af

Pond C37P: CB #37 Peak Elev=222.70' Storage=9 cf Inflow=1.81 cfs 0.159 af
15.0" Round Culvert n=0.012 L=70.5' S=0.0071 '/' Outflow=1.81 cfs 0.159 af

Pond C38P: CB #38 Peak Elev=219.97' Storage=5 cf Inflow=0.79 cfs 0.059 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0550 '/' Outflow=0.79 cfs 0.059 af

Pond C39P: CB #39 Peak Elev=218.85' Storage=23 cf Inflow=1.00 cfs 0.076 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0275 '/' Outflow=0.99 cfs 0.076 af

Pond C40P: CB #40 Peak Elev=218.85' Storage=16 cf Inflow=0.33 cfs 0.027 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0090 '/' Outflow=0.33 cfs 0.027 af

Pond C41P: CB #41 Peak Elev=218.55' Storage=30 cf Inflow=0.59 cfs 0.046 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0114 '/' Outflow=0.58 cfs 0.045 af

Pond C42P: CB #42 Peak Elev=218.56' Storage=23 cf Inflow=0.31 cfs 0.024 af
15.0" Round Culvert n=0.012 L=26.0' S=0.0154 '/' Outflow=0.31 cfs 0.023 af

Pond C43P: CB #43 Peak Elev=227.78' Storage=7 cf Inflow=1.43 cfs 0.111 af
15.0" Round Culvert n=0.012 L=90.0' S=0.0467 '/' Outflow=1.43 cfs 0.111 af

Pond C44P: CB #44 Peak Elev=230.10' Storage=11 cf Inflow=2.57 cfs 0.235 af
15.0" Round Culvert n=0.012 L=110.0' S=0.0068 '/' Outflow=2.57 cfs 0.235 af

Pond C45P: CB #45 Peak Elev=231.10' Storage=8 cf Inflow=1.26 cfs 0.107 af
15.0" Round Culvert n=0.012 L=65.0' S=0.0062 '/' Outflow=1.26 cfs 0.107 af

Pond C46P: CB #46 Peak Elev=233.92' Storage=18 cf Inflow=3.93 cfs 0.578 af
Primary=3.14 cfs 0.544 af Secondary=0.79 cfs 0.034 af Outflow=3.93 cfs 0.578 af

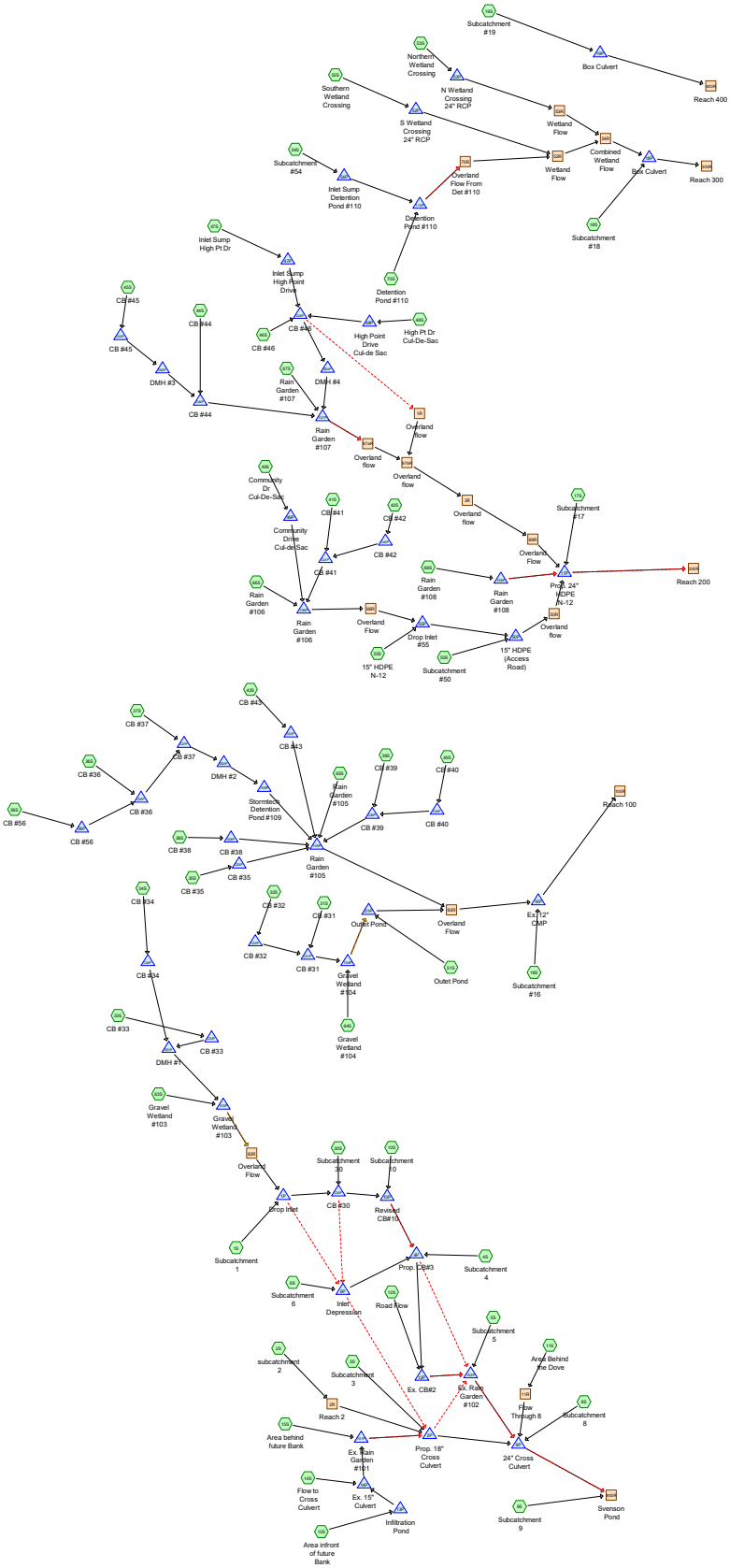
Pond D01P: DMH #1 Peak Elev=214.39' Storage=28 cf Inflow=1.64 cfs 0.125 af
15.0" Round Culvert n=0.012 L=22.5' S=0.0089 '/' Outflow=1.64 cfs 0.124 af

Pond D02P: DMH #2 Peak Elev=221.83' Storage=36 cf Inflow=1.81 cfs 0.159 af
24.0" Round Culvert n=0.012 L=3.0' S=0.0000 '/' Outflow=1.78 cfs 0.159 af

Pond D03P: DMH #3 Peak Elev=230.60' Storage=8 cf Inflow=1.26 cfs 0.107 af
15.0" Round Culvert n=0.012 L=65.5' S=0.0099 '/' Outflow=1.26 cfs 0.107 af

Pond D04P: DMH #4 Peak Elev=228.95' Storage=12 cf Inflow=3.14 cfs 0.544 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=3.14 cfs 0.544 af

Total Runoff Area = 78.998 ac Runoff Volume = 7.829 af Average Runoff Depth = 1.19"
92.80% Pervious = 73.313 ac 7.20% Impervious = 5.685 ac



Subcat Reach Pond Link

Routing Diagram for 20-097 Proposed Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

HydroCAD® 10.00-22 s/n 07605 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=240,329 sf 0.00% Impervious Runoff Depth>1.81"
Flow Length=1,542' Tc=32.6 min CN=60 Runoff=6.03 cfs 0.834 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>1.80"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=13.92 cfs 2.633 af

Subcatchment 3S: Subcatchment 3 Runoff Area=118,503 sf 0.00% Impervious Runoff Depth>0.45"
Flow Length=993' Tc=20.7 min CN=40 Runoff=0.43 cfs 0.103 af

Subcatchment 4S: Subcatchment 4 Runoff Area=9,068 sf 100.00% Impervious Runoff Depth>5.62"
Flow Length=207' Tc=6.0 min CN=98 Runoff=1.17 cfs 0.097 af

Subcatchment 5S: Subcatchment 5 Runoff Area=22,497 sf 40.08% Impervious Runoff Depth>2.08"
Flow Length=212' Tc=7.0 min CN=63 Runoff=1.16 cfs 0.089 af

Subcatchment 6S: Subcatchment 6 Runoff Area=25,520 sf 84.67% Impervious Runoff Depth>4.60"
Tc=6.0 min CN=89 Runoff=2.97 cfs 0.224 af

Subcatchment 8S: Subcatchment 8 Runoff Area=25,776 sf 25.48% Impervious Runoff Depth>1.36"
Flow Length=152' Tc=10.4 min CN=54 Runoff=0.69 cfs 0.067 af

Subcatchment 9S: Subcatchment 9 Runoff Area=45,641 sf 11.38% Impervious Runoff Depth>0.81"
Flow Length=259' Tc=13.4 min CN=46 Runoff=0.49 cfs 0.070 af

Subcatchment 10S: Subcatchment 10 Runoff Area=9,312 sf 47.01% Impervious Runoff Depth>2.69"
Tc=6.0 min CN=70 Runoff=0.66 cfs 0.048 af

Subcatchment 11S: Area Behind the Dove Runoff Area=84,440 sf 13.47% Impervious Runoff Depth>0.93"
Flow Length=636' Tc=29.3 min CN=48 Runoff=0.90 cfs 0.150 af

Subcatchment 12S: Road Flow Runoff Area=4,388 sf 100.00% Impervious Runoff Depth>5.62"
Tc=6.0 min CN=98 Runoff=0.56 cfs 0.047 af

Subcatchment 13S: Area infront of future Runoff Area=29,777 sf 30.66% Impervious Runoff Depth>1.59"
Flow Length=175' Tc=12.4 min CN=57 Runoff=0.92 cfs 0.090 af

Subcatchment 14S: Flow to Cross Culvert Runoff Area=7,713 sf 59.39% Impervious Runoff Depth>3.06"
Tc=6.0 min CN=74 Runoff=0.62 cfs 0.045 af

Subcatchment 15S: Area behind future Runoff Area=17,796 sf 67.02% Impervious Runoff Depth>3.55"
Tc=6.0 min CN=79 Runoff=1.66 cfs 0.121 af

Subcatchment 16S: Subcatchment #16 Runoff Area=124,974 sf 4.60% Impervious Runoff Depth>0.93"
Flow Length=344' Tc=16.5 min CN=48 Runoff=1.62 cfs 0.223 af

Subcatchment 17S: Subcatchment #17 Runoff Area=221,822 sf 0.52% Impervious Runoff Depth>1.73"
Flow Length=590' Tc=32.1 min CN=59 Runoff=5.31 cfs 0.736 af

Subcatchment 18S: Subcatchment #18 Runoff Area=168,645 sf 0.00% Impervious Runoff Depth>1.74"
Flow Length=451' Tc=24.9 min CN=59 Runoff=4.51 cfs 0.561 af

Subcatchment 19S: Subcatchment #19 Runoff Area=687,994 sf 0.00% Impervious Runoff Depth>1.81"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=14.45 cfs 2.379 af

Subcatchment 30S: Subcatchment 30 Runoff Area=5,396 sf 79.95% Impervious Runoff Depth>4.82"
Tc=6.0 min CN=91 Runoff=0.65 cfs 0.050 af

Subcatchment 31S: CB #31 Runoff Area=6,793 sf 80.13% Impervious Runoff Depth>4.82"
Tc=6.0 min CN=91 Runoff=0.82 cfs 0.063 af

Subcatchment 32S: CB #32 Runoff Area=7,675 sf 61.20% Impervious Runoff Depth>4.17"
Tc=6.0 min CN=85 Runoff=0.83 cfs 0.061 af

Subcatchment 33S: CB #33 Runoff Area=14,563 sf 62.46% Impervious Runoff Depth>4.06"
Tc=6.0 min CN=84 Runoff=1.54 cfs 0.113 af

Subcatchment 34S: CB #34 Runoff Area=5,164 sf 100.00% Impervious Runoff Depth>5.62"
Tc=6.0 min CN=98 Runoff=0.66 cfs 0.056 af

Subcatchment 35S: CB #35 Runoff Area=7,817 sf 68.21% Impervious Runoff Depth>4.38"
Tc=6.0 min CN=87 Runoff=0.88 cfs 0.066 af

Subcatchment 36S: CB #36 Runoff Area=12,881 sf 80.50% Impervious Runoff Depth>4.82"
Tc=6.0 min CN=91 Runoff=1.55 cfs 0.119 af

Subcatchment 37S: CB #37 Runoff Area=5,252 sf 70.16% Impervious Runoff Depth>4.38"
Tc=6.0 min CN=87 Runoff=0.59 cfs 0.044 af

Subcatchment 38S: CB #38 Runoff Area=8,972 sf 76.16% Impervious Runoff Depth>4.60"
Tc=6.0 min CN=89 Runoff=1.04 cfs 0.079 af

Subcatchment 39S: CB #39 Runoff Area=8,469 sf 63.81% Impervious Runoff Depth>4.17"
Tc=6.0 min CN=85 Runoff=0.91 cfs 0.068 af

Subcatchment 40S: CB #40 Runoff Area=3,230 sf 100.00% Impervious Runoff Depth>5.62"
Tc=6.0 min CN=98 Runoff=0.42 cfs 0.035 af

Subcatchment 41S: CB #41 Runoff Area=2,930 sf 92.56% Impervious Runoff Depth>5.27"
Tc=6.0 min CN=95 Runoff=0.37 cfs 0.030 af

Subcatchment 42S: CB #42 Runoff Area=3,320 sf 84.85% Impervious Runoff Depth>4.93"
Tc=6.0 min CN=92 Runoff=0.40 cfs 0.031 af

Subcatchment 43S: CB #43 Runoff Area=14,691 sf 86.27% Impervious Runoff Depth>5.15"
Tc=6.0 min CN=94 Runoff=1.83 cfs 0.145 af

Subcatchment 44S: CB #44 Runoff Area=27,005 sf 48.05% Impervious Runoff Depth>3.55"
Flow Length=493' Tc=14.6 min CN=79 Runoff=1.96 cfs 0.183 af

Subcatchment 45S: CB #45 Runoff Area=30,206 sf 17.92% Impervious Runoff Depth>2.78"
Flow Length=265' Tc=10.2 min CN=71 Runoff=1.94 cfs 0.161 af

Subcatchment 46S: CB #46 Runoff Area=9,814 sf 97.25% Impervious Runoff Depth>5.50"
Tc=6.0 min CN=97 Runoff=1.26 cfs 0.103 af

Subcatchment 47S: Inlet Sump High Pt Dr Runoff Area=174,905 sf 1.77% Impervious Runoff Depth>2.07"
Flow Length=862' Tc=26.2 min CN=63 Runoff=5.63 cfs 0.691 af

Subcatchment 48S: High Pt Dr Cul-De-Sac Runoff Area=11,063 sf 68.77% Impervious Runoff Depth>4.49"
Tc=6.0 min CN=88 Runoff=1.26 cfs 0.095 af

Subcatchment 49S: Community Dr Runoff Area=19,859 sf 64.00% Impervious Runoff Depth>4.27"
Tc=6.0 min CN=86 Runoff=2.19 cfs 0.162 af

Subcatchment 50S: Subcatchment #50 Runoff Area=20,009 sf 0.00% Impervious Runoff Depth>1.82"
Flow Length=209' Tc=15.8 min CN=60 Runoff=0.68 cfs 0.070 af

Subcatchment 51S: Outet Pond Runoff Area=2,846 sf 0.00% Impervious Runoff Depth>1.91"
Tc=6.0 min CN=61 Runoff=0.14 cfs 0.010 af

Subcatchment 52S: Southern Wetland Runoff Area=156,553 sf 0.00% Impervious Runoff Depth>1.98"
Flow Length=971' Tc=24.9 min CN=62 Runoff=4.91 cfs 0.594 af

Subcatchment 53S: Northern Wetland Runoff Area=26,372 sf 0.00% Impervious Runoff Depth>2.24"
Flow Length=497' Tc=20.6 min CN=65 Runoff=1.03 cfs 0.113 af

Subcatchment 54S: Subcatchment #54 Runoff Area=120,358 sf 0.00% Impervious Runoff Depth>2.07"
Flow Length=1,059' Tc=24.7 min CN=63 Runoff=3.97 cfs 0.476 af

Subcatchment 55S: 15" HDPE N-12 Runoff Area=4,389 sf 0.00% Impervious Runoff Depth>1.91"
Tc=6.0 min CN=61 Runoff=0.21 cfs 0.016 af

Subcatchment 56S: CB #56 Runoff Area=16,876 sf 0.00% Impervious Runoff Depth>1.91"
Flow Length=247' Tc=15.6 min CN=61 Runoff=0.60 cfs 0.062 af

Subcatchment 63S: Gravel Wetland #103 Runoff Area=6,291 sf 0.30% Impervious Runoff Depth>1.91"
Tc=6.0 min CN=61 Runoff=0.30 cfs 0.023 af

Subcatchment 64S: Gravel Wetland #104 Runoff Area=1,940 sf 0.00% Impervious Runoff Depth>1.91"
Tc=6.0 min CN=61 Runoff=0.09 cfs 0.007 af

Subcatchment 65S: Rain Garden #105 Runoff Area=10,279 sf 0.72% Impervious Runoff Depth>2.33"
Tc=6.0 min CN=66 Runoff=0.62 cfs 0.046 af

Subcatchment 66S: Rain Garden #106 Runoff Area=30,740 sf 5.62% Impervious Runoff Depth>2.33"
Flow Length=153' Tc=17.2 min CN=66 Runoff=1.35 cfs 0.137 af

Subcatchment 67S: Rain Garden #107 Runoff Area=23,728 sf 0.00% Impervious Runoff Depth>1.91"
Flow Length=99' Tc=8.8 min CN=61 Runoff=1.03 cfs 0.087 af

Subcatchment 68S: Rain Garden #108 Runoff Area=7,539 sf 47.49% Impervious Runoff Depth>3.55"
Tc=6.0 min CN=79 Runoff=0.71 cfs 0.051 af

Subcatchment 70S: Detention Pond #110 Runoff Area=24,497 sf 0.00% Impervious Runoff Depth>1.74"
Flow Length=273' Tc=12.3 min CN=59 Runoff=0.86 cfs 0.082 af

Reach 1R: Overland flow Avg. Flow Depth=0.23' Max Vel=2.62 fps Inflow=1.96 cfs 0.094 af
n=0.030 L=264.5' S=0.0340 '/' Capacity=45.70 cfs Outflow=1.95 cfs 0.094 af

Reach 2R: Reach 2 Avg. Flow Depth=0.74' Max Vel=4.19 fps Inflow=13.92 cfs 2.633 af
n=0.022 L=220.0' S=0.0091 '/' Capacity=24.64 cfs Outflow=13.93 cfs 2.631 af

Reach 3R: Overland flow Avg. Flow Depth=0.24' Max Vel=5.19 fps Inflow=4.11 cfs 1.023 af
n=0.030 L=71.0' S=0.1268 '/' Capacity=88.20 cfs Outflow=4.11 cfs 1.023 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.18' Max Vel=1.20 fps Inflow=0.90 cfs 0.150 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=0.90 cfs 0.150 af

Reach 50R: Overland flow Avg. Flow Depth=0.17' Max Vel=1.87 fps Inflow=0.94 cfs 0.268 af
n=0.025 L=42.0' S=0.0179 '/' Capacity=186.81 cfs Outflow=0.94 cfs 0.267 af

Reach 52R: Wetland Flow Avg. Flow Depth=0.29' Max Vel=1.84 fps Inflow=5.29 cfs 1.067 af
n=0.045 L=123.0' S=0.0285 '/' Capacity=17.83 cfs Outflow=5.28 cfs 1.066 af

Reach 53R: Wetland Flow Avg. Flow Depth=0.13' Max Vel=1.21 fps Inflow=1.03 cfs 0.113 af
n=0.045 L=135.0' S=0.0370 '/' Capacity=20.35 cfs Outflow=1.02 cfs 0.113 af

Reach 54R: Combined Wetland Flow Avg. Flow Depth=0.34' Max Vel=5.35 fps Inflow=6.26 cfs 1.179 af
n=0.045 L=87.0' S=0.1379 '/' Capacity=610.11 cfs Outflow=6.26 cfs 1.178 af

Reach 63R: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.91 fps Inflow=0.15 cfs 0.094 af
n=0.030 L=126.0' S=0.0476 '/' Capacity=43.27 cfs Outflow=0.15 cfs 0.094 af

Reach 65R: Overland Flow Avg. Flow Depth=0.19' Max Vel=1.78 fps Inflow=2.86 cfs 0.594 af
n=0.035 L=342.1' S=0.0270 '/' Capacity=22.35 cfs Outflow=2.84 cfs 0.592 af

Reach 66R: Overland Flow Avg. Flow Depth=0.08' Max Vel=2.11 fps Inflow=0.42 cfs 0.182 af
n=0.025 L=48.0' S=0.0677 '/' Capacity=24.68 cfs Outflow=0.42 cfs 0.182 af

Reach 67aR: Overland flow Avg. Flow Depth=0.24' Max Vel=3.79 fps Inflow=2.91 cfs 0.930 af
n=0.030 L=58.0' S=0.0690 '/' Capacity=65.05 cfs Outflow=2.91 cfs 0.929 af

Reach 67bR: Overland flow Avg. Flow Depth=0.38' Max Vel=2.10 fps Inflow=4.11 cfs 1.024 af
n=0.030 L=115.0' S=0.0087 '/' Capacity=24.95 cfs Outflow=4.11 cfs 1.023 af

Reach 69R: Overland Flow Avg. Flow Depth=0.23' Max Vel=2.28 fps Inflow=4.11 cfs 1.023 af
n=0.035 L=84.0' S=0.0357 '/' Capacity=101.76 cfs Outflow=4.11 cfs 1.022 af

Reach 70R: Overland Flow From Det Avg. Flow Depth=0.12' Max Vel=2.22 fps Inflow=0.60 cfs 0.474 af
n=0.035 L=61.0' S=0.0820 '/' Capacity=60.79 cfs Outflow=0.60 cfs 0.473 af

Reach 100R: Reach 100 Inflow=2.40 cfs 0.814 af
Outflow=2.40 cfs 0.814 af

Reach 200R: Reach 200 Inflow=9.98 cfs 2.054 af
Outflow=9.98 cfs 2.054 af

Reach 300R: Reach 300 Inflow=10.76 cfs 1.739 af
Outflow=10.76 cfs 1.739 af

Reach 400R: Reach 400 Inflow=14.45 cfs 2.379 af
Outflow=14.45 cfs 2.379 af

Reach 800R: Svenson Pond Inflow=19.39 cfs 4.645 af
Outflow=19.39 cfs 4.645 af

Pond 1P: Drop Inlet Peak Elev=204.93' Storage=14 cf Inflow=6.12 cfs 0.928 af
Primary=6.18 cfs 0.889 af Secondary=2.80 cfs 0.052 af Outflow=6.12 cfs 0.928 af

Pond 2P: Prop. 18" Cross Culvert Peak Elev=201.74' Storage=5,806 cf Inflow=16.05 cfs 2.971 af
Primary=13.22 cfs 2.971 af Secondary=0.00 cfs 0.000 af Outflow=13.22 cfs 2.971 af

Pond 4P: Prop. CB#3 Peak Elev=203.14' Storage=245 cf Inflow=9.48 cfs 1.352 af
Primary=6.58 cfs 1.317 af Secondary=2.02 cfs 0.035 af Outflow=8.24 cfs 1.352 af

Pond 6P: Inlet Depression Peak Elev=202.23' Storage=1,139 cf Inflow=4.33 cfs 0.289 af
Primary=4.08 cfs 0.271 af Secondary=3.15 cfs 0.089 af Outflow=4.75 cfs 0.289 af

Pond 8P: 24" Cross Culvert Peak Elev=199.44' Storage=4,289 cf Inflow=19.81 cfs 4.576 af
Primary=19.22 cfs 4.574 af Secondary=0.00 cfs 0.000 af Outflow=19.22 cfs 4.574 af

Pond 10P: Revised CB#10 Peak Elev=204.30' Storage=88 cf Inflow=6.75 cfs 0.984 af
Primary=5.55 cfs 0.976 af Secondary=0.81 cfs 0.007 af Outflow=6.36 cfs 0.984 af

Pond 12P: Ex. CB#2 Peak Elev=201.57' Storage=37 cf Inflow=6.70 cfs 1.364 af
Primary=6.72 cfs 1.364 af Secondary=0.00 cfs 0.000 af Outflow=6.72 cfs 1.364 af

Pond 13P: Infiltration Pond Peak Elev=203.35' Storage=972 cf Inflow=0.92 cfs 0.090 af
Discarded=0.26 cfs 0.090 af Primary=0.00 cfs 0.000 af Outflow=0.26 cfs 0.090 af

Pond 14P: Ex. 15" Culvert Peak Elev=202.09' Storage=608 cf Inflow=0.62 cfs 0.045 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=0.29 cfs 0.045 af

Pond 16P: Ex. 12" CMP Peak Elev=204.66' Storage=3,812 cf Inflow=4.26 cfs 0.815 af
Outflow=2.40 cfs 0.814 af

Pond 17P: Prop. 24" HDPE N-12 Peak Elev=204.03' Storage=1,265 cf Inflow=10.24 cfs 2.055 af
Primary=9.98 cfs 2.054 af Secondary=0.00 cfs 0.000 af Outflow=9.98 cfs 2.054 af

Pond 18P: Box Culvert Peak Elev=191.54' Storage=162 cf Inflow=10.76 cfs 1.739 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=10.76 cfs 1.739 af

Pond 19P: Box Culvert Peak Elev=184.44' Storage=43 cf Inflow=14.45 cfs 2.379 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=14.45 cfs 2.379 af

Pond 47P: Inlet Sump High Point Drive Peak Elev=237.94' Storage=236 cf Inflow=5.63 cfs 0.691 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0622 '/' Outflow=5.61 cfs 0.691 af

Pond 48P: High Point Drive Cul-de Sac Peak Elev=236.53' Storage=132 cf Inflow=1.26 cfs 0.095 af
15.0" Round Culvert n=0.012 L=55.0' S=0.0118 '/' Outflow=1.22 cfs 0.095 af

Pond 49P: Community Drive Cul-de Sac Peak Elev=218.33' Storage=5,378 cf Inflow=2.19 cfs 0.162 af
15.0" Round Culvert n=0.012 L=70.0' S=0.0064 '/' Outflow=0.43 cfs 0.058 af

Pond 50P: 15" HDPE (Access Road) Peak Elev=203.78' Storage=66 cf Inflow=0.94 cfs 0.268 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0060 '/' Outflow=0.94 cfs 0.268 af

Pond 51P: Outlet Pond Peak Elev=214.09' Storage=971 cf Inflow=1.70 cfs 0.107 af
Outflow=1.37 cfs 0.087 af

Pond 52P: S Wetland Crossing 24" RCP Peak Elev=214.36' Storage=89 cf Inflow=4.91 cfs 0.594 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=36.0' S=0.0278 '/' Outflow=4.90 cfs 0.594 af

Pond 53P: N Wetland Crossing 24" RCP Peak Elev=215.81' Storage=11 cf Inflow=1.03 cfs 0.113 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=25.0' S=0.0600 '/' Outflow=1.03 cfs 0.113 af

Pond 54P: Inlet Sump Detention Pond #110 Peak Elev=225.96' Storage=359 cf Inflow=3.97 cfs 0.476 af
18.0" Round Culvert n=0.012 L=35.0' S=0.0429 '/' Outflow=3.96 cfs 0.475 af

Pond 55P: Drop Inlet #55 Peak Elev=204.12' Storage=0.000 af Inflow=0.45 cfs 0.198 af
15.0" Round Culvert n=0.012 L=93.2' S=0.0054 '/' Outflow=0.45 cfs 0.198 af

Pond 56P: CB #56 Peak Elev=224.95' Storage=6 cf Inflow=0.60 cfs 0.062 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0084 '/' Outflow=0.61 cfs 0.061 af

Pond 101P: Ex. Rain Garden #101 Peak Elev=202.08' Storage=2,649 cf Inflow=1.95 cfs 0.167 af
Primary=0.38 cfs 0.148 af Secondary=0.00 cfs 0.000 af Outflow=0.38 cfs 0.148 af

Pond 102P: Ex. Rain Garden #102 Peak Elev=200.29' Storage=6,551 cf Inflow=8.73 cfs 1.488 af
Primary=0.46 cfs 0.546 af Secondary=7.48 cfs 0.842 af Outflow=7.94 cfs 1.388 af

Pond 103P: Gravel Wetland #103 Peak Elev=214.66' Storage=5,072 cf Inflow=2.48 cfs 0.190 af
Primary=0.02 cfs 0.028 af Secondary=0.13 cfs 0.066 af Tertiary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.094 af

Pond 104P: Gravel Wetland #104 Peak Elev=216.48' Storage=1,855 cf Inflow=1.72 cfs 0.130 af
Primary=0.01 cfs 0.013 af Secondary=1.57 cfs 0.084 af Tertiary=0.00 cfs 0.000 af Outflow=1.58 cfs 0.097 af

Pond 105P: Rain Garden #105 Peak Elev=219.31' Storage=10,203 cf Inflow=6.03 cfs 0.655 af
Outflow=2.28 cfs 0.507 af

Pond 106P: Rain Garden #106 Peak Elev=219.05' Storage=4,916 cf Inflow=1.70 cfs 0.260 af
Outflow=0.42 cfs 0.182 af

Pond 107P: Rain Garden #107 Peak Elev=229.41' Storage=20,766 cf Inflow=8.58 cfs 1.225 af
Discarded=0.02 cfs 0.019 af Primary=2.91 cfs 0.930 af Secondary=0.00 cfs 0.000 af Outflow=2.93 cfs 0.949 af

Pond 108P: Rain Garden #108 Peak Elev=206.51' Storage=1,319 cf Inflow=0.71 cfs 0.051 af
Primary=0.02 cfs 0.025 af Secondary=0.04 cfs 0.004 af Outflow=0.06 cfs 0.029 af

Pond 109P: Stormtech Detention Pond #109 Peak Elev=222.41' Storage=2,878 cf Inflow=2.46 cfs 0.224 af
Outflow=1.42 cfs 0.219 af

Pond 110P: Detention Pond #110 Peak Elev=222.26' Storage=11,301 cf Inflow=4.54 cfs 0.557 af
Primary=0.60 cfs 0.474 af Secondary=0.00 cfs 0.000 af Outflow=0.60 cfs 0.474 af

Pond C30P: CB #30 Peak Elev=204.43' Storage=112 cf Inflow=6.32 cfs 0.938 af
Primary=6.58 cfs 0.936 af Secondary=1.00 cfs 0.013 af Outflow=6.68 cfs 0.938 af

Pond C31P: CB #31 Peak Elev=216.55' Storage=30 cf Inflow=1.63 cfs 0.123 af
15.0" Round Culvert n=0.012 L=25.0' S=0.0060 '/' Outflow=1.63 cfs 0.123 af

Pond C32P: CB #32 Peak Elev=216.53' Storage=27 cf Inflow=0.83 cfs 0.061 af
15.0" Round Culvert n=0.012 L=29.0' S=0.0052 '/' Outflow=0.82 cfs 0.061 af

Pond C33P: CB #33 Peak Elev=214.66' Storage=27 cf Inflow=1.54 cfs 0.113 af
15.0" Round Culvert n=0.012 L=28.7' S=0.0070 '/' Outflow=1.53 cfs 0.113 af

Pond C34P: CB #34 Peak Elev=216.93' Storage=9 cf Inflow=0.66 cfs 0.056 af
15.0" Round Culvert n=0.012 L=63.5' S=0.0669 '/' Outflow=0.67 cfs 0.055 af

Pond C35P: CB #35 Peak Elev=219.31' Storage=34 cf Inflow=0.88 cfs 0.066 af
15.0" Round Culvert n=0.012 L=8.0' S=0.0125 '/' Outflow=0.86 cfs 0.065 af

Pond C36P: CB #36 Peak Elev=224.83' Storage=9 cf Inflow=1.92 cfs 0.180 af
15.0" Round Culvert n=0.012 L=162.0' S=0.0051 '/' Outflow=1.92 cfs 0.180 af

Pond C37P: CB #37 Peak Elev=222.85' Storage=11 cf Inflow=2.50 cfs 0.224 af
15.0" Round Culvert n=0.012 L=70.5' S=0.0071 '/' Outflow=2.51 cfs 0.224 af

Pond C38P: CB #38 Peak Elev=220.04' Storage=6 cf Inflow=1.04 cfs 0.079 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0550 '/' Outflow=1.04 cfs 0.079 af

Pond C39P: CB #39 Peak Elev=219.31' Storage=28 cf Inflow=1.32 cfs 0.102 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0275 '/' Outflow=1.29 cfs 0.101 af

Pond C40P: CB #40 Peak Elev=219.31' Storage=22 cf Inflow=0.42 cfs 0.035 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0090 '/' Outflow=0.40 cfs 0.034 af

Pond C41P: CB #41 Peak Elev=219.05' Storage=36 cf Inflow=0.76 cfs 0.060 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0114 '/' Outflow=0.75 cfs 0.060 af

Pond C42P: CB #42 Peak Elev=219.05' Storage=30 cf Inflow=0.40 cfs 0.031 af
15.0" Round Culvert n=0.012 L=26.0' S=0.0154 '/' Outflow=0.39 cfs 0.031 af

Pond C43P: CB #43 Peak Elev=227.86' Storage=8 cf Inflow=1.83 cfs 0.145 af
15.0" Round Culvert n=0.012 L=90.0' S=0.0467 '/' Outflow=1.83 cfs 0.145 af

Pond C44P: CB #44 Peak Elev=230.34' Storage=14 cf Inflow=3.82 cfs 0.344 af
15.0" Round Culvert n=0.012 L=110.0' S=0.0068 '/' Outflow=3.82 cfs 0.344 af

Pond C45P: CB #45 Peak Elev=231.29' Storage=10 cf Inflow=1.94 cfs 0.161 af
15.0" Round Culvert n=0.012 L=65.0' S=0.0062 '/' Outflow=1.94 cfs 0.161 af

Pond C46P: CB #46 Peak Elev=234.19' Storage=23 cf Inflow=6.43 cfs 0.889 af
Primary=4.47 cfs 0.795 af Secondary=1.96 cfs 0.094 af Outflow=6.43 cfs 0.889 af

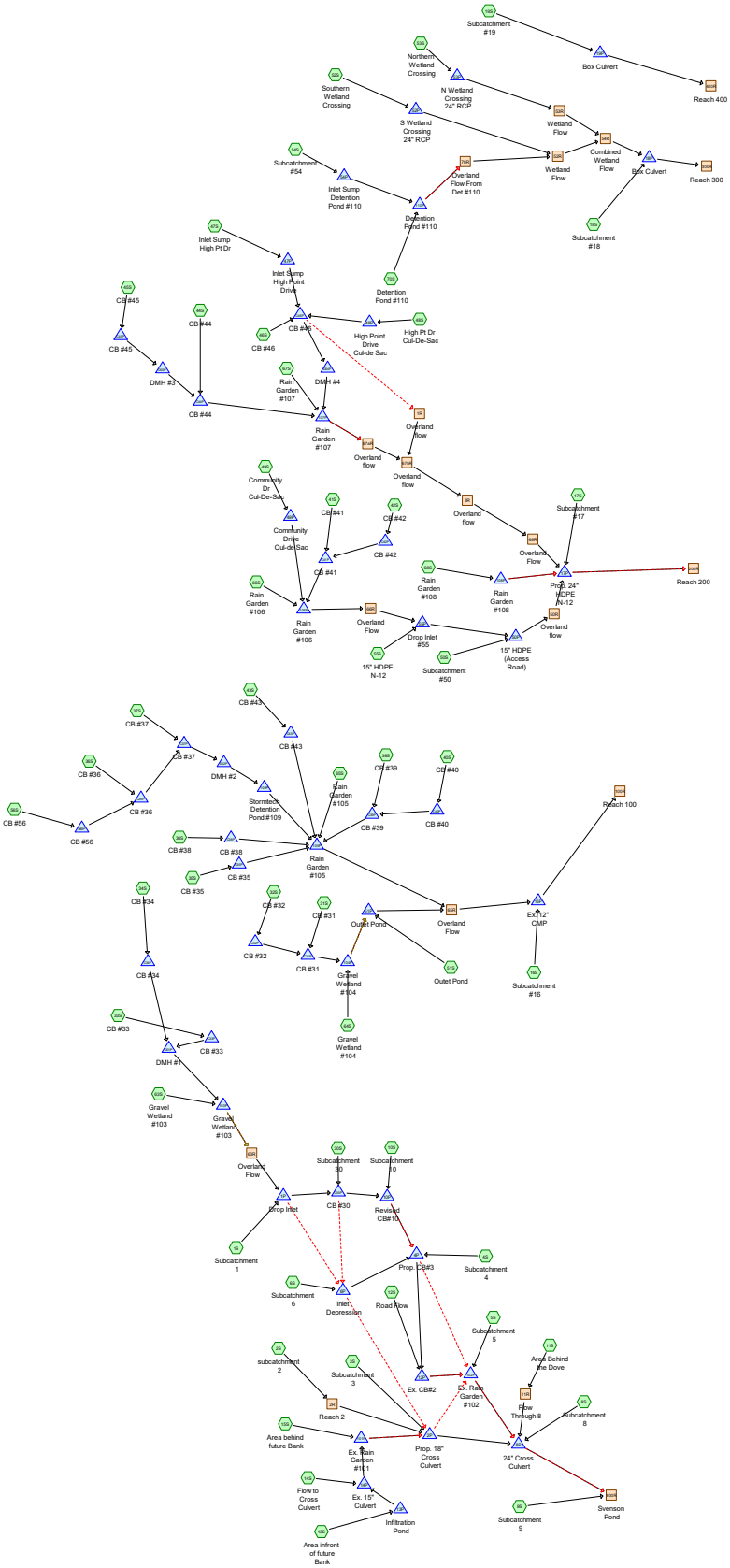
Pond D01P: DMH #1 Peak Elev=214.66' Storage=31 cf Inflow=2.19 cfs 0.168 af
15.0" Round Culvert n=0.012 L=22.5' S=0.0089 '/' Outflow=2.18 cfs 0.167 af

Pond D02P: DMH #2 Peak Elev=222.42' Storage=48 cf Inflow=2.51 cfs 0.224 af
24.0" Round Culvert n=0.012 L=3.0' S=0.0000 '/' Outflow=2.46 cfs 0.224 af

Pond D03P: DMH #3 Peak Elev=230.81' Storage=10 cf Inflow=1.94 cfs 0.161 af
15.0" Round Culvert n=0.012 L=65.5' S=0.0099 '/' Outflow=1.93 cfs 0.161 af

Pond D04P: DMH #4 Peak Elev=229.65' Storage=21 cf Inflow=4.47 cfs 0.795 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=4.46 cfs 0.795 af

Total Runoff Area = 78.998 ac Runoff Volume = 12.645 af Average Runoff Depth = 1.92"
92.80% Pervious = 73.313 ac 7.20% Impervious = 5.685 ac



Subcat Reach Pond Link

Routing Diagram for 20-097 Proposed Analysis

Prepared by {enter your company name here}, Printed 10/12/2021

HydroCAD® 10.00-22 s/n 07605 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=240,329 sf 0.00% Impervious Runoff Depth>2.58"
Flow Length=1,542' Tc=32.6 min CN=60 Runoff=8.85 cfs 1.187 af

Subcatchment 2S: subcatchment 2 Runoff Area=764,518 sf 0.65% Impervious Runoff Depth>2.56"
Flow Length=2,418' Tc=59.1 min CN=60 Runoff=20.47 cfs 3.749 af

Subcatchment 3S: Subcatchment 3 Runoff Area=118,503 sf 0.00% Impervious Runoff Depth>0.84"
Flow Length=993' Tc=20.7 min CN=40 Runoff=1.07 cfs 0.189 af

Subcatchment 4S: Subcatchment 4 Runoff Area=9,068 sf 100.00% Impervious Runoff Depth>6.76"
Flow Length=207' Tc=6.0 min CN=98 Runoff=1.40 cfs 0.117 af

Subcatchment 5S: Subcatchment 5 Runoff Area=22,497 sf 40.08% Impervious Runoff Depth>2.90"
Flow Length=212' Tc=7.0 min CN=63 Runoff=1.65 cfs 0.125 af

Subcatchment 6S: Subcatchment 6 Runoff Area=25,520 sf 84.67% Impervious Runoff Depth>5.70"
Tc=6.0 min CN=89 Runoff=3.64 cfs 0.278 af

Subcatchment 8S: Subcatchment 8 Runoff Area=25,776 sf 25.48% Impervious Runoff Depth>2.03"
Flow Length=152' Tc=10.4 min CN=54 Runoff=1.11 cfs 0.100 af

Subcatchment 9S: Subcatchment 9 Runoff Area=45,641 sf 11.38% Impervious Runoff Depth>1.32"
Flow Length=259' Tc=13.4 min CN=46 Runoff=0.98 cfs 0.115 af

Subcatchment 10S: Subcatchment 10 Runoff Area=9,312 sf 47.01% Impervious Runoff Depth>3.62"
Tc=6.0 min CN=70 Runoff=0.89 cfs 0.064 af

Subcatchment 11S: Area Behind the Dove Runoff Area=84,440 sf 13.47% Impervious Runoff Depth>1.48"
Flow Length=636' Tc=29.3 min CN=48 Runoff=1.62 cfs 0.239 af

Subcatchment 12S: Road Flow Runoff Area=4,388 sf 100.00% Impervious Runoff Depth>6.76"
Tc=6.0 min CN=98 Runoff=0.68 cfs 0.057 af

Subcatchment 13S: Area infront of future Runoff Area=29,777 sf 30.66% Impervious Runoff Depth>2.31"
Flow Length=175' Tc=12.4 min CN=57 Runoff=1.41 cfs 0.131 af

Subcatchment 14S: Flow to Cross Culvert Runoff Area=7,713 sf 59.39% Impervious Runoff Depth>4.04"
Tc=6.0 min CN=74 Runoff=0.82 cfs 0.060 af

Subcatchment 15S: Area behind future Runoff Area=17,796 sf 67.02% Impervious Runoff Depth>4.58"
Tc=6.0 min CN=79 Runoff=2.13 cfs 0.156 af

Subcatchment 16S: Subcatchment #16 Runoff Area=124,974 sf 4.60% Impervious Runoff Depth>1.48"
Flow Length=344' Tc=16.5 min CN=48 Runoff=3.00 cfs 0.355 af

Subcatchment 17S: Subcatchment #17 Runoff Area=221,822 sf 0.52% Impervious Runoff Depth>2.49"
Flow Length=590' Tc=32.1 min CN=59 Runoff=7.88 cfs 1.055 af

Subcatchment 18S: Subcatchment #18 Runoff Area=168,645 sf 0.00% Impervious Runoff Depth>2.49"
Flow Length=451' Tc=24.9 min CN=59 Runoff=6.70 cfs 0.804 af

Subcatchment 19S: Subcatchment #19 Runoff Area=687,994 sf 0.00% Impervious Runoff Depth>2.57"
Flow Length=1,832' Tc=46.3 min CN=60 Runoff=21.21 cfs 3.386 af

Subcatchment 30S: Subcatchment 30 Runoff Area=5,396 sf 79.95% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=91 Runoff=0.79 cfs 0.061 af

Subcatchment 31S: CB #31 Runoff Area=6,793 sf 80.13% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=91 Runoff=0.99 cfs 0.077 af

Subcatchment 32S: CB #32 Runoff Area=7,675 sf 61.20% Impervious Runoff Depth>5.25"
Tc=6.0 min CN=85 Runoff=1.03 cfs 0.077 af

Subcatchment 33S: CB #33 Runoff Area=14,563 sf 62.46% Impervious Runoff Depth>5.14"
Tc=6.0 min CN=84 Runoff=1.92 cfs 0.143 af

Subcatchment 34S: CB #34 Runoff Area=5,164 sf 100.00% Impervious Runoff Depth>6.76"
Tc=6.0 min CN=98 Runoff=0.79 cfs 0.067 af

Subcatchment 35S: CB #35 Runoff Area=7,817 sf 68.21% Impervious Runoff Depth>5.48"
Tc=6.0 min CN=87 Runoff=1.08 cfs 0.082 af

Subcatchment 36S: CB #36 Runoff Area=12,881 sf 80.50% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=91 Runoff=1.88 cfs 0.146 af

Subcatchment 37S: CB #37 Runoff Area=5,252 sf 70.16% Impervious Runoff Depth>5.48"
Tc=6.0 min CN=87 Runoff=0.73 cfs 0.055 af

Subcatchment 38S: CB #38 Runoff Area=8,972 sf 76.16% Impervious Runoff Depth>5.70"
Tc=6.0 min CN=89 Runoff=1.28 cfs 0.098 af

Subcatchment 39S: CB #39 Runoff Area=8,469 sf 63.81% Impervious Runoff Depth>5.25"
Tc=6.0 min CN=85 Runoff=1.14 cfs 0.085 af

Subcatchment 40S: CB #40 Runoff Area=3,230 sf 100.00% Impervious Runoff Depth>6.76"
Tc=6.0 min CN=98 Runoff=0.50 cfs 0.042 af

Subcatchment 41S: CB #41 Runoff Area=2,930 sf 92.56% Impervious Runoff Depth>6.40"
Tc=6.0 min CN=95 Runoff=0.44 cfs 0.036 af

Subcatchment 42S: CB #42 Runoff Area=3,320 sf 84.85% Impervious Runoff Depth>6.05"
Tc=6.0 min CN=92 Runoff=0.49 cfs 0.038 af

Subcatchment 43S: CB #43 Runoff Area=14,691 sf 86.27% Impervious Runoff Depth>6.28"
Tc=6.0 min CN=94 Runoff=2.21 cfs 0.177 af

Subcatchment 44S: CB #44 Runoff Area=27,005 sf 48.05% Impervious Runoff Depth>4.57"
Flow Length=493' Tc=14.6 min CN=79 Runoff=2.52 cfs 0.236 af

Subcatchment 45S: CB #45 Runoff Area=30,206 sf 17.92% Impervious Runoff Depth>3.72"
Flow Length=265' Tc=10.2 min CN=71 Runoff=2.60 cfs 0.215 af

Subcatchment 46S: CB #46 Runoff Area=9,814 sf 97.25% Impervious Runoff Depth>6.64"
Tc=6.0 min CN=97 Runoff=1.51 cfs 0.125 af

Subcatchment 47S: Inlet Sump High Pt Dr Runoff Area=174,905 sf 1.77% Impervious Runoff Depth>2.88"
Flow Length=862' Tc=26.2 min CN=63 Runoff=8.02 cfs 0.965 af

Subcatchment 48S: High Pt Dr Cul-De-Sac Runoff Area=11,063 sf 68.77% Impervious Runoff Depth>5.59"
Tc=6.0 min CN=88 Runoff=1.56 cfs 0.118 af

Subcatchment 49S: Community Dr Runoff Area=19,859 sf 64.00% Impervious Runoff Depth>5.36"
Tc=6.0 min CN=86 Runoff=2.71 cfs 0.204 af

Subcatchment 50S: Subcatchment #50 Runoff Area=20,009 sf 0.00% Impervious Runoff Depth>2.59"
Flow Length=209' Tc=15.8 min CN=60 Runoff=1.00 cfs 0.099 af

Subcatchment 51S: Outet Pond Runoff Area=2,846 sf 0.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=61 Runoff=0.20 cfs 0.015 af

Subcatchment 52S: Southern Wetland Runoff Area=156,553 sf 0.00% Impervious Runoff Depth>2.78"
Flow Length=971' Tc=24.9 min CN=62 Runoff=7.06 cfs 0.834 af

Subcatchment 53S: Northern Wetland Runoff Area=26,372 sf 0.00% Impervious Runoff Depth>3.09"
Flow Length=497' Tc=20.6 min CN=65 Runoff=1.44 cfs 0.156 af

Subcatchment 54S: Subcatchment #54 Runoff Area=120,358 sf 0.00% Impervious Runoff Depth>2.88"
Flow Length=1,059' Tc=24.7 min CN=63 Runoff=5.67 cfs 0.664 af

Subcatchment 55S: 15" HDPE N-12 Runoff Area=4,389 sf 0.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=61 Runoff=0.31 cfs 0.023 af

Subcatchment 56S: CB #56 Runoff Area=16,876 sf 0.00% Impervious Runoff Depth>2.69"
Flow Length=247' Tc=15.6 min CN=61 Runoff=0.88 cfs 0.087 af

Subcatchment 63S: Gravel Wetland #103 Runoff Area=6,291 sf 0.30% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=61 Runoff=0.44 cfs 0.032 af

Subcatchment 64S: Gravel Wetland #104 Runoff Area=1,940 sf 0.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=61 Runoff=0.14 cfs 0.010 af

Subcatchment 65S: Rain Garden #105 Runoff Area=10,279 sf 0.72% Impervious Runoff Depth>3.20"
Tc=6.0 min CN=66 Runoff=0.86 cfs 0.063 af

Subcatchment 66S: Rain Garden #106 Runoff Area=30,740 sf 5.62% Impervious Runoff Depth>3.19"
Flow Length=153' Tc=17.2 min CN=66 Runoff=1.87 cfs 0.188 af

Subcatchment 67S: Rain Garden #107 Runoff Area=23,728 sf 0.00% Impervious Runoff Depth>2.70"
Flow Length=99' Tc=8.8 min CN=61 Runoff=1.50 cfs 0.122 af

Subcatchment 68S: Rain Garden #108 Runoff Area=7,539 sf 47.49% Impervious Runoff Depth>4.58"
Tc=6.0 min CN=79 Runoff=0.90 cfs 0.066 af

Subcatchment 70S: Detention Pond #110 Runoff Area=24,497 sf 0.00% Impervious Runoff Depth>2.50"
Flow Length=273' Tc=12.3 min CN=59 Runoff=1.28 cfs 0.117 af

Reach 1R: Overland flow Avg. Flow Depth=0.30' Max Vel=3.11 fps Inflow=3.43 cfs 0.178 af
n=0.030 L=264.5' S=0.0340 '/' Capacity=45.70 cfs Outflow=3.42 cfs 0.178 af

Reach 2R: Reach 2 Avg. Flow Depth=0.91' Max Vel=4.68 fps Inflow=20.47 cfs 3.749 af
n=0.022 L=220.0' S=0.0091 '/' Capacity=24.64 cfs Outflow=20.48 cfs 3.747 af

Reach 3R: Overland flow Avg. Flow Depth=0.30' Max Vel=6.01 fps Inflow=6.64 cfs 1.475 af
n=0.030 L=71.0' S=0.1268 '/' Capacity=88.20 cfs Outflow=6.64 cfs 1.475 af

Reach 11R: Flow Through 8 Avg. Flow Depth=0.24' Max Vel=1.44 fps Inflow=1.62 cfs 0.239 af
n=0.035 L=76.0' S=0.0132 '/' Capacity=7.77 cfs Outflow=1.62 cfs 0.238 af

Reach 50R: Overland flow Avg. Flow Depth=0.21' Max Vel=2.12 fps Inflow=1.41 cfs 0.379 af
n=0.025 L=42.0' S=0.0179 '/' Capacity=186.81 cfs Outflow=1.41 cfs 0.379 af

Reach 52R: Wetland Flow Avg. Flow Depth=0.33' Max Vel=2.05 fps Inflow=7.49 cfs 1.469 af
n=0.045 L=123.0' S=0.0285 '/' Capacity=17.83 cfs Outflow=7.49 cfs 1.467 af

Reach 53R: Wetland Flow Avg. Flow Depth=0.15' Max Vel=1.35 fps Inflow=1.44 cfs 0.156 af
n=0.045 L=135.0' S=0.0370 '/' Capacity=20.35 cfs Outflow=1.44 cfs 0.156 af

Reach 54R: Combined Wetland Flow Avg. Flow Depth=0.42' Max Vel=6.00 fps Inflow=8.85 cfs 1.622 af
n=0.045 L=87.0' S=0.1379 '/' Capacity=610.11 cfs Outflow=8.85 cfs 1.622 af

Reach 63R: Overland Flow Avg. Flow Depth=0.04' Max Vel=1.02 fps Inflow=0.22 cfs 0.143 af
n=0.030 L=126.0' S=0.0476 '/' Capacity=43.27 cfs Outflow=0.22 cfs 0.143 af

Reach 65R: Overland Flow Avg. Flow Depth=0.25' Max Vel=2.09 fps Inflow=4.81 cfs 0.795 af
n=0.035 L=342.1' S=0.0270 '/' Capacity=22.35 cfs Outflow=4.78 cfs 0.793 af

Reach 66R: Overland Flow Avg. Flow Depth=0.09' Max Vel=2.36 fps Inflow=0.60 cfs 0.258 af
n=0.025 L=48.0' S=0.0677 '/' Capacity=24.68 cfs Outflow=0.60 cfs 0.258 af

Reach 67aR: Overland flow Avg. Flow Depth=0.27' Max Vel=4.12 fps Inflow=3.82 cfs 1.299 af
n=0.030 L=58.0' S=0.0690 '/' Capacity=65.05 cfs Outflow=3.82 cfs 1.298 af

Reach 67bR: Overland flow Avg. Flow Depth=0.50' Max Vel=2.43 fps Inflow=6.65 cfs 1.476 af
n=0.030 L=115.0' S=0.0087 '/' Capacity=24.95 cfs Outflow=6.64 cfs 1.475 af

Reach 69R: Overland Flow Avg. Flow Depth=0.28' Max Vel=2.64 fps Inflow=6.64 cfs 1.475 af
n=0.035 L=84.0' S=0.0357 '/' Capacity=101.76 cfs Outflow=6.64 cfs 1.475 af

Reach 70R: Overland Flow From Det Avg. Flow Depth=0.14' Max Vel=2.45 fps Inflow=0.82 cfs 0.635 af
n=0.035 L=61.0' S=0.0820 '/' Capacity=60.79 cfs Outflow=0.82 cfs 0.635 af

Reach 100R: Reach 100 Inflow=6.17 cfs 1.147 af
Outflow=6.17 cfs 1.147 af

Reach 200R: Reach 200 Inflow=15.61 cfs 2.949 af
Outflow=15.61 cfs 2.949 af

Reach 300R: Reach 300 Inflow=15.52 cfs 2.425 af
Outflow=15.52 cfs 2.425 af

Reach 400R: Reach 400 Inflow=21.21 cfs 3.386 af
Outflow=21.21 cfs 3.386 af

Reach 800R: Svenson Pond Inflow=29.64 cfs 6.620 af
Outflow=29.64 cfs 6.620 af

Pond 1P: Drop Inlet Peak Elev=205.01' Storage=16 cf Inflow=9.04 cfs 1.330 af
Primary=5.61 cfs 1.155 af Secondary=4.85 cfs 0.181 af Outflow=9.03 cfs 1.330 af

Pond 2P: Prop. 18" Cross Culvert Peak Elev=202.89' Storage=17,021 cf Inflow=23.97 cfs 4.389 af
Primary=15.33 cfs 4.274 af Secondary=5.39 cfs 0.115 af Outflow=20.72 cfs 4.388 af

Pond 4P: Prop. CB#3 Peak Elev=203.35' Storage=319 cf Inflow=11.42 cfs 1.718 af
Primary=7.47 cfs 1.677 af Secondary=3.00 cfs 0.045 af Outflow=9.04 cfs 1.718 af

Pond 6P: Inlet Depression Peak Elev=202.72' Storage=1,624 cf Inflow=5.89 cfs 0.477 af
Primary=6.12 cfs 0.328 af Secondary=5.28 cfs 0.234 af Outflow=6.83 cfs 0.476 af

Pond 8P: 24" Cross Culvert Peak Elev=199.65' Storage=5,016 cf Inflow=29.24 cfs 6.506 af
Primary=21.12 cfs 6.270 af Secondary=8.28 cfs 0.234 af Outflow=29.40 cfs 6.505 af

Pond 10P: Revised CB#10 Peak Elev=204.22' Storage=84 cf Inflow=6.23 cfs 1.271 af
Primary=5.53 cfs 1.268 af Secondary=0.56 cfs 0.004 af Outflow=5.75 cfs 1.271 af

Pond 12P: Ex. CB#2 Peak Elev=201.79' Storage=40 cf Inflow=7.58 cfs 1.734 af
Primary=7.37 cfs 1.734 af Secondary=0.00 cfs 0.000 af Outflow=7.37 cfs 1.734 af

Pond 13P: Infiltration Pond Peak Elev=203.44' Storage=1,347 cf Inflow=1.41 cfs 0.131 af
Discarded=0.30 cfs 0.116 af Primary=0.38 cfs 0.015 af Outflow=0.68 cfs 0.131 af

Pond 14P: Ex. 15" Culvert Peak Elev=202.69' Storage=1,591 cf Inflow=0.82 cfs 0.075 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=0.57 cfs 0.074 af

Pond 16P: Ex. 12" CMP Peak Elev=204.84' Storage=6,190 cf Inflow=7.64 cfs 1.148 af
Outflow=6.17 cfs 1.147 af

Pond 17P: Prop. 24" HDPE N-12 Peak Elev=204.62' Storage=3,158 cf Inflow=16.08 cfs 2.951 af
Primary=13.97 cfs 2.926 af Secondary=1.63 cfs 0.024 af Outflow=15.61 cfs 2.949 af

Pond 18P: Box Culvert Peak Elev=191.90' Storage=372 cf Inflow=15.54 cfs 2.426 af
36.0" x 36.0" Box Culvert n=0.012 L=28.0' S=0.0018 '/' Outflow=15.52 cfs 2.425 af

Pond 19P: Box Culvert Peak Elev=184.84' Storage=92 cf Inflow=21.21 cfs 3.386 af
36.0" x 36.0" Box Culvert n=0.012 L=52.0' S=-0.0085 '/' Outflow=21.21 cfs 3.386 af

Pond 47P: Inlet Sump High Point Drive Peak Elev=238.37' Storage=495 cf Inflow=8.02 cfs 0.965 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0622 '/' Outflow=7.92 cfs 0.965 af

Pond 48P: High Point Drive Cul-de Sac Peak Elev=236.59' Storage=156 cf Inflow=1.56 cfs 0.118 af
15.0" Round Culvert n=0.012 L=55.0' S=0.0118 '/' Outflow=1.50 cfs 0.118 af

Pond 49P: Community Drive Cul-de Sac Peak Elev=218.57' Storage=6,968 cf Inflow=2.71 cfs 0.204 af
15.0" Round Culvert n=0.012 L=70.0' S=0.0064 '/' Outflow=0.49 cfs 0.077 af

Pond 50P: 15" HDPE (Access Road) Peak Elev=203.92' Storage=90 cf Inflow=1.43 cfs 0.380 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0060 '/' Outflow=1.41 cfs 0.379 af

Pond 51P: Outlet Pond Peak Elev=214.14' Storage=1,012 cf Inflow=2.32 cfs 0.145 af
Outflow=2.57 cfs 0.124 af

Pond 52P: S Wetland Crossing 24" RCP Peak Elev=214.60' Storage=170 cf Inflow=7.06 cfs 0.834 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=36.0' S=0.0278 '/' Outflow=7.05 cfs 0.834 af

Pond 53P: N Wetland Crossing 24" RCP Peak Elev=215.89' Storage=16 cf Inflow=1.44 cfs 0.156 af
24.0" Round Culvert w/ 6.0" inside fill n=0.024 L=25.0' S=0.0600 '/' Outflow=1.44 cfs 0.156 af

Pond 54P: Inlet Sump Detention Pond #110 Peak Elev=226.20' Storage=488 cf Inflow=5.67 cfs 0.664 af
18.0" Round Culvert n=0.012 L=35.0' S=0.0429 '/' Outflow=5.64 cfs 0.663 af

Pond 55P: Drop Inlet #55 Peak Elev=204.23' Storage=0.000 af Inflow=0.64 cfs 0.280 af
15.0" Round Culvert n=0.012 L=93.2' S=0.0054 '/' Outflow=0.64 cfs 0.280 af

Pond 56P: CB #56 Peak Elev=225.07' Storage=7 cf Inflow=0.88 cfs 0.087 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0084 '/' Outflow=0.88 cfs 0.087 af

Pond 101P: Ex. Rain Garden #101 Peak Elev=202.71' Storage=4,065 cf Inflow=2.35 cfs 0.236 af
Primary=0.56 cfs 0.198 af Secondary=1.11 cfs 0.020 af Outflow=1.17 cfs 0.217 af

Pond 102P: Ex. Rain Garden #102 Peak Elev=200.39' Storage=6,934 cf Inflow=14.11 cfs 2.018 af
Primary=0.46 cfs 0.570 af Secondary=12.52 cfs 1.325 af Outflow=12.98 cfs 1.894 af

Pond 103P: Gravel Wetland #103 Peak Elev=215.05' Storage=6,198 cf Inflow=3.13 cfs 0.241 af
Primary=0.02 cfs 0.030 af Secondary=0.19 cfs 0.114 af Tertiary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.143 af

Pond 104P: Gravel Wetland #104 Peak Elev=216.51' Storage=1,888 cf Inflow=2.16 cfs 0.163 af
Primary=0.01 cfs 0.013 af Secondary=2.10 cfs 0.117 af Tertiary=0.01 cfs 0.000 af Outflow=2.12 cfs 0.130 af

Pond 105P: Rain Garden #105 Peak Elev=219.69' Storage=11,962 cf Inflow=7.88 cfs 0.825 af
Outflow=3.91 cfs 0.671 af

Pond 106P: Rain Garden #106 Peak Elev=219.41' Storage=5,980 cf Inflow=2.31 cfs 0.340 af
Outflow=0.60 cfs 0.258 af

Pond 107P: Rain Garden #107 Peak Elev=230.06' Storage=26,222 cf Inflow=11.11 cfs 1.603 af
Discarded=0.02 cfs 0.020 af Primary=3.82 cfs 1.299 af Secondary=0.00 cfs 0.000 af Outflow=3.84 cfs 1.319 af

Pond 108P: Rain Garden #108 Peak Elev=206.55' Storage=1,371 cf Inflow=0.90 cfs 0.066 af
Primary=0.02 cfs 0.025 af Secondary=0.29 cfs 0.017 af Outflow=0.31 cfs 0.042 af

Pond 109P: Stormtech Detention Pond #109 Peak Elev=222.82' Storage=3,122 cf Inflow=3.12 cfs 0.288 af
Outflow=2.33 cfs 0.280 af

Pond 110P: Detention Pond #110 Peak Elev=223.33' Storage=16,306 cf Inflow=6.48 cfs 0.780 af
Primary=0.82 cfs 0.635 af Secondary=0.00 cfs 0.000 af Outflow=0.82 cfs 0.635 af

Pond C30P: CB #30 Peak Elev=204.51' Storage=126 cf Inflow=5.79 cfs 1.216 af
Primary=6.12 cfs 1.207 af Secondary=0.77 cfs 0.017 af Outflow=6.16 cfs 1.216 af

Pond C31P: CB #31 Peak Elev=216.62' Storage=31 cf Inflow=2.02 cfs 0.154 af
15.0" Round Culvert n=0.012 L=25.0' S=0.0060 '/' Outflow=2.02 cfs 0.153 af

Pond C32P: CB #32 Peak Elev=216.64' Storage=28 cf Inflow=1.03 cfs 0.077 af
15.0" Round Culvert n=0.012 L=29.0' S=0.0052 '/' Outflow=1.03 cfs 0.077 af

Pond C33P: CB #33 Peak Elev=215.05' Storage=32 cf Inflow=1.92 cfs 0.143 af
15.0" Round Culvert n=0.012 L=28.7' S=0.0070 '/' Outflow=1.91 cfs 0.143 af

Pond C34P: CB #34 Peak Elev=216.97' Storage=9 cf Inflow=0.79 cfs 0.067 af
15.0" Round Culvert n=0.012 L=63.5' S=0.0669 '/' Outflow=0.80 cfs 0.067 af

Pond C35P: CB #35 Peak Elev=219.70' Storage=39 cf Inflow=1.08 cfs 0.082 af
15.0" Round Culvert n=0.012 L=8.0' S=0.0125 '/' Outflow=1.06 cfs 0.081 af

Pond C36P: CB #36 Peak Elev=224.94' Storage=11 cf Inflow=2.45 cfs 0.233 af
15.0" Round Culvert n=0.012 L=162.0' S=0.0051 '/' Outflow=2.45 cfs 0.233 af

Pond C37P: CB #37 Peak Elev=223.09' Storage=14 cf Inflow=3.17 cfs 0.288 af
15.0" Round Culvert n=0.012 L=70.5' S=0.0071 '/' Outflow=3.18 cfs 0.288 af

Pond C38P: CB #38 Peak Elev=220.09' Storage=7 cf Inflow=1.28 cfs 0.098 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0550 '/' Outflow=1.28 cfs 0.098 af

Pond C39P: CB #39 Peak Elev=219.70' Storage=33 cf Inflow=1.62 cfs 0.126 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0275 '/' Outflow=1.60 cfs 0.126 af

Pond C40P: CB #40 Peak Elev=219.70' Storage=26 cf Inflow=0.50 cfs 0.042 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0090 '/' Outflow=0.48 cfs 0.041 af

Pond C41P: CB #41 Peak Elev=219.41' Storage=40 cf Inflow=0.93 cfs 0.074 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0114 '/' Outflow=0.91 cfs 0.073 af

Pond C42P: CB #42 Peak Elev=219.41' Storage=34 cf Inflow=0.49 cfs 0.038 af
15.0" Round Culvert n=0.012 L=26.0' S=0.0154 '/' Outflow=0.48 cfs 0.038 af

Pond C43P: CB #43 Peak Elev=227.94' Storage=9 cf Inflow=2.21 cfs 0.177 af
15.0" Round Culvert n=0.012 L=90.0' S=0.0467 '/' Outflow=2.21 cfs 0.177 af

Pond C44P: CB #44 Peak Elev=230.60' Storage=17 cf Inflow=5.02 cfs 0.451 af
15.0" Round Culvert n=0.012 L=110.0' S=0.0068 '/' Outflow=5.02 cfs 0.451 af

Pond C45P: CB #45 Peak Elev=231.47' Storage=12 cf Inflow=2.60 cfs 0.215 af
15.0" Round Culvert n=0.012 L=65.0' S=0.0062 '/' Outflow=2.60 cfs 0.215 af

Pond C46P: CB #46 Peak Elev=234.47' Storage=29 cf Inflow=8.86 cfs 1.207 af
Primary=5.43 cfs 1.029 af Secondary=3.43 cfs 0.178 af Outflow=8.86 cfs 1.207 af

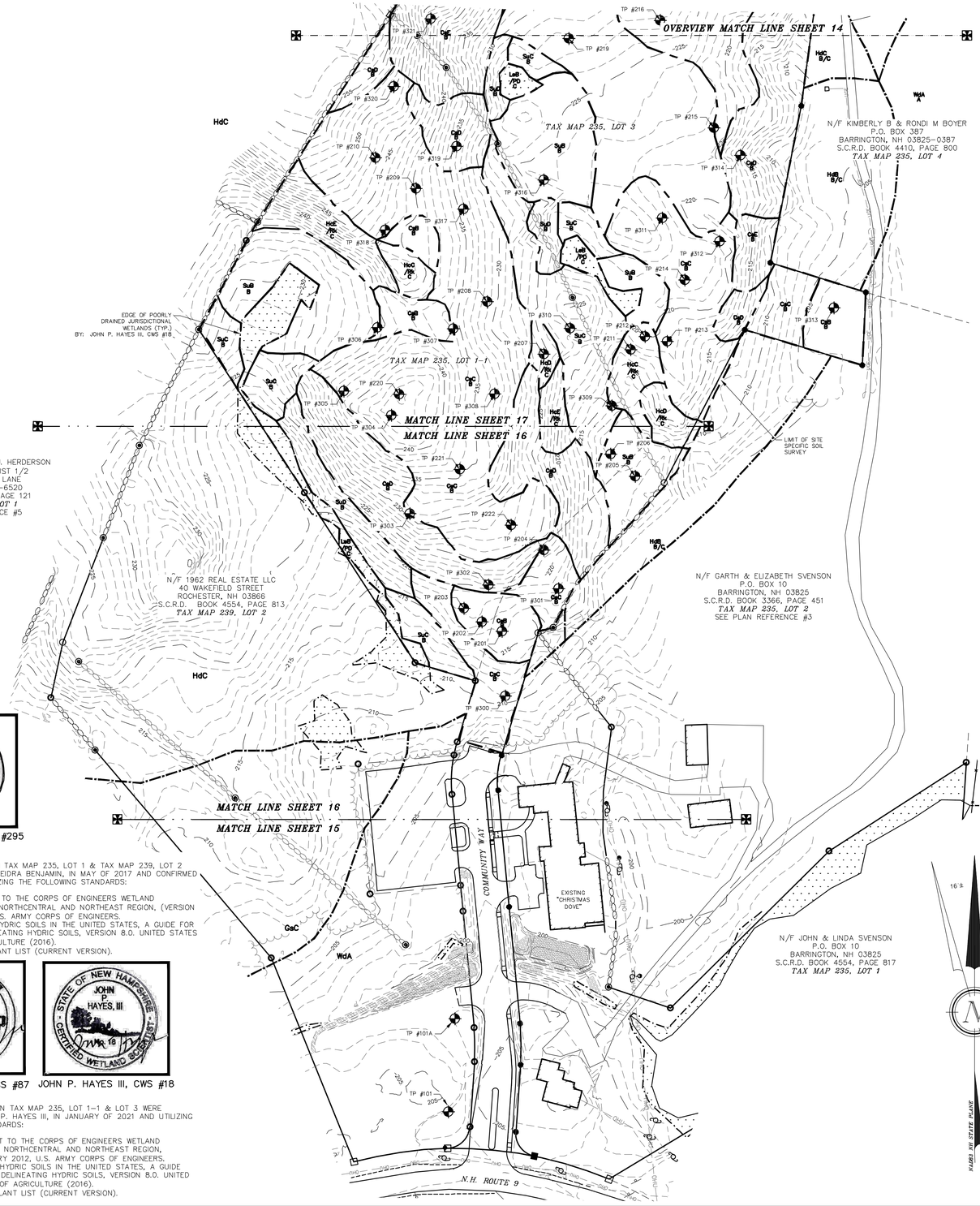
Pond D01P: DMH #1 Peak Elev=215.05' Storage=36 cf Inflow=2.71 cfs 0.209 af
15.0" Round Culvert n=0.012 L=22.5' S=0.0089 '/' Outflow=2.69 cfs 0.208 af

Pond D02P: DMH #2 Peak Elev=222.84' Storage=56 cf Inflow=3.18 cfs 0.288 af
24.0" Round Culvert n=0.012 L=3.0' S=0.0000 '/' Outflow=3.12 cfs 0.288 af

Pond D03P: DMH #3 Peak Elev=231.03' Storage=13 cf Inflow=2.60 cfs 0.215 af
15.0" Round Culvert n=0.012 L=65.5' S=0.0099 '/' Outflow=2.60 cfs 0.215 af

Pond D04P: DMH #4 Peak Elev=230.55' Storage=32 cf Inflow=5.43 cfs 1.029 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=5.43 cfs 1.029 af

Total Runoff Area = 78.998 ac Runoff Volume = 17.691 af Average Runoff Depth = 2.69"
92.80% Pervious = 73.313 ac 7.20% Impervious = 5.685 ac



DEIDRA BENJAMIN, CWS #295

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1 & TAX MAP 239, LOT 2 WERE DELINEATED BY DEIDRA BENJAMIN, IN MAY OF 2017 AND CONFIRMED IN JUNE OF 2021 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

JOHN P. HAYES, III CSS #87 JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1-1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

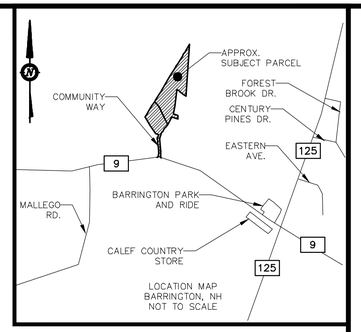
4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) ZONING: TOWN CENTER
FRONTAGE ~ 40.0'
MINIMUM LOT SIZE ~ 20,000 SQUARE FEET
FRONT SETBACK ~ 20.0'
NH ROUTE 125/9 SET BACK: ~ 50'
REAR SETBACK ~ 15.0'
SIDE SETBACK ~ 15.0'
COMMERCIAL / RESIDENTIAL BUFFER ~ 50.0'
WETLANDS/WATERBODY SETBACK ~ 50.0'
MAX. STRUCTURE HEIGHT: 40.0'

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY# -330178, MAP# - 33017C0305E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOILS MAP FOR THE SUBJECT PARCELS.



SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
CsB	CHARLTON (VERY STONY)	B
CsC	CHARLTON (VERY STONY)	B
CsD	CHARLTON (VERY STONY)	B
CsE	CHARLTON (VERY STONY)	B
HcC	HOLLIS (VERY STONY)	C/D
HcD	HOLLIS (VERY STONY)	C/D
HcE	HOLLIS (VERY STONY)	C/D
HdD	HOLLIS CHARLTON COMPLEX (VERY STONY)	C/D
HdE	HOLLIS CHARLTON COMPLEX (VERY STONY)	C/D
LeB	LEICESTER (VERY STONY)	C
LeC	LEICESTER (VERY STONY)	C
LeD	LEICESTER (VERY STONY)	C
SuB	SUTTON	B
SuC	SUTTON	B
SuD	SUTTON	B

SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED /Rk = ROCKY

LEGEND:

- 4"X4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND~
- IRON BOUND/REBAR ~FND/SET~
- DRILL HOLE ~FND~
- IRON PIPE ~FND~
- WELL
- TEST PIT
- MATCH POINT
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- OVERVIEW MATCH LINE
- DETAIL MATCH LINE
- SOIL LINE
- LIMIT OF SOIL SURVEY
- BzB SOIL SERIES
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

FOR TOWN APPROVAL PURPOSES :

THE SUBDIVISION REGULATIONS OF THE TOWN OF BARRINGTON ARE A PART OF THIS PLAT, AND APPROVAL OF THIS PLAN IS CONTIGENT UPON COMPLETION OF ALL REQUIREMENTS OF SAID SUBDIVISION REGULATIONS, EXCEPTING ONLY MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

SITE SPECIFIC SOILS MAP - OVERVIEW 1
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 80 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE
JOHN P. HAYES III
LICENSED LAND SURVEYOR

JOHN P. HAYES, III CSS #87

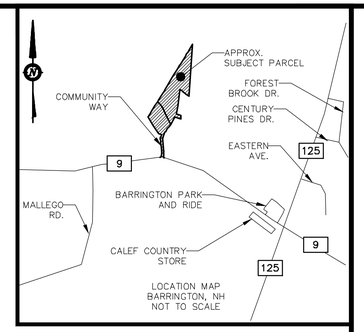
STATE OF NEW HAMPSHIRE
JOHN P. HAYES, III
CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1–1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).



N/F DAVID R. & GLENDA J. HERDERSON
UND INT LIV REV TRUST 1/2
1272 WINGED FOOT LANE
DENVER, NC 28037–6520
S.C.R.D. BOOK 897, PAGE 121
TAX MAP 235, LOT 1
SEE PLAN REFERENCE #5

N/F MARLA L LEMOS REV. TRUST
1164 OCEAN BLVD.
RYE, NH 03870
S.C.R.D. BOOK 4218, PAGE 912
SEE PLAN REF. #7
TAX MAP 234, LOT 57

N/F GARTH & ELIZABETH SVENSON
P.O. BOX 10
BARRINGTON, NH 03825
S.C.R.D. BOOK 3366, PAGE 451
TAX MAP 235, LOT 2
SEE PLAN REFERENCE #4

N/F KIMBERLY B & RONDI M BOYER
P.O. BOX 387
BARRINGTON, NH 03825–0387
S.C.R.D. BOOK 4410, PAGE 800
TAX MAP 235, LOT 4

N/F LINDA SVENSON
P.O. BOX 10
BARRINGTON, NH 03825
S.C.R.D. BOOK 4022, PAGE 576
TAX MAP 238, LOT 3
SEE PLAN REFERENCE #2

NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) ZONING: TOWN CENTER
FRONTAGE ~ 40.0'
MINIMUM LOT SIZE ~ 20,000 SQUARE FEET
FRONT SETBACK ~ 20.0'
NH ROUTE 125/9 SET BACK: ~ 50'
REAR SETBACK ~ 15.0'
SIDE SETBACK ~ 15.0'
COMMERCIAL / RESIDENTIAL BUFFER ~ 50.0'
WETLANDS/WATERBODY SETBACK ~ 50.0'
MAX. STRUCTURE HEIGHT: 40.0'

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY# –330178, MAP# – 33017C0305E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOILS MAP FOR THE SUBJECT PARCELS.

LEGEND:

- 4"X4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND~
- IRON BOUND/REBAR ~FND/SET~
- DRILL HOLE ~FND~
- IRON PIPE ~FND~
- W — WELL
- TEST PIT
- MATCH POINT
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OHU — OHU — OVERHEAD UTILITIES LINE
- OVERVIEW MATCH LINE
- DETAIL MATCH LINE
- SOIL LINE
- LIMIT OF SOIL SURVEY
- B±D — SOIL SERIES
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND

FOR TOWN APPROVAL PURPOSES :

THE SUBDIVISION REGULATIONS OF THE TOWN OF BARRINGTON ARE A PART OF THIS PLAT, AND APPROVAL OF THIS PLAN IS CONTIGENT UPON COMPLETION OF ALL REQUIREMENTS OF SAID SUBDIVISION REGULATIONS, EXCEPTING ONLY MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

REVISION	DATE	DESCRIPTION
#2	10–12–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08–30–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

SITE SPECIFIC SOILS MAP – OVERVIEW 2
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 80 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

DEIDRA BENJAMIN, CWS #295

WETLAND NOTES:
WETLANDS LOCATED ON TAX MAP 235, LOT 1 & TAX MAP 239, LOT 2 WERE DELINEATED BY DEIDRA BENJAMIN, IN MAY OF 2017 AND CONFIRMED IN JUNE OF 2021 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

JOHN P. HAYES, III CSS #87

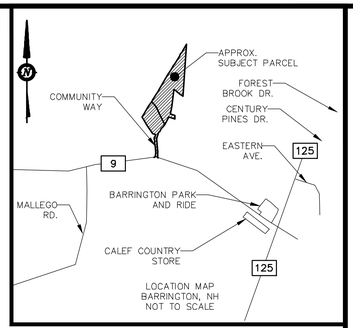
JOHN P. HAYES III, CWS #18

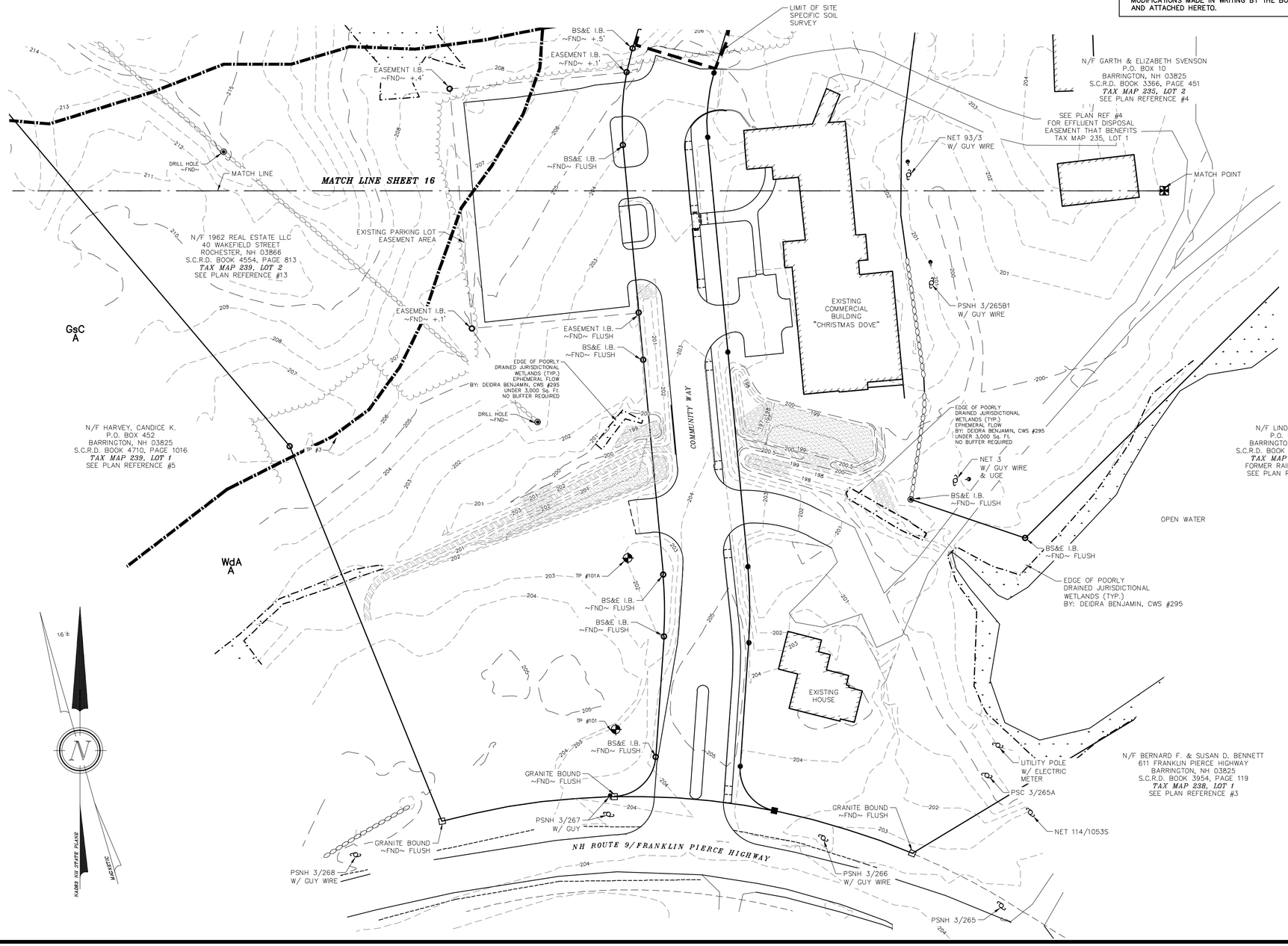
WETLAND NOTES:
WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

FOR TOWN APPROVAL PURPOSES :

THE SUBDIVISION REGULATIONS OF THE TOWN OF BARRINGTON ARE A PART OF THIS PLAT, AND APPROVAL OF THIS PLAN IS CONTIGENT UPON COMPLETION OF ALL REQUIREMENTS OF SAID SUBDIVISION REGULATIONS, EXCEPTING ONLY MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1-1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) ZONING: TOWN CENTER
FRONTAGE ~ 40.0'
MINIMUM LOT SIZE ~ 20,000 SQUARE FEET
FRONT SETBACK ~ 20.0'
NH ROUTE 125/9 SET BACK: ~ 50'
REAR SETBACK ~ 15.0'
SIDE SETBACK ~ 15.0'
COMMERCIAL / RESIDENTIAL BUFFER ~ 50.0'
WETLANDS/WATERBODY SETBACK ~ 50.0'
MAX. STRUCTURE HEIGHT: 40.0'

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY# – 330178, MAP# – 33017C0305E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOILS MAP FOR THE SUBJECT PARCELS.

9.) NO SSSM WAS PROVIDED FOR THE ORIGINAL 2019 BARRINGTON PLANNING BOARD APPROVAL.

LEGEND:

- 4"X4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND~
- IRON BOUND/REBAR ~FND/SET~
- DRILL HOLE ~FND~
- IRON PIPE ~FND~
- (W) WELL
- TEST PIT
- LEDGE PROBE
- MATCH POINT
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OHU OHU OVERHEAD UTILITIES LINE
- OVERVIEW MATCH LINE
- DETAIL MATCH LINE
- SOIL LINE
- LIMIT OF SOIL SURVEY
- BsB SOIL SERIES
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

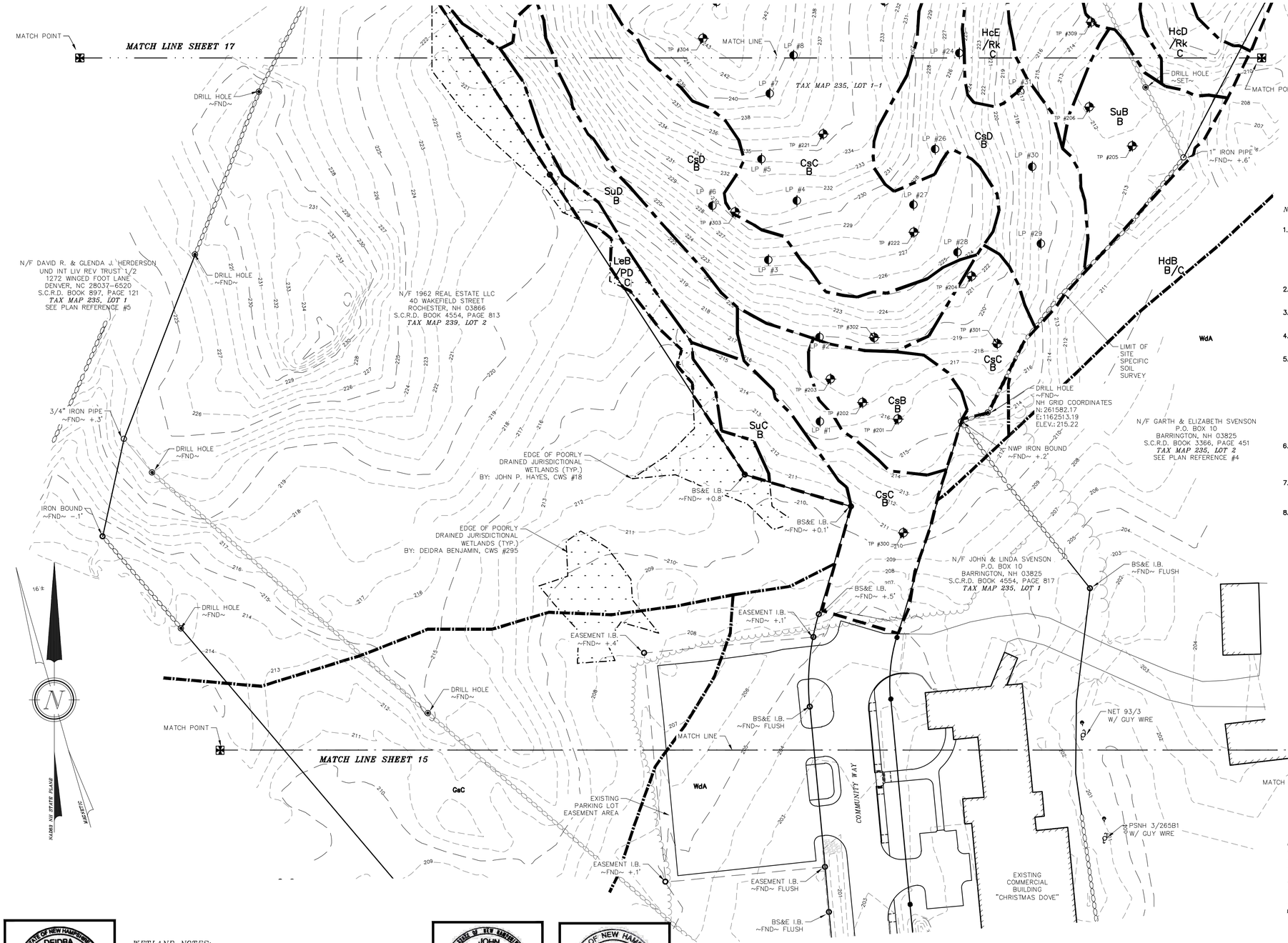
#	DATE	REVISION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

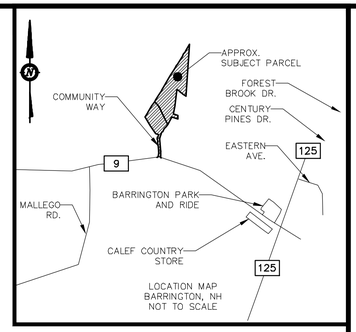
NRCS SOILS MAP – DETAIL 1
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097

KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1-1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) ZONING: TOWN CENTER
FRONTAGE ~ 40.0'
MINIMUM LOT SIZE ~ 20,000 SQUARE FEET
FRONT SETBACK ~ 20.0'
NH ROUTE 125/9 SET BACK: ~ 50'
REAR SETBACK ~ 15.0'
SIDE SETBACK ~ 15.0'
COMMERCIAL / RESIDENTIAL BUFFER ~ 50.0'
WETLANDS/WATERBODY SETBACK ~ 50.0'
MAX. STRUCTURE HEIGHT: 40.0'

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY# -330178, MAP# - 33017C0305E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOILS MAP FOR THE SUBJECT PARCELS.

FOR TOWN APPROVAL PURPOSES :

THE SUBDIVISION REGULATIONS OF THE TOWN OF BARRINGTON ARE A PART OF THIS PLAT, AND APPROVAL OF THIS PLAN IS CONTIGENT UPON COMPLETION OF ALL REQUIREMENTS OF SAID SUBDIVISION REGULATIONS, EXCEPTING ONLY MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

LEGEND:

- 4"X4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND~
- IRON BOUND/REBAR ~FND/SET~
- DRILL HOLE ~FND~
- IRON PIPE ~FND~
- WELL
- TEST PIT
- LEDGE PROBE
- MATCH POINT
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- OVERVIEW MATCH LINE
- DETAIL MATCH LINE
- SOIL LINE
- LIMIT OF SOIL SURVEY
- BzB SOIL SERIES
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

WETLAND NOTES:
WETLANDS LOCATED ON TAX MAP 235, LOT 1 & TAX MAP 239, LOT 2 WERE DELINEATED BY DEIDRA BENJAMIN, IN MAY OF 2017 AND CONFIRMED IN JUNE OF 2021 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

STATE OF NEW HAMPSHIRE · DEIDRA L. BENJAMIN · No. 295 · CERTIFIED WETLAND SCIENTIST

DEIDRA BENJAMIN, CWS #295

WETLAND NOTES:
WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

STATE OF NEW HAMPSHIRE · JOHN P. HAYES III · No. 087 · CERTIFIED SOIL SCIENTIST

JOHN P. HAYES, III CSS #87

STATE OF NEW HAMPSHIRE · JOHN P. HAYES, III · CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES III, CWS #18

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

SITE SPECIFIC SOILS MAP - DETAIL 2
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

STATE OF NEW HAMPSHIRE · KENNETH A. BERRY · No. 10437 · LICENSED PROFESSIONAL ENGINEER

JOHN P. HAYES III, CWS #18

JOHN P. HAYES, III CSS #87

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

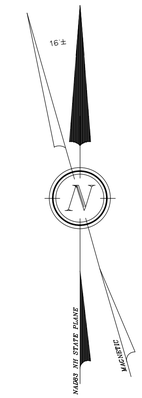
LEGEND:

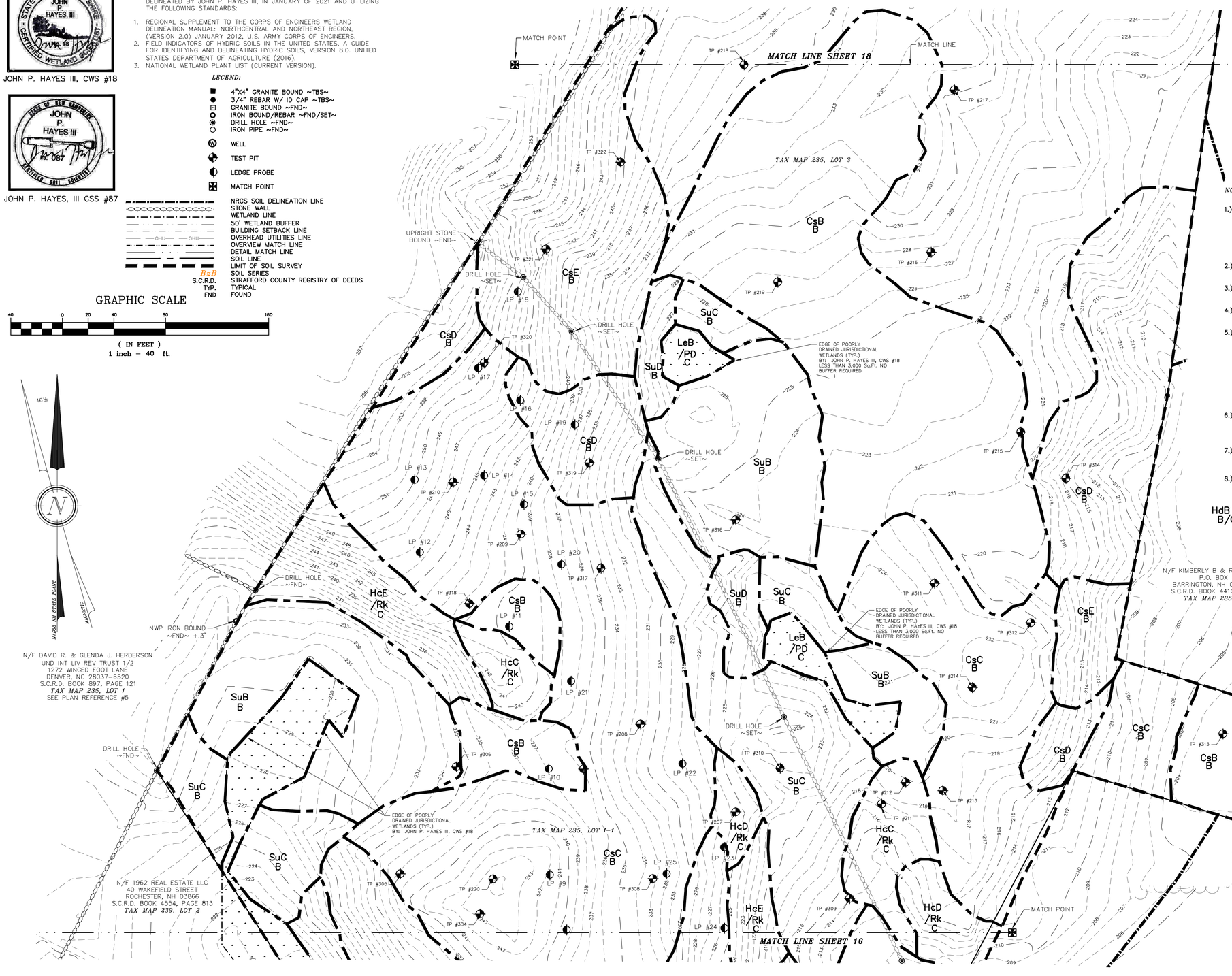
- 4"X4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND~
- IRON BOUND/REBAR ~FND/SET~
- DRILL HOLE ~FND~
- IRON PIPE ~FND~
- WELL
- TEST PIT
- LEDGE PROBE
- MATCH POINT
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- OVERVIEW MATCH LINE
- DETAIL MATCH LINE
- SOIL LINE
- LIMIT OF SOIL SURVEY
- SoB SOIL SERIES
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

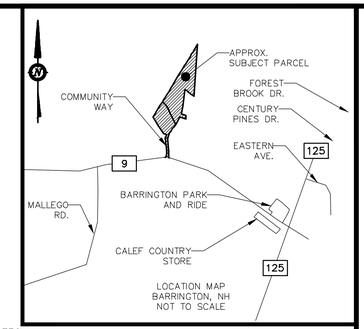
GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.







NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1-1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) ZONING: TOWN CENTER
FRONTAGE ~ 40.0'
MINIMUM LOT SIZE ~ 20,000 SQUARE FEET
FRONT SETBACK ~ 20.0'
NH ROUTE 125/9 SET BACK: ~ 50'
REAR SETBACK ~ 15.0'
SIDE SETBACK ~ 15.0'
COMMERCIAL / RESIDENTIAL BUFFER ~ 50.0'
WETLANDS/WATERBODY SETBACK ~ 50.0'
MAX. STRUCTURE HEIGHT: 40.0'

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY# -330178, MAP# - 33017C0305E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOILS MAP FOR THE SUBJECT PARCELS.

FOR TOWN APPROVAL PURPOSES :

THE SUBDIVISION REGULATIONS OF THE TOWN OF BARRINGTON ARE A PART OF THIS PLAT, AND APPROVAL OF THIS PLAN IS CONTIGENT UPON COMPLETION OF ALL REQUIREMENTS OF SAID SUBDIVISION REGULATIONS, EXCEPTING ONLY MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

SITE SPECIFIC SOILS MAP - DETAIL 3
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 14243 - LICENSED PROFESSIONAL ENGINEER

JOHN P. HAYES, III CSS #87

JOHN P. HAYES III, CWS #18

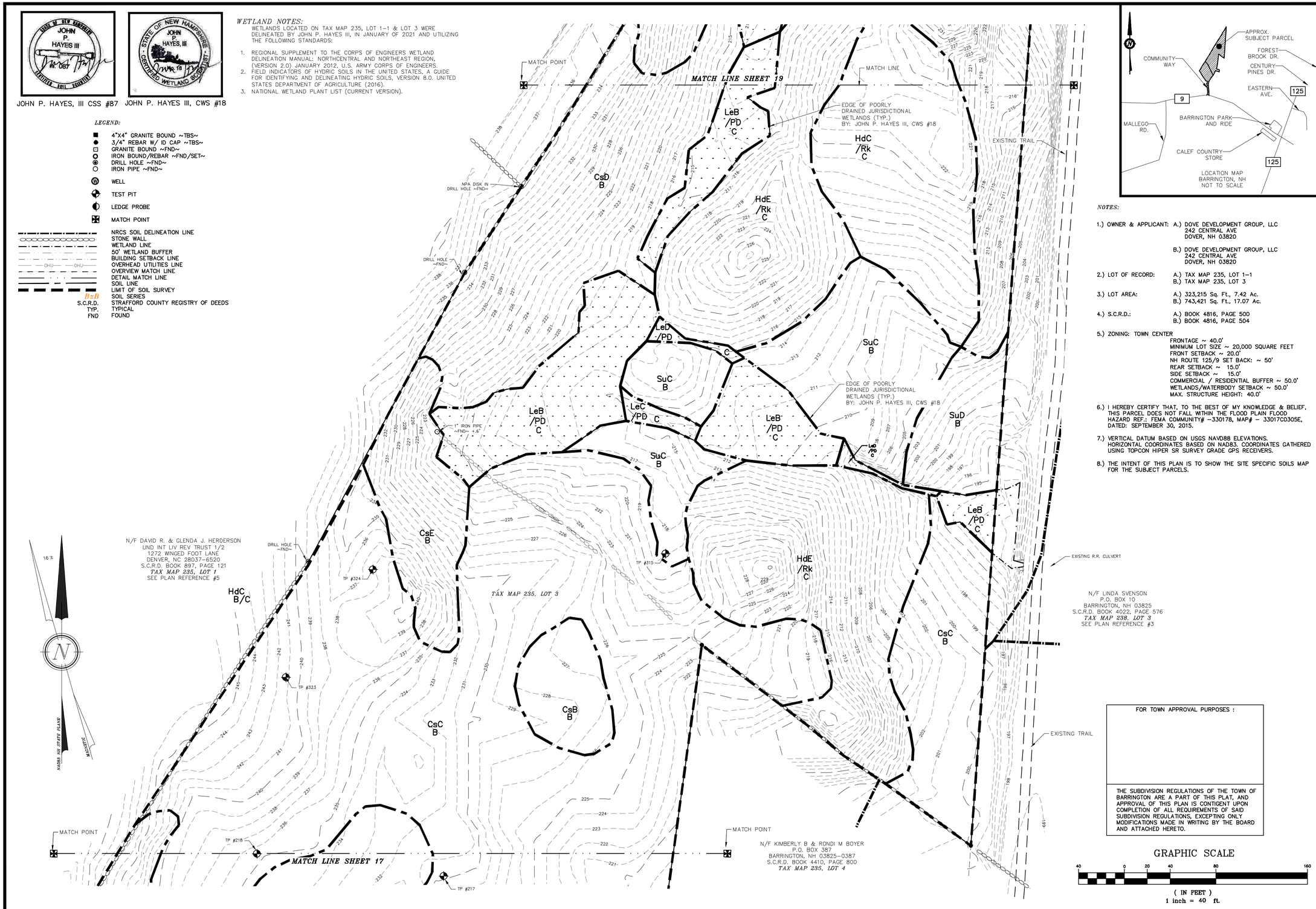
WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1-1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

LEGEND:

- 4"X4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND~
- IRON BOUND/REBAR ~FND/SET~
- DRILL HOLE ~FND~
- IRON PIPE ~FND~
- WELL
- TEST PIT
- LEDGE PROBE
- MATCH POINT
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OHU — OVERHEAD UTILITIES LINE
- OVERVIEW MATCH LINE
- DETAIL MATCH LINE
- SOIL LINE
- LIMIT OF SOIL SURVEY
- BzB SOIL SERIES
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND



NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1-1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) ZONING: TOWN CENTER
FRONTAGE ~ 40.0'
MINIMUM LOT SIZE ~ 20,000 SQUARE FEET
FRONT SETBACK ~ 20.0'
NH ROUTE 125/9 SET BACK: ~ 50'
REAR SETBACK ~ 15.0'
SIDE SETBACK ~ 15.0'
COMMERCIAL / RESIDENTIAL BUFFER ~ 50.0'
WETLANDS/WATERBODY SETBACK ~ 50.0'
MAX. STRUCTURE HEIGHT: 40.0'

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY# -330178, MAP# - 33017C0305E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOILS MAP FOR THE SUBJECT PARCELS.

FOR TOWN APPROVAL PURPOSES :

THE SUBDIVISION REGULATIONS OF THE TOWN OF BARRINGTON ARE A PART OF THIS PLAT, AND APPROVAL OF THIS PLAN IS CONTIGENT UPON COMPLETION OF ALL REQUIREMENTS OF SAID SUBDIVISION REGULATIONS, EXCEPTING ONLY MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

SITE SPECIFIC SOILS MAP - DETAIL 4
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 10478
LICENSED PROFESSIONAL ENGINEER

LEGEND:

- 4"X4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND~
- IRON BOUND/REBAR ~FND/SET~
- DRILL HOLE ~FND~
- IRON PIPE ~FND~
- WELL
- TEST PIT
- LEDGE PROBE
- MATCH POINT
- NRCS SOIL DELINEATION LINE
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- OVERVIEW MATCH LINE
- DETAIL MATCH LINE
- SOIL LINE
- LIMIT OF SOIL SURVEY
- BzB SOIL SERIES
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

STATE OF NEW HAMPSHIRE · JOHN P. HAYES III · No. 087 · CERTIFIED SOIL SCIENTIST

JOHN P. HAYES, III CSS #87

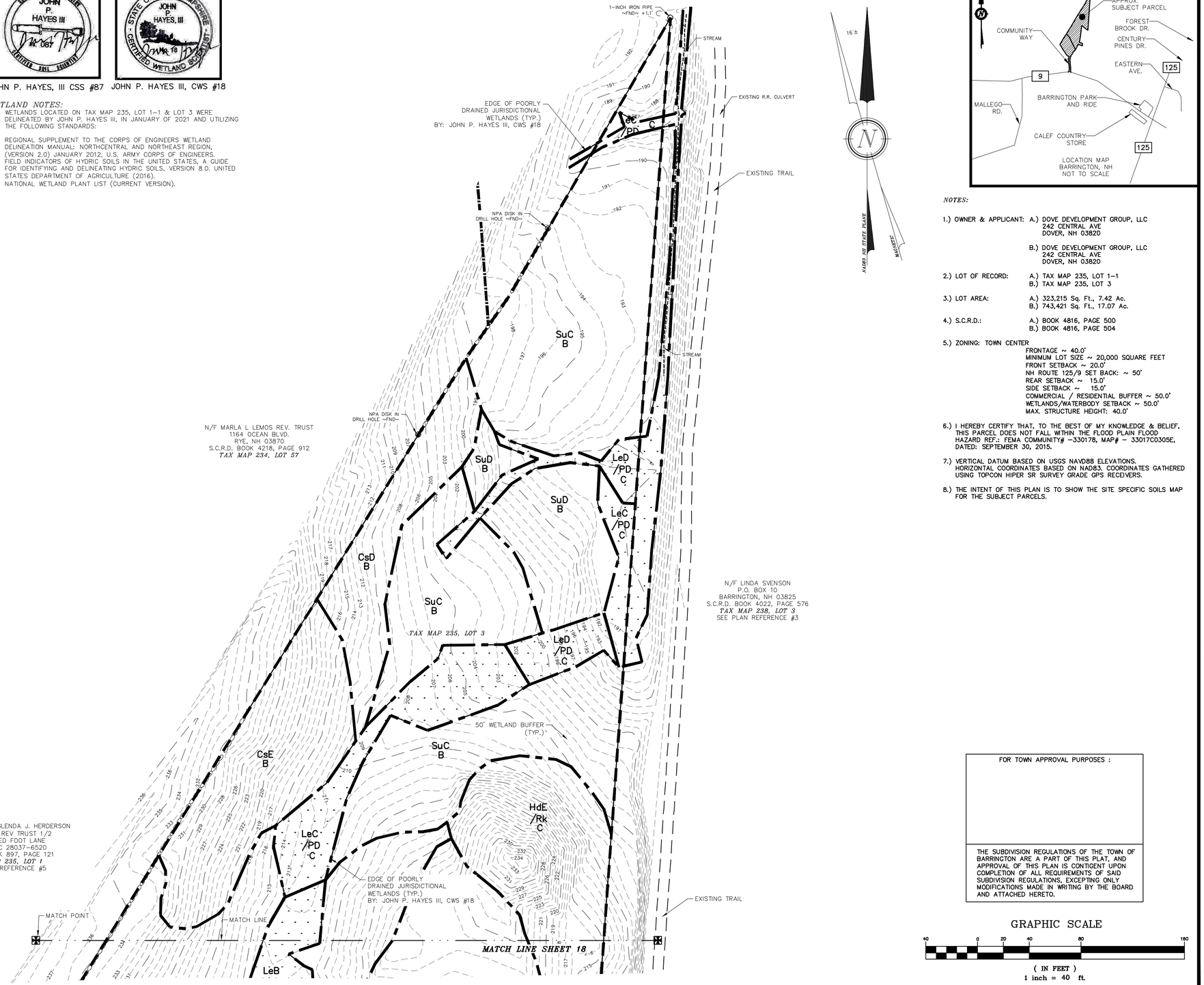
STATE OF NEW HAMPSHIRE · JOHN P. HAYES, III · CERTIFIED WETLAND SCIENTIST

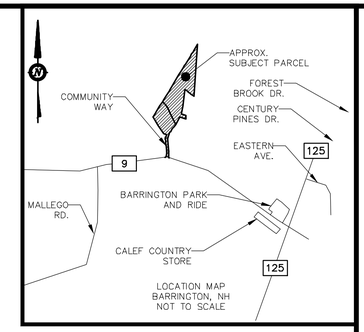
JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS LOCATED ON TAX MAP 235, LOT 1–1 & LOT 3 WERE DELINEATED BY JOHN P. HAYES III, IN JANUARY OF 2021 AND UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).





NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) ZONING: TOWN CENTER
FRONTAGE ~ 40.0'
MINIMUM LOT SIZE ~ 20,000 SQUARE FEET
FRONT SETBACK ~ 20.0'
NH ROUTE 125/9 SET BACK: ~ 50'
REAR SETBACK ~ 15.0'
SIDE SETBACK ~ 15.0'
COMMERCIAL / RESIDENTIAL BUFFER ~ 50.0'
WETLANDS/WATERBODY SETBACK ~ 50.0'
MAX. STRUCTURE HEIGHT: 40.0'

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY# –330178, MAP# – 33017C0305E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOILS MAP FOR THE SUBJECT PARCELS.

FOR TOWN APPROVAL PURPOSES :

THE SUBDIVISION REGULATIONS OF THE TOWN OF BARRINGTON ARE A PART OF THIS PLAT, AND APPROVAL OF THIS PLAN IS CONTIGENT UPON COMPLETION OF ALL REQUIREMENTS OF SAID SUBDIVISION REGULATIONS, EXCEPTING ONLY MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

REVISION	DATE	DESCRIPTION
#2	10–12–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08–30–2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

SITE SPECIFIC SOILS MAP – DETAIL 5
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097

STATE OF NEW HAMPSHIRE · KENNETH A. BERRY No. 14243 · LICENSED PROFESSIONAL ENGINEER

Appendix III - Calculations, Charts, & Graphs

Extreme Precipitation Tables
Rip Rap Calculations
NHDES AoT Spreadsheets
USDA / NRCS Websoil
NRCS Soil Survey Report
Stormwater System Operation & Maintenance Plan
& Inspection and Maintenance Manual
Infiltration Feasibility Report
Watershed Report Card, 303 (d) List, ORW List
Filtrexx

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	70.998 degrees West
Latitude	43.215 degrees North
Elevation	0 feet
Date/Time	Mon, 16 Apr 2018 09:46:54 -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	0.49	0.65	0.81	1.02	**1yr**	0.70	0.98	1.19	1.53	1.97	2.56	2.81	**1yr**	2.27	2.71	3.12	3.84	4.41	**1yr**
2yr	0.32	0.49	0.61	0.80	1.01	1.28	**2yr**	0.87	1.16	1.49	1.89	2.41	3.08	3.43	**2yr**	2.73	3.30	3.80	4.52	5.15	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.57	**5yr**	1.06	1.44	1.84	2.36	3.03	3.89	4.38	**5yr**	3.44	4.22	4.84	5.70	6.45	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.84	**10yr**	1.22	1.69	2.17	2.80	3.60	4.64	5.28	**10yr**	4.11	5.08	5.81	6.79	7.64	**10yr**
25yr	0.46	0.74	0.94	1.30	1.72	2.27	**25yr**	1.49	2.08	2.69	3.49	4.53	5.86	6.77	**25yr**	5.19	6.51	7.41	8.57	9.58	**25yr**
50yr	0.52	0.83	1.06	1.49	2.01	2.67	**50yr**	1.73	2.45	3.17	4.15	5.40	7.00	8.16	**50yr**	6.20	7.85	8.91	10.23	11.37	**50yr**
100yr	0.58	0.94	1.21	1.71	2.33	3.13	**100yr**	2.01	2.88	3.74	4.92	6.43	8.37	9.85	**100yr**	7.41	9.47	10.72	12.21	13.50	**100yr**
200yr	0.65	1.05	1.37	1.96	2.71	3.68	**200yr**	2.34	3.39	4.42	5.85	7.67	10.01	11.89	**200yr**	8.85	11.43	12.90	14.58	16.03	**200yr**
500yr	0.76	1.25	1.63	2.37	3.33	4.55	**500yr**	2.87	4.21	5.50	7.32	9.66	12.68	15.25	**500yr**	11.22	14.66	16.48	18.45	20.15	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.36	0.44	0.60	0.73	0.90	**1yr**	0.63	0.88	0.91	1.24	1.52	1.94	2.49	**1yr**	1.72	2.39	2.93	3.28	3.96	**1yr**
2yr	0.31	0.48	0.60	0.81	0.99	1.18	**2yr**	0.86	1.15	1.36	1.82	2.34	2.99	3.34	**2yr**	2.65	3.21	3.69	4.41	5.03	**2yr**
5yr	0.35	0.54	0.67	0.92	1.16	1.40	**5yr**	1.01	1.37	1.61	2.14	2.77	3.61	4.05	**5yr**	3.19	3.89	4.50	5.35	6.03	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.82	2.43	3.12	4.14	4.69	**10yr**	3.66	4.51	5.23	6.18	6.90	**10yr**
25yr	0.44	0.67	0.83	1.19	1.57	1.91	**25yr**	1.35	1.87	2.12	2.84	3.63	4.94	5.68	**25yr**	4.37	5.46	6.38	7.47	8.25	**25yr**
50yr	0.49	0.74	0.92	1.33	1.79	2.20	**50yr**	1.54	2.15	2.37	3.20	4.07	5.65	6.56	**50yr**	5.00	6.31	7.42	8.63	9.52	**50yr**
100yr	0.55	0.83	1.03	1.49	2.05	2.52	**100yr**	1.77	2.47	2.67	3.60	4.54	6.44	7.56	**100yr**	5.70	7.27	8.65	9.96	10.88	**100yr**
200yr	0.61	0.92	1.16	1.68	2.35	2.90	**200yr**	2.03	2.83	2.99	4.05	5.06	7.34	8.83	**200yr**	6.50	8.49	10.08	11.50	12.46	**200yr**
500yr	0.72	1.06	1.37	1.99	2.83	3.50	**500yr**	2.44	3.43	3.50	4.72	5.87	8.68	10.69	**500yr**	7.68	10.28	12.35	13.93	14.83	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.07	**1yr**	0.75	1.05	1.23	1.72	2.18	2.76	3.01	**1yr**	2.44	2.90	3.34	4.13	4.73	**1yr**
2yr	0.33	0.50	0.62	0.84	1.03	1.24	**2yr**	0.89	1.21	1.46	1.94	2.50	3.19	3.54	**2yr**	2.82	3.40	3.91	4.66	5.31	**2yr**
5yr	0.39	0.60	0.75	1.02	1.30	1.57	**5yr**	1.12	1.53	1.83	2.47	3.16	4.18	4.71	**5yr**	3.70	4.53	5.18	6.06	6.83	**5yr**
10yr	0.45	0.70	0.86	1.21	1.56	1.90	**10yr**	1.35	1.86	2.21	3.01	3.80	5.15	5.85	**10yr**	4.56	5.63	6.41	7.40	8.30	**10yr**
25yr	0.55	0.84	1.04	1.49	1.96	2.44	**25yr**	1.69	2.38	2.84	3.91	4.87	6.82	7.82	**25yr**	6.03	7.52	8.49	9.76	10.74	**25yr**
50yr	0.64	0.97	1.21	1.74	2.34	2.93	**50yr**	2.02	2.87	3.44	4.75	5.90	8.43	9.75	**50yr**	7.46	9.37	10.51	11.97	13.15	**50yr**
100yr	0.74	1.12	1.41	2.03	2.79	3.53	**100yr**	2.41	3.46	4.17	5.80	7.16	10.43	12.16	**100yr**	9.23	11.69	13.01	14.70	16.05	**100yr**
200yr	0.86	1.30	1.64	2.38	3.32	4.27	**200yr**	2.86	4.18	5.06	7.08	8.67	12.95	15.07	**200yr**	11.46	14.49	16.10	18.05	19.62	**200yr**
500yr	1.05	1.57	2.01	2.93	4.16	5.46	**500yr**	3.59	5.34	6.52	9.24	11.19	17.28	20.18	**500yr**	15.30	19.40	21.35	23.72	25.61	**500yr**

Powered by ACIS Northeast Regional Climate Center

RIP RAP CALCULATIONS

20-097 Dove Development Group

Barrington, NH

Berry Surveying & Engineering

335 Second Crown Point Road

Barrington, NH

6/14/2021, Rev 10/12/21

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.* Rip Rap was sized for the 25 year storm event. (Some d50 sizes and T values have been modified)

TAILWATER < HALF THE Do

La = (1.8 x Q) / Do 3/2 + (7 x Do) Q = Peak Flow & Do is Pipe Diameter

W = La + 3*Do or defined channel width

d50 = (0.02 x Q4/3) / (Tw x Do) Tw = Tailwater Depth

T = Largest Stone Size x 1.5

Culvert or Catch Basin	Tailwater (Feet) Tw	Discharge (C.F.S.) Q	Diameter of Pipe Do	Length of Rip Rap La (feet)	Width of Rip Rap W (feet)	d50-Stone Rip Rap d50(ft.)	Actual Size	Thickness
15" HDPE (Pond #C31P)	0.25	1.63	1.25	10.8	14.6	0.12	0.50	1.20
15" HDPE (Pond #C35P)	0.25	0.86	1.25	9.9	13.6	0.05	0.50	1.20
15" HDPE (Pond #C38P)	0.25	1.04	1.25	10.1	13.8	0.07	0.50	1.20
15" HDPE (Pond #C39P)	0.25	1.29	1.25	10.4	14.2	0.09	0.50	1.20
15" HDPE (Pond #C41P)	0.25	0.75	1.25	9.7	13.5	0.04	0.50	1.20
15" HDPE (Pond #C43P)	0.25	1.83	1.25	11.1	14.9	0.14	0.50	1.20
15" HDPE (Pond #C44P)	0.25	3.79	1.25	13.6	17.4	0.38	0.50	1.20
15" HDPE (Pond #C46P)	0.25	4.47	1.25	14.5	18.3	0.47	0.50	1.20
15" HDPE (Pond #D01P)	0.25	2.18	1.25	11.6	15.3	0.18	0.50	1.20
15" HDPE (Pond #D04P)	0.25	4.46	1.25	14.5	18.2	0.47	0.50	1.20
15" HDPE (Pond #17P)	0.30	9.98	1.50	20.3	24.8	0.95	1.00	2.25
15" HDPE (Pond #48P)	0.25	1.22	1.25	10.3	14.1	0.08	0.50	1.20
15" HDPE (Pond #49P)	0.25	0.43	1.25	9.3	13.1	0.02	0.50	1.20
15" HDPE (Pond #50P)	0.25	0.94	1.25	10.0	13.7	0.06	0.50	1.20
15" HDPE (Pond #54P)	0.25	3.96	1.25	13.9	17.6	0.40	0.50	1.20
15" HDPE (Pond #55P)	0.25	0.45	1.25	9.3	13.1	0.02	0.50	1.20
15" HDPE (Pond #103P)	0.25	0.15	1.25	8.9	12.7	0.01	0.50	1.20
15" HDPE (Pond #104P)	0.25	1.58	1.25	10.8	14.5	0.12	0.50	1.20
18" HDPE (Pond #105P)	0.30	2.29	1.50	12.7	17.2	0.13	0.50	1.20
15" HDPE (Pond #106P)	0.25	0.42	1.25	9.3	13.0	0.02	0.50	1.20
15" HDPE (Pond #107P)	0.25	2.89	1.25	12.5	16.2	0.26	0.50	1.20
6" HDPE (Pond #108P)	0.10	0.02	0.50	3.6	5.1	0.00	0.50	1.20
15" HDPE (Pond #109P)	0.25	1.44	0.50	10.8	12.3	0.26	0.50	1.20
15" HDPE (Pond #110P)	0.25	0.60	1.25	9.5	13.3	0.03	0.50	1.20

Please note that the designer chose to use the 25 Year Event for the dimensional calculations.

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d50 Size =	1	Feet	12	Inches
% of Weight Smaller	Size of Stone (Inches)			
Than the Given d50 Size	From		To	
100%	18		24	
85%	16		22	
50%	12		18	
15%	4		6	
d50 Size =	0.5	Feet	6	Inches
% of Weight Smaller	Size of Stone (Inches)			
Than the Given d50 Size	From		To	
100%	9		12	
85%	8		11	
50%	6		9	
50%	6		9	
15%	2		3	

GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION
(Env-Wq 1507.04)

0.38	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
3.31	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
0.27	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
-	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.25	inches	Rd = Weighted groundwater recharge depth	
1.0071	ac-in	GRV = AI * Rd	
3,656	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”)	

Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

8,854 CF Infiltrated by RG W/ infiltration #107

975 CF Infiltrated by Infiltration Pond #13

9,829 CF Total Infiltrated

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **Infiltration Pond (Existing) Pond 13**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

Yes		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← **yes**
0.68	ac	A = Area draining to the practice	
0.21	ac	A_I = Impervious area draining to the practice	
0.31	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.33	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.22	ac-in	WQV= 1" x Rv x A	
810	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
203	cf	25% x WQV (check calc for sediment forebay volume)	
Grass Sheet		Method of pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
975	cf	V = Volume[1] (attach a stage-storage table)	**≥ WQV**
1,934	sf	A_{SA} = Surface area of the bottom of the pond	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
1.7	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
203.00	feet	E_{BTM} = Elevation of the bottom of the basin	
198.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
198.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
5.00	feet	D_{SHWT} = Separation from SHWT	**≥ *** [3]
5.0	feet	D_{ROCK} = Separation from bedrock	**≥ *** [3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	**≥ 24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←**yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	← **yes**
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← **yes**
	:1	If a basin is proposed, pond side slopes.	**≥3:1**
203.16	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
203.44	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
203.75	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	← **yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← **yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

Summary for Pond 13P: Infiltration Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=96)

Inflow Area = 0.684 ac, 30.66% Impervious, Inflow Depth > 0.92" for 10YR - 24HR event
Inflow = 0.47 cfs @ 12.21 hrs, Volume= 0.052 af
Outflow = 0.19 cfs @ 12.64 hrs, Volume= 0.052 af, Atten= 60%, Lag= 25.6 min
Discarded = 0.19 cfs @ 12.64 hrs, Volume= 0.052 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 203.16' @ 12.64 hrs Surf.Area= 2,691 sf Storage= 371 cf
Flood Elev= 203.50' Surf.Area= 4,691 sf Storage= 1,606 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 11.6 min (907.6 - 896.0)

Volume	Invert	Avail.Storage	Storage Description
#1	203.00'	3,001 cf	**Open Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.00	1,934	235.0	0	0	1,934
203.75	6,520	429.0	3,001	3,001	12,188

Device	Routing	Invert	Outlet Devices
#1	Discarded	203.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	203.35'	**5.0' 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=0.19 cfs @ 12.64 hrs HW=203.16' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=203.00' TW=201.50' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 13P: Infiltration Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=70)

Inflow Area = 0.684 ac, 30.66% Impervious, Inflow Depth > 2.31" for 50YR - 24HR event
Inflow = 1.41 cfs @ 12.19 hrs, Volume= 0.131 af
Outflow = 0.68 cfs @ 12.51 hrs, Volume= 0.131 af, Atten= 52%, Lag= 19.5 min
Discarded = 0.30 cfs @ 12.51 hrs, Volume= 0.116 af
Primary = 0.38 cfs @ 12.51 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 203.44' @ 12.51 hrs Surf.Area= 4,312 sf Storage= 1,347 cf
Flood Elev= 203.50' Surf.Area= 4,691 sf Storage= 1,606 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 31.9 min (897.1 - 865.2)

Volume	Invert	Avail.Storage	Storage Description
#1	203.00'	3,001 cf	**Open Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.00	1,934	235.0	0	0	1,934
203.75	6,520	429.0	3,001	3,001	12,188

Device	Routing	Invert	Outlet Devices
#1	Discarded	203.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	203.35'	**5.0' 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=0.30 cfs @ 12.51 hrs HW=203.44' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.30 cfs)

Primary OutFlow Max=0.38 cfs @ 12.51 hrs HW=203.44' TW=202.42' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 0.38 cfs @ 0.82 fps)

Stage-Area-Storage for Pond 13P: Infiltration Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
203.00	1,934	0
203.01	1,977	20
203.02	2,021	40
203.03	2,066	60
203.04	2,110	81
203.05	2,156	102
203.06	2,201	124
203.07	2,248	146
203.08	2,294	169
203.09	2,342	192
203.10	2,389	216
203.11	2,437	240
203.12	2,486	265
203.13	2,535	290
203.14	2,585	315
203.15	2,635	341
203.16	2,685	368
203.17	2,737	395
203.18	2,788	423
203.19	2,840	451
203.20	2,893	479
203.21	2,946	509
203.22	2,999	538
203.23	3,053	569
203.24	3,107	599
203.25	3,162	631
203.26	3,218	663
203.27	3,273	695
203.28	3,330	728
203.29	3,387	762
203.30	3,444	796
203.31	3,502	831
203.32	3,560	866
203.33	3,619	902
203.34	3,678	938
203.35	3,738	975
203.36	3,798	1,013
203.37	3,858	1,051
203.38	3,920	1,090
203.39	3,981	1,130
203.40	4,043	1,170
203.41	4,106	1,211
203.42	4,169	1,252
203.43	4,233	1,294
203.44	4,297	1,337
203.45	4,361	1,380
203.46	4,426	1,424
203.47	4,492	1,468
203.48	4,558	1,514
203.49	4,624	1,560
203.50	4,691	1,606
203.51	4,758	1,653
203.52	4,826	1,701
203.53	4,895	1,750
203.54	4,963	1,799
203.55	5,033	1,849
203.56	5,102	1,900
203.57	5,173	1,951
203.58	5,244	2,003
203.59	5,315	2,056
203.60	5,386	2,110
203.61	5,459	2,164
203.62	5,531	2,219
203.63	5,605	2,274
203.64	5,678	2,331
203.65	5,752	2,388
203.66	5,827	2,446
203.67	5,902	2,505
203.68	5,978	2,564
203.69	6,054	2,624
203.70	6,130	2,685
203.71	6,207	2,747
203.72	6,285	2,809
203.73	6,363	2,872
203.74	6,441	2,936
203.75	**6,520**	**3,001**

Linear Interpolation
Lowest Outlet = 203.35'
Storage Volume = 975 CF

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #101 (Existing)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
1.27	ac	A = Area draining to the practice	
0.59	ac	A_I = Impervious area draining to the practice	
0.46	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.47	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.59	ac-in	WQV= 1" x Rv x A	
2,153	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
538	cf	25% x WQV (check calc for sediment forebay volume)	
1,615	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
629	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
202.01	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.35	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
3.42	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
199.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
198.50	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
199.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
190.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
9.50	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
0.50	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
202.70	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
203.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
3,113	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	R101	Note what sheet in the plan set contains the filter course specification	
2.0	:1	Pond side slopes	**≥ 3:1**
Sheet	R101	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course spec.	**mod. 304.1 (see spec)**

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: Rain Garden #101 was constructed in 2019 as part of the initial Christmas Lane construction on land of 1962 Real Estate, LLC.

Summary for Pond 101P: Ex. Rain Garden #101

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=38)
[80] Warning: Exceeded Pond 14P by 0.14' @ 12.25 hrs (1.01 cfs 0.048 af)

Inflow Area = 1.269 ac, 46.37% Impervious, Inflow Depth > 2.21" for 50YR - 24HR event
Inflow = 2.35 cfs @ 12.10 hrs, Volume= 0.234 af
Outflow = 1.41 cfs @ 13.51 hrs, Volume= 0.215 af, Atten= 40%, Lag= 85.0 min
Primary = 0.56 cfs @ 13.91 hrs, Volume= 0.198 af
Secondary = 1.31 cfs @ 13.51 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 202.70' @ 13.44 hrs Surf.Area= 2,921 sf Storage= 4,035 cf
Flood Elev= 203.00' Surf.Area= 3,677 sf Storage= 5,022 cf

Plug-Flow detention time= 126.8 min calculated for 0.215 af (92% of inflow)
Center-of-Mass det. time= 89.0 min (921.6 - 832.6)

Volume	Invert	Avail.Storage	Storage Description
#1	198.50'	384 cf	**Stone Bed (Irregular)** Listed below (Recalc) -Impervious 959 cf Overall x 40.0% Voids
#2	199.50'	288 cf	**Bio Media (Irregular)** Listed below -Impervious 1,439 cf Overall x 20.0% Voids
#3	201.00'	3,722 cf	**Open Storage (Irregular)** Listed below (Recalc)
#4	200.00'	629 cf	**Forebay (Irregular)** Listed below (Recalc) -Impervious
		5,022 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
198.50	959	250.0	0	0	959
199.50	959	250.0	959	959	1,209

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
199.50	959	250.0	0	0	959
201.00	959	250.0	1,439	1,439	1,334

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
201.00	959	250.0	0	0	959
202.00	1,494	284.0	1,217	1,217	2,428
203.00	3,677	596.0	2,505	3,722	24,281

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
200.00	55	35.0	0	0	55
201.00	281	320.0	153	153	8,108
202.00	702	445.0	476	629	15,727

Device	Routing	Invert	Outlet Devices
#1	Secondary	202.50'	**20.0' long x 4.0' breadth E-Spillway** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Primary	198.50'	**6.0" Round 6" U.D.** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 198.50' / 198.30' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	201.00'	**10.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.56 cfs @ 13.91 hrs HW=202.48' TW=202.01' (Dynamic Tailwater)
↑—**2=6" U.D.** (Passes 0.56 cfs of 0.64 cfs potential flow)
↑—**3=Exfiltration** (Exfiltration Controls 0.56 cfs)

Secondary OutFlow Max=0.46 cfs @ 13.51 hrs HW=202.66' TW=202.66' (Dynamic Tailwater)
↑—**1=E-Spillway** (Weir Controls 0.46 cfs @ 0.15 fps)

Stage-Area-Storage for Pond 101P: Ex. Rain Garden #101

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
198.50	0	0
198.55	0	19
198.60	0	38
198.65	0	58
198.70	0	77
198.75	0	96
198.80	0	115
198.85	0	134
198.90	0	153
198.95	0	173
199.00	0	192
199.05	0	211
199.10	0	230
199.15	0	249
199.20	0	269
199.25	0	288
199.30	0	307
199.35	0	326
199.40	0	345
199.45	0	364
199.50	0	384
199.55	0	393
199.60	0	403
199.65	0	412
199.70	0	422
199.75	0	432
199.80	0	441
199.85	0	451
199.90	0	460
199.95	0	470
200.00	0	480
200.05	0	492
200.10	0	505
200.15	0	518
200.20	0	532
200.25	0	546
200.30	0	561
200.35	0	576
200.40	0	591
200.45	0	607
200.50	0	624
200.55	0	641
200.60	0	659
200.65	0	677
200.70	0	696
200.75	0	716
200.80	0	736
200.85	0	757
200.90	0	779
200.95	0	801
201.00	959	825
201.05	983	888

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
201.10	1,007	953
201.15	1,032	1,020
201.20	1,057	1,089
201.25	1,082	1,161
201.30	1,107	1,234
201.35	1,133	1,310
201.40	1,159	1,388
201.45	1,185	1,469
201.50	1,212	1,551
201.55	1,239	1,637
201.60	1,266	1,724
201.65	1,293	1,814
201.70	1,321	1,907
201.75	1,349	2,002
201.80	1,378	2,100
201.85	1,406	2,200
201.90	1,435	2,303
201.95	1,464	2,409
202.00	1,494	2,517
202.05	1,580	2,594
202.10	1,669	2,675
202.15	1,760	2,761
202.20	1,853	2,851
202.25	1,949	2,946
202.30	2,047	3,046
202.35	2,148	3,151
202.40	2,251	3,261
202.45	2,357	3,376
202.50	2,465	3,497
202.55	2,575	3,623
202.60	2,688	3,754
202.65	2,803	3,892
202.70	2,921	4,035
202.75	3,041	4,184
202.80	3,163	4,339
202.85	3,288	4,500
202.90	3,415	4,668
202.95	3,545	4,842
203.00	**3,677**	**5,022**

WQV Draw-down
Linear Interpolation
2,153 CF Storage above
stone = 202.01'

See next Stage-Area-Storage Table
for storage volume

Stage-Discharge for Pond 101P: Ex. Rain Garden #101

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
198.50	0.00	0.00	0.00
198.55	0.00	0.00	0.00
198.60	0.00	0.00	0.00
198.65	0.00	0.00	0.00
198.70	0.00	0.00	0.00
198.75	0.00	0.00	0.00
198.80	0.00	0.00	0.00
198.85	0.00	0.00	0.00
198.90	0.00	0.00	0.00
198.95	0.00	0.00	0.00
199.00	0.00	0.00	0.00
199.05	0.00	0.00	0.00
199.10	0.00	0.00	0.00
199.15	0.00	0.00	0.00
199.20	0.00	0.00	0.00
199.25	0.00	0.00	0.00
199.30	0.00	0.00	0.00
199.35	0.00	0.00	0.00
199.40	0.00	0.00	0.00
199.45	0.00	0.00	0.00
199.50	0.00	0.00	0.00
199.55	0.00	0.00	0.00
199.60	0.00	0.00	0.00
199.65	0.00	0.00	0.00
199.70	0.00	0.00	0.00
199.75	0.00	0.00	0.00
199.80	0.00	0.00	0.00
199.85	0.00	0.00	0.00
199.90	0.00	0.00	0.00
199.95	0.00	0.00	0.00
200.00	0.00	0.00	0.00
200.05	0.00	0.00	0.00
200.10	0.00	0.00	0.00
200.15	0.00	0.00	0.00
200.20	0.00	0.00	0.00
200.25	0.00	0.00	0.00
200.30	0.00	0.00	0.00
200.35	0.00	0.00	0.00
200.40	0.00	0.00	0.00
200.45	0.00	0.00	0.00
200.50	0.00	0.00	0.00
200.55	0.00	0.00	0.00
200.60	0.00	0.00	0.00
200.65	0.00	0.00	0.00
200.70	0.00	0.00	0.00
200.75	0.00	0.00	0.00
200.80	0.00	0.00	0.00
200.85	0.00	0.00	0.00
200.90	0.00	0.00	0.00
200.95	0.00	0.00	0.00
201.00	0.22	0.22	0.00
201.05	0.23	0.23	0.00
201.10	0.23	0.23	0.00
201.15	0.24	0.24	0.00
201.20	0.24	0.24	0.00
201.25	0.25	0.25	0.00
201.30	0.26	0.26	0.00
201.35	0.26	0.26	0.00
201.40	0.27	0.27	0.00
201.45	0.27	0.27	0.00
201.50	0.28	0.28	0.00
201.55	0.29	0.29	0.00
201.60	0.29	0.29	0.00
201.65	0.30	0.30	0.00
201.70	0.31	0.31	0.00
201.75	0.31	0.31	0.00
201.80	0.32	0.32	0.00
201.85	0.33	0.33	0.00
201.90	0.33	0.33	0.00
201.95	0.34	0.34	0.00
202.00	0.35	0.35	0.00
202.05	0.37	0.37	0.00
202.10	0.39	0.39	0.00
202.15	0.41	0.41	0.00
202.20	0.43	0.43	0.00
202.25	0.45	0.45	0.00
202.30	0.47	0.47	0.00
202.35	0.50	0.50	0.00
202.40	0.52	0.52	0.00
202.45	0.55	0.55	0.00
202.50	0.57	0.57	0.00
202.55	1.13	0.60	0.53
202.60	2.13	0.62	1.51
202.65	3.41	0.65	2.77
202.70	4.93	0.68	4.26
202.75	6.75	0.70	6.05
202.80	8.82	0.73	8.08
202.85	11.11	0.76	10.35
202.90	13.64	0.79	12.85
202.95	16.38	0.82	15.56
203.00	**19.34**	**0.85**	**18.49**

Elevation 202.01' = 0.35 CFS discharge

Stage-Area-Storage for Pond 101P: Ex. Rain Garden #101

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
198.50	0	0
198.55	0	19
198.60	0	38
198.65	0	58
198.70	0	77
198.75	0	96
198.80	0	115
198.85	0	134
198.90	0	153
198.95	0	173
199.00	0	192
199.05	0	211
199.10	0	230
199.15	0	249
199.20	0	269
199.25	0	288
199.30	0	307
199.35	0	326
199.40	0	345
199.45	0	364
199.50	0	384
199.55	0	393
199.60	0	403
199.65	0	412
199.70	0	422
199.75	0	432
199.80	0	441
199.85	0	451
199.90	0	460
199.95	0	470
200.00	0	480
200.05	0	492
200.10	0	505
200.15	0	518
200.20	0	532
200.25	0	546
200.30	0	561
200.35	0	576
200.40	0	591
200.45	0	607
200.50	0	624
200.55	0	641
200.60	0	659
200.65	0	677
200.70	0	696
200.75	0	716
200.80	0	736
200.85	0	757
200.90	0	779
200.95	0	801
201.00	959	825
201.05	983	888

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
201.10	1,007	953
201.15	1,032	1,020
201.20	1,057	1,089
201.25	1,082	1,161
201.30	1,107	1,234
201.35	1,133	1,310
201.40	1,159	1,388
201.45	1,185	1,469
201.50	1,212	1,551
201.55	1,239	1,637
201.60	1,266	1,724
201.65	1,293	1,814
201.70	1,321	1,907
201.75	1,349	2,002
201.80	1,378	2,100
201.85	1,406	2,200
201.90	1,435	2,303
201.95	1,464	2,409
202.00	1,494	2,517
202.05	1,580	2,594
202.10	1,669	2,675
202.15	1,760	2,761
202.20	1,853	2,851
202.25	1,949	2,946
202.30	2,047	3,046
202.35	2,148	3,151
202.40	2,251	3,261
202.45	2,357	3,376
202.50	2,465	3,497
202.55	2,575	3,623
202.60	2,688	3,754
202.65	2,803	3,892
202.70	2,921	4,035
202.75	3,041	4,184
202.80	3,163	4,339
202.85	3,288	4,500
202.90	3,415	4,668
202.95	3,545	4,842
203.00	**3,677**	**5,022**

Linear Interpolation
Lowest Outlet = 202.50'
Storage Volume = 3,113 CF

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #102 (Existing)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
7.86	ac	A = Area draining to the practice	
0.85	ac	A_I = Impervious area draining to the practice	
0.11	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.15	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.16	ac-in	WQV= 1" x Rv x A	
4,204	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,051	cf	25% x WQV (check calc for sediment forebay volume)	
3,153	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
1,106	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
199.88	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.46	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
5.08	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
197.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
196.50	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
198.50	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
190.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
7.50	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
(1.00)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
200.40	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
200.50	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
NO	ac	Drainage Area no larger than 5 ac?	**← yes**
4,580	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	R102	Note what sheet in the plan set contains the filter course specification	
2.0	:1	Pond side slopes	**≥ 3:1**
Sheet	R102	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course spec.	**mod. 304.1 (see spec)**

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: Rain Garden #101 was constructed in 2019 as part of the initial Christmas Lane construction on land of John & Linda Svenson.

31,150 SF of pavement has been removed from the impervious surface to account for the pre-existing parking lot and paved are of the Christmas Dove & used for WQV Calculations

67,950 SF (1.56 Ac) of impervious - 31,150 SF (0.72 Ac.) pre-existing pavement = 36,800 SF (0.85 Ac)

Summary for Pond 102P: Ex. Rain Garden #102

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 7.863 ac, 19.58% Impervious, Inflow Depth > 3.10" for 50YR - 24HR event
Inflow = 12.62 cfs @ 12.98 hrs, Volume= 2.034 af
Outflow = 13.14 cfs @ 13.02 hrs, Volume= 1.911 af, Atten= 0%, Lag= 2.2 min
Primary = 0.46 cfs @ 11.70 hrs, Volume= 0.570 af
Secondary = 12.67 cfs @ 13.02 hrs, Volume= 1.341 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 200.40' @ 13.02 hrs Surf.Area= 1,994 sf Storage= 6,946 cf
Flood Elev= 200.50' Surf.Area= 1,994 sf Storage= 7,317 cf

Plug-Flow detention time= 48.9 min calculated for 1.907 af (94% of inflow)
Center-of-Mass det. time= 18.2 min (873.5 - 855.3)

Volume	Invert	Avail.Storage	Storage Description
#1	196.50'	798 cf	**Stone Base (Irregular)** Listed below (Recalc) -Impervious 1,994 cf Overall x 40.0% Voids
#2	197.50'	598 cf	**Bio Media (Irregular)** Listed below (Recalc) 2,991 cf Overall x 20.0% Voids
#3	199.00'	4,816 cf	**Open Storage (Irregular)** Listed below (Recalc) -Impervious
#4	197.00'	1,106 cf	**Forebay (Irregular)** Listed below (Recalc) -Impervious
		7,317 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
196.50	1,994	198.7	0	0	1,994
197.50	1,994	198.7	1,994	1,994	2,193

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
197.50	1,994	198.7	0	0	1,994
199.00	1,994	198.7	2,991	2,991	2,292

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
199.00	2,793	272.2	0	0	2,793
200.00	3,352	285.2	3,068	3,068	3,433
200.50	3,640	291.5	1,748	4,816	3,757

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
197.00	336	93.0	0	0	336
198.00	547	108.0	437	437	596
199.00	798	127.0	669	1,106	970

Device	Routing	Invert	Outlet Devices
#1	Primary	196.50'	**6.0" Round 6" U.D.** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 196.50' / 196.40' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Device 1	197.50'	**10.000 in/hr Exfil. To UD over Surface area**
#3	Secondary	200.00'	**20.0' long x 4.0' breadth E-Spillway** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.46 cfs @ 11.70 hrs HW=199.07' TW=197.17' (Dynamic Tailwater)
↑—**1=6" U.D.** (Passes 0.46 cfs of 1.29 cfs potential flow)
↑—**2=Exfil. To UD** (Exfiltration Controls 0.46 cfs)

Secondary OutFlow Max=12.19 cfs @ 13.02 hrs HW=200.39' TW=199.65' (Dynamic Tailwater)
↑—**3=E-Spillway** (Weir Controls 12.19 cfs @ 1.57 fps)

Stage-Area-Storage for Pond 102P: Ex. Rain Garden #102

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
196.50	0	0
196.55	0	40
196.60	0	80
196.65	0	120
196.70	0	160
196.75	0	199
196.80	0	239
196.85	0	279
196.90	0	319
196.95	0	359
197.00	0	399
197.05	0	456
197.10	0	513
197.15	0	571
197.20	0	629
197.25	0	688
197.30	0	747
197.35	0	807
197.40	0	868
197.45	0	928
197.50	1,994	990
197.55	1,994	1,032
197.60	1,994	1,074
197.65	1,994	1,117
197.70	1,994	1,161
197.75	1,994	1,205
197.80	1,994	1,250
197.85	1,994	1,295
197.90	1,994	1,341
197.95	1,994	1,387
198.00	1,994	1,434
198.05	1,994	1,482
198.10	1,994	1,530
198.15	1,994	1,579
198.20	1,994	1,628
198.25	1,994	1,678
198.30	1,994	1,728
198.35	1,994	1,780
198.40	1,994	1,831
198.45	1,994	1,884
198.50	1,994	1,937
198.55	1,994	1,990
198.60	1,994	2,044
198.65	1,994	2,099
198.70	1,994	2,155
198.75	1,994	2,211
198.80	1,994	2,268
198.85	1,994	2,325
198.90	1,994	2,383
198.95	1,994	2,442
199.00	**1,994**	2,502
199.05	1,994	2,642
199.10	1,994	2,784
199.15	1,994	2,927
199.20	1,994	3,071
199.25	1,994	3,217
199.30	1,994	3,364
199.35	1,994	3,512
199.40	1,994	3,662
199.45	1,994	3,813
199.50	1,994	3,966
199.55	1,994	4,120
199.60	1,994	4,275
199.65	1,994	4,432
199.70	1,994	4,590
199.75	1,994	4,750
199.80	1,994	4,911
199.85	1,994	5,074
199.90	1,994	5,238
199.95	1,994	5,403
200.00	1,994	5,570
200.05	1,994	5,738
200.10	1,994	5,908
200.15	1,994	6,079
200.20	1,994	6,252
200.25	1,994	6,426
200.30	1,994	6,601
200.35	1,994	6,778
200.40	1,994	6,956
200.45	1,994	7,136
200.50	1,994	**7,317**

WQV Draw-down
Linear Interpolation
4,204 CF Storage above
stone = 199.88'

See next Stage-Area-Storage Table
for storage volume

Stage-Discharge for Pond 102P: Ex. Rain Garden #102

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
196.50	0.00	0.00	0.00
196.55	0.00	0.00	0.00
196.60	0.00	0.00	0.00
196.65	0.00	0.00	0.00
196.70	0.00	0.00	0.00
196.75	0.00	0.00	0.00
196.80	0.00	0.00	0.00
196.85	0.00	0.00	0.00
196.90	0.00	0.00	0.00
196.95	0.00	0.00	0.00
197.00	0.00	0.00	0.00
197.05	0.00	0.00	0.00
197.10	0.00	0.00	0.00
197.15	0.00	0.00	0.00
197.20	0.00	0.00	0.00
197.25	0.00	0.00	0.00
197.30	0.00	0.00	0.00
197.35	0.00	0.00	0.00
197.40	0.00	0.00	0.00
197.45	0.00	0.00	0.00
197.50	0.46	0.46	0.00
197.55	0.46	0.46	0.00
197.60	0.46	0.46	0.00
197.65	0.46	0.46	0.00
197.70	0.46	0.46	0.00
197.75	0.46	0.46	0.00
197.80	0.46	0.46	0.00
197.85	0.46	0.46	0.00
197.90	0.46	0.46	0.00
197.95	0.46	0.46	0.00
198.00	0.46	0.46	0.00
198.05	0.46	0.46	0.00
198.10	0.46	0.46	0.00
198.15	0.46	0.46	0.00
198.20	0.46	0.46	0.00
198.25	0.46	0.46	0.00
198.30	0.46	0.46	0.00
198.35	0.46	0.46	0.00
198.40	0.46	0.46	0.00
198.45	0.46	0.46	0.00
198.50	0.46	0.46	0.00
198.55	0.46	0.46	0.00
198.60	0.46	0.46	0.00
198.65	0.46	0.46	0.00
198.70	0.46	0.46	0.00
198.75	0.46	0.46	0.00
198.80	0.46	0.46	0.00
198.85	0.46	0.46	0.00
198.90	0.46	0.46	0.00
198.95	0.46	0.46	0.00
199.00	0.46	**0.46**	0.00
199.05	0.46	0.46	0.00
199.10	0.46	0.46	0.00
199.15	0.46	0.46	0.00
199.20	0.46	0.46	0.00
199.25	0.46	0.46	0.00
199.30	0.46	0.46	0.00
199.35	0.46	0.46	0.00
199.40	0.46	0.46	0.00
199.45	0.46	0.46	0.00
199.50	0.46	0.46	0.00
199.55	0.46	0.46	0.00
199.60	0.46	0.46	0.00
199.65	0.46	0.46	0.00
199.70	0.46	0.46	0.00
199.75	0.46	0.46	0.00
199.80	0.46	0.46	0.00
199.85	0.46	0.46	0.00
199.90	0.46	0.46	0.00
199.95	0.46	0.46	0.00
200.00	0.46	0.46	0.00
200.05	0.99	0.46	0.53
200.10	1.97	0.46	1.51
200.15	3.23	0.46	2.77
200.20	4.72	0.46	4.26
200.25	6.51	0.46	6.05
200.30	8.55	0.46	8.08
200.35	10.81	0.46	10.35
200.40	13.31	0.46	12.85
200.45	16.02	0.46	15.56
200.50	**18.95**	0.46	**18.49**

Elevation 199.88' =
0.46 CFS discharge

Stage-Area-Storage for Pond 102P: Ex. Rain Garden #102

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
196.50	0	0
196.55	0	40
196.60	0	80
196.65	0	120
196.70	0	160
196.75	0	199
196.80	0	239
196.85	0	279
196.90	0	319
196.95	0	359
197.00	0	399
197.05	0	456
197.10	0	513
197.15	0	571
197.20	0	629
197.25	0	688
197.30	0	747
197.35	0	807
197.40	0	868
197.45	0	928
197.50	1,994	990
197.55	1,994	1,032
197.60	1,994	1,074
197.65	1,994	1,117
197.70	1,994	1,161
197.75	1,994	1,205
197.80	1,994	1,250
197.85	1,994	1,295
197.90	1,994	1,341
197.95	1,994	1,387
198.00	1,994	1,434
198.05	1,994	1,482
198.10	1,994	1,530
198.15	1,994	1,579
198.20	1,994	1,628
198.25	1,994	1,678
198.30	1,994	1,728
198.35	1,994	1,780
198.40	1,994	1,831
198.45	1,994	1,884
198.50	1,994	1,937
198.55	1,994	1,990
198.60	1,994	2,044
198.65	1,994	2,099
198.70	1,994	2,155
198.75	1,994	2,211
198.80	1,994	2,268
198.85	1,994	2,325
198.90	1,994	2,383
198.95	1,994	2,442
199.00	**1,994**	2,502
199.05	1,994	2,642
199.10	1,994	2,784
199.15	1,994	2,927
199.20	1,994	3,071
199.25	1,994	3,217
199.30	1,994	3,364
199.35	1,994	3,512
199.40	1,994	3,662
199.45	1,994	3,813
199.50	1,994	3,966
199.55	1,994	4,120
199.60	1,994	4,275
199.65	1,994	4,432
199.70	1,994	4,590
199.75	1,994	4,750
199.80	1,994	4,911
199.85	1,994	5,074
199.90	1,994	5,238
199.95	1,994	5,403
200.00	1,994	5,570
200.05	1,994	5,738
200.10	1,994	5,908
200.15	1,994	6,079
200.20	1,994	6,252
200.25	1,994	6,426
200.30	1,994	6,601
200.35	1,994	6,778
200.40	1,994	6,956
200.45	1,994	7,136
200.50	1,994	**7,317**

Linear Interpolation
Lowest Outlet = 200.00'
Storage Volume = 4,580 CF

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

GRAVEL WETLAND DESIGN CRITERIA
(Env-Wq 1508.05)

Type/Node Name: **Gravel Wetland #103**

Enter the node name in the drainage analysis if applicable.

0.60 ac	A = Area draining to the practice	
0.33 ac	A_I = Impervious area draining to the practice	
0.55 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.54 unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.32 ac-in	WQV= 1" x Rv x A	
1,179 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
118 cf	10% x WQV (check calc for sediment forebay)	
530 cf	45% x WQV (check calc for gravel wetland treatment bay volume)	
311 cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
547 cf	V_{TB1} = Volume of treatment bay 1 [1]	**≥ 45%WQV**
555 cf	V_{TB2} = Volume of treatment bay 2 [1]	**≥ 45%WQV**
0.03 cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec) [2]	
212.98 ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.01 cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{avg}$**
65.49 hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
3.00 :1	Pond side slopes	**≥ 3:1**
215.42 ft	Elevation of SHWT	
213.42 ft	SHWT - 2 feet	
211.67 ft	Epp = Elevation of the permanent pool (elevation of lowest orifice) [3]	**≤ E_{SHWT} - 2 ft**
16.5, 16 ft	Length of the flow path between the inlet and outlet in each cell	**≥ 15 ft**
Angle Grate	What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
215.05 ft	Peak elevation of the 50-year storm event (E_{50})	
216.00 ft	Berm elevation of the pond	
YES	E_{50} ≤ the berm elevation?	**← yes**

Qualified professional that developed the planting plan

Name, Profession: KAB/KRP

1. Volume stored above the wetland soil and below the high flow by-pass.

2. To ensure orifice is sized so that WQV is released at a relatively stable rate.

3. 4" to 8" below the wetland soil. If lowest orifice is higher than (SHWT - 2 feet), and saturated hydraulic conductivity (Ksat) is greater than 0.015 in/hr, the system must be lined.

Designer's Notes: Ksat Sutton & Ksat Charlton > than 0.015 in/hr. System to be lined w/ low perm material

Summary for Pond 103P: Gravel Wetland #103

[80] Warning: Exceeded Pond D01P by 0.02' @ 22.00 hrs (0.87 cfs 0.024 af)

Inflow Area = 0.597 ac, 54.88% Impervious, Inflow Depth > 4.84" for 50YR - 24HR event
Inflow = 3.13 cfs @ 12.09 hrs, Volume= 0.241 af
Outflow = 0.22 cfs @ 13.66 hrs, Volume= 0.143 af, Atten= 93%, Lag= 94.4 min
Primary = 0.02 cfs @ 13.66 hrs, Volume= 0.030 af
Secondary = 0.19 cfs @ 13.66 hrs, Volume= 0.114 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 215.05' @ 13.66 hrs Surf.Area= 4,702 sf Storage= 6,198 cf
Flood Elev= 216.00' Surf.Area= 5,387 sf Storage= 9,384 cf

Plug-Flow detention time= 287.7 min calculated for 0.143 af (59% of inflow)
Center-of-Mass det. time= 178.4 min (968.9 - 790.5)

Volume	Invert	Avail.Storage	Storage Description
#1	211.67'	32 cf	**4.00'D x 2.57'H 4' Outlet Structure**
#2	212.00'	547 cf	**Cell 1 (Irregular)** Listed below (Recalc)
#3	212.00'	555 cf	**Cell 2 (Irregular)** Listed below (Recalc)
#4	213.00'	7,939 cf	**Open Water Storage (Irregular)** Listed below (Recalc)
#5	212.00'	311 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
		9,384 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.00	429	77.7	0	0	429
213.00	674	96.1	547	547	698

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.00	426	79.3	0	0	426
213.00	695	98.2	555	555	707

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
213.00	1,515	153.7	0	0	1,515
214.00	2,371	195.9	1,927	1,927	2,702
215.00	2,986	214.9	2,673	4,600	3,356
216.00	3,705	237.6	3,339	7,939	4,204

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.00	47	26.8	0	0	47
213.00	147	45.3	92	92	159
214.00	300	63.8	219	311	329

Device	Routing	Invert	Outlet Devices
#1	Primary	211.67'	**15.0" Round 6" N-12 HDPE** L= 15.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.67' / 211.00' S= 0.0432 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	211.67'	**15.0" Round 15" N-12 HDPE** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.67' / 211.00' S= 0.0335 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#3	Device 1	211.67'	**0.7" Vert. 0.75" Orifice Goose Neck** C= 0.600
#4	Device 2	214.25'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 2	215.45'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#6	Tertiary	215.50'	**5.0' long x 7.0' breadth 5' Emergency Spillway** 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) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.02 cfs @ 13.66 hrs HW=215.05' TW=211.04' (Dynamic Tailwater)
└─**1=6" N-12 HDPE** (Passes 0.02 cfs of 9.81 cfs potential flow)
  └─**3=0.75" Orifice Goose Neck** (Orifice Controls 0.02 cfs @ 8.81 fps)

Secondary OutFlow Max=0.19 cfs @ 13.66 hrs HW=215.05' TW=211.04' (Dynamic Tailwater)
└─**2=15" N-12 HDPE** (Passes 0.19 cfs of 9.81 cfs potential flow)
  ├─**4=3" Orifice** (Orifice Controls 0.19 cfs @ 3.96 fps)
  └─**5=48" Structure** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.67' TW=211.00' (Dynamic Tailwater)
└─**6=5' Emergency Spillway** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 103P: Gravel Wetland #103

Elevation (feet)	Storage (cubic-feet)
211.67	0
211.72	1
211.77	1
211.82	2
211.87	3
211.92	3
211.97	4
212.02	23
212.07	69
212.12	118
212.17	167
212.22	218
212.27	271
212.32	325
212.37	380
212.42	437
212.47	495
212.52	555
212.57	616
212.62	679
212.67	744
212.72	810
212.77	878
212.82	947
212.87	1,018
212.92	1,091
212.97	1,165
213.02	1,245
213.07	1,330
213.12	1,418
213.17	1,509
213.22	1,601
213.27	1,696
213.32	1,794
213.37	1,893
213.42	1,996
213.47	2,100
213.52	2,207
213.57	2,317
213.62	2,429
213.67	2,544
213.72	2,662
213.77	2,782
213.82	2,905
213.87	3,030
213.92	3,159
213.97	3,290
214.02	3,417
214.07	3,538
214.12	3,660
214.17	3,783
214.22	3,908
214.27	4,034
214.32	4,161
214.37	4,290
214.42	4,421
214.47	4,552
214.52	4,686
214.57	4,821
214.62	4,957
214.67	5,095
214.72	5,234
214.77	5,376
214.82	5,518
214.87	5,663
214.92	5,809
214.97	5,956
215.02	6,105
215.07	6,256
215.12	6,409
215.17	6,563
215.22	6,719
215.27	6,877
215.32	7,036
215.37	7,197
215.42	7,360
215.47	7,525
215.52	7,692
215.57	7,860
215.62	8,030
215.67	8,202
215.72	8,376
215.77	8,552
215.82	8,730
215.87	8,909
215.92	9,090
215.97	**9,274**

Linear Interpolation
682 CF Storage = 212.98'

Stage-Discharge for Pond 103P: Gravel Wetland #103

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
211.67	0.00	0.00	0.00
211.72	0.00	0.00	0.00
211.77	0.00	0.00	0.00
211.82	0.00	0.00	0.00
211.87	0.01	0.01	0.00
211.92	0.01	0.01	0.00
211.97	0.01	0.01	0.00
212.02	0.01	0.01	0.00
212.07	0.01	0.01	0.00
212.12	0.01	0.01	0.00
212.17	0.01	0.01	0.00
212.22	0.01	0.01	0.00
212.27	0.01	0.01	0.00
212.32	0.01	0.01	0.00
212.37	0.01	0.01	0.00
212.42	0.01	0.01	0.00
212.47	0.01	0.01	0.00
212.52	0.01	0.01	0.00
212.57	0.01	0.01	0.00
212.62	0.01	0.01	0.00
212.67	0.01	0.01	0.00
212.72	0.01	0.01	0.00
212.77	0.01	0.01	0.00
212.82	0.01	0.01	0.00
212.87	0.01	0.01	0.00
212.92	0.01	0.01	0.00
212.97	0.01	0.01	0.00
213.02	0.01	0.01	0.00
213.07	0.02	0.02	0.00
213.12	0.02	0.02	0.00
213.17	0.02	0.02	0.00
213.22	0.02	0.02	0.00
213.27	0.02	0.02	0.00
213.32	0.02	0.02	0.00
213.37	0.02	0.02	0.00
213.42	0.02	0.02	0.00
213.47	0.02	0.02	0.00
213.52	0.02	0.02	0.00
213.57	0.02	0.02	0.00
213.62	0.02	0.02	0.00
213.67	0.02	0.02	0.00
213.72	0.02	0.02	0.00
213.77	0.02	0.02	0.00
213.82	0.02	0.02	0.00
213.87	0.02	0.02	0.00
213.92	0.02	0.02	0.00
213.97	0.02	0.02	0.00
214.02	0.02	0.02	0.00
214.07	0.02	0.02	0.00
214.12	0.02	0.02	0.00
214.17	0.02	0.02	0.00
214.22	0.02	0.02	0.00
214.27	0.02	0.02	0.00
214.32	0.03	0.03	0.00
214.37	0.05	0.05	0.00
214.42	0.07	0.07	0.00
214.47	0.09	0.09	0.00
214.52	0.11	0.11	0.00
214.57	0.13	0.13	0.00
214.62	0.14	0.14	0.00
214.67	0.15	0.15	0.00
214.72	0.16	0.16	0.00
214.77	0.17	0.17	0.00
214.82	0.18	0.18	0.00
214.87	0.19	0.19	0.00
214.92	0.20	0.20	0.00
214.97	0.21	0.21	0.00
215.02	0.21	0.21	0.00
215.07	0.22	0.22	0.00
215.12	0.23	0.23	0.00
215.17	0.23	0.23	0.00
215.22	0.24	0.24	0.00
215.27	0.25	0.25	0.00
215.32	0.25	0.25	0.00
215.37	0.26	0.26	0.00
215.42	0.27	0.27	0.00
215.47	0.39	0.39	0.00
215.52	1.07	1.04	0.03
215.57	2.21	1.99	0.22
215.62	3.67	3.17	0.50
215.67	5.38	4.53	0.84
215.72	7.31	6.06	1.24
215.77	9.46	7.74	1.71
215.82	11.80	9.56	2.24
215.87	13.99	11.17	2.82
215.92	14.70	11.25	3.45
215.97	**15.49**	**11.33**	**4.16**

Elevation 212.98' =
0.01 CFS discharge

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

GRAVEL WETLAND DESIGN CRITERIA
(Env-Wq 1508.05)

Type/Node Name: **Gravel Wetland #104**

Enter the node name in the drainage analysis if applicable.

0.38	ac	A = Area draining to the practice	
0.23	ac	A_I = Impervious area draining to the practice	
0.62	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.60	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.23	ac-in	WQV= 1" x Rv x A	
823	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
82	cf	10% x WQV (check calc for sediment forebay)	
371	cf	45% x WQV (check calc for gravel wetland treatment bay volume)	
217	cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
567	cf	V_{TB1} = Volume of treatment bay 1 [1]	**≥ 45%WQV**
471	cf	V_{TB2} = Volume of treatment bay 2 [1]	**≥ 45%WQV**
0.02	cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec) [2]	
215.51	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.01	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{avg}$**
45.75	hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
2.00	:1	Pond side slopes	**≥ 3:1**
215.60	ft	Elevation of SHWT	
213.60	ft	SHWT - 2 feet	
213.67	ft	Epp = Elevation of the permanent pool (elevation of lowest orifice) [3]	**≤ E_{SHWT} - 2 ft**
15.5, 15.6	ft	Length of the flow path between the inlet and outlet in each cell	**≥ 15 ft**
Angle Grate		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
216.60	ft	Peak elevation of the 50-year storm event (E_{50})	
217.00	ft	Berm elevation of the pond	
YES		E_{50} ≤ the berm elevation?	**← yes**

Qualified professional that developed the planting plan

Name, Profession: KAB/KRP

1. Volume stored above the wetland soil and below the high flow by-pass.

2. To ensure orifice is sized so that WQV is released at a relatively stable rate.

3. 4" to 8" below the wetland soil. If lowest orifice is higher than (SHWT - 2 feet), and saturated hydraulic conductivity (Ksat) is greater than 0.015 in/hr, the system must be lined.

Designer's Notes: Ksat Charlton > than 0.015 in/hr. System to be lined w/ low perm material

Summary for Pond 104P: Gravel Wetland #104

[80] Warning: Exceeded Pond C31P by 0.01' @ 22.00 hrs (0.69 cfs 0.045 af)

Inflow Area = 0.377 ac, 61.80% Impervious, Inflow Depth > 5.19" for 50YR - 24HR event
Inflow = 2.16 cfs @ 12.09 hrs, Volume= 0.163 af
Outflow = 2.12 cfs @ 12.11 hrs, Volume= 0.130 af, Atten= 2%, Lag= 1.0 min
Primary = 0.01 cfs @ 12.01 hrs, Volume= 0.013 af
Secondary = 2.10 cfs @ 12.11 hrs, Volume= 0.117 af
Tertiary = 0.01 cfs @ 12.10 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 216.51' @ 12.11 hrs Surf.Area= 2,309 sf Storage= 1,888 cf
Flood Elev= 217.00' Surf.Area= 2,491 sf Storage= 2,555 cf

Plug-Flow detention time= 125.3 min calculated for 0.130 af (80% of inflow)
Center-of-Mass det. time= 49.6 min (839.6 - 790.0)

Volume	Invert	Avail.Storage	Storage Description
#1	213.67'	34 cf	**4.00'D x 2.73'H 4' Outlet Structure**
#2	214.00'	567 cf	**Cell #1 (Irregular)** Listed below (Recalc)
#3	214.00'	471 cf	**Cell #2 (Irregular)** Listed below (Recalc)
#4	214.00'	217 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#5	216.00'	1,266 cf	**Open Water Storage (Irregular)** Listed below (Recalc)
		2,555 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
214.00	159	49.1	0	0	159
215.00	278	64.5	216	216	309
216.00	430	80.0	351	567	502

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
214.00	117	45.4	0	0	117
215.00	231	61.8	171	171	267
216.00	375	76.7	300	471	445

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
214.00	20	20.0	0	0	20
215.00	104	48.3	57	57	178
216.00	224	63.8	160	217	327

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	1,092	171.9	0	0	1,092
217.00	1,449	184.5	1,266	1,266	1,491

Device	Routing	Invert	Outlet Devices
#1	Primary	213.67'	**6.0" Round 6" N-12 HDPE** L= 15.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.67' / 213.00' S= 0.0427 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	213.67'	**15.0" Round 15" N-12 HDPE** L= 16.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.67' / 213.00' S= 0.0406 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#3	Device 1	213.67'	**0.5" Vert. 0.50" Orifice Goose Neck** C= 0.600
#4	Device 2	216.10'	**12.0" W x 3.0" H Vert. 3" X 12" Box Orifice** C= 0.600
#5	Device 2	216.40'	**48.0" Horiz. 12" Horizontal Orifice** C= 0.600 Limited to weir flow at low heads
#6	Tertiary	216.50'	**5.0' long x 7.0' breadth E-Spillway** 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) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.01 cfs @ 12.01 hrs HW=216.45' TW=213.48' (Dynamic Tailwater)
└─**1=6" N-12 HDPE** (Passes 0.01 cfs of 1.50 cfs potential flow)
└─**3=0.50" Orifice Goose Neck** (Orifice Controls 0.01 cfs @ 7.99 fps)

Secondary OutFlow Max=2.07 cfs @ 12.11 hrs HW=216.51' TW=214.10' (Dynamic Tailwater)
└─**2=15" N-12 HDPE** (Passes 2.07 cfs of 8.79 cfs potential flow)
├─**4=3" X 12" Box Orifice** (Orifice Controls 0.63 cfs @ 2.53 fps)
└─**5=12" Horizontal Orifice** (Weir Controls 1.43 cfs @ 1.07 fps)

Tertiary OutFlow Max=0.01 cfs @ 12.10 hrs HW=216.51' TW=214.09' (Dynamic Tailwater)
└─**6=E-Spillway** (Weir Controls 0.01 cfs @ 0.22 fps)

Stage-Area-Storage for Pond 104P: Gravel Wetland #104

Elevation (feet)	Storage (cubic-feet)
213.67	0
213.72	1
213.77	1
213.82	2
213.87	3
213.92	3
213.97	4
214.02	10
214.07	26
214.12	43
214.17	60
214.22	78
214.27	97
214.32	116
214.37	136
214.42	157
214.47	179
214.52	201
214.57	225
214.62	249
214.67	274
214.72	299
214.77	326
214.82	353
214.87	382
214.92	411
214.97	441
215.02	472
215.07	504
215.12	537
215.17	571
215.22	606
215.27	642
215.32	679
215.37	717
215.42	756
215.47	795
215.52	836
215.57	878
215.62	921
215.67	965
215.72	1,010
215.77	1,057
215.82	1,104
215.87	1,152
215.92	1,202
215.97	1,253
216.02	1,306
216.07	1,362
216.12	1,419
216.17	1,477
216.22	1,535
216.27	1,594
216.32	1,655
216.37	1,716
216.42	1,777
216.47	1,840
216.52	1,903
216.57	1,967
216.62	2,032
216.67	2,098
216.72	2,164
216.77	2,232
216.82	2,301
216.87	2,370
216.92	2,441
216.97	**2,512**

Linear Interpolation
823 CF Storage = 215.51'

Stage-Discharge for Pond 104P: Gravel Wetland #104

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
213.67	0.00	0.00	0.00
213.72	0.00	0.00	0.00
213.77	0.00	0.00	0.00
213.82	0.00	0.00	0.00
213.87	0.00	0.00	0.00
213.92	0.00	0.00	0.00
213.97	0.00	0.00	0.00
214.02	0.00	0.00	0.00
214.07	0.00	0.00	0.00
214.12	0.00	0.00	0.00
214.17	0.00	0.00	0.00
214.22	0.00	0.00	0.00
214.27	0.00	0.00	0.00
214.32	0.01	0.01	0.00
214.37	0.01	0.01	0.00
214.42	0.01	0.01	0.00
214.47	0.01	0.01	0.00
214.52	0.01	0.01	0.00
214.57	0.01	0.01	0.00
214.62	0.01	0.01	0.00
214.67	0.01	0.01	0.00
214.72	0.01	0.01	0.00
214.77	0.01	0.01	0.00
214.82	0.01	0.01	0.00
214.87	0.01	0.01	0.00
214.92	0.01	0.01	0.00
214.97	0.01	0.01	0.00
215.02	0.01	0.01	0.00
215.07	0.01	0.01	0.00
215.12	0.01	0.01	0.00
215.17	0.01	0.01	0.00
215.22	0.01	0.01	0.00
215.27	0.01	0.01	0.00
215.32	0.01	0.01	0.00
215.37	0.01	0.01	0.00
215.42	0.01	0.01	0.00
215.47	0.01	0.01	0.00
215.52	0.01	0.01	0.00
215.57	0.01	0.01	0.00
215.62	0.01	0.01	0.00
215.67	0.01	0.01	0.00
215.72	0.01	0.01	0.00
215.77	0.01	0.01	0.00
215.82	0.01	0.01	0.00
215.87	0.01	0.01	0.00
215.92	0.01	0.01	0.00
215.97	0.01	0.01	0.00
216.02	0.01	0.01	0.00
216.07	0.01	0.01	0.00
216.12	0.02	0.02	0.00
216.17	0.07	0.07	0.00
216.22	0.14	0.14	0.00
216.27	0.24	0.24	0.00
216.32	0.34	0.34	0.00
216.37	0.45	0.45	0.00
216.42	0.56	0.56	0.00
216.47	0.79	0.79	0.00
216.52	1.12	1.09	0.03
216.57	1.66	1.43	0.22
216.62	2.32	1.82	0.50
216.67	3.09	2.25	0.84
216.72	3.96	2.72	1.24
216.77	4.91	3.20	1.71
216.82	5.63	3.39	2.24
216.87	6.39	3.57	2.82
216.92	7.20	3.74	3.45
216.97	**8.07**	**3.90**	**4.16**

Elevation 215.51' =
0.01 CFS discharge

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #105**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
2.04	ac	A = Area draining to the practice	
1.09	ac	A_I = Impervious area draining to the practice	
0.53	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.53	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.08	ac-in	WQV= 1" x Rv x A	
3,932	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
983	cf	25% x WQV (check calc for sediment forebay volume)	
2,949	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay (3)		Method of Pretreatment? (not required for clean or roof runoff)	
See Notes	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
N/A	sf	A_{SA} = Surface area of the practice	
N/A	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
N/A	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
217.62	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.13	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
16.80	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
213.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
212.50	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
212.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
208.67	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
4.83	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
1.50	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
219.69	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
220.50	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
5,782	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
24.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	P-105	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**> 3:1**
Sheet	P-105	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course spec.	**mod. 304.1 (see spec)**

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: KAB/KRP

Sediment Forebay #1: 454 CF

Sediment Forebay #2: 677 CF

Sediment Forebay #3: 330 CF

For a total of 1,461 CF, > than 25% of WQV (983 CF)

Summary for Pond 105P: Rain Garden #105

[80] Warning: Exceeded Pond C35P by 0.01' @ 17.90 hrs (0.68 cfs 0.116 af)
[80] Warning: Exceeded Pond C39P by 0.02' @ 19.00 hrs (0.76 cfs 0.065 af)

Inflow Area = 2.031 ac, 53.81% Impervious, Inflow Depth > 4.87" for 50YR - 24HR event
Inflow = 7.88 cfs @ 12.11 hrs, Volume= 0.825 af
Outflow = 3.91 cfs @ 12.41 hrs, Volume= 0.671 af, Atten= 50%, Lag= 18.2 min
Primary = 3.91 cfs @ 12.41 hrs, Volume= 0.671 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 219.69' @ 12.41 hrs Surf.Area= 1,035 sf Storage= 11,962 cf
Flood Elev= 220.50' Surf.Area= 1,035 sf Storage= 15,999 cf

Plug-Flow detention time= 146.2 min calculated for 0.670 af (81% of inflow)
Center-of-Mass det. time= 65.9 min (881.8 - 815.9)

Volume	Invert	Avail.Storage	Storage Description
#1	212.50'	414 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 1,035 cf Overall x 40.0% Voids
#2	213.50'	414 cf	**Bio-media (Irregular)** Listed below (Recalc) 2,070 cf Overall x 20.0% Voids
#3	215.75'	3,420 cf	**RG Cell (Irregular)** Listed below (Recalc) -Impervious
#4	218.00'	10,238 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	215.50'	52 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 259 cf Overall x 20.0% Voids
#6	216.00'	454 cf	**Sediment Forebay #1 (Irregular)** Listed below (Recalc) -Impervious
#7	216.00'	677 cf	**Sediment Forebay #2 (Irregular)** Listed below (Recalc) -Impervious
#8	218.00'	330 cf	**Sediment Forebay #3 (Irregular)** Listed below (Recalc) -Impervious
		15,999 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.50	1,035	147.0	0	0	1,035
213.50	1,035	147.0	1,035	1,035	1,182

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
213.50	1,035	147.0	0	0	1,035
215.50	1,035	147.0	2,070	2,070	1,329

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
215.75	1,035	147.0	0	0	1,035
216.00	1,148	152.3	273	273	1,167
217.00	1,567	170.9	1,352	1,625	1,672
218.00	2,033	190.7	1,795	3,420	2,269

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
218.00	2,898	222.9	0	0	2,898
219.00	3,889	244.5	3,381	3,381	3,735
220.00	4,805	306.0	4,339	7,720	6,443
220.50	5,271	315.8	2,518	10,238	6,952

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
215.50	1,035	147.0	0	0	1,035
215.75	1,035	147.0	259	259	1,072

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	85	42.0	0	0	85
217.00	220	61.0	147	147	249
218.00	402	79.4	306	454	466

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	147	59.8	0	0	147
217.00	331	79.4	233	233	375
218.00	568	99.2	444	677	670

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
218.00	33	20.7	0	0	33
219.00	153	47.3	86	86	181
220.00	350	74.0	245	330	446

Device	Routing	Invert	Outlet Devices
#1	Primary	212.50'	**18.0" Round 18" HDPE N-12** L= 91.5' Ke= 0.500 Inlet / Outlet Invert= 212.50' / 212.00' S= 0.0055 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	212.50'	**1.5" Vert. 1.25" Orifice** C= 0.600
#3	Device 2	213.50'	**10.000 in/hr Exfiltration over Surface area**
#4	Device 1	219.95'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#5	Device 1	218.25'	**3.0" Vert. 3" Orifice** C= 0.600
#6	Device 1	218.50'	**6.0" Vert. 6" Orifice (2) X 2.00** C= 0.600
#7	Device 1	219.00'	**6.0" Vert. 6" Orifice (2) X 2.00** C= 0.600
#8	Device 1	219.45'	**12.0" W x 6.0" H Vert. 6"X12" Box Orifice** C= 0.600

Primary OutFlow Max=3.90 cfs @ 12.41 hrs HW=219.69' TW=212.74' (Dynamic Tailwater)
- **1=18" HDPE N-12** (Passes 3.90 cfs of 20.63 cfs potential flow)
  - **2=1.25" Orifice** (Orifice Controls 0.16 cfs @ 12.69 fps)
    - **3=Exfiltration** (Passes 0.16 cfs of 0.24 cfs potential flow)
  - **4=48" Structure** (Controls 0.00 cfs)
  - **5=3" Orifice** (Orifice Controls 0.27 cfs @ 5.53 fps)
  - **6=6" Orifice (2)** (Orifice Controls 1.84 cfs @ 4.67 fps)
  - **7=6" Orifice (2)** (Orifice Controls 1.26 cfs @ 3.20 fps)
  - **8=6"X12" Box Orifice** (Orifice Controls 0.38 cfs @ 1.58 fps)

Stage-Area-Storage for Pond 105P: Rain Garden #105

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
212.50	0	0
212.60	0	41
212.70	0	83
212.80	0	124
212.90	0	166
213.00	0	207
213.10	0	248
213.20	0	290
213.30	0	331
213.40	0	373
213.50	**1,035**	414
213.60	1,035	435
213.70	1,035	455
213.80	1,035	476
213.90	1,035	497
214.00	1,035	518
214.10	1,035	538
214.20	1,035	559
214.30	1,035	580
214.40	1,035	600
214.50	1,035	621
214.60	1,035	642
214.70	1,035	662
214.80	1,035	683
214.90	1,035	704
215.00	1,035	725
215.10	1,035	745
215.20	1,035	766
215.30	1,035	787
215.40	1,035	807
215.50	1,035	828
215.60	1,035	849
215.70	1,035	869
215.80	1,035	932
215.90	1,035	1,040
216.00	1,035	1,153
216.10	1,035	1,294
216.20	1,035	1,442
216.30	1,035	1,596
216.40	1,035	1,758
216.50	1,035	1,926
216.60	1,035	2,102
216.70	1,035	2,286
216.80	1,035	2,478
216.90	1,035	2,677
217.00	1,035	2,885
217.10	1,035	3,101
217.20	1,035	3,324
217.30	1,035	3,557
217.40	1,035	3,797
217.50	1,035	4,047
217.60	1,035	4,305
217.70	1,035	4,572
217.80	1,035	4,849
217.90	1,035	5,135
218.00	1,035	5,430
218.10	1,035	5,728
218.20	1,035	6,037
218.30	1,035	6,355
218.40	1,035	6,685
218.50	1,035	7,025
218.60	1,035	7,376
218.70	1,035	7,739
218.80	1,035	8,113
218.90	1,035	8,499
219.00	1,035	8,897
219.10	1,035	9,307
219.20	1,035	9,726
219.30	1,035	10,157
219.40	1,035	10,598
219.50	1,035	11,050
219.60	1,035	11,513
219.70	1,035	11,988
219.80	1,035	12,474
219.90	1,035	12,972
220.00	1,035	13,481
220.10	1,035	13,966
220.20	1,035	14,460
220.30	1,035	14,964
220.40	1,035	15,477
220.50	1,035	**15,999**

WQV Draw-down
Linear Interpolation
3,932 CF Storage above
stone = 217.62'

See next Stage-Area-Storage Table
for storage volume

Stage-Discharge for Pond 105P: Rain Garden #105

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
212.50	0.00	214.58	0.08	216.66	0.12	218.74	0.60
212.54	0.00	214.62	0.08	216.70	0.12	218.78	0.71
212.58	0.00	214.66	0.09	216.74	0.12	218.82	0.82
212.62	0.00	214.70	0.09	216.78	0.12	218.86	0.93
212.66	0.00	214.74	0.09	216.82	0.12	218.90	1.05
212.70	0.00	214.78	0.09	216.86	0.12	218.94	1.15
212.74	0.00	214.82	0.09	216.90	0.12	218.98	1.25
212.78	0.00	214.86	0.09	216.94	0.12	219.02	1.33
212.82	0.00	214.90	0.09	216.98	0.12	219.06	1.42
212.86	0.00	214.94	0.09	217.02	0.12	219.10	1.53
212.90	0.00	214.98	0.09	217.06	0.13	219.14	1.65
212.94	0.00	215.02	0.09	217.10	0.13	219.18	1.79
212.98	0.00	215.06	0.09	217.14	0.13	219.22	1.93
213.02	0.00	215.10	0.09	217.18	0.13	219.26	2.08
213.06	0.00	215.14	0.09	217.22	0.13	219.30	2.24
213.10	0.00	215.18	0.10	217.26	0.13	219.34	2.40
213.14	0.00	215.22	0.10	217.30	0.13	219.38	2.56
213.18	0.00	215.26	0.10	217.34	0.13	219.42	2.72
213.22	0.00	215.30	0.10	217.38	0.13	219.46	2.87
213.26	0.00	215.34	0.10	217.42	0.13	219.50	3.03
213.30	0.00	215.38	0.10	217.46	0.13	219.54	3.20
213.34	0.00	215.42	0.10	217.50	0.13	219.58	3.38
213.38	0.00	215.46	0.10	217.54	0.13	219.62	3.56
213.42	0.00	215.50	0.10	217.58	0.13	219.66	3.75
213.46	0.00	215.54	0.10	217.62	0.13	219.70	3.94
213.50	0.06	215.58	0.10	217.66	0.13	219.74	4.14
213.54	0.06	215.62	0.10	217.70	0.13	219.78	4.34
213.58	0.06	215.66	0.10	217.74	0.13	219.82	4.55
213.62	0.06	215.70	0.10	217.78	0.13	219.86	4.76
213.66	0.06	215.74	0.11	217.82	0.14	219.90	4.97
213.70	0.06	215.78	0.11	217.86	0.14	219.94	5.19
213.74	0.06	215.82	0.11	217.90	0.14	219.98	5.61
213.78	0.07	215.86	0.11	217.94	0.14	220.02	6.34
213.82	0.07	215.90	0.11	217.98	0.14	220.06	7.25
213.86	0.07	215.94	0.11	218.02	0.14	220.10	8.30
213.90	0.07	215.98	0.11	218.06	0.14	220.14	9.47
213.94	0.07	216.02	0.11	218.10	0.14	220.18	10.75
213.98	0.07	216.06	0.11	218.14	0.14	220.22	12.12
214.02	0.07	216.10	0.11	218.18	0.14	220.26	13.59
214.06	0.07	216.14	0.11	218.22	0.14	220.30	15.14
214.10	0.07	216.18	0.11	218.26	0.14	220.34	16.78
214.14	0.07	216.22	0.11	218.30	0.15	220.38	18.48
214.18	0.08	216.26	0.11	218.34	0.16	220.42	20.27
214.22	0.08	216.30	0.11	218.38	0.17	220.46	21.87
214.26	0.08	216.34	0.11	218.42	0.19	220.50	**21.94**
214.30	0.08	216.38	0.12	218.46	0.21		
214.34	0.08	216.42	0.12	218.50	0.23		
214.38	0.08	216.46	0.12	218.54	0.25		
214.42	0.08	216.50	0.12	218.58	0.29		
214.46	0.08	216.54	0.12	218.62	0.35		
214.50	0.08	216.58	0.12	218.66	0.42		
214.54	0.08	216.62	0.12	218.70	0.50		

Elevation 217.62' = 0.12 CFS discharge

Stage-Area-Storage for Pond 105P: Rain Garden #105

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
212.50	0	0
212.60	0	41
212.70	0	83
212.80	0	124
212.90	0	166
213.00	0	207
213.10	0	248
213.20	0	290
213.30	0	331
213.40	0	373
213.50	**1,035**	414
213.60	1,035	435
213.70	1,035	455
213.80	1,035	476
213.90	1,035	497
214.00	1,035	518
214.10	1,035	538
214.20	1,035	559
214.30	1,035	580
214.40	1,035	600
214.50	1,035	621
214.60	1,035	642
214.70	1,035	662
214.80	1,035	683
214.90	1,035	704
215.00	1,035	725
215.10	1,035	745
215.20	1,035	766
215.30	1,035	787
215.40	1,035	807
215.50	1,035	828
215.60	1,035	849
215.70	1,035	869
215.80	1,035	932
215.90	1,035	1,040
216.00	1,035	1,153
216.10	1,035	1,294
216.20	1,035	1,442
216.30	1,035	1,596
216.40	1,035	1,758
216.50	1,035	1,926
216.60	1,035	2,102
216.70	1,035	2,286
216.80	1,035	2,478
216.90	1,035	2,677
217.00	1,035	2,885
217.10	1,035	3,101
217.20	1,035	3,324
217.30	1,035	3,557
217.40	1,035	3,797
217.50	1,035	4,047
217.60	1,035	4,305
217.70	1,035	4,572
217.80	1,035	4,849
217.90	1,035	5,135
218.00	1,035	5,430
218.10	1,035	5,728
218.20	1,035	6,037
218.30	1,035	6,355
218.40	1,035	6,685
218.50	1,035	7,025
218.60	1,035	7,376
218.70	1,035	7,739
218.80	1,035	8,113
218.90	1,035	8,499
219.00	1,035	8,897
219.10	1,035	9,307
219.20	1,035	9,726
219.30	1,035	10,157
219.40	1,035	10,598
219.50	1,035	11,050
219.60	1,035	11,513
219.70	1,035	11,988
219.80	1,035	12,474
219.90	1,035	12,972
220.00	1,035	13,481
220.10	1,035	13,966
220.20	1,035	14,460
220.30	1,035	14,964
220.40	1,035	15,477
220.50	1,035	**15,999**

Linear Interpolation
Lowest Orifice = 218.25'
Storage Volume = 5,782 CF

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #106**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
1.30	ac	A = Area draining to the practice	
0.46	ac	A_I = Impervious area draining to the practice	
0.35	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.37	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.48	ac-in	WQV= 1" x Rv x A	
1,728	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
432	cf	25% x WQV (check calc for sediment forebay volume)	
1,296	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
864	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
N/A	sf	A_{SA} = Surface area of the practice	
N/A	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
N/A	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
217.30	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.03	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
32.00	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
213.75	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
212.75	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
215.33	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
215.33	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
(1.58)	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
(1.58)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
219.40	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
220.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
2,999	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
24.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	P-106	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	P-106	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course spec.	**mod. 304.1 (see spec)**

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: KAB/KRP. System lined with a low-perm liner

Summary for Pond 106P: Rain Garden #106

[80] Warning: Exceeded Pond 49P by 1.17' @ 12.70 hrs (6.26 cfs 2.160 af)
[80] Warning: Exceeded Pond C41P by 0.05' @ 23.70 hrs (1.26 cfs 0.296 af)

Inflow Area = 1.303 ac, 35.04% Impervious, Inflow Depth > 3.12" for 50YR - 24HR event
Inflow = 2.31 cfs @ 12.22 hrs, Volume= 0.339 af
Outflow = 0.59 cfs @ 12.79 hrs, Volume= 0.257 af, Atten= 74%, Lag= 34.8 min
Primary = 0.59 cfs @ 12.79 hrs, Volume= 0.257 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 219.40' @ 12.79 hrs Surf.Area= 525 sf Storage= 5,966 cf
Flood Elev= 220.00' Surf.Area= 525 sf Storage= 7,955 cf

Plug-Flow detention time= 225.5 min calculated for 0.257 af (76% of inflow)
Center-of-Mass det. time= 108.8 min (985.8 - 876.9)

Volume	Invert	Avail.Storage	Storage Description
#1	212.75'	210 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 525 cf Overall x 40.0% Voids
#2	213.75'	210 cf	**Bio-media (Irregular)** Listed below (Recalc) 1,050 cf Overall x 20.0% Voids
#3	216.00'	1,936 cf	**Rain Garden Cell (Irregular)** Listed below (Recalc) -Impervious
#4	218.00'	4,709 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	215.75'	26 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 131 cf Overall x 20.0% Voids
#6	216.00'	864 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		7,955 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.75	525	89.9	0	0	525
213.75	525	89.9	525	525	615

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
213.75	525	89.9	0	0	525
215.75	525	89.9	1,050	1,050	705

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	525	89.9	0	0	525
217.00	985	123.1	743	743	1,098
218.00	1,413	148.2	1,193	1,936	1,656

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
218.00	525	89.9	0	0	525
219.00	2,819	223.0	1,520	1,520	3,843
220.00	3,573	254.3	3,189	4,709	5,055

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
215.75	525	89.9	0	0	525
216.00	525	89.9	131	131	547

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
216.00	236	56.5	0	0	236
217.00	420	74.7	324	324	437
218.00	671	96.6	541	864	748

Device	Routing	Invert	Outlet Devices
#1	Primary	212.75'	**15.0" Round 15" HDPE N-12** L= 95.0' Ke= 0.500 Inlet / Outlet Invert= 212.75' / 211.00' S= 0.0184 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	212.75'	**0.7" Vert. 0.75" Orifice** C= 0.600
#3	Device 2	213.75'	**10.000 in/hr Exfiltration over Surface area**
#4	Device 1	218.00'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 1	218.75'	**4.0" Vert. 4" Orifice** C= 0.600
#6	Device 1	219.75'	**48.0" Horiz. 48" Top Structure** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.59 cfs @ 12.79 hrs HW=219.40' TW=211.09' (Dynamic Tailwater)
- **1=15" HDPE N-12** (Passes 0.59 cfs of 14.31 cfs potential flow)
  - **2=0.75" Orifice** (Orifice Controls 0.03 cfs @ 12.39 fps)
    - **3=Exfiltration** (Passes 0.03 cfs of 0.12 cfs potential flow)
  - **4=3" Orifice** (Orifice Controls 0.27 cfs @ 5.45 fps)
  - **5=4" Orifice** (Orifice Controls 0.29 cfs @ 3.36 fps)
  - **6=48" Top Structure** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 106P: Rain Garden #106

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
212.75	0	0
212.85	0	21
212.95	0	42
213.05	0	63
213.15	0	84
213.25	0	105
213.35	0	126
213.45	0	147
213.55	0	168
213.65	0	189
213.75	**525**	210
213.85	525	220
213.95	525	231
214.05	525	242
214.15	525	252
214.25	525	263
214.35	525	273
214.45	525	283
214.55	525	294
214.65	525	305
214.75	525	315
214.85	525	325
214.95	525	336
215.05	525	347
215.15	525	357
215.25	525	368
215.35	525	378
215.45	525	388
215.55	525	399
215.65	525	410
215.75	525	420
215.85	525	430
215.95	525	441
216.05	525	485
216.15	525	567
216.25	525	654
216.35	525	747
216.45	525	847
216.55	525	953
216.65	525	1,065
216.75	525	1,184
216.85	525	1,310
216.95	525	1,444
217.05	525	1,584
217.15	525	1,731
217.25	525	1,884
217.35	525	2,043
217.45	525	2,209
217.55	525	2,382
217.65	525	2,561
217.75	525	2,748
217.85	525	2,942
217.95	525	3,143
218.05	525	3,274
218.15	525	3,341
218.25	525	3,425
218.35	525	3,528
218.45	525	3,650
218.55	525	3,795
218.65	525	3,963
218.75	525	4,157
218.85	525	4,378
218.95	525	4,629
219.05	525	4,908
219.15	525	5,197
219.25	525	5,493
219.35	525	5,797
219.45	525	6,108
219.55	525	6,427
219.65	525	6,753
219.75	525	7,086
219.85	525	7,428
219.95	525	**7,777**

WQV Draw-down
Linear Interpolation
1,728 CF Storage above
stone = 217.30'

See next Stage-Area-Storage Table
for storage volume

Stage-Discharge for Pond 106P: Rain Garden #106

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
212.75	0.00	214.83	0.02	216.91	0.03	218.99	0.36
212.79	0.00	214.87	0.02	216.95	0.03	219.03	0.40
212.83	0.00	214.91	0.02	216.99	0.03	219.07	0.43
212.87	0.00	214.95	0.02	217.03	0.03	219.11	0.45
212.91	0.00	214.99	0.02	217.07	0.03	219.15	0.47
212.95	0.00	215.03	0.02	217.11	0.03	219.19	0.50
212.99	0.00	215.07	0.02	217.15	0.03	219.23	0.52
213.03	0.00	215.11	0.02	217.19	0.03	219.27	0.54
213.07	0.00	215.15	0.02	217.23	0.03	219.31	0.55
213.11	0.00	215.19	0.02	217.27	0.03	219.35	0.57
213.15	0.00	215.23	0.02	217.31	0.03	219.39	0.59
213.19	0.00	215.27	0.02	217.35	0.03	219.43	0.60
213.23	0.00	215.31	0.02	217.39	0.03	219.47	0.62
213.27	0.00	215.35	0.02	217.43	0.03	219.51	0.64
213.31	0.00	215.39	0.02	217.47	0.03	219.55	0.65
213.35	0.00	215.43	0.02	217.51	0.03	219.59	0.66
213.39	0.00	215.47	0.02	217.55	0.03	219.63	0.68
213.43	0.00	215.51	0.02	217.59	0.03	219.67	0.69
213.47	0.00	215.55	0.02	217.63	0.03	219.71	0.71
213.51	0.00	215.59	0.02	217.67	0.03	219.75	0.72
213.55	0.00	215.63	0.02	217.71	0.03	219.79	1.06
213.59	0.00	215.67	0.02	217.75	0.03	219.83	1.67
213.63	0.00	215.71	0.02	217.79	0.03	219.87	2.46
213.67	0.00	215.75	0.02	217.83	0.03	219.91	3.40
213.71	0.00	215.79	0.02	217.87	0.03	219.95	4.46
213.75	0.01	215.83	0.02	217.91	0.03	219.99	**5.62**
213.79	0.01	215.87	0.02	217.95	0.03		
213.83	0.01	215.91	0.02	217.99	0.03		
213.87	0.01	215.95	0.02	218.03	0.03		
213.91	0.01	215.99	0.02	218.07	0.04		
213.95	0.01	216.03	0.02	218.11	0.05		
213.99	0.01	216.07	0.02	218.15	0.07		
214.03	0.01	216.11	0.02	218.19	0.09		
214.07	0.01	216.15	0.02	218.23	0.11		
214.11	0.01	216.19	0.02	218.27	0.12		
214.15	0.02	216.23	0.02	218.31	0.13		
214.19	0.02	216.27	0.02	218.35	0.14		
214.23	0.02	216.31	0.02	218.39	0.15		
214.27	0.02	216.35	0.02	218.43	0.16		
214.31	0.02	216.39	0.02	218.47	0.17		
214.35	0.02	216.43	0.02	218.51	0.18		
214.39	0.02	216.47	0.02	218.55	0.18		
214.43	0.02	216.51	0.02	218.59	0.19		
214.47	0.02	216.55	0.02	218.63	0.20		
214.51	0.02	216.59	0.03	218.67	0.21		
214.55	0.02	216.63	0.03	218.71	0.21		
214.59	0.02	216.67	0.03	218.75	0.22		
214.63	0.02	216.71	0.03	218.79	0.23		
214.67	0.02	216.75	0.03	218.83	0.25		
214.71	0.02	216.79	0.03	218.87	0.27		
214.75	0.02	216.83	0.03	218.91	0.30		
214.79	0.02	216.87	0.03	218.95	0.33		

Elevation 217.30' = 0.06 CFS discharge

Stage-Area-Storage for Pond 106P: Rain Garden #106

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
212.75	0	0
212.85	0	21
212.95	0	42
213.05	0	63
213.15	0	84
213.25	0	105
213.35	0	126
213.45	0	147
213.55	0	168
213.65	0	189
213.75	**525**	210
213.85	525	220
213.95	525	231
214.05	525	242
214.15	525	252
214.25	525	263
214.35	525	273
214.45	525	283
214.55	525	294
214.65	525	305
214.75	525	315
214.85	525	325
214.95	525	336
215.05	525	347
215.15	525	357
215.25	525	368
215.35	525	378
215.45	525	388
215.55	525	399
215.65	525	410
215.75	525	420
215.85	525	430
215.95	525	441
216.05	525	485
216.15	525	567
216.25	525	654
216.35	525	747
216.45	525	847
216.55	525	953
216.65	525	1,065
216.75	525	1,184
216.85	525	1,310
216.95	525	1,444
217.05	525	1,584
217.15	525	1,731
217.25	525	1,884
217.35	525	2,043
217.45	525	2,209
217.55	525	2,382
217.65	525	2,561
217.75	525	2,748
217.85	525	2,942
217.95	525	3,143
218.05	525	3,274
218.15	525	3,341
218.25	525	3,425
218.35	525	3,528
218.45	525	3,650
218.55	525	3,795
218.65	525	3,963
218.75	525	4,157
218.85	525	4,378
218.95	525	4,629
219.05	525	4,908
219.15	525	5,197
219.25	525	5,493
219.35	525	5,797
219.45	525	6,108
219.55	525	6,427
219.65	525	6,753
219.75	525	7,086
219.85	525	7,428
219.95	525	**7,777**

Linear Interpolation
Lowest Orifice = 218.00'
Storage Volume = 2,998 CF

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #107 W/ Infiltration**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
6.35	ac	A = Area draining to the practice	
0.89	ac	A_I = Impervious area draining to the practice	
0.14	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.18	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.12	ac-in	WQV= 1" x Rv x A	
4,051	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,013	cf	25% x WQV (check calc for sediment forebay volume)	
3,038	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay (2)		Method of Pretreatment? (not required for clean or roof runoff)	
641, 714	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
2,300	sf	A_{SA} = Surface area of the practice	
0.30	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
N/A	Yes/No	(Use the calculations below)	
70.4	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
N/A	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
N/A	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
223.75	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
N/A	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
221.23	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
221.23	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
#VALUE!	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
2.52	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
2.52	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
230.06	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
231.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
NO	ac	Drainage Area no larger than 5 ac?	**← yes**
8,854	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
24.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	P-107	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	P-107	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course spec.	**mod. 304.1 (see spec)**

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: Charlton Ksat prior to 0.5 Factor of Safety = 0.6iph, apply factor of safety infiltration rate selected to KAB/KRP

Summary for Pond 107P: Rain Garden #107

Inflow Area = 6.353 ac, 13.96% Impervious, Inflow Depth > 3.03" for 50YR - 24HR event
Inflow = 11.10 cfs @ 12.17 hrs, Volume= 1.603 af
Outflow = 3.84 cfs @ 12.90 hrs, Volume= 1.319 af, Atten= 65%, Lag= 44.0 min
Discarded = 0.02 cfs @ 9.00 hrs, Volume= 0.020 af
Primary = 3.82 cfs @ 12.90 hrs, Volume= 1.299 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 230.06' @ 12.90 hrs Surf.Area= 2,300 sf Storage= 26,225 cf
Flood Elev= 231.00' Surf.Area= 2,300 sf Storage= 34,921 cf

Plug-Flow detention time= 155.0 min calculated for 1.316 af (82% of inflow)
Center-of-Mass det. time= 81.5 min (931.0 - 849.5)

Volume	Invert	Avail.Storage	Storage Description
#1	222.75'	920 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 2,300 cf Overall x 40.0% Voids
#2	223.75'	920 cf	**Bio-media (Irregular)** Listed below (Recalc) 4,600 cf Overall x 20.0% Voids
#3	225.75'	115 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 575 cf Overall x 20.0% Voids
#4	226.00'	14,259 cf	**Infiltration Cell Storage (Irregular)** Listed below (Recalc) -Impervious
#5	229.00'	17,353 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#6	227.00'	641 cf	**Sediment Forebay #1 (Irregular)** Listed below (Recalc) -Impervious
#7	227.00'	714 cf	**Sediment Forebay #2 (Irregular)** Listed below (Recalc) -Impervious
		34,921 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
222.75	2,300	194.0	0	0	2,300
223.75	2,300	194.0	2,300	2,300	2,494

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
223.75	2,300	194.0	0	0	2,300
225.75	2,300	194.0	4,600	4,600	2,688

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.75	2,300	194.0	0	0	2,300
226.00	2,300	194.0	575	575	2,349

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
226.00	3,712	241.0	0	0	3,712
227.00	4,380	262.0	4,041	4,041	4,589
228.00	5,101	282.0	4,736	8,777	5,497
229.00	5,871	302.0	5,481	14,259	6,471

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
229.00	7,610	343.5	0	0	7,610
230.00	8,668	362.0	8,133	8,133	8,707
231.00	9,783	381.1	9,220	17,353	9,896

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
227.00	115	41.3	0	0	115
228.00	312	74.3	205	205	424
229.00	571	103.5	435	641	847

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
227.00	144	49.8	0	0	144
228.00	345	81.0	237	237	475
229.00	622	111.6	477	714	954

Device	Routing	Invert	Outlet Devices
#1	Primary	223.50'	**15.0" Round 15" HDPE N-12** L= 27.5' Ke= 0.500 Inlet / Outlet Invert= 223.50' / 223.00' S= 0.0182 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Discarded	223.75'	**0.300 in/hr Exfiltration over Surface area**
#3	Device 1	227.75'	**4.0" Vert. 4" Orifice** C= 0.600
#4	Device 1	228.00'	**6.0" Vert. 6" Orifice** C= 0.600
#5	Device 1	228.40'	**8.0" Vert. 8" Orifice** C= 0.600
#6	Device 1	230.40'	**12.0" Horiz. 12" Horizontal Orifice** C= 0.600 Limited to weir flow at low heads
#7	Secondary	230.50'	**10.0' long x 11.0' breadth 10' Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Discarded OutFlow Max=0.02 cfs @ 9.00 hrs HW=223.78' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=3.82 cfs @ 12.90 hrs HW=230.06' TW=223.27' (Dynamic Tailwater)
└**1=15" HDPE N-12** (Passes 3.82 cfs of 14.40 cfs potential flow)
- **3=4" Orifice** (Orifice Controls 0.62 cfs @ 7.05 fps)
- **4=6" Orifice** (Orifice Controls 1.27 cfs @ 6.48 fps)
- **5=8" Orifice** (Orifice Controls 1.94 cfs @ 5.55 fps)
- **6=12" Horizontal Orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=222.75' TW=223.00' (Dynamic Tailwater)
└**7=10' Emergency Spillway** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 107P: Rain Garden #107

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
222.75	0	0
222.85	0	92
222.95	0	184
223.05	0	276
223.15	0	368
223.25	0	460
223.35	0	552
223.45	0	644
223.55	0	736
223.65	0	828
223.75	**2,300**	920
223.85	2,300	966
223.95	2,300	1,012
224.05	2,300	1,058
224.15	2,300	1,104
224.25	2,300	1,150
224.35	2,300	1,196
224.45	2,300	1,242
224.55	2,300	1,288
224.65	2,300	1,334
224.75	2,300	1,380
224.85	2,300	1,426
224.95	2,300	1,472
225.05	2,300	1,518
225.15	2,300	1,564
225.25	2,300	1,610
225.35	2,300	1,656
225.45	2,300	1,702
225.55	2,300	1,748
225.65	2,300	1,794
225.75	2,300	1,840
225.85	2,300	1,886
225.95	2,300	1,932
226.05	2,300	2,141
226.15	2,300	2,519
226.25	2,300	2,903
226.35	2,300	3,294
226.45	2,300	3,691
226.55	2,300	4,095
226.65	2,300	4,506
226.75	2,300	4,923
226.85	2,300	5,347
226.95	2,300	5,778
227.05	2,300	6,230
227.15	2,300	6,704
227.25	2,300	7,188
227.35	2,300	7,683
227.45	2,300	8,189
227.55	2,300	8,706
227.65	2,300	9,234
227.75	2,300	9,774
227.85	2,300	10,325
227.95	2,300	10,889
228.05	2,300	11,464
228.15	2,300	12,052
228.25	2,300	12,653
228.35	2,300	13,265
228.45	2,300	13,891
228.55	2,300	14,529
228.65	2,300	15,181
228.75	2,300	15,846
228.85	2,300	16,525
228.95	2,300	17,217
229.05	2,300	17,950
229.15	2,300	18,721
229.25	2,300	19,503
229.35	2,300	20,295
229.45	2,300	21,098
229.55	2,300	21,911
229.65	2,300	22,734
229.75	2,300	23,569
229.85	2,300	24,414
229.95	2,300	25,270
230.05	2,300	26,136
230.15	2,300	27,014
230.25	2,300	27,903
230.35	2,300	28,802
230.45	2,300	29,713
230.55	2,300	30,634
230.65	2,300	31,567
230.75	2,300	32,511
230.85	2,300	33,467
230.95	2,300	**34,434**

Linear Interpolation
Lowest Orifice = 227.75'
Storage Volume = 8,854 CF

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #108**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.17	ac	A = Area draining to the practice	
0.08	ac	A_I = Impervious area draining to the practice	
0.46	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.46	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.08	ac-in	WQV= 1" x Rv x A	
288	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
72	cf	25% x WQV (check calc for sediment forebay volume)	
216	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
72	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
N/A	sf	A_{SA} = Surface area of the practice	
N/A	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
N/A	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
205.82	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.02	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
7.99	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
203.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
202.50	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
199.42	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
199.42	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
4.08	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
4.08	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
206.55	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
207.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
950	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
24.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	P-108	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	P-108	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: KAB/KRP

Summary for Pond 108P: Rain Garden #108

Inflow Area = 0.171 ac, 45.91% Impervious, Inflow Depth > 4.47" for 50YR - 24HR event
Inflow = 0.87 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.26 cfs @ 12.45 hrs, Volume= 0.040 af, Atten= 70%, Lag= 21.4 min
Primary = 0.02 cfs @ 18.76 hrs, Volume= 0.025 af
Secondary = 0.24 cfs @ 12.45 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 206.55' @ 12.45 hrs Surf.Area= 530 sf Storage= 1,362 cf
Flood Elev= 207.00' Surf.Area= 530 sf Storage= 2,072 cf

Plug-Flow detention time= 258.2 min calculated for 0.040 af (62% of inflow)
Center-of-Mass det. time= 156.6 min (968.9 - 812.3)

Volume	Invert	Avail.Storage	Storage Description
#1	202.50'	212 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 530 cf Overall x 40.0% Voids
#2	203.50'	212 cf	**Bio-media (Irregular)** Listed below (Recalc) 1,060 cf Overall x 20.0% Voids
#3	205.50'	27 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 133 cf Overall x 20.0% Voids
#4	205.75'	1,550 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	205.75'	72 cf	**Forebay (Irregular)** Listed below (Recalc) -Impervious
		2,072 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
202.50	530	89.7	0	0	530
203.50	530	89.7	530	530	620

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.50	530	89.7	0	0	530
205.50	530	89.7	1,060	1,060	709

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.50	530	89.7	0	0	530
205.75	530	89.7	133	133	552

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.75	530	89.7	0	0	530
206.00	1,050	140.4	194	194	1,459
206.50	1,297	161.2	586	779	1,964
207.00	1,800	205.6	771	1,550	3,263

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.75	62	28.3	0	0	62
206.00	83	32.5	18	18	84
206.50	133	41.4	54	72	139

Device	Routing	Invert	Outlet Devices
#1	Primary	202.50'	**6.0" Round 6" HDPE N-12 UD** L= 22.5' Ke= 0.500 Inlet / Outlet Invert= 202.50' / 202.25' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Device 1	202.50'	**0.7" Vert. 0.75" Orifice** C= 0.600
#3	Device 2	203.50'	**10.000 in/hr Exfiltration over Surface area**
#4	Device 2	206.40'	**24.0" Horiz. 24" Drop Inlet** C= 0.600 Limited to weir flow at low heads
#5	Secondary	206.50'	**10.0' long x 7.0' breadth 10' Emergency spillway** 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) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.02 cfs @ 18.76 hrs HW=206.48' TW=202.84' (Dynamic Tailwater)
- **1=6" HDPE N-12 UD** (Passes 0.02 cfs of 1.73 cfs potential flow)
  - **2=0.75" Orifice** (Orifice Controls 0.02 cfs @ 9.18 fps)
    - **3=Exfiltration** (Passes < 0.12 cfs potential flow)
    - **4=24" Drop Inlet** (Passes < 0.43 cfs potential flow)

Secondary OutFlow Max=0.24 cfs @ 12.45 hrs HW=206.55' TW=203.82' (Dynamic Tailwater)
- **5=10' Emergency spillway** (Weir Controls 0.24 cfs @ 0.51 fps)

Stage-Area-Storage for Pond 108P: Rain Garden #108

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
202.50	0	0
202.55	0	11
202.60	0	21
202.65	0	32
202.70	0	42
202.75	0	53
202.80	0	64
202.85	0	74
202.90	0	85
202.95	0	95
203.00	0	106
203.05	0	117
203.10	0	127
203.15	0	138
203.20	0	148
203.25	0	159
203.30	0	170
203.35	0	180
203.40	0	191
203.45	0	201
203.50	**530**	212
203.55	530	217
203.60	530	223
203.65	530	228
203.70	530	233
203.75	530	239
203.80	530	244
203.85	530	249
203.90	530	254
203.95	530	260
204.00	530	265
204.05	530	270
204.10	530	276
204.15	530	281
204.20	530	286
204.25	530	292
204.30	530	297
204.35	530	302
204.40	530	307
204.45	530	313
204.50	530	318
204.55	530	323
204.60	530	329
204.65	530	334
204.70	530	339
204.75	530	345
204.80	530	350
204.85	530	355
204.90	530	360
204.95	530	366
205.00	530	371
205.05	530	376
205.10	530	382
205.15	530	387
205.20	530	392
205.25	530	398
205.30	530	403
205.35	530	408
205.40	530	413
205.45	530	419
205.50	530	424
205.55	530	429
205.60	530	435
205.65	530	440
205.70	530	445
205.75	530	451
205.80	530	482
205.85	530	519
205.90	530	561
205.95	530	609
206.00	530	662
206.05	530	720
206.10	530	778
206.15	530	839
206.20	530	900
206.25	530	963
206.30	530	1,028
206.35	530	1,094
206.40	530	1,162
206.45	530	1,231
206.50	530	1,302
206.55	530	1,368
206.60	530	1,436
206.65	530	1,507
206.70	530	1,580
206.75	530	1,656
206.80	530	1,734
206.85	530	1,814
206.90	530	1,898
206.95	530	1,984
207.00	530	**2,072**

WQV Draw-down
Linear Interpolation
288 CF Storage above
stone = 205.82'

500 CF - 212 CF = 288 CF

See next Stage-Area-Storage Table
for storage volume

Stage-Discharge for Pond 108P: Rain Garden #108

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
202.50	0.00	0.00	0.00
202.55	0.00	0.00	0.00
202.60	0.00	0.00	0.00
202.65	0.00	0.00	0.00
202.70	0.00	0.00	0.00
202.75	0.00	0.00	0.00
202.80	0.00	0.00	0.00
202.85	0.00	0.00	0.00
202.90	0.00	0.00	0.00
202.95	0.00	0.00	0.00
203.00	0.00	0.00	0.00
203.05	0.00	0.00	0.00
203.10	0.00	0.00	0.00
203.15	0.00	0.00	0.00
203.20	0.00	0.00	0.00
203.25	0.00	0.00	0.00
203.30	0.00	0.00	0.00
203.35	0.00	0.00	0.00
203.40	0.00	0.00	0.00
203.45	0.00	0.00	0.00
203.50	0.01	0.01	0.00
203.55	0.01	0.01	0.00
203.60	0.01	0.01	0.00
203.65	0.01	0.01	0.00
203.70	0.01	0.01	0.00
203.75	0.01	0.01	0.00
203.80	0.01	0.01	0.00
203.85	0.01	0.01	0.00
203.90	0.02	0.02	0.00
203.95	0.02	0.02	0.00
204.00	0.02	0.02	0.00
204.05	0.02	0.02	0.00
204.10	0.02	0.02	0.00
204.15	0.02	0.02	0.00
204.20	0.02	0.02	0.00
204.25	0.02	0.02	0.00
204.30	0.02	0.02	0.00
204.35	0.02	0.02	0.00
204.40	0.02	0.02	0.00
204.45	0.02	0.02	0.00
204.50	0.02	0.02	0.00
204.55	0.02	0.02	0.00
204.60	0.02	0.02	0.00
204.65	0.02	0.02	0.00
204.70	0.02	0.02	0.00
204.75	0.02	0.02	0.00
204.80	0.02	0.02	0.00
204.85	0.02	0.02	0.00
204.90	0.02	0.02	0.00
204.95	0.02	0.02	0.00
205.00	0.02	0.02	0.00
205.05	0.02	0.02	0.00
205.10	0.02	0.02	0.00
205.15	0.02	0.02	0.00
205.20	0.02	0.02	0.00
205.25	0.02	0.02	0.00
205.30	0.02	0.02	0.00
205.35	0.02	0.02	0.00
205.40	0.02	0.02	0.00
205.45	0.02	0.02	0.00
205.50	0.02	0.02	0.00
205.55	0.02	0.02	0.00
205.60	0.02	0.02	0.00
205.65	0.02	0.02	0.00
205.70	0.02	0.02	0.00
205.75	0.02	0.02	0.00
205.80	0.02	0.02	0.00
205.85	0.02	0.02	0.00
205.90	0.02	0.02	0.00
205.95	0.02	0.02	0.00
206.00	0.02	0.02	0.00
206.05	0.02	0.02	0.00
206.10	0.02	0.02	0.00
206.15	0.02	0.02	0.00
206.20	0.02	0.02	0.00
206.25	0.02	0.02	0.00
206.30	0.02	0.02	0.00
206.35	0.03	0.03	0.00
206.40	0.03	0.03	0.00
206.45	0.03	0.03	0.00
206.50	0.03	0.03	0.00
206.55	0.29	0.03	0.27
206.60	0.78	0.03	0.76
206.65	1.42	0.03	1.39
206.70	2.17	0.03	2.15
206.75	3.06	0.03	3.04
206.80	4.07	0.03	4.04
206.85	5.18	0.03	5.16
206.90	6.40	0.03	6.38
206.95	7.77	0.03	7.74
207.00	**9.25**	**0.03**	**9.23**

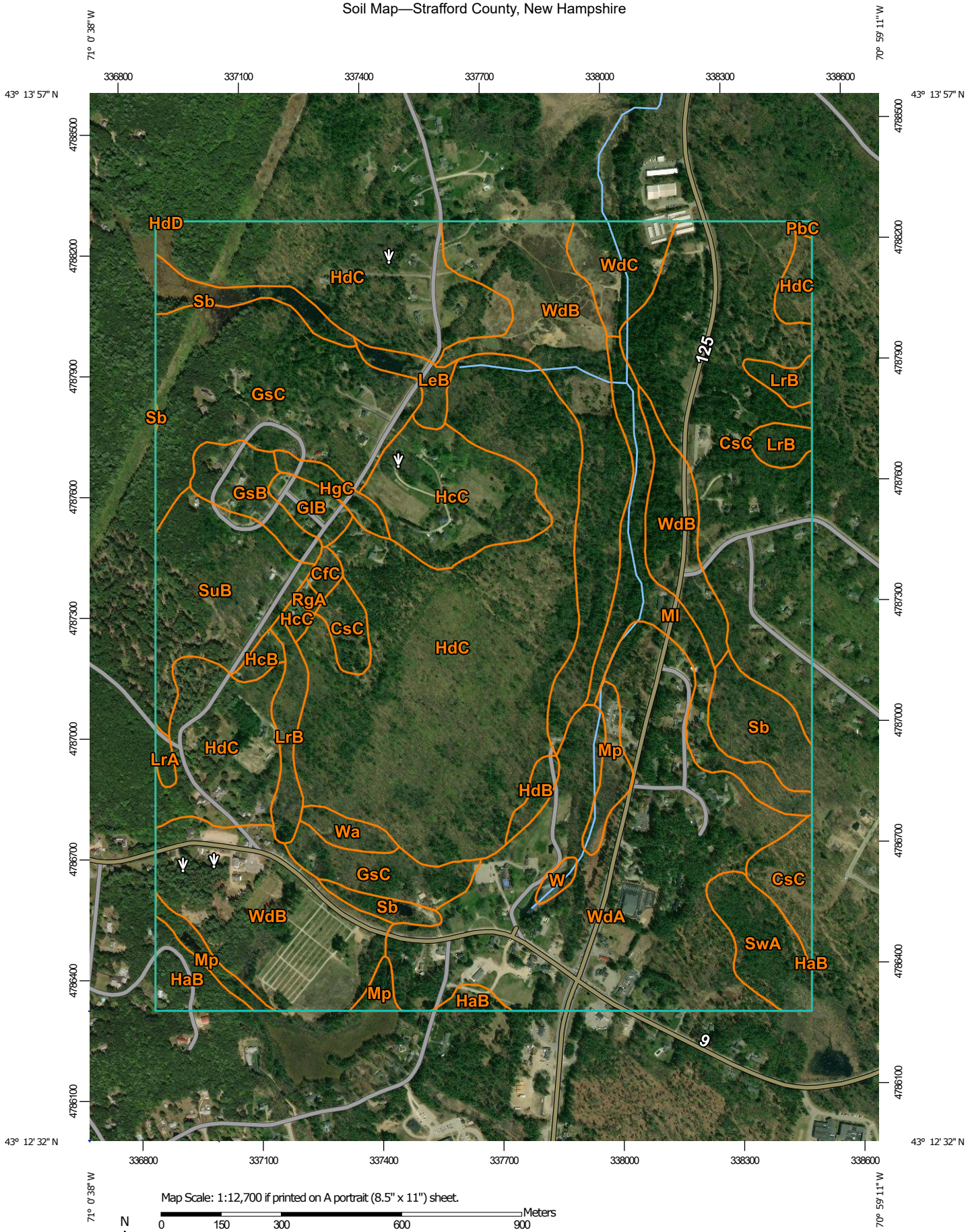
Elevation 205.82' =
0.02 CFS discharge

Stage-Area-Storage for Pond 108P: Rain Garden #108

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
202.50	0	0
202.55	0	11
202.60	0	21
202.65	0	32
202.70	0	42
202.75	0	53
202.80	0	64
202.85	0	74
202.90	0	85
202.95	0	95
203.00	0	106
203.05	0	117
203.10	0	127
203.15	0	138
203.20	0	148
203.25	0	159
203.30	0	170
203.35	0	180
203.40	0	191
203.45	0	201
203.50	**530**	212
203.55	530	217
203.60	530	223
203.65	530	228
203.70	530	233
203.75	530	239
203.80	530	244
203.85	530	249
203.90	530	254
203.95	530	260
204.00	530	265
204.05	530	270
204.10	530	276
204.15	530	281
204.20	530	286
204.25	530	292
204.30	530	297
204.35	530	302
204.40	530	307
204.45	530	313
204.50	530	318
204.55	530	323
204.60	530	329
204.65	530	334
204.70	530	339
204.75	530	345
204.80	530	350
204.85	530	355
204.90	530	360
204.95	530	366
205.00	530	371
205.05	530	376
205.10	530	382
205.15	530	387
205.20	530	392
205.25	530	398
205.30	530	403
205.35	530	408
205.40	530	413
205.45	530	419
205.50	530	424
205.55	530	429
205.60	530	435
205.65	530	440
205.70	530	445
205.75	530	451
205.80	530	482
205.85	530	519
205.90	530	561
205.95	530	609
206.00	530	662
206.05	530	720
206.10	530	778
206.15	530	839
206.20	530	900
206.25	530	963
206.30	530	1,028
206.35	530	1,094
206.40	530	1,162
206.45	530	1,231
206.50	530	1,302
206.55	530	1,368
206.60	530	1,436
206.65	530	1,507
206.70	530	1,580
206.75	530	1,656
206.80	530	1,734
206.85	530	1,814
206.90	530	1,898
206.95	530	1,984
207.00	530	**2,072**

Linear Interpolation
Lowest Orifice = 206.40'
Storage Volume = 950 CF

1,162 CF - 212CF = 950 CF


71° 0' 38" W
70° 59' 11" W
43° 13' 57" N
43° 12' 32" N
336800
337100
337400
337700
338000
338300
338600
4788500
4788200
4787900
4787600
4787300
4787000
4786700
4786400
4786100
HdD
HdC
Sb
WdC
WdB
PbC
HdC
125
LeB
LrB
GsC
Sb
CsC
LrB
GsB
HgC
GlB
HcC
WdB
CfC
SuB
RgA
HcC
CsC
Ml
HdC
HcB
Sb
LrB
HdC
LrA
Mp
HdB
Wa
GsC
W
CsC
Sb
WdB
WdA
SwA
Mp
HaB
HaB
Mp
HaB
9
Map Scale: 1:12,700 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 150 300 600 900
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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: Strafford County, New Hampshire
Survey Area Data: Version 20, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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
CfC	Charlton fine sandy loam, 8 to 15 percent slopes	1.7	0.2%
CsC	Charlton fine sandy loam, 8 to 15 percent slopes, very stony	97.2	12.2%
GlB	Gloucester fine sandy loam, 3 to 8 percent slopes	5.1	0.6%
GsB	Gloucester very stony fine sandy loam, 3 to 8 percent slopes	10.7	1.3%
GsC	Gloucester very stony fine sandy loam, 8 to 15 percent slopes	65.6	8.2%
HaB	Hinckley loamy sand, 3 to 8 percent slopes	8.9	1.1%
HcB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes	2.1	0.3%
HcC	Hollis-Charlton fine sandy loams, 8 to 15 percent slopes	28.4	3.6%
HdB	Hollis-Charlton very rocky fine sandy loams, 3 to 8 percent slopes	2.7	0.3%
HdC	Hollis-Charlton very rocky fine sandy loams, 8 to 15 percent slopes	202.3	25.4%
HdD	Hollis-Charlton very rocky fine sandy loams, 15 to 25 percent slopes	0.1	0.0%
HgC	Hollis-Gloucester very rocky fine sandy loams, 8 to 15 percent slopes	4.2	0.5%
LeB	Leicester very stony fine sandy loam, 3 to 8 percent slopes	4.9	0.6%
LrA	Leicester-Ridgebury fine sandy loams, 0 to 3 percent slopes, very stony	1.4	0.2%
LrB	Leicester-Ridgebury fine sandy loams, 3 to 8 percent slopes, very stony	14.0	1.8%
Ml	Mixed alluvial land, wet	24.3	3.0%
Mp	Freetown and Swansea mucky peats, 0 to 2 percent slopes	11.1	1.4%
PbC	Paxton fine sandy loam, 8 to 15 percent slopes	0.4	0.1%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
RgA	Ridgebury fine sandy loam, 0 to 3 percent slopes	0.8	0.1%
Sb	Saugatuck loamy sand	23.0	2.9%
SuB	Sutton fine sandy loam, 0 to 8 percent slopes, very stony	31.3	3.9%
SwA	Swanton fine sandy loam, 0 to 3 percent slopes	12.9	1.6%
W	Water	1.5	0.2%
Wa	Whitman fine sandy loam, 0 to 3 percent slopes, very stony	3.9	0.5%
WdA	Windsor loamy sand, 0 to 3 percent slopes	117.6	14.8%
WdB	Windsor loamy sand, 3 to 8 percent slopes	107.8	13.5%
WdC	Windsor loamy sand, 8 to 15 percent slopes	12.2	1.5%
Totals for Area of Interest		**796.1**	**100.0%**

John P. Hayes III CSS, CWS,
7 Limestone Way
North Hampton, NH 03862
603-205-4396
johnphayes@comcast.net

3/11/21

Christopher Berry
Berry Surveying and Engineering
335 Second Crown Point Road
Barrington NH 03825

Job # 21-007

3/10/21
Site Specific Soil Survey
Map 235 Lots 1-1 & 3
Christmas Lane Barrington, NH

Dear Chris,

This letter report presents the findings of a Site Specific Soil Survey conducted on the referenced property by John P. Hayes III on March 11, 2021. The soil survey was conducted in accordance with the New Hampshire Supplement of the Site-Specific Soil Mapping Standard For New Hampshire and Vermont, Version 5.0, December 2017, Special Publication # 3, published by the Society of Soil Scientist of Northern New England.

The property that is subject of the soil survey is located on the north side of Route 9, and northeast of Route 125, in Barrington, NH. The area of the pacel is approximately 23 acres in size. Only the portion of the lot was mapped. The plans used for these soil maps are a 80 scale plan, where 1 inch equals 80 feet, with one foot contours.

The purpose of the soil survey is to provide the client with soils information for urban and suburban or rural land planning. Soil characteristics on the property were evaluated through observation of numerous test holes and hand auger probes conducted throughout the property. Slope phases were determined with the use of the topography provided on the plan. The Site-specific Soil Map Units identified are taken from the New Hampshire State-Wide Numerical Soils Legend, Issue #10 January 2011, and are briefly described below. Official Series Descriptions (OSD) for each of these soil series are enclosed with this report. The soil map units comply with the Range In Characteristics described in the OSD. Dissimilar inclusions are noted above. Limits of the Site Specific mapping units are highlighted on the plan.

Portions of the soil map with the map unit denominator P, contain poorly drained soils. Portions of the map with the denominator Rk, are soils that have the potential to have areas of bedrock substratum within 40 inches of the soil surface.

MAP UNIT #	SOIL TAXANOMIC NAME	DESCRIPTION
CsB (State No. 63)	**Charlton (very stony)**	The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges. Saturated hydraulic conductivity is moderately high or high. The hydrologic soil group is B. Slope ranges from 3% to 8%.
CsC (State No. 63)	**Charlton (very stony)**	The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges. Saturated hydraulic conductivity is moderately high or high. The hydrologic soil group is B. Slope ranges from 8% to 15%.
CsD (State No. 63)	**Charlton (very stony)**	The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges. Saturated hydraulic conductivity is moderately high or high. The hydrologic soil group is B. Slope ranges from 15% to 25%.
CsE (State No. 63)	**Charlton (very stony)**	The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges. Saturated hydraulic conductivity is moderately high or high. The hydrologic soil group is B. Slope ranges from 25% to 50%.
HcC Rk (State No. 85)	**Hollis (very Stony)**	The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges. Saturated hydraulic conductivity is moderately high or high. Depth to hard bedrock ranges from 25 to 50 cm. The hydrologic soil group is D. Slope ranges from 8% to 15%.
HcD Rk (State No. 85)	**Hollis (very Stony)**	The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges. Saturated hydraulic conductivity is moderately high or high. Depth to hard bedrock ranges from 25 to 50 cm. The hydrologic soil group is D. Slope ranges from 15% to 25%.

MAP UNIT #	SOIL TAXANOMIC NAME	DESCRIPTION
HcE **Rk** **(State No. 85)**	**Hollis** **(very Stony)**	The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges. Saturated hydraulic conductivity is moderately high or high. Depth to hard bedrock ranges from 25 to 50 cm. The hydrologic soil group is D. Slope ranges from 25% to 50%..
HdD **Rk** **(State No. 175)**	**Hollis Charlton Complex** **(very stony)**	The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges. Saturated hydraulic conductivity is moderately high or high. Depth to hard bedrock ranges from 25 to 50 cm. The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges. Saturated hydraulic conductivity is moderately high or high. The hydrologic soil group is C/D. Slope ranges from 15% to 25%..
HdE **Rk** **(State No. 175)**	**Hollis Charlton Complex** **(very stony)**	The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges. Saturated hydraulic conductivity is moderately high or high. Depth to hard bedrock ranges from 25 to 50 cm. The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges. Saturated hydraulic conductivity is moderately high or high. The hydrologic soil group is C/D. Slope ranges from 25% to 50%..
LeB **P** **(State No. 515)**	**Leicester** **(very stony)**	The Leicester series consists of very deep, poorly drained soils formed in coarse-loamy till. They are nearly level or gently sloping soils in drainageways and low-lying positions on hills. Permeability is moderate or moderately rapid in the surface layer and subsoil and moderate to rapid in the substratum. The hydrologic soil group is C. Slope ranges from 3% to 8%
LeC **P** **(State No. 515)**	**Leicester** **(very stony)**	The Leicester series consists of very deep, poorly drained soils formed in coarse-loamy till. They are nearly level or gently sloping soils in drainageways and low-lying positions on hills. Permeability is moderate or moderately rapid in the surface layer and subsoil and moderate to rapid in the substratum. The hydrologic soil group is C. Slope ranges from 8% to 15%

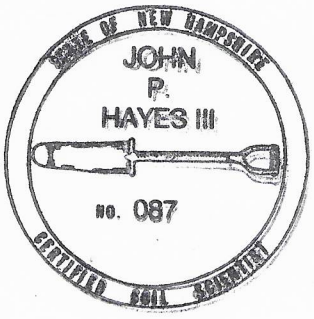
MAP UNIT #	SOIL TAXANOMIC NAME	DESCRIPTION
LeD P (State No. 515)	**Leicester (very stony)**	The Leicester series consists of very deep, poorly drained soils formed in coarse-loamy till. They are nearly level or gently sloping soils in drainageways and low-lying positions on hills. Permeability is moderate or moderately rapid in the surface layer and subsoil and moderate to rapid in the substratum. The hydrologic soil group is C. Slope ranges from 15% to 25%
SuB (State No. 69)	**Sutton**	The Sutton series consists of very deep, moderately well drained loamy soils formed in melt-out till. They are nearly level to strongly sloping soils on hills, low ridges, and ground moraines, typically on footslopes, lower backslopes and in slight depressions. Saturated hydraulic conductivity is moderately high or high throughout. The hydrologic soil group is B. Slope ranges from 3% to 8%.
SuC (State No. 69)	**Sutton**	The Sutton series consists of very deep, moderately well drained loamy soils formed in melt-out till. They are nearly level to strongly sloping soils on hills, low ridges, and ground moraines, typically on footslopes, lower backslopes and in slight depressions. Saturated hydraulic conductivity is moderately high or high throughout. The hydrologic soil group is B. Slope ranges from 8% to 15%.
SuD (State No. 69)	**Sutton**	The Sutton series consists of very deep, moderately well drained loamy soils formed in melt-out till. They are nearly level to strongly sloping soils on hills, low ridges, and ground moraines, typically on footslopes, lower backslopes and in slight depressions. Saturated hydraulic conductivity is moderately high or high throughout. The hydrologic soil group is B. Slope ranges from 15% to 25%.

Slope Phases

Alpha Slope Symbol	Range
A	0 – 3%
B	3 – 8%
C	8 – 15%
D	15 – 25%
E	25 – 50%
F	> 50%

I trust that this Soil Survey and report meet your current planning needs. Please do not hesitate to contact me if you have any questions.

Sincerely:



John P. Hayes III CSS, CWS

NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1-1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

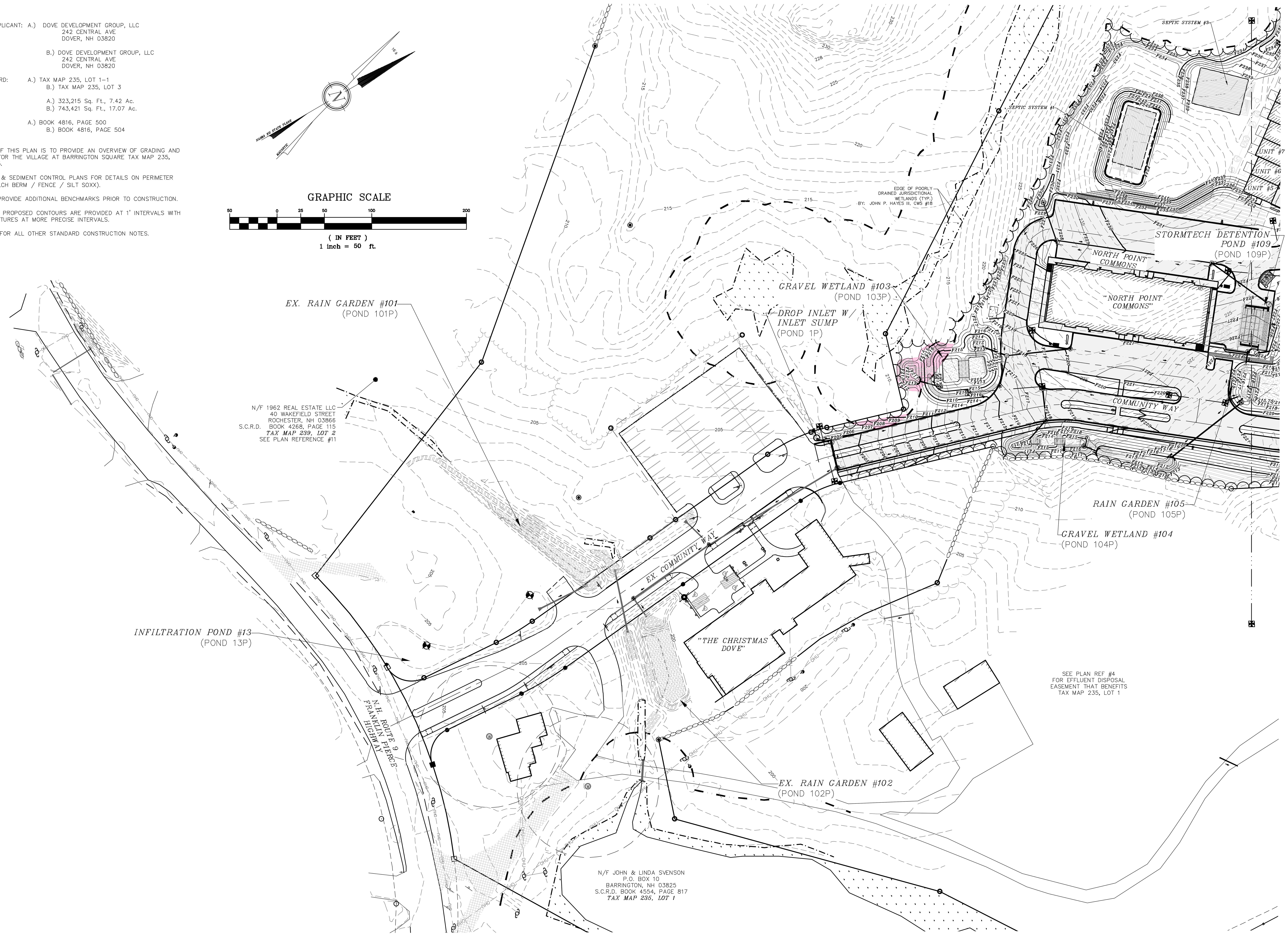
5.) THE INTENT OF THIS PLAN IS TO PROVIDE AN OVERVIEW OF GRADING AND ENGINEERING FOR THE VILLAGE AT BARRINGTON SQUARE TAX MAP 235, LOTS 1-1 & 3.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.



REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVSED PER CMA ENGINEERS & NHDES AoT COMMENT

DRAINAGE INSPECTION & MAINTENANCE PLAN SOUTH
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1-1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 - 097

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
LICENSED PROFESSIONAL ENGINEER

CULVERT INLET SUMP
(POND 45P)

CULVERT INLET SUMP
(POND 48P)

WELL HOUSE

SEPTIC SYSTEM #5

SEPTIC SYSTEM #6

HIGH POINT DRIVE

WELL ACCESS ROAD

SEPTIC SYSTEM #4

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.) BY: JOHN P. HAYES III, CWS #18 UNDER 3,000 Sq. Ft. NO BUFFER REQUIRED

CONVEYANCE SWALE

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.) BY: JOHN P. HAYES III, CWS #18

CULVERT INLET SUMP
(POND 54P)

WETLAND CROSSING #1

WETLAND CROSSING #2

PROJECT WELLS

DETENTION POND #110
(POND 110P)

RAIN GARDEN W/ INFILTRATION #107
(POND 107P)

LEVEL SPREADER

LEVEL SPREADER

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.) BY: JOHN P. HAYES III, CWS #18

NORTH POINT COMMON

CULVERT INLET SUMP
(POND 49P)

LEVEL SPREADER

COMMUNITY WAY

ACCESS ROAD

RAIN GARDEN #105
(POND 105P)

RAIN GARDEN #106
(POND 106P)

RAIN GARDEN #108
(POND 108P)

N/F LINDA SVENSON
P.O. BOX 10
BARRINGTON, NH 03825
S.C.R.D. BOOK 4022, PAGE 576
TAX MAP 235, LOT 3
FORMER RAIL ROAD R.O.W.
SEE PLAN REFERENCE #2

NAD83 NH STATE PLANE MERIDIAN

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NOTES:

1.) OWNER & APPLICANT: A.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

B.) DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) LOT OF RECORD: A.) TAX MAP 235, LOT 1–1
B.) TAX MAP 235, LOT 3

3.) LOT AREA: A.) 323,215 Sq. Ft., 7.42 Ac.
B.) 743,421 Sq. Ft., 17.07 Ac.

4.) S.C.R.D.: A.) BOOK 4816, PAGE 500
B.) BOOK 4816, PAGE 504

5.) THE INTENT OF THIS PLAN IS TO PROVIDE AN OVERVIEW OF GRADING AND ENGINEERING FOR THE VILLAGE AT BARRINGTON SQUARE TAX MAP 235, LOTS 1–1 & 3.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

REVISION	DATE	DESCRIPTION
#2	10-12-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT
#1	08-30-2021	REVISED PER CMA ENGINEERS & NHDES AoT COMMENT

DRAINAGE INSPECTION & MAINTENANCE PLAN NORTH
LAND OF
DOVE DEVELOPMENT GROUP, LLC
N.H. ROUTE 9 / FRANKLIN PIERCE HIGHWAY
COMMUNITY WAY
BARRINGTON, NH
TAX MAP 235 LOT 1–1 & MAP 235 LOT 3

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 14, 2021
FILE NO. : DB 2020 – 097

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14245
LICENSED PROFESSIONAL ENGINEER

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

Inspection and Maintenance Manual

Stormwater System Management

The Village at Barrington Square
Tax Map 235, Lot 1-1 & Lot 3
Including Tax Map 235, Lot 1 &
Tax Map 239, Lot 2

Prepared for:

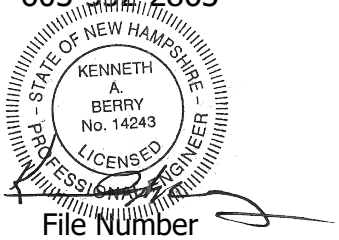
Dove Development Group, LLC
242 Central Avenue
Dover, NH 03820

Land of

Dove Development Group LLC

Prepared By

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825
603-332-2863



File Number
DB2020-097

June 14, 2021
Revised: October 12, 2021

Inspection and Maintenance Manual

Stormwater System Management

Table of Contents

Introduction

The Best Management Practices (BMP) described in this manual are specified in more detail within the plan set giving design details and specifications. The New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA) is included by reference to this manual. Additional details, construction specifications, and example drawings are provided within this reference. (http://des.nh.gov/organization/divisions/water/stormwater/)

The BMP's are covered below in the general order in which the storm water flows. Each BMP has a description and maintenance consideration listed. A Check List table is proved after the narrative to summarize the maintenance responsibilities and schedule. A Log Form is also provided for the owners use.

For details regarding the design of the Storm Water System see also Drainage Analysis & Sediment and Erosion, **June 14, 2021**, as revised. See also plan set completed for **The Dove Development Group, LLC**, originally dated **June 14, 2021**, as revised.

Robert Baldwin, Managing Member of Dove Development Group, LLC is responsible for the Operation, Inspection, and Maintenance of the Stormwater Management System. A significant step in this responsibility is the Inspection and Maintenance of each component of the system. Ongoing, semi-annual, and annual inspection and maintenance requirements are documented below and must be followed diligently. Failure of any component of the system can result in surface water run-off ponding and/or freezing in the roadway and parking lots, leaving the developed site untreated, and/or causing violations to issued permits. The owner / developer must initiate or expand the Homeowners Association (HOA) and will be responsible as the majority owner of the association. The HOA will then be responsible for the drainage infrastructure. When, and if, the Town of Barrington accepts the roads as public, they may also become responsible for the roads and drainage infrastructure, then becoming the responsible party, for part or the whole. The responsible party must maintain, and have available, plans of the Stormwater System in order properly inspect and maintain the system. (Reduced copies attached.) The responsible party will conduct the inspections, complete the required maintenance, and will maintain the Inspection & Maintenance Check Lists and Logs, and will provide copies with the Annual Report to the Town of Barrington, Land Use Department and provided a copy to NHDES AoT by December 15th of each year.

The owners of Tax Map 235, Lot 1-1 and 3 (to be merged), The Dove Development Group, LLC, are proposing a mixed-use and residential development consisting of 5 commercial first-floor units with 20 apartments on the second & third floor and 25 condominium units, and 5,555 linear feet of roadway, which includes the 560 LF already constructed for Community Way.

Reference is made to 18-005 Inspection & Maintenance Manual for John & Linda Svenson and 1962 Real Estate LLC on file at the Town of Barrington. However, Dove development Group will assume responsibility for Infiltration Pond #13 & Rain Garden #101 located on 1962 Real Estate, LLC property within the easement area until such time that the lot is developed; and for P-102 located on land of John & Linda Svenson also within the easement area. This includes the periodic inspection and maintenance of the catch basins, sumps, and drain manholes up slope of P-102.

The following practices and drainage features will all require periodic inspections and maintenance based on this manual and drainage layout:

Completed Construction:

Infiltration Pond #13 (1962 Real Estate LLC) Formerly Pond #20

Rain Garden #101 with Underdrain (1962 Real Estate LLC)

Rain Garden #102 with Underdrain (Christmas Dove / J & L Svenson)

Proposed Construction – Dove Development Group, LLC

Culvert Inlet Sumps.

Catch Basins & Drainage Pipes

Drain Manholes

Sediment Forebays for all Treatment Practices

Subsurface Gravel Wetland #103 with Outlet Structure and Spillway

Subsurface Gravel Wetland #104 with Outlet Structure and Spillway

Rip Rap Outlet Protection & Level Spreaders

Rain Garden #105 with Underdrain & Orifice, Outlet Structure, and Spillway

Rain Garden #106 with Underdrain & Orifice, Outlet Structure, and Spillway

Rain Garden with Infiltration #107 with Outlet Structure and Spillway

Rain Garden #108 with Underdrain & Orifice, Outlet Structure, and Spillway

Stormtech Detention Pond #109 with Underdrain & Orifice, Outlet Structure

Detention Pond #110 with Outlet Structure

Culvert Inlet Sumps

Description: In four locations, to capture the surface water runoff that is trapped within the inside of the residential roadway and residential runoff from back yards, there are Residential Inlet Sumps. This culvert pipes, flared end sections, and constructed sumps will collect the runoff that is directed to that location during and after the residential development. The culvert will allow the runoff to enter the drainage network where the runoff will be pre-treated and treated at a treatment practice. The location of the Residential Inlet Sumps will be marked and identified with painted and distinctive fence post.

Maintenance Considerations: Vegetation and debris will need to be removed from the culvert inlet several times a year, especially late fall after the majority of the leaves have fallen and in the spring. In addition to the sump and culverts themselves, the drainage channel will need to be inspected to ensure that the runoff intended to get to the inlets is making it to the sump. The identification fence post will be inspected for structural condition and painted condition.

Catch Basin, and Drain Manholes

Description: Catch Basins are used throughout the site to capture and, along with culvert pipes and manhole, route surface water runoff to stormwater treatment and detention infrastructure. During construction the catch basins will be protected by inlet protection per the approved construction plans. The practice of street sweeping on a bi-annual basis will help reduce maintenance of these catch basins and culvert pipes.

Note: Deep sump catch basins are not allowed to be used on this proposed development due to wildlife concerns and any manufacturer sump resulting in a catch basin must be filled with washed crushed stone. Sediment should be trapped in the sediment forebays but is also a concern in earlier structures.

Maintenance Considerations: Sediment must be removed from Catch Basins and Manholes on a regular basis, at least twice a year and more often if post-winter maintenance and street sweeping is not conducted. Inspections should be conducted

periodically. At a minimum they should be cleaned after snow-melt and after leaf-drop. Disposal of all material, sediment, and debris must be done in accordance with state and federal regulations. Culvert pipes will be inspected to ensure that surface water runoff is capable of leaving the structures.

Treatment & Conveyance Swales

Description: "Swales are stabilized channels designed to convey runoff at non-erosive velocities." (NHDES SWM) They will be trapezoidal or parabolic in section view. A conveyance swale is intended to move surface water runoff from one point to another where as a treatment swale will slow the velocity to a point where sediment will settle out of the stormwater flow. A treatment swale will be constructed to a width of between four and eight feet and have a minimum length of 100 feet. The flow characteristics will also meet design criteria. See SWM Volume 2, 4.3 Treatment Practices, 5. Treatment Swales, page 123.

Project Intent: The swales are individually designed in the drainage analysis and specified on the design plans. The designed swales must have greater than 85% vegetated growth prior to receiving runoff. The bottom of a treatment swale must be above the seasonal high water table.

Maintenance Considerations: Grassed swales will be inspected twice annually, removing accumulated sediment and gross solids. Grass will be mowed periodically but to a depth of not less than 4 inches. Any damage to the vegetation will be repaired and woody vegetation and invasive vegetation will be removed.

Culvert Pipes, Flared End Sections / Headwalls

Description: Culvert pipes are placed to route surface water runoff from catch basins to drain manholes, and drain manholes to a discharge point conveying the runoff in such a manner that erosion does not take place. Culvert pipes are often terminated with flared end sections or headwalls.

Maintenance Considerations: The entrance and exit of the culvert pipe should be cleaned of any trash and sediment build-up. The culvert should be clear to let runoff pass through the culvert unobstructed. Flared end sections and headwalls should be inspected for erosion and destabilization, with repairs made as required.

Sediment Forebay

Description: A sediment forebay is designed to reduce the velocity of incoming surface water runoff allowing sediment to fall out of suspension initially pre-treating the runoff before it is sent to a treatment structure. This earthen basin will have vegetated side-slopes and a check dam to further reduce and pretreat the runoff. At the point of incoming runoff, the basin will be protected by rip rap outlet protection construction and the outgoing edge will be protected with rip rap. The check dam will be constructed from one side of the basin to the other and cause runoff to either go through or over. The volume of the forebay is generally 10% the volume of the Water Quality Volume (WQV) for gravel wetlands, and 25% for rain gardens. A dewatering drain is designed into the two-foot berm of the forebay. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-4 Pretreatment Practices 1, Sediment Forebays.

If it determined that too much sediment is by-passing the sediment forebay into the stormwater practice, semi-permanent sediment barriers may be warranted in the form of check dams by using a filtering media such as Filtrexx Silt Soxx.

Maintenance Considerations: The basin and slopes will be periodically mowed, at least twice per year ensuring that woody material does not get an opportunity to grow. Sediment accumulated in the basin will be removed and properly disposed of when it reaches half the height of the check dam. Erosion or other damage to the basin will be repaired and revegetated. (See Outlet Protection) Inspect and clean the dewatering drain to ensure runoff is not trapped for more than 72 hours in the forebay.

Infiltration Basins (Infiltration Rain Garden #107) & Detention Ponds

Description: Infiltration Basins and the Infiltration component of some Rain Gardens, are constructed ponds that are intended to detain surface water runoff and during the detention to infiltrate runoff into the ground. Detention Ponds are also constructed ponds with the purpose of detaining runoff but not necessarily for infiltration purposes. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 3B, In-ground Infiltration Basin and Section 4-6, Conveyance Pracitces, 2. Detention Basins.

Maintenance Considerations:

Infiltration Basins and Detention Ponds should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

On an annual basis the infiltration capabilities need to be confirmed by evaluation the drawdown time. If the infiltration system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the basin to determine measures required to restore the infiltration function. This is normally the direct result of sediment accumulation which will be removed to restore the filter media ratio.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

StormTech Chamber (Detention Pond) System

Description: The StormTech Chamber System and Isolator Row are trademark products of the Advance Drainage System (ADS) company. The purchase and installation of this system will conform to ADS proprietary rights. The design engineer has specifically used the Isolator Row and StormTech Chamber specifications in the design of this installation. The design is based on the StormTech SC-740 Chambers with an Isolator Row for sediment isolation. The system is designed as a detention pond. The volume in the washed crushed stone and in the specified chambers will act as detention in connection with the Outlet Structure orifice and discharge stack. The inlet structure is equipped with an over-flow orifice to ensure that the WQV runoff is directed to the Isolator Row. During a storm event that exceeds a 2 year – 24 hour event, the volume within the internal storage is anticipated to reach the specified elevation and runoff will be allowed to bypass the Isolator Row directly into subsequent chamber rows. The system for this applicant and owner consists of **30 chambers in five rows of six chambers.** The orifices are located in the outlet stack is located to direct all runoff into Rain Garden #105. The small orifice and top of the stack are designed to pass larger storm events. Multiple inspection ports are located throughout the system.

Inspection: Semi-annual and sever rain storm event inspections will be conducted by a trained individual with the capability to observe the condition of the pre-treatment measures and the condition of the Isolator Row especially regarding the depth and extent of sediment buildup. The Isolator Row should initially be inspected semi-annually however this schedule may need to be adjusted based on findings, condition of the pre-

treatment measures, and use of the parking facilities. See list of known qualified inspection / maintenance professionals below. The inlet structure and outlet structure must also be inspected. The inspection process requires the removal of Drain Manhole covers.

Maintenance Considerations: Sediment collected in the Isolator Row will be removed with the JetVac process, consisting of high-pressure water scouring and suction retrieval of the captured sediment and pollutants.

The orifice cover plate installed to ensure that runoff is routed to the Isolator Row must be in place and if not re-installed to the original specifications. The orifice in the stack in the outlet structure must be maintained to ensure that there is no buildup that prevents the proper operation of the outlet.

A copy of the ADS StormTech SC-740 Chamber manual and ADS StormTech Isolator Row O&M Manual are attached.

After the system construction and before operation of the site, it is recommended that a long-term agreement for Inspection and Maintenance be established.

As for Isolator Row inspection and maintenance, Catch Basin maintenance, the regional ADS, Inc. representatives recommend using any of the following contacts:

Stormwater Compliance, LLC;
Attn: Nathan Marles, 1-877-271-9055; nmarles@lidtech.com
163 Thadeus Street, Portland, me 04106
Info@stormwatercomp.com

Ted Berry Company;
Attn: Dave Beauchamp, 207-897-3348; david.beauchamp@tedberrycompany.com
521 Federal Road, Livermore, me 04253
Info@tedberrycompany.com

Bellemore Septic Sewer & Drain
Attn: Ray Bellemore, 603-641-6640
raymond@bellemore.com
PO Box 10369
Bedford, NH 03110

ADS / StormTech Contact: Aaron Cheever, PE, Advance Drainage Systems, Inc.
aaron.cheever@ads-pipe.com 1-978-302-0650

Bio-Filtration System (Rain Gardens) & Bio-Swales

Description: Rain Gardens, or bio-filtration areas are located close to the source of runoff. They are intended to integrate with the site landscaping an become an aesthetically attractive opportunity to provide highly effective stormwater treatment. The rain gardens associated with this proposed development contribute toward recharge of surface water run-off into the ground. It is important that sediment be removed from run-off prior to discharge into the bio-filtration area to preserve the mulch and soil mix ratio. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 4c Bioretention System. (Bio-media and bio-filtration mean bioretention filter media.)

Maintenance Considerations:
Rain Gardens should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

The design of the rain garden under-drain system includes an orifice in an end-cap. This feature is designed to be disassembled to allow cleaning. This outlet orifice is located within a concrete outlet structure that may contains a control stack or manifold used to control and detain runoff in the system. Although this is designed to be "clean water" after the filtering process, the outlet structure in general is going to require periodic maintenance to ensure that it is discharging runoff properly. If the Rain Garden retains runoff on the surface for more than 72 hours the performance is not correct and maintenance is required.

On an annual basis the infiltration capabilities need to be confirmed by evaluation the drawdown time. If the bio-filtration system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the rain garden to determine measures required to restore the infiltration function. This is normally the direct result of sediment accumulation which will be removed to restore the filter media ratio or as stated above, an issue with the discharge orifice.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

Subsurface Gravel Wetland

Description: A Gravel Wetland (NHDES SWM 4-3 Treatment Practice 2D) or Subsurface Gravel Wetland consists of a forebay and multiple flow-through treatment cells. During smaller rain events, the surface water runoff is intended to pass from the forebay, into the gravel media through perforated pipes and structures where it passes through an anaerobic environment where the Water Quality Volume will have 24-72 hours of contact time. The forebay is required to contain 10% of the WQV and each of the two cell must contain 45% of the WQV. During larger storm events, the system works as a detention pond. The design of a Subsurface Gravel Wetland will be constructed in accordance with the most current version of the Design Specifications provided by the UNH Stormwater Center and SWM Volume 2, Section 4-3 Treatment Practices, 2d Gravel Wetlands.

Maintenance Considerations: The outlet configuration of the anaerobic subsurface gravel consists of a small discharge orifice that is located in a threaded cap. This goose-neck feature is designed to be disassembled to allow cleaning. This outlet orifice is located within a concrete outlet structure that may contains a control stack or manifold used to control and detain runoff in the system. Although this is designed to be "clean water" after the filtering process, the outlet structure in general is going to require periodic maintenance to ensure that it is discharging runoff properly. If the Subsurface Gravel Wetland retains runoff on the surface for more than 72 hours the performance is not correct and maintenance is required.
Debris will need to be removed from the inlet and outlet structures as well as any buildup of sediment. The surface of the ponded area is intended to have wetland plants which may require periodic replanting, depending on the sediment loading. Sediment buildup in the forebay must be removed to maintain the minimum required volume. See also 9 and 10 of the attached UNHSC Subsurface Gravel Wetland Design Specifications 2009, and / or UNHSC Subsurface Gravel Wetland Design Specifications 2016 with Maintenance Guidelines and Checklist. See also Design and Maintenance of Subsurface Gravel Wetlands, February 4, 2015, UNHSC / NHDOT with included Checklist for Inspection of Gravel Wetland and Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device which is attached.

Rip Rap Outlet Protection, Level Spreaders, & Emergency Spillways

Description: Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the conduit and apron. Level spreaders are intended to provide a level lip where surface water runoff is allowed to continue downhill closer to sheet flow. The level lip is to be constructed as level as possible for the entire length. Emergency Spillways are rip rap

reinforced outlets near the top of the berm that allow runoff to leave a practice during periods of very high flow. Ref.: NHDES SWM Volume 2, Section 4-6 Conveyance Practices, 6. Outlet Protection and 1. Detention Ponds, Note 3, Page 158.

Maintenance Considerations: The riprap outlet protection will be inspected annually for damage, which must be corrected immediately. Any sediment buildup will be removed and disposed of correctly. Sediment and subsequent vegetation will build up in the Level Spreader. This material will be cleaned out along with any gross solids and disposed of properly. (See invasive species below) Any rip rap that has been displaced from the original construction will be repaired, especially recreating the level lip.

Stabilization for Long Term Cover

Vegetated Stabilization – Original Planting

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-102 using seeding mixture C, as follows:

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Conservation Mix

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	15	0.35
Creeping Red Fescue	15	0.35
Annual Ryegrass	5	0.12
Perennial Ryegrass	5	0.12
Kentucky Bluegrass	15	0.35
White Clover	7	0.16
Total	**62**	**1.45**

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer. As the site is to be stabilized with erosion control mix as a mulch, the vegetation should be established with a high percentage of white clover for growth to be established.

Rain garden mix

The grass that is planted within a rain garden bio-filtration system within the bio-media must consist of a combination of warm season grass seed and cold season grass seed in order for the grass to start growing for stabilization and continue growing in the sandy well-drained environment. Planting specification will meet the requirements as outlined in 'Vegetation New Hampshire Sand and Gravel Pits' mix 1 (warm season grasses) (15 lbs/ac) and include annual and perennial rye grass seed (15 lbs/ac); the New England native warm season grass mix (23 lbs/ac) by New England Wetland Plants, Inc.; rain garden mix 180 (15 lbs/ac & 15 lbs/ac of rye) / rain garden grass mix 180-1 (20 lbs/ac & 10 lbs/ac of rye) by Ernst Conservation Seeds; or approved equal.

Detention Pond Mix:

The grass that is planted within a Detention Pond will be a mix designed for both inundation and dry conditions such as Ernst Seeds, Retention Basin Floor Mix ERNMX-126.

Subsurface Gravel Wetland Mix:

The grass that is planted within a Subsurface Gravel Wetland will be a diverse mix of species to provide food and cover as well as erosion control in the seasonally flooded conditions such as Ernst Seeds Seasonally Flooded Wildlife Mix ERNMX-128.

Maintenance Considerations: Permanent seeded areas for long-term cover will be inspected on a periodic basis looking for signs of growth loss or erosion. Any areas found to be damaged will be repaired and replanted to reestablish the growth. The grass should be mowed at least twice per year and any dead material removed. Any woody growth that becomes established will need to be cut and removed.

Long-term maintenance of the land cover is critical and must be maintained at least 85% grass / vegetation coverage, must be inspected for concentrated flow, rills, and channels; and must be repaired as necessary to prevent erosion.

CONTROL OF INVASIVE PLANTS

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described on the following pages.

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

Annual Report

Description: The owner is responsible to keep an **I & M Activity Log** that documents inspection, maintenance and repairs to the storm water management system, and a **Deicing Log** to track the amount and type of deicing material applied to the site. The original owner is responsible to ensure that any subsequent owner (s) have copies of the Inspection & Maintenance Manual, Stormwater System Management, copies of past logs and check lists. This includes any owner association that might become involved with the property. The Annual Report will be prepared and submitted to the Town of Barrington Land Use Department with copies of both logs and check lists no later than December 15th of each year and made provided to NHDES on that same date. Upon an ownership change, the Annual Report will include the Transfer of Ownership Responsibility Forms duplicated from the form found below.

The plans that accompany this manual includes two sheets, "Drainage Operation, Inspection, & Maintenance Plan". The owners and municipality will also maintain a complete set of the approved original design plans.

Respectfully
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, EIT
Project Engineer / Manager

Kenneth A. Berry, PE, LLS
CPSWQ, CPESC, CESSWI
Principal, VP – Technical Operations

STORMWATER SYSTEM: INSPECTION AND MAINTENANCE MANUAL

Inspection & Maintenance Manual Checklist

The Village at Barrington Square

Tax Map 235, Lot 1-1 & Lot 3 Including
Tax Map 235, Lot 1 & Tax Map 239, Lot 2
Dove Development Group, LLC
242 Central Avenue, Dover, NH 03820

☑	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Pavement Sweeping	Three Times Per Year	N/A	N/A
		Litter/Trash Removal	Routinely	Inspect dumpsters, outdoor waste receptacles area, and yard areas.	Parcel will be free of litter/trash.
		Deicing Agents	N/A	N/A	Use salt as the primary agent for roadway safety during winter.
		Invasive Species	Two times per year.	Inspect for Invasive Species	Remove and dispose invasive species.
		Closed Drainage System:			
		Drainage Pipes & Inlet Sumps	2 years per year	Check for sediment accumulation & clogging.	Less than 2" sediment depth

		Catch Basins & Catch Basins	2 times per year	Check for sediment accumulation & clogging.	Sediment accumulated to a depth of 2 feet.
☑	**Date**	**BMP / System**	**Minimum Inspection Frequency**	**Minimum Inspection Requirements**	**Maintenance / Cleanout Threshold**
		Subsurface Gravel Wetlands, Rain Gardens, Detention Ponds & Infiltration Ponds	2 times per year	Check for sediment and debris accumulation buildup.	Remove sediment & debris when required. Remove Invasive Species
		Subsurface Gravel Wetland and system clean-outs.	Annually	72-Hour drawdown time evaluation and vegetation evaluation. Underdrain flushing.	Remove dead & diseased vegetation along with all debris, take corrective measures of filtration media if required. Flush underdrain clean-outs with a hose.
		Stormtech Chamber Detention Pond	See sheets 7&8	See sheets 7&8	See sheets 7&8
		Rain Garden & Infiltration Ponds	Annually	72-Hour drawdown time evaluation and vegetation evaluation. Underdrain flushing.	Remove dead & diseased vegetation along with all debris, take corrective measures of filtration media if required. Flush underdrain clean-outs with a hose.
		Riprap Outlet Protection	Annually	Check for sediment buildup and structure damage.	Remove excess sediment and repair damage.

		Winter Maintenance	Ongoing	Remove snow as directed.	Ongoing
		Post Winter Maintenance	Annually	Remove excess sand, gross solids, and repair vegetation and plantings	Parcel will be free of excess sand, litter/trash. Vegetation per approved plans.
		Annual Report	1 time per year	Submit Annual Report to Barrington Land Use Department and kept on file by the owner.	Report to be submitted on or before December 15th each year. Copies submitted to NHDES by that date.

Inspection Check List:

The following practices and drainage features will all require periodic inspections and maintenance based on this manual and drainage layout:

Culvert Inlet Sumps.

Catch Basins & Drainage Pipes

Drain Manholes

Sediment Forebays for all Treatment Practices

Subsurface Gravel Wetland #103 with Outlet Structure and Spillway

Subsurface Gravel Wetland #104 with Outlet Structure and Spillway

Rip Rap Outlet Protection & Level Spreaders

Rain Garden #105 with Underdrain & Orifice, Outlet Structure, and Spillway

Rain Garden #106 with Underdrain & Orifice, Outlet Structure, and Spillway

Rain Garden with Infiltration #107 with Outlet Structure and Spillway

Rain Garden #108 with Underdrain & Orifice, Outlet Structure, and Spillway

Stormtech Detention Pond with Underdrain & Orifice, Outlet Structure

Detention Pond #110 with Outlet Structure

Inlet Sump #13P

Rain Garden #101 with Underdrain and Spillway

Rain Garden #102 with Underdrain and Spillway

STORMWATER SYSTEM INSPECTION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Log Form

The Village at Barrington Square

Tax Map 235, Lot 1-1 & Lot 3 Including
Tax Map 235, Lot 1 & Tax Map 239, Lot 2
Dove Development Group, LLC
242 Central Avenue
Dover, NH 03820

BMP / System	Date Inspected	Inspector	Cleaning/Repair (List Items & Comments)	Repair Date	Performed By:

STORMWATER SYSTEM INSPECTION AND MAINTENANCE PLAN

Deicing Log Form

The Village at Barrington Square

Tax Map 235, Lot 1-1 & Lot 3 Including
Tax Map 235, Lot 1 & Tax Map 239, Lot 2
Dove Development Group, LLC
242 Central Avenue
Dover, NH 03820

Date	Amount Applied	Performed By:	Date	Amount Applied	Performed By:

STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN CERTIFICATION

Owner	Responsibility
Name: Robert Baldwin, Managing Member Dove Development Group Address: 242 Central Avenue Dover, NH 03820 Telephone: (603) 986-2373 (Mobile)	The owner is responsible for the conduct of all construction activities, and ultimate compliance with all the provisions of the Stormwater System Operation & Maintenance Plan and the implementation of the Inspection and Maintenance Manual.

OWNER CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signed: _____ Date: _____

Printed Name:

Representing:

The Village at Barrington Square
Tax Map 235, Lot 1-1 & Lot 3
Dove Development Group, LLC
242 Central Avenue
Dover, NH 03820

Infiltration Feasibility Report

Village at Barrington Square
Barrington, NH 03825

Tax Map 235, Lot 1-1 & 3
Including Tax Map 235, Lot 1 & Tax Map 239, Lot 2

Land of:

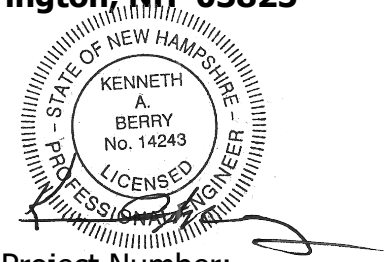
Dove Development Group, LLC
242 Central Avenue
Dover, NH 03820

Prepared for:

Dove Development Group, LLC
242 Central Avenue
Dover, NH 03820

Prepared by:

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825



Project Number:
DB 2020-097

June 14, 2021
Revised October 12, 2021

Table of Contents

1.0 Location of Practices:

The project proposes locations of infiltration for ground water recharge as well as channel flow protection purposes. The following is a list in ascending order by Pond number designation in the HydroCAD report of Infiltration Pond #13, and Rain Garden with Infiltration #107.

Infiltration Pond #13 is located on property of 1962 Real Estate LLC and was constructed on the westerly side of the roadway, Community Way, formerly Christmas Lane. In 2019, the runoff collected and treated in this infiltration pond is currently limited to grass area.

Rain Garden with Infiltration #107 (POND 107) – This Rain Garden is on the northerly side of the proposed Village at Barrington Square development where runoff is collected in an inlet sump, two catch basins, pre-treated in two sediment forebays before being treated in the biomedia. This practice treats runoff from roadway, residential buildings and collects runoff from off-site.

2.0 Existing topography at the location of the practice

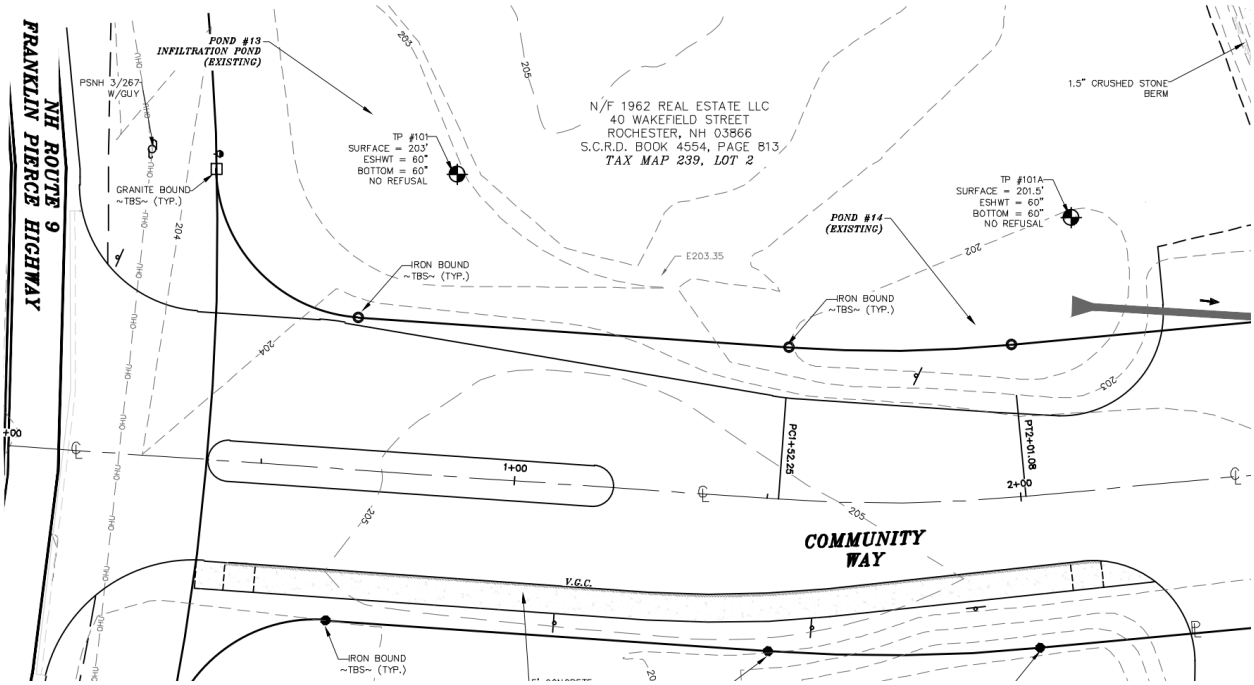
Infiltration Pond #13 was constructed on relatively flat area and is located in an area that was residential lawn and currently vacant land.

Rain Garden with Infiltration #107 (POND 107) – The existing topography within the area is at an 3% slope. The area was woodlands and is comprised of a natural state soils. This land has been used for forestry practices in the past.

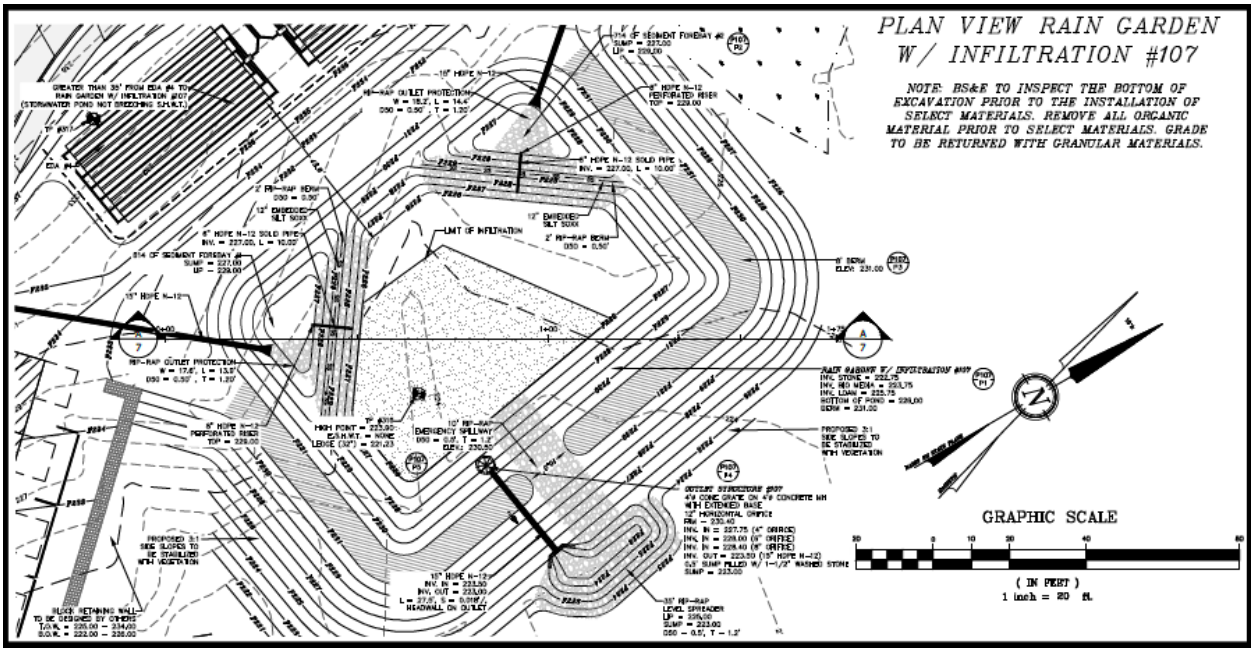
3.0 Test Pit Locations

Infiltration Pond #13 (Pond 13) – This practice has a surface area of 1,934 square feet (SF) and 560 SF respectively and were constructed over test pits #101 and #101A. See test pit profiles below. See test pit locations on Plan & Profile 0+00 to 5+50 Sheet 35. These test pits were completed in May of 2017 by Berry Surveying & Engineering. The soil in the vicinity of this practice is Windsor Loamy Sand considered to be a HSG A soil where the most restrictive published Ksat is 6 inches per hour. The rate of 0.71 inches per hour were use for the design.

Rain Garden with Infiltration #107 (POND 107) – The practice has a surface area of 2,135 SF. The practice is located over test pits #316. See test pit profiles below. See test pit locations on Sheet P-107, Proposed Rain Garden with Infiltration #107 Detail Plan. The test holes were completed in March of 2021, (See Site Specific Soil Map Report by John P Hayes III) and by BS&E Staff in the spring / summer of 2021. The soil in the vicinity of this practice is Sutton Loamy Sand, considered to be HSG B soil where the most restrictive published Ksat is .6 inches per hour. This practice was designed using .3 in. / hr.



Infiltration Pond #13 (Pond 13) (Constructed Summer 2019) (1962 Real Estate, LLC)



Rain Garden with Infiltration #107 (POND 107) – (Reference Sheet P-107)

4.0 Seasonal high water table (SHWT) and bedrock elevations

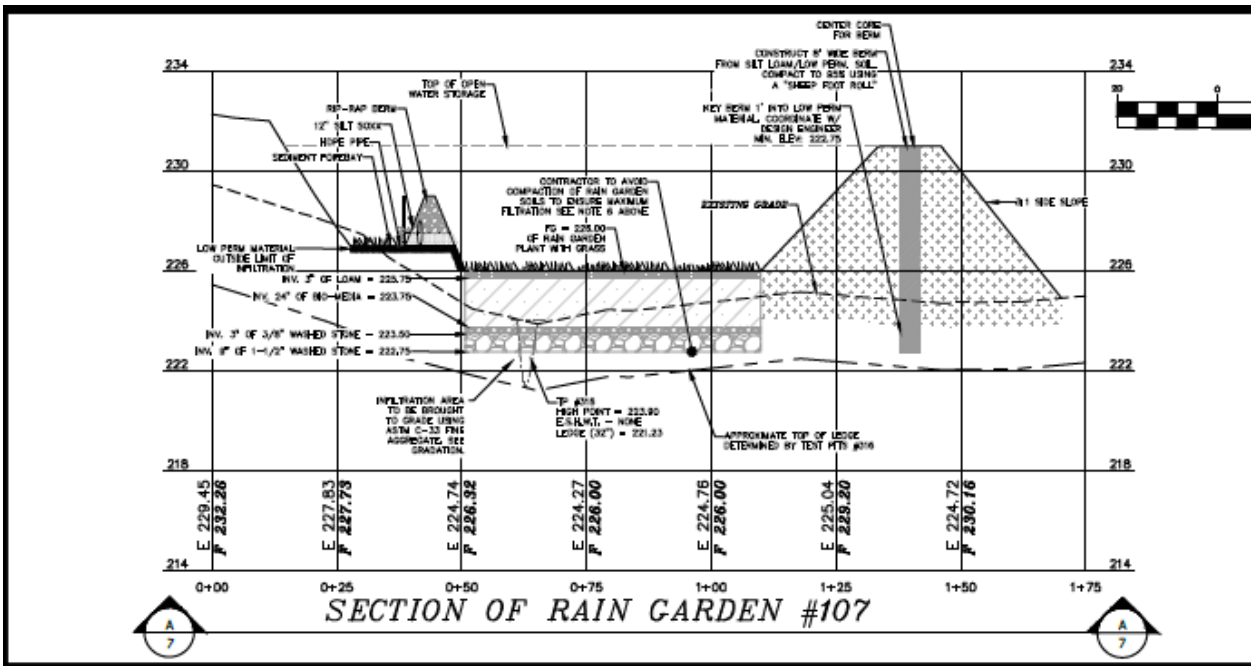
TP#101:	Existing Surface Elevation of TP =	203.00′
	SHWT = 60 – Inches	198.00′
	Bedrock = > 60 – Inches	>198.00′
	Ground Water = N/A	
	Deepest Elevation of TP =	198.00′

Infiltration Pond#13 (Pond 13) Bottom: 203.00′

TP#316:	Existing Surface Elevation of TP =	223.90′
	SHWT = 32 – Inches	221.23
	Bedrock = 32 – Inches	221.23′
	Ground Water = N/A	
	Deepest Elevation of TP =	221.23

Rain Garden w/ Infiltration #107 (Pond 107): Biomedia 203.75′

See cross section below.



5.0 Profile descriptions

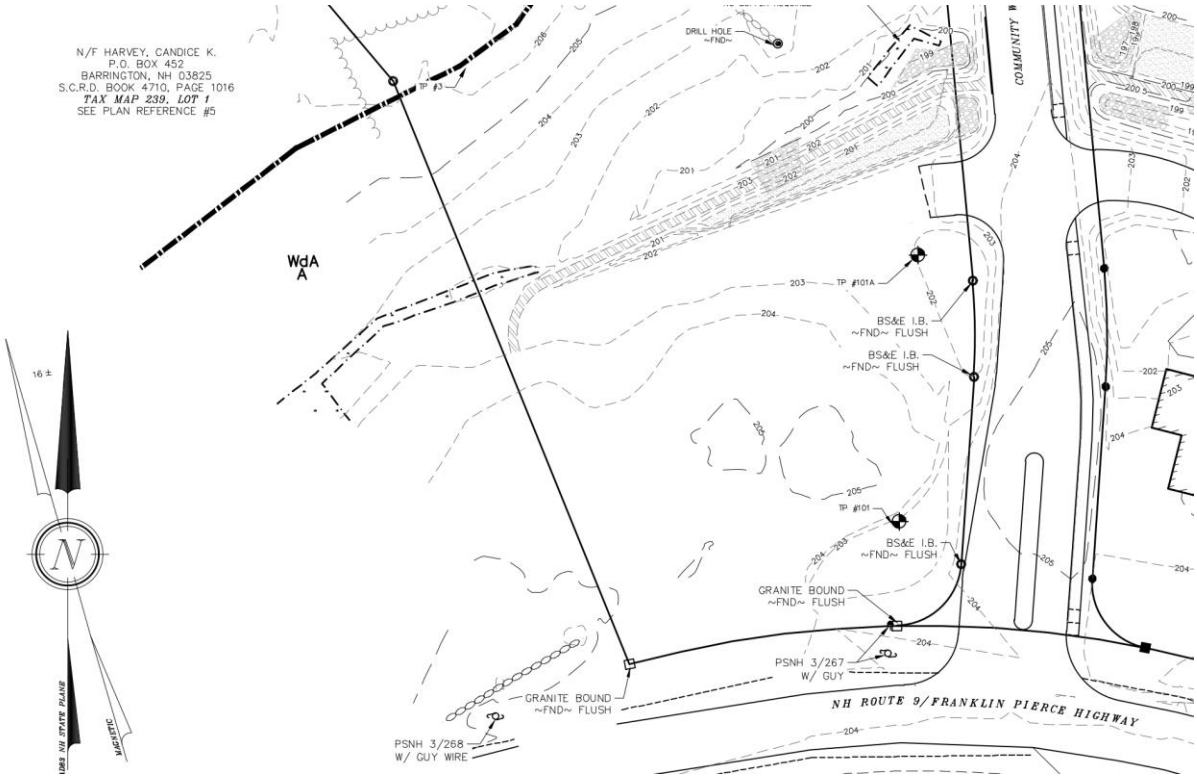
The following test pit data was collected on two dates, see profile below.

TEST PIT #101 MAY 19, 2017
0-6" 10YR 3/2 FINE SANDY LOAM, GRANULAR, FRIABLE, TOPSOIL
6-32" 7.5YR 5/6 FINE SAND, GRANULAR, FRIABLE
32-60" 7.5YR 5/6 FINE SAND, SINGLE GRAIN, LOOSE IN HAND
E.S.H.W.T. @ 60"
GROUND WATER @ NONE
TERMINATED @ 60"
ROOTS @ 24" REFUSAL @ NONE"
PERC. = < 4 MIN/IN

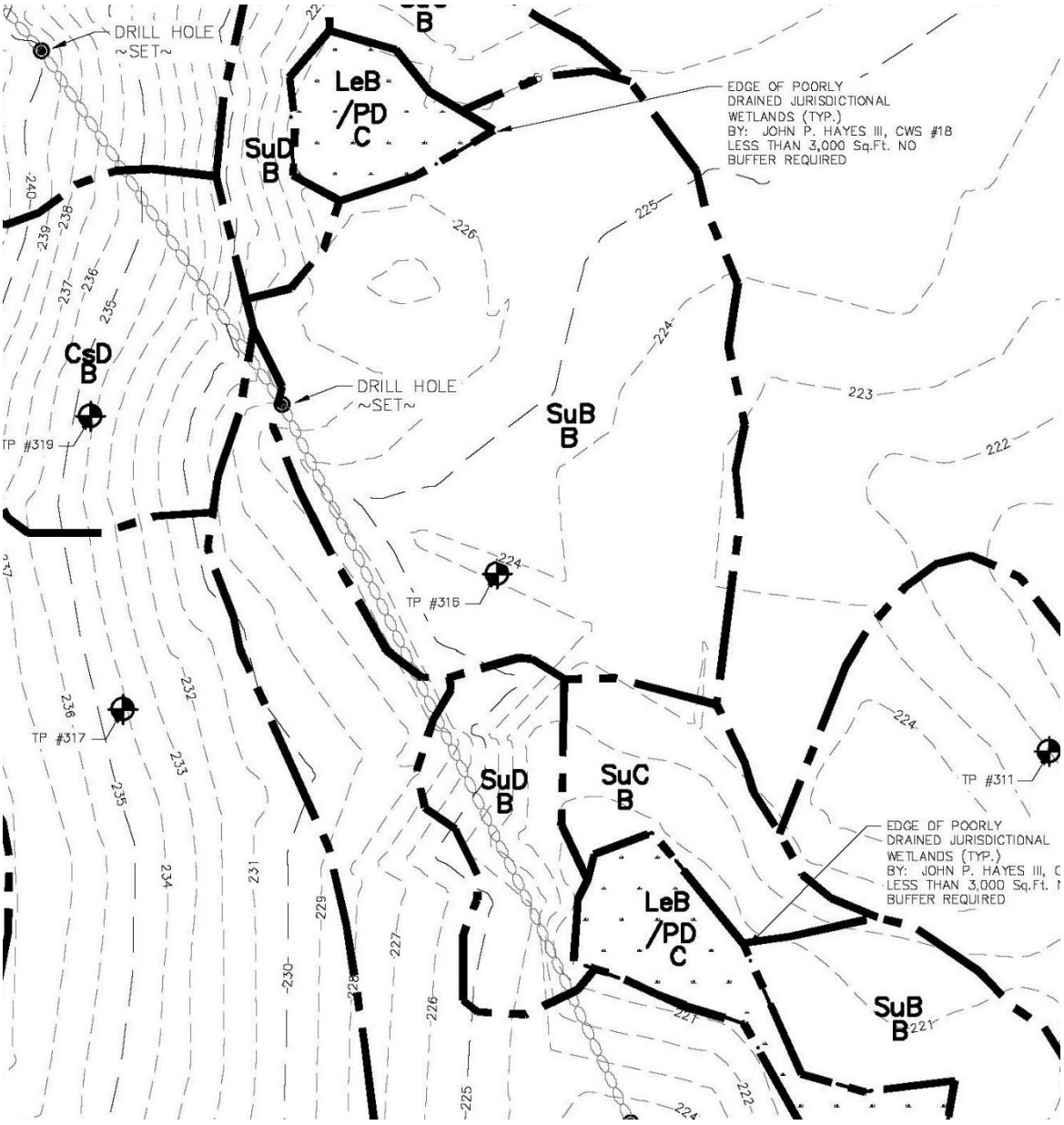
TEST PIT #316 June 10, 2021
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-18 7.5YR 5/6 STRONG BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18-32 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
E.S.H.W.T. @ NONE Use depth to ledge for calculations.
GROUND WATER @ NONE
TERMINATED @ 32"
REFUSAL @ 32"
PERC. = 10 MIN/IN

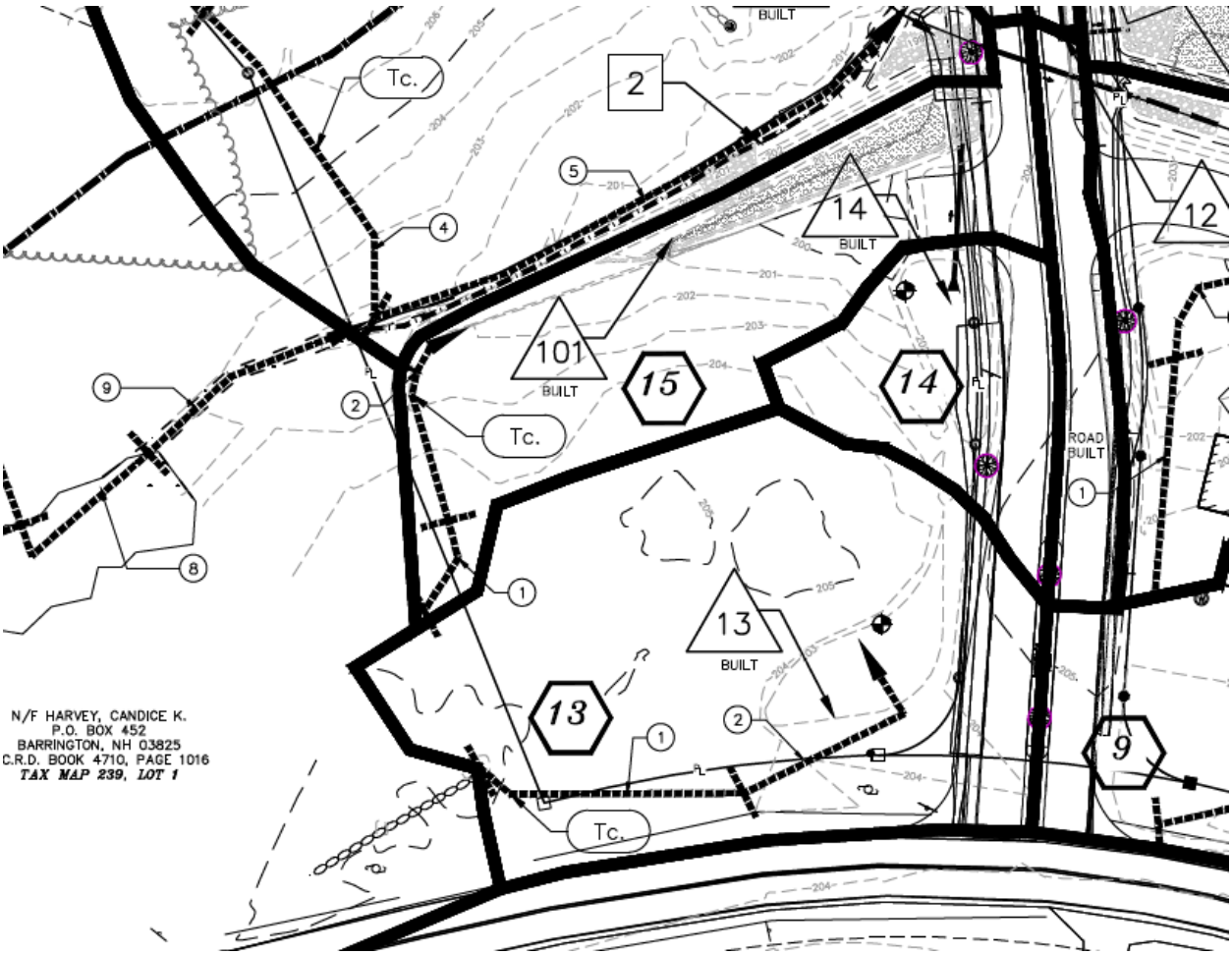
6.0 Soil plan in the area of the constructed practice

The infiltration practice is located over Windsor Loamy Sand. (Pond #13)

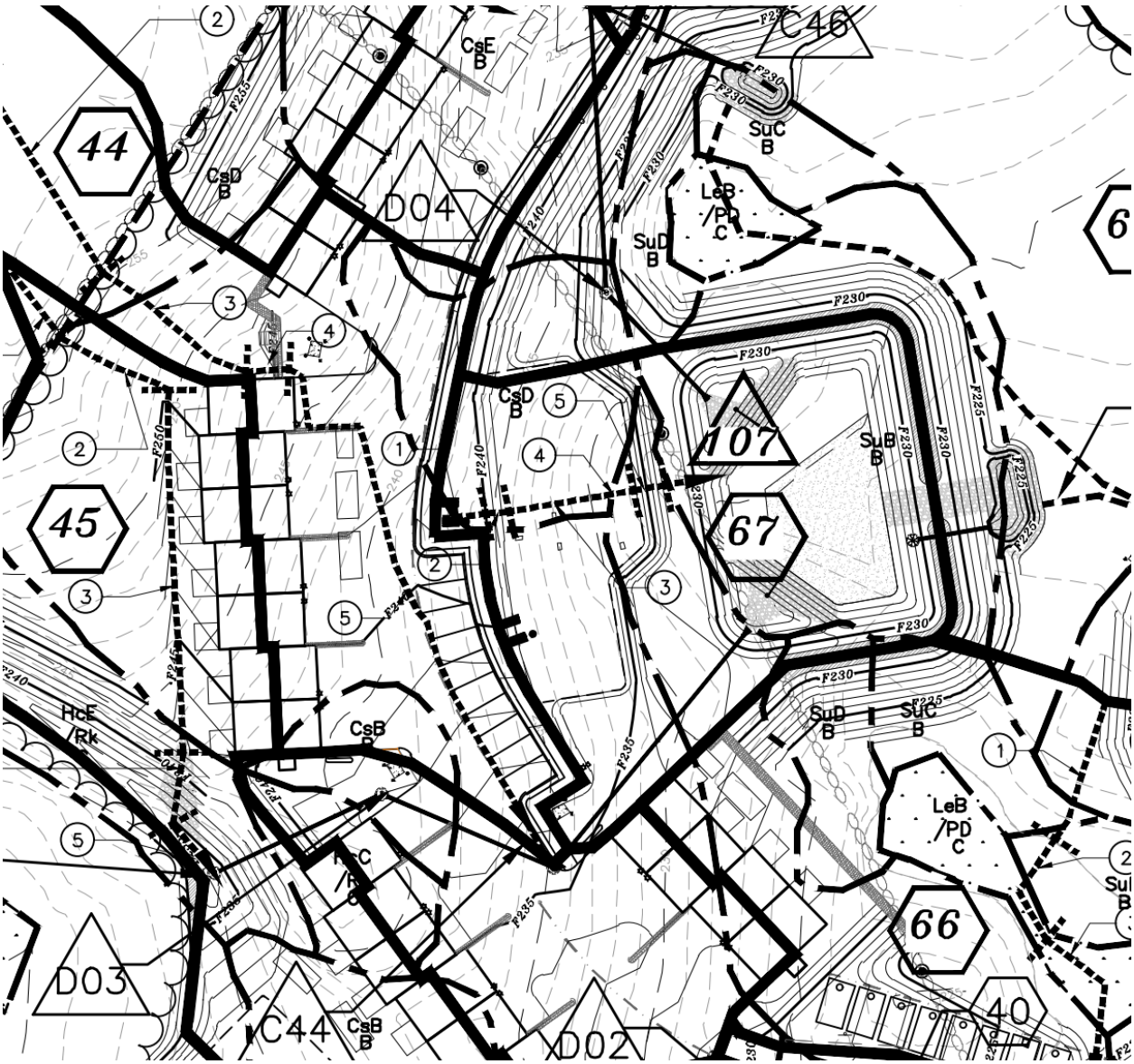


Rain Garden with Infiltration is located over Sutton Loose Till with Loamy Textures (Pond #107) See Test Pit #316





Infiltration Pond #13 (Pond 13)



Rain Garden with Infiltration #107 (Pond 107)

7.0 Summary of Infiltration Rate

Infiltration Pond #13 is located within a Windsor Loamy Sand, HSG A soil area as mapped by the USDA / NRCS Websoil and confirmed by test pits with a documented Ksat of 6 inches per hour for the most restrictive layer. The design exfiltration rate for the two infiltration pond is 3 inches per hour.

Rain Garden with Infiltration #107 is located within a Sutton Loose Till with Loamy Textures, HSG B soil area as mapped by Site Specific Soil Survey by John P. Hayes III, CSS, with a documented Ksat of 0.6 inches per hour. The design exfiltration rate for the rain garden is 0.3 inches per hour.

Amoozemeter testing was not conducted on site and the alternate method of using the USDA / NRCS published values was employed. Reference is made to K Sat Values for New Hampshire Soils (Including Hydrologic and DES Soil Lot Sizing Groups, sponsored by the Society of Soil Scientists of Norther New England, Publication #5 dated September 2009.

Respectfully submitted:

BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, EIT
Project Engineer

Kenneth A. Berry, PE, LLS
CPSWQ, CPESC, CESSWI
Principal, VP – Technical Operations

Control of Invasive Plants

New Hampshire
Department of Agriculture,
Markets & Food
Douglas Cygan
603-271-3488
doug.cygan@agr.nh.gov

This guide lists garden plants and weeds which are already causing significant changes to natural areas in the Mid-Atlantic. **Measures for controlling each species are indicated by number, e.g., (3), in the text with a full explanation at the end of this article.** Click on the word Control: to jump to that section. Then click your "back" button to return to the text. Following each section suggested alternative plants are given. These alternatives are native plants, well adapted and needing little care, attractive to birds and butterflies, and an important part of the food web for our indigenous species.

INVASIVE TREES

NORWAY MAPLE (*Acer platanoides*) has large leaves similar to sugar maple. To easily confirm that the plant is Norway maple, break off a leaf and if it's truly Norway maple it will exude milky white sap. Fall foliage is yellow. (Exception: cultivars such as 'Crimson King,' which have red leaves in spring or summer, may have red autumn leaves.) The leaves turn color late, usually in late October after native trees have dropped their foliage. This tree suppresses growth of grass, garden plants, and forest understory beneath it, at least as far as the drip-line. Its wind-borne seeds can germinate and grow in deep shade. The presence of young Norway maples in our woodlands is increasing.

Control: (1); (7), (8), (9), or (10); (11) in mid-October to early November, before the leaves turn color.

TREE OF HEAVEN (*Ailanthus altissima*), is incredibly tough and can grow in the poorest conditions. It produces huge quantities of wind-borne seeds, grows rapidly, and secretes a toxin that kills other plants. Its long compound leaves, with 11-25 lance-shaped leaflets, smell like peanut butter or burnt coffee when crushed. Once established, this tree cannot be removed by mechanical means alone.

Control: (1) - seedlings only. Herbicide - use Garlon 3a (9) with no more than a 1" gap between cuts, or (10); plus (11) on re-growth. Or paint bottom 12" of bark with Garlon 4 Ultra (in February or March to protect surrounding plants). USE MAXIMUM STRENGTH SPECIFIED ON LABEL for all herbicide applications on Ailanthus. Glyphosate is not effective against Ailanthus.

INVASIVE SHRUBS

AUTUMN OLIVE (*Eleagnus umbellata*): Formerly recommended for erosion control and wildlife value, these have proved highly invasive and diminish the overall quality of wildlife habitat.

Control: (1) - up to 4" diameter trunks; (7) or (10) or bury stump. Do not mow.

MULTIFLORA ROSE (*Rosa multiflora*), formerly recommended for erosion control, hedges, and wildlife habitat, becomes a huge shrub that chokes out all other vegetation and is too dense for many species of birds to nest in, though a few favor it. In shade, it grows up trees like a vine. It is covered with white flowers in June. (Our native roses have fewer flowers, mostly pink.) Distinguish multiflora by its size, and by the presence of very hard, curved thorns, and a fringed edge to the leaf stalk.

Control: (1) - pull seedlings, dig out larger plants at least 6" from the crown and 6" down; (4) on extensive infestations; (10) or (11). It may remain green in winter, so herbicide may *applied when other plants are dormant. For foliar application, mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants.*

BUSH HONEYSUCKLES (*Lonicera spp.*), including Belle, Amur, Morrow's, and Tatarian honeysuckle. (In our region, assume that any honeysuckle is exotic unless it is a scarlet-flowered vine). Bush honeysuckles create denser shade than native shrubs, reducing plant diversity and eliminating nest sites for many forest interior species.
Control: (2) on ornamentals; (1); on shady sites only, brush cut in early spring and again in early fall (3); (4) during the growing season; (7); or (10) late in the growing season.

BLUNT-LEAVED PRIVET (*Ligustrum* obtusifolium). *Control:* (1); (7) or (10); or trim off all flowers. Do not cut back or mow.

BURNING BUSH, WINGED EUONYMUS (*Euonymus alatus*), identified by wide, corky wings on the branches.
Control: (1); (7) or (10); or trim off all flowers.

JAPANESE BARBERRY (*Berberis thunbergii*), and all cultivars and varieties.
Control: (1); (7) or (10); or trim off all flowers.

INVASIVE WOODY VINES

All of these vines shade out the shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle. DO NOT PLANT NEXT TO OPEN SPACE.

JAPANESE HONEYSUCKLE (*Lonicera japonica*), including Hall's honeysuckle, has gold-and-white flowers with a heavenly scent and sweet nectar in June. This is probably the familiar honeysuckle of your childhood. It is a rampant grower that spirals around trees, often strangling them.
Control: (1); (3); (10); (11) in fall or early spring when native vegetation is dormant. Plan to re-treat repeatedly.

ORIENTAL BITTERSWEET (*Celastrus orbiculatus*) has almost completely displaced American bittersweet (*C. scandens*). The Asian plant has its flowers and bright orange seed capsules in clusters all along the stem, while the native species bears them only at the branch tips.
Control: (1); keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits; to eradicate use Garlon 3a (10).

JAPANESE KNOTWEED, MEXICAN BAMBOO (*Polygonum cuspidatum*) can grow in shade. The stems have knotty joints, reminiscent of bamboo. It grows 6-10' tall and has large pointed oval or triangular leaves.
Control: Cut at least 3 times each growing season and/or treat with Rodeo (10) or (11). In gardens, heavy mulch or dense shade may kill it.

INVASIVE HERBACEOUS PLANTS

GARLIC MUSTARD (*Alliaria petiolata*, *A. officinalis*), a white-flowered biennial with rough, scalloped leaves (kidney-, heart- or arrow-shaped), recognizable by the smell of garlic and taste of mustard when its leaves are crushed. (The odor fades by fall.)
Control: Pull before it flowers in spring (1), removing crown and roots. Tamp down soil afterwards. Once it has flowered, cut (2), being careful not to scatter seed, then bag and burn or send to the landfill. (11) may be appropriate in some settings.

JAPANESE STILT GRASS (*Microstegium vimineum*) can be identified by its lime-green color and a line of silvery hairs down the middle of the 2-3" long blade. It tolerates sun or dense shade and quickly invades areas left bare or disturbed by tilling or flooding. An annual grass, it builds up a large seed bank in the soil.

Control: Easily pulled in early to mid-summer (1) - be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to landfill. Mowing weekly or when it has just begun to flower may prevent it from setting seed (3). Use glyphosate (11) or herbicidal soap (less effective) on large infestations. Follow up with (5) in spring.

MILE-A-MINUTE VINE, DEVIL'S TAIL TEARTHUMB (*Polygonum perfoliatum*), a rapidly growing annual vine with triangular leaves, barbed stems, and turquoise berries in August which are spread by birds. It quickly covers and shades out herbaceous plants.
Control: same as for stilt grass.

SPOTTED KNAPWEED (*Centaurea maculosa*), a biennial with thistle-like flowers.
Control: Do NOT pull (1) unless the plant is young and the ground is very soft - the tap root will break off and produce several new plants. Wear sturdy gloves. (2); (6); (10) or (11).

CONTROL MEASURES

(1) PULL seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs.
(2) DEADHEAD to prevent spread of seeds of invasive plants. Cut off seeds or fruits before they ripen. Bag, and burn or send to a landfill.
(3) MOW or CUTTING at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year.
(4) CONTROLLED BURNING during the spring, repeated over several years, allows native vegetation to compete more effectively with the invasive species. This requires a permit. Spot treatment with glyphosate in late fall can be used to make this method more effective.
(5) Use a CORN-BASED PRE-EMERGENCE HERBICIDE on annual weeds. This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.
(6) In lawns, SPOT TREAT with BROAD-LEAF WEEDKILLER. Good lawn-care practices (test soil; use lime and fertilizer only when soil test shows a need; mow high and frequently; leave clippings on lawn) reduce weed infestations.
(7) CUT DOWN the tree. Grind out the stump, or clip off re-growth.
(8) GIRDLE tree: cut through the bark and growing layer (cambium) all around the trunk, about 6" above the ground. Girdling is most effective in spring when the sap is rising, and from middle to late summer when the tree is sending down food to the roots. Clip off sucker sprouts.
(9) FRILL: Using a machete, hatchet or similar device, hack scars (several holes in larger trees) downward into the cambium layer, and squirt in glyphosate (or triclopyr if recommended in text above). Follow label directions for Injection and Frill Applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.
(10) CUT STEM / CUT STUMP WITH GLYPHOSATE (or triclopyr if specified above). Follow label directions for Cut Stump Application. Clip off sucker sprouts or paint with glyphosate. See Note on Herbicides.
(11) FOLIAR SPRAY WITH GLYPHOSATE herbicide (see Note on Herbicides). Use a backpack or garden sprayer or mist blower, following label directions. Avoid overspray and/or dripping onto non-target plants, because glyphosate kills most plants except moss. If it rolls off waxy or grass-like foliage, use additional sticker-spreader. Deciduous trees, shrubs, and perennials move nutrients down to the roots in late summer. Glyphosate is particularly effective at this time and when plants have just gone out of flowering. Several invasive species retain their foliage after native plants have lost theirs, and resume growth earlier in spring than most natives. This allows you to treat them without harming the natives. However, the plant must be actively growing for the herbicide to work. Retreatments may be necessary the following year if suckering occurs or the plant hasn't been entirely killed.

NOTE ON HERBICIDES: It is highly recommended that small populations try to be controlled using non-chemical methods wherever feasible. However, for large infestations, and for a few plants specified above, herbicide use is essential. Apply herbicides carefully to avoid non-target plants, glyphosate is the least environmentally damaging herbicide in most cases. Add food coloring for visibility, and a soap-based sticker such as Cide-Kick. Glyphosate is ineffective on some

plants; for these, triclopyr (Garlon) may be indicated. When using herbicides, read the entire label and observe all precautions listed, including proper disposal. If in doubt, call your local Cooperative Extension Service.

Pavement Temp. (°F) and Trend (↑ ↓)	Weather Condition	Maintenance Actions	Application Rate (lbs/per 1000 sq.ft.)			
			Salt Prewetted/Pretreated with salt brine	Salt Prewetted/Pretreated with other blends	Dry salt	Winter sand
>30 ↑	Snow	Plow, treat intersections only				Not recommended
	Frz. Rain	Apply chemical				Not recommended
30 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				Not recommended
25 - 30 ↑	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				Not recommended
25 - 30 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
20 - 25 ↑	Snow or frz. Rain	Plow and Apply chemical				3.25 for frz. Rain
20 - 25 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
15 - 20 ↑	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
15 - 20 ↓	Snow or Frz. Rain	Plow and apply chemical				3.25 for frz. Rain
0 to 15 ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended		Not recommended	5.0 and spot-treat as needed
< 0	Snow	Plow, treat with blends, sand hazardous areas	Not recommended		Not recommended	5.0 and spot-treat as needed

Table 19. Application Rates for Deicing

These rates & table format are based on road application guidelines (Mn Snow & Ice Control Field Handbook, Manual 2005-1). Develop your own application rates by adjusting your current rates incrementally downward toward these guidelines. Where temperature categories overlap, select the rate most applicable to your situation.

Welcome to New Hampshire's Watershed Report Cards built from the DRAFT 2020, 305(b)/303(d)

Each Watershed Report Card covers a single 12-digit Hydrologic Unit Code (HUC12), on average a 34 square mile area. Each Watershed Report Card has three components;

1. REPORT CARD - A one page card that summarizes the overall use support for Aquatic Life Integrity, Primary Contact (i.e. Swimming), and Secondary Contact (i.e. Boating) Designated Uses on every Assessment Unit ID (AUID) within the HUC12.
2. HUC 12 MAP - A map of the watershed with abbreviated labels for each AUID within the HUC12.
3. ASSESSMENT DETAILS - Anywhere from one to forty pages with the detailed assessment information for each and every AUID in the Report Card and Map.

How are the Surface Water Quality Assessment determinations made?

All readily available data with reliable Quality Assurance/Quality Control is used in the biennial surface water quality assessments. For a full understanding of how the Surface Water Quality Standards (Env-Wq 1700) are translated into surface water quality assessments we urge the reader to review the 2020 Consolidated Assessment and Listing Methodology (CALM).

Where can I find more advanced mapping resources?

GIS files are available by assessment cycle at the NHDES FTP site.

I'd like to see the more raw water quality data?

The web mapping tool allows you to download the data used in the assessment of the primary contact and aquatic life designated uses by clicking on the "Data Access Waterbody Data (Aquatic Life and Swimming Uses)" link for any assessment unit.

How are assessments coded in the report card?

Assessment outcomes are displayed on a color scale as well as an alpha numeric scale that provides additional distinctions for the designated use and parameter level assessments as outlined in the table below.

		Severe Not Supporting, Severe	**Poor** Not Supporting, Marginal	**Likely Bad** Insufficient Information – Potentially Not Supporting	**No Data** No Data	**Likely Good** Insufficient Information – Potentially Full Supporting	**Marginal** Full Support, Marginal	**Good** Full Support, Good
CATEGORY	**Description**							
Category 2	Meets standards						2-M or 2-OBS	2-G
Category 3	Insufficient Information			3-PNS	3-ND	3-PAS		
Category 4	Does not Meet Standards;							
4A	TMDL* Completed	4A-P	4A-M or 4A-T					
4B	Other enforceable measure will correct the issue.	4B-P	4B-M or 4B-T					
4C	Non-pollutant (i.e. exotic weeds)	4C-P	4C-M					
Category 5	TMDL* Needed	5-P	5-M or 5-T					

* TMDL stands for Total Maximum Daily Load studies

Watershed 305(b) Assessment Summary Report:

Assessment Cycle: Draft 2020

HUC 12: 010600030607

HUC 12 Name: Lower Isinglass River

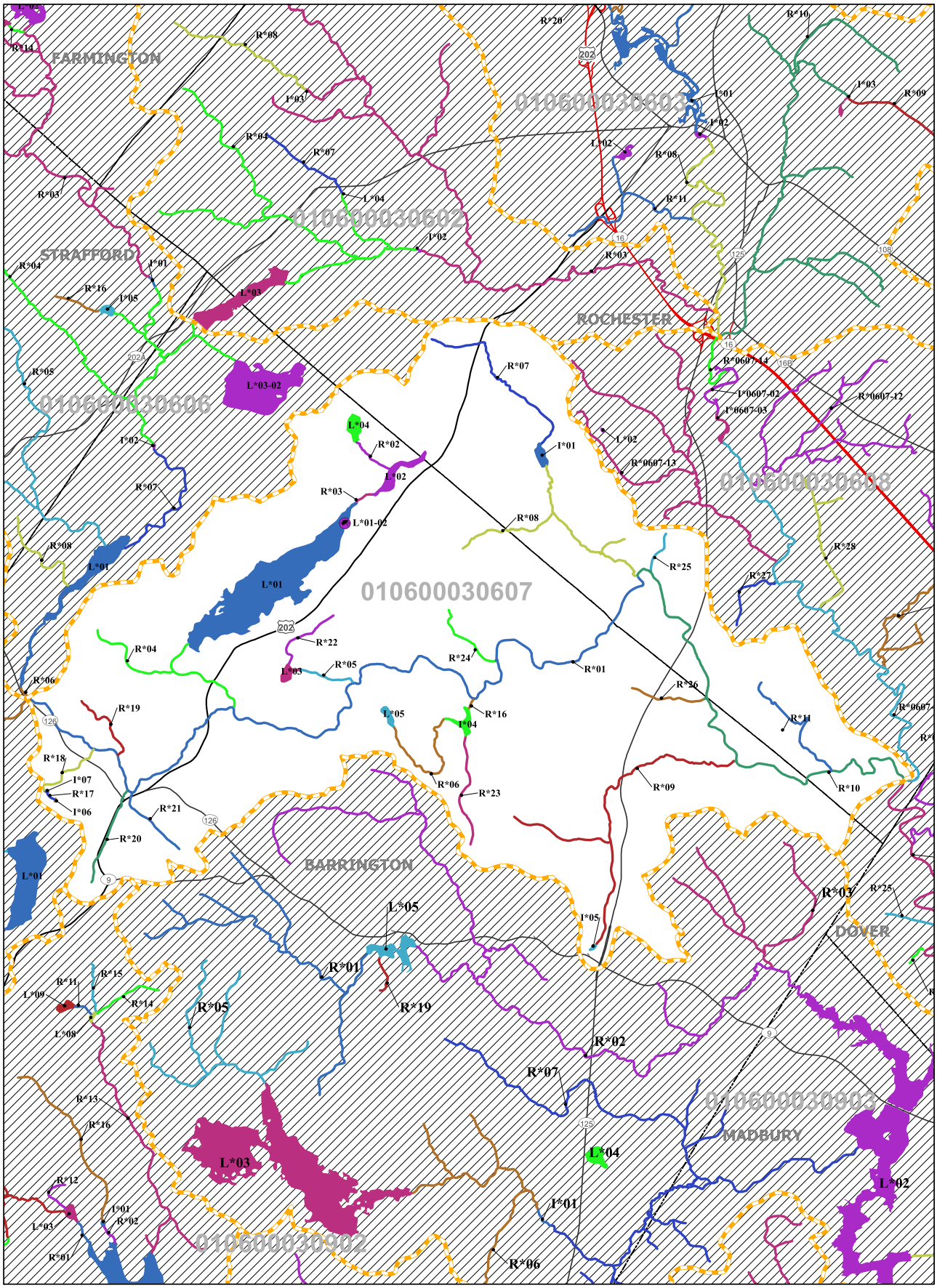
(Locator map on next page only applies to this HUC12)

Good	Meets water quality standards/thresholds by a relatively large margin.
Marginal	Meets water quality standards/thresholds but only marginally.
Likely Good	Limited data available, however, the data that is available suggests that the parameter is Potentially Attaining Standards (PAS).
No Current Data	Insufficient information to make an assessment decision.
Likely Bad	Limited data available, however, the data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.
Poor	Not meeting water quality standards/thresholds. The impairment is marginal.
Severe	Not meeting water quality standards/thresholds. The impairment is more severe and causes poor water quality.

Assessment Unit ID	Map Label	Assessment Unit Name	Aquatic Life	Fish Consump.	Swimming	Boating
NHIMP600030607-01	I*01	Hanson Brook		4A-M	3-ND	3-ND
NHIMP600030607-04	I*04	Unnamed Brook - Scruton Pond Road	3-ND	4A-M	3-ND	3-ND
NHIMP600030607-05	I*05	Unnamed Brook - Fire Protection Pond	3-ND	4A-M	3-ND	3-ND
NHIMP600030607-06	I*06	Unnamed Brook - Golf Course Pond	3-ND	4A-M	3-ND	3-ND
NHIMP600030607-07	I*07	Unnamed Brook - Wildlife And Fire Protection Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030607-01	L*01	Ayers Pond	4A-M	4A-M	3-PAS	3-PAS
NHLAK600030607-01-02	L*01-02	Ayers Pond - Camp Fireside Beach	3-ND	4A-M	2-M	2-G
NHLAK600030607-02	L*02	Little Long Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030607-03	L*03	Farm Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030607-04	L*04	Preston Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030607-05	L*05	Scruton Pond	3-PNS	4A-M	3-PAS	3-ND
NHRIV600030607-01	R*01	Isinglass River	5-M	4A-M	2-G	2-G

NHRIV600030607-02	R*02	Unnamed Brook - From Preston Pond To Little Long Pong	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-03	R*03	Ayers Pond Brook	5-M	4A-M	3-ND	3-ND
NHRIV600030607-04	R*04	Ayers Pond Brook	5-M	4A-M	3-ND	3-ND
NHRIV600030607-05	R*05	Unnamed Brook - From Farm Pond To Isinglass River	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-06	R*06	Scrutton Pond Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-07	R*07	Unnamed Brook - To Hanson Pond	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-08	R*08	Hanson Brook	5-M	4A-M	3-ND	3-ND
NHRIV600030607-09	R*09	Green Hill Brook	5-M	4A-M	3-ND	3-ND
NHRIV600030607-10	R*10	Isinglass River	5-M	4A-M	4A-M	2-G
NHRIV600030607-11	R*11	Unnamed Brook - To Isinglass River	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-16	R*16	Scruton Pond Outlet Brook	5-P	4A-M	3-ND	3-ND
NHRIV600030607-17	R*17	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-18	R*18	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-19	R*19	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-20	R*20	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-21	R*21	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-22	R*22	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-23	R*23	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-24	R*24	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-25	R*25	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-26	R*26	Unnamed Brook	3-ND	4A-M	3-ND	3-ND

AUIDs For HUC12: 010600030607 - Lower Isinglass River



HUC12 Boundaries
Town Boundaries
Major Roads
Interstate Highway
US Highway
State Highway

Assessment Unit Coloring
AUs Ending with:
0 =
1 =
2 =
3 =
4 =
5 =
6 =
7 =
8 =
9 =

N
W E
S

Abbrv. Label	HUC 12
L* 03	010 700060201

AUID = NH LAK700060201-03

Assessment Unit IDs are derived from the HUC12 they reside within. The labels have been shortened on this map for presentation purposes.
Example: the Label "L*03" in HUC12 = 010700060201 represents AUID = "NHLAK700060201-03"
In rare cases where an AUID extends beyond the boundary of a single HUC12, additional portions of the end of the HUC 12 number have also been replaced.

0 0.45 0.9 1.35 1.8 Miles

Scale:1:45,040

S:\WD-Watershed\WQ_Planning\305b_303d\2020\Report_Cards\HUC12_maps

Assessment Unit ID: NHRIV600030607-09
Assessment Unit Name: Green Hill Brook
Town(s) Primary Town is Listed First: Barrington

Size: 3.2240 MILES
Assessment Unit Category: 5-M
Beach: N

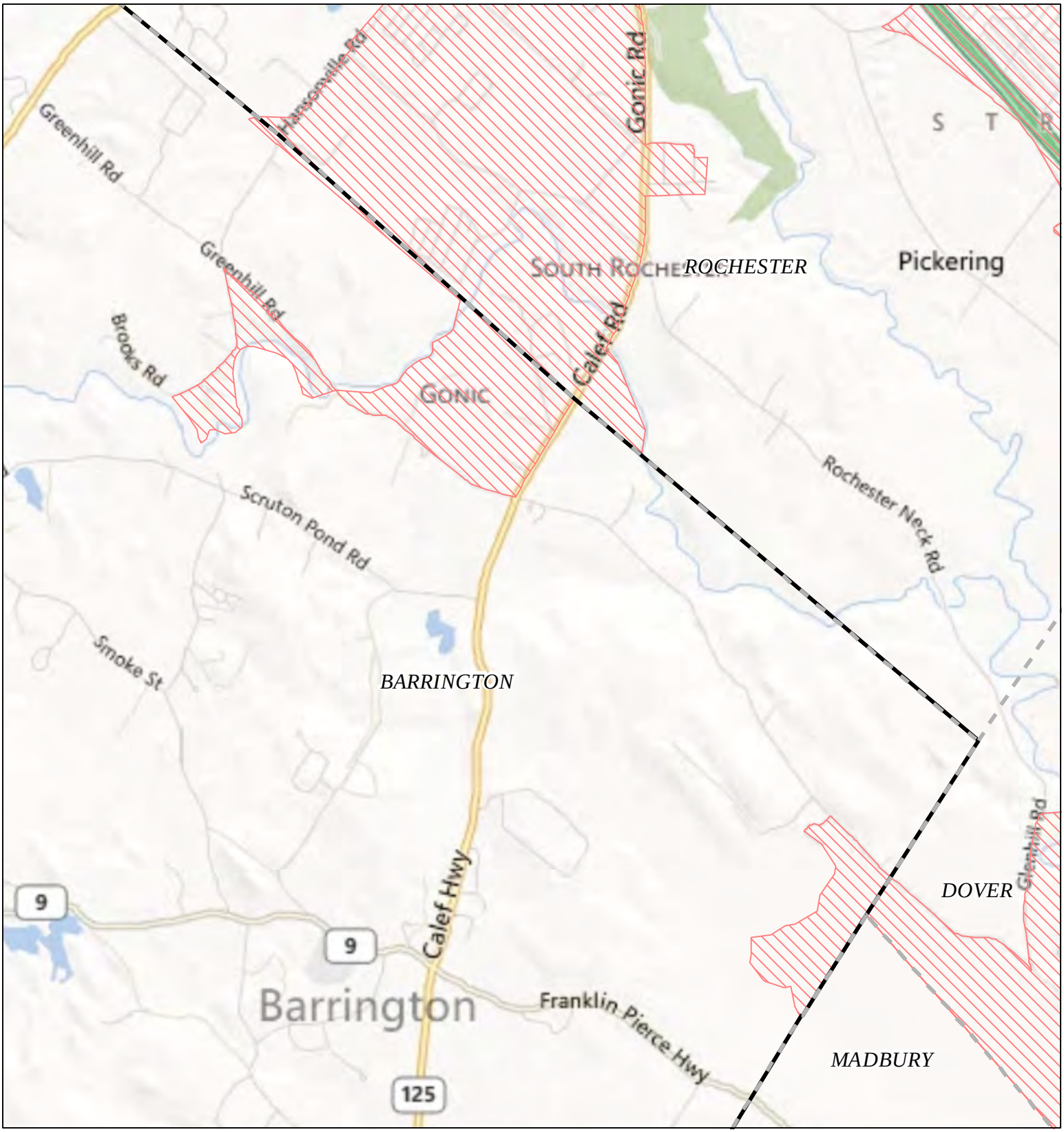
Draft 2020, 305(b)/303(d) - All Reviewed Parameters by Assessment Unit

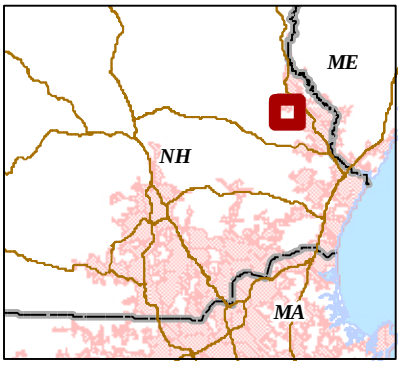
Designated Use Description	Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category	TMDL Priority
Aquatic Life Integrity	5-M	Benthic-Macroinvertebrate Bioassessments (Streams)	N			3-ND	
		Chloride	N	2008	N/A	3-ND	
		Dissolved Oxygen Saturation	N	2008	N/A	3-ND	
		Fishes Bioassessments (Streams)	N			3-ND	
		Oxygen, Dissolved	N	2008	N/A	3-ND	
		Ph	N	2008	2008	5-M	LOW
		Turbidity	N	2008	N/A	3-ND	
Fish Consumption	4A-M	Mercury - Fish Consumption Advisory	N			4A-M	
Potential Drinking Water Supply	2-G						
Primary Contact Recreation	3-ND	Escherichia Coli	N			3-ND	
Secondary Contact Recreation	3-ND	Escherichia Coli	N			3-ND	
Wildlife	3-ND						

Good	Marginal	Likely Good	No Current Data	Likely Bad	Poor	Severe
Meets water quality standards/thresholds by a relatively large margin.	Meets water quality standards/thresholds but only marginally.	Limited data available. The data that is available suggests that the parameter is Potentially Attaining Standards (PAS)	Insufficient information to make an assessment decision.	Limited data available The data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.	Not meeting water quality standards/thresholds. The impairment is marginal.	Not meeting water quality standards/thresholds The impairment is more severe and causes poor water quality.

2018	NHRIV600030603-08	COCHECO RIVER	ROCHESTER	2.428 MILES	Aquatic Life Integrity	Habitat Assessment (Streams)	4C-P				Non-ORW
2018	NHRIV600030603-08	COCHECO RIVER	ROCHESTER	2.428 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030603-08	COCHECO RIVER	ROCHESTER	2.428 MILES	Primary Contact Recreatior	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE E	39272	Non-ORW
2018	NHRIV600030603-10	WILLOW BROOK	ROCHESTER	7.347 MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessme	5-P				Non-ORW
2018	NHRIV600030603-10	WILLOW BROOK	ROCHESTER	7.347 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-P				Non-ORW
2018	NHRIV600030603-10	WILLOW BROOK	ROCHESTER	7.347 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P				Non-ORW
2018	NHRIV600030603-10	WILLOW BROOK	ROCHESTER	7.347 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030603-10	WILLOW BROOK	ROCHESTER	7.347 MILES	Primary Contact Recreatior	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE E	39272	Non-ORW
2018	NHRIV600030603-11	HURD BROOK	ROCHESTER	1.621 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030604-01	UNNAMED BROOKS - TO BOW LAKE	STRAFFORD	4.812 MILES							ORW
2018	NHRIV600030604-02	UNNAMED BROOK - TO BOW LAKE	STRAFFORD	1.323 MILES							ORW
2018	NHRIV600030604-03	UNNAMED BROOK - TO BOW LAKE	STRAFFORD	0.873 MILES							ORW
2018	NHRIV600030604-04	SHERBOURNE BROOK	NORTHWOOD	2.885 MILES							ORW
2018	NHRIV600030604-05	SHERBURNE BROOK - UNNAMED BROOK	NORTHWOOD	0.823 MILES							ORW
2018	NHRIV600030604-06	SHERBURNE BROOK	NORTHWOOD	1.357 MILES							ORW
2018	NHRIV600030604-07	UNNAMED BROOK - Â FROM PINE ROCK F/	STRAFFORD	0.643 MILES							ORW
2018	NHRIV600030604-08	UNNAMED BROOK - TO BOW LAKE	STRAFFORD	0.982 MILES							ORW
2018	NHRIV600030604-09	UNNAMED BROOK	NORTHWOOD	0.479 MILES							ORW
2018	NHRIV600030604-10	UNNAMED BROOK	STRAFFORD	0.609 MILES							ORW
2018	NHRIV600030604-11	UNNAMED BROOK	NORTHWOOD	0.168 MILES							ORW
2018	NHRIV600030604-12	UNNAMED BROOK	STRAFFORD	0.07 MILES							ORW
2018	NHRIV600030604-13	UNNAMED BROOK	STRAFFORD	0.086 MILES							ORW
2018	NHRIV600030604-14	UNNAMED BROOK	NORTHWOOD, STRAFFORD	1.276 MILES							ORW
2018	NHRIV600030604-15	UNNAMED BROOK	NORTHWOOD	0.63 MILES							ORW
2018	NHRIV600030604-16	UNNAMED BROOK	NORTHWOOD	2.178 MILES							ORW
2018	NHRIV600030604-17	UNNAMED BROOK	STRAFFORD	0.388 MILES							ORW
2018	NHRIV600030605-01	UNNAMED BROOKS - TO UNNAMED POND	STRAFFORD	3.474 MILES							ORW
2018	NHRIV600030605-03	UNNAMED BROOK - TO UNNAMED POND	STRAFFORD	1.467 MILES							ORW
2018	NHRIV600030605-04	UNNAMED BROOK - TO WILDLIFE POND	STRAFFORD	0.31 MILES							ORW
2018	NHRIV600030605-05	MOHAWK BROOK	STRAFFORD, BARRINGTON	10.233 MILES							ORW
2018	NHRIV600030605-06	UNNAMED BROOK - TO UNNAMED POND	STRAFFORD	0.75 MILES							ORW
2018	NHRIV600030605-07	UNNAMED BROOK - TO HUCKINS MILL PO	STRAFFORD	0.511 MILES							ORW
2018	NHRIV600030605-08	UNNAMED BROOK - FROM HUCKINS MILL	STRAFFORD	0.469 MILES							ORW
2018	NHRIV600030605-09	PENNY BROOK	STRAFFORD	1.912 MILES							ORW
2018	NHRIV600030605-10	ISINGLASS RIVER	STRAFFORD	0.459 MILES							ORW
2018	NHRIV600030605-11	ISINGLASS RIVER	STRAFFORD, BARRINGTON	4.467 MILES							ORW
2018	NHRIV600030605-12	UNNAMED BROOK - TO ISINGLASS RIVER	STRAFFORD	2.183 MILES							ORW
2018	NHRIV600030605-13	UNNAMED BROOK - TO ISINGLASS RIVER	STRAFFORD	0.729 MILES							ORW
2018	NHRIV600030605-14	STONEHOUSE BROOK - HALL BROOK	BARRINGTON, NORTHWOOD, STRAFFORD	7.02 MILES							ORW
2018	NHRIV600030605-15	NIPPO BROOK	BARRINGTON, STRAFFORD	12.125 MILES							ORW
2018	NHRIV600030605-16	ISINGLASS RIVER	STRAFFORD, BARRINGTON	0.778 MILES	Primary Contact Recreatior	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE E	39273	Review OneStop GIS
2018	NHRIV600030605-17	UNNAMED BROOK	STRAFFORD	1.609 MILES							ORW
2018	NHRIV600030605-18	UNNAMED BROOK	STRAFFORD	0.865 MILES							ORW
2018	NHRIV600030605-19	UNNAMED BROOK	STRAFFORD	0.359 MILES							ORW
2018	NHRIV600030605-20	UNNAMED BROOK	STRAFFORD	0.46 MILES							ORW
2018	NHRIV600030606-03	BERRYS RIVER	STRAFFORD, FARMINGTON, ROCHESTER	5.2 MILES	Aquatic Life Integrity	pH	5-P				Non-ORW
2018	NHRIV600030606-04	BERRYS RIVER - UNNAMED BROOK	STRAFFORD, BARRINGTON	5.705 MILES	Aquatic Life Integrity	Low flow alterations	4C-P				Non-ORW
2018	NHRIV600030606-04	BERRYS RIVER - UNNAMED BROOK	STRAFFORD, BARRINGTON	5.705 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030606-06	BERRY RIVER - FROM LONG POND TO ISIN(	BARRINGTON	0.107 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030606-06	BERRY RIVER - FROM LONG POND TO ISIN(	BARRINGTON	0.107 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M				Non-ORW
2018	NHRIV600030606-06	BERRY RIVER - FROM LONG POND TO ISIN(	BARRINGTON	0.107 MILES	Aquatic Life Integrity	pH	5-P				Non-ORW
2018	NHRIV600030606-07	BERRYS RIVER	BARRINGTON	1.26 MILES	Aquatic Life Integrity	pH	5-P				Non-ORW
2018	NHRIV600030607-01	ISINGLASS RIVER	BARRINGTON, ROCHESTER	7.336 MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessme	5-M				Non-ORW
2018	NHRIV600030607-01	ISINGLASS RIVER	BARRINGTON, ROCHESTER	7.336 MILES	Aquatic Life Integrity	pH	5-P				Non-ORW
2018	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON	0.128 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M				Non-ORW
2018	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON	0.128 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON	1.691 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M				Non-ORW
2018	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON	1.691 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030607-08	HANSON BROOK	ROCHESTER, BARRINGTON	2.411 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030607-09	GREEN HILL BROOK	BARRINGTON	3.224 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	3.796 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	3.796 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	3.796 MILES	Primary Contact Recreatior	Escherichia coli	4A-M	8/29/2011	58 NH BACTERIA IMPAIRED WA	40663	Non-ORW
2018	NHRIV600030607-15	COCHECO RIVER	ROCHESTER	4.414 MILES	Aquatic Life Integrity	Iron	5-M				Non-ORW
2018	NHRIV600030607-15	COCHECO RIVER	ROCHESTER	4.414 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P				Non-ORW
2018	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071 MILES	Aquatic Life Integrity	pH	5-P				Non-ORW
2018	NHRIV600030608-02	BLACKWATER BROOK-CLARK BROOK	ROCHESTER, DOVER, SOMERSWORTH	15.228 MILES	Primary Contact Recreatior	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE E	39272	Non-ORW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	3.267 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	3.267 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	3.267 MILES	Primary Contact Recreatior	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE E	39272	Non-ORW
2018	NHRIV600030608-04	REYNERS BROOK	DOVER	1.77 MILES	Primary Contact Recreatior	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE E	39272	Non-ORW
2018	NHRIV600030608-05	COCHECO RIVER	DOVER	2.06 MILES	Aquatic Life Integrity	pH	5-M				Non-ORW

2020	NHRIV600030603-10	WILLOW BROOK	ROCHESTER	Yes	7.347	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments (Streams)	5-P	LOW	N	2011	2011
2020	NHRIV600030603-10	WILLOW BROOK	ROCHESTER	Yes	7.347	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-P	LOW	N	2017	2011
2020	NHRIV600030603-10	WILLOW BROOK	ROCHESTER	Yes	7.347	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2017	2011
2020	NHRIV600030603-10	WILLOW BROOK	ROCHESTER	Yes	7.347	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2017	2017
2020	NHRIV600030603-11	HURD BROOK	ROCHESTER	Yes	1.621	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2007	2007
2020	NHRIV600030605-05	MOHAWK BROOK	STRAFFORD, BARRINGTON		10.233	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2009	2007
2020	NHRIV600030605-05	MOHAWK BROOK	STRAFFORD, BARRINGTON		10.233	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2009	2007
2020	NHRIV600030605-05	MOHAWK BROOK	STRAFFORD, BARRINGTON		10.233	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2009	2009
2020	NHRIV600030605-10	ISINGLASS RIVER	STRAFFORD		0.459	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2019	2016
2020	NHRIV600030605-11	ISINGLASS RIVER	STRAFFORD, BARRINGTON		4.467	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2019	2019
2020	NHRIV600030605-12	UNNAMED BROOK - TO ISINGLASS RIVER	STRAFFORD		2.183	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2016	2016
2020	NHRIV600030605-14	STONEHOUSE BROOK - HALL BROOK	BARRINGTON, NORTHWOOD, STRAFFORD		7.020	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2009	2009
2020	NHRIV600030605-14	STONEHOUSE BROOK - HALL BROOK	BARRINGTON, NORTHWOOD, STRAFFORD		7.020	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2009	2009
2020	NHRIV600030605-15	NIPPO BROOK	BARRINGTON, STRAFFORD		12.125	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2009	2007
2020	NHRIV600030605-15	NIPPO BROOK	BARRINGTON, STRAFFORD		12.125	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2009	2009
2020	NHRIV600030605-16	ISINGLASS RIVER	STRAFFORD, BARRINGTON		0.778	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2019	2003
2020	NHRIV600030605-16	ISINGLASS RIVER	STRAFFORD, BARRINGTON		0.778	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2019	2019
2020	NHRIV600030606-03	BERRYS RIVER	STRAFFORD, FARMINGTON, ROCHESTER		5.200	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2009	2009
2020	NHRIV600030606-04	BERRYS RIVER - UNNAMED BROOK	STRAFFORD, BARRINGTON		5.705	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2007	2007
2020	NHRIV600030606-06	BERRY RIVER - FROM LONG POND TO ISINGLASS RIVER	BARRINGTON		0.107	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2009	2007
2020	NHRIV600030606-06	BERRY RIVER - FROM LONG POND TO ISINGLASS RIVER	BARRINGTON		0.107	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M	LOW	N	2009	2008
2020	NHRIV600030606-06	BERRY RIVER - FROM LONG POND TO ISINGLASS RIVER	BARRINGTON		0.107	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2009	2009
2020	NHRIV600030606-07	BERRYS RIVER	BARRINGTON		1.260	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2009	2009
2020	NHRIV600030607-01	ISINGLASS RIVER	BARRINGTON, ROCHESTER	Yes	7.336	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments (Streams)	5-M	LOW	N	2015	NA
2020	NHRIV600030607-01	ISINGLASS RIVER	BARRINGTON, ROCHESTER	Yes	7.336	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2019	2019
2020	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON		0.128	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M	LOW	N	2009	2009
2020	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON		0.128	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2019	2019
2020	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON		1.691	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M	LOW	N	2009	2009
2020	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON		1.691	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2019	2019
2020	NHRIV600030607-08	HANSON BROOK	ROCHESTER, BARRINGTON	Yes	2.411	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2009	2009
2020	NHRIV600030607-09	GREEN HILL BROOK	BARRINGTON		3.224	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2008	2008
2020	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	Yes	3.796	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2019	2007
2020	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	Yes	3.796	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2019	2019
2020	NHRIV600030607-15	COCHECO RIVER	ROCHESTER		4.414	MILES	Aquatic Life Integrity	Iron	5-M	LOW	N	2013	2013
2020	NHRIV600030607-15	COCHECO RIVER	ROCHESTER		4.414	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2019	2019
2020	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON		0.071	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2008	2008
2020	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON		0.071	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2008	2008
2020	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON		0.071	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2008	2008
2020	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	Yes	3.267	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2013	2007
2020	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	Yes	3.267	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2013	2013
2020	NHRIV600030608-05	COCHECO RIVER	DOVER	Yes	2.060	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2013	2009
2020	NHRIV600030608-06	INDIAN BROOK	DOVER	Yes	1.106	MILES	Aquatic Life Integrity	Chloride	5-P	LOW	N	2009	2009
2020	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	Yes	4.983	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2009	2009
2020	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	Yes	4.983	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2009	2009
2020	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	Yes	4.983	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2009	2009
2020	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	Yes	2.856	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2009	2009
2020	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	Yes	2.856	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2009	2009
2020	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	Yes	2.856	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2009	2009
2020	NHRIV600030608-14	UNNAMED TRIB. TO COCHECO RIVER, DOVER (FROM	DOVER	Yes	0.169	MILES	Aquatic Life Integrity	Iron	5-M	LOW	N	2013	2013
2020	NHRIV600030608-15	BERRY BROOK	DOVER	Yes	1.106	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments (Streams)	5-M	LOW	N	2001	2001
2020	NHRIV600030608-15	BERRY BROOK	DOVER	Yes	1.106	MILES	Aquatic Life Integrity	Chloride	5-M	LOW	N	2016	2016
2020	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER TRIBUTARIES	NORTHWOOD, DEERFIELD		13.652	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-P	LOW	N	2016	2014
2020	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER TRIBUTARIES	NORTHWOOD, DEERFIELD		13.652	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2016	2016
2020	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER TRIBUTARIES	NORTHWOOD, DEERFIELD		13.652	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2016	2016
2020	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD		10.734	MILES	Aquatic Life Integrity	Aluminum	5-M	LOW	N	2006	2006
2020	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD		10.734	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments (Streams)	5-P	LOW	N	2003	2003
2020	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD		10.734	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2006	2006
2020	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD		7.767	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-P	LOW	N	2017	2016
2020	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD		7.767	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2017	2017
2020	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD		7.767	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2017	2017
2020	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD		0.041	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2012	2007
2020	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD		0.041	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2012	2012
2020	NHRIV600030702-06	NORTH BRANCH RIVER - UNNAMED BROOKS	DEERFIELD, CANDIA		5.185	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2017	2016
2020	NHRIV600030702-06	NORTH BRANCH RIVER - UNNAMED BROOKS	DEERFIELD, CANDIA		5.185	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2017	2017
2020	NHRIV600030702-06	NORTH BRANCH RIVER - UNNAMED BROOKS	DEERFIELD, CANDIA		5.185	MILES	Aquatic Life Integrity	pH	5-P	LOW	N	2017	2017
2020	NHRIV600030702-07	NORTH BRANCH RIVER - UNNAMED BROOKS	CANDIA, DEERFIELD		10.013	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2017	2017
2020	NHRIV600030702-07	NORTH BRANCH RIVER - UNNAMED BROOKS	CANDIA, DEERFIELD		10.013	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2017	2017
2020	NHRIV600030702-07	NORTH BRANCH RIVER - UNNAMED BROOKS	CANDIA, DEERFIELD		10.013	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2017	2017
2020	NHRIV600030703-01	UNNAMED BROOK - TO ONWAY LAKE	RAYMOND, CANDIA		5.450	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments (Streams)	5-P	LOW	N	1998	1998
2020	NHRIV600030703-01	UNNAMED BROOK - TO ONWAY LAKE	RAYMOND, CANDIA		5.450	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2019	2019
2020	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD, NOTTINGHAM	Yes	4.340	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	LOW	N	2005	2004
2020	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD, NOTTINGHAM	Yes	4.340	MILES	Aquatic Life Integrity	Lead	5-M	LOW	N	2000	2000
2020	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD, NOTTINGHAM	Yes	4.340	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	LOW	N	2005	2004
2020	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD, NOTTINGHAM	Yes	4.340	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2005	2005
2020	NHRIV600030703-05	LAMPREY RIVER	RAYMOND	Yes	2.647	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2019	2019
2020	NHRIV600030703-09	LAMPREY RIVER	RAYMOND	Yes	2.295	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2006	2006
2020	NHRIV600030703-10	LAMPREY RIVER	RAYMOND	Yes	0.558	MILES	Aquatic Life Integrity	pH	5-M	LOW	N	2006	2004





NPDES Phase II Stormwater Program
Automatically Designated MS4 Areas

Barrington NH

Regulated Area (2000 + 2010 Urbanized Area)

0 1 2 Kilometers
0 1 2 Miles

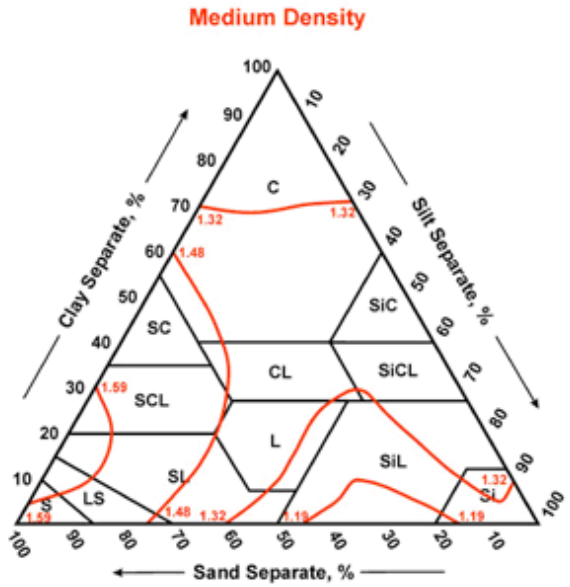
Town Population: 8576
Regulated Population: 159
(Populations estimated from 2010 Census)

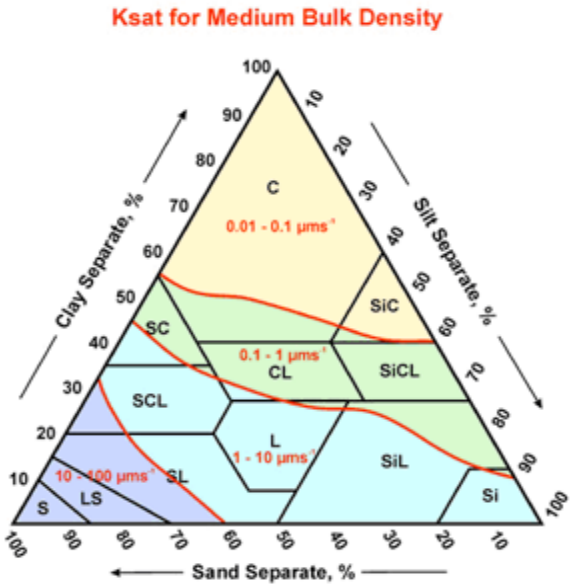
EPA

Urbanized Areas, Town Boundaries:
US Census (2000, 2010)

US EPA Region 1 GIS Center Map #8824, 11/19/2012

K_{sat} VALUES
FOR
NEW HAMPSHIRE SOILS
(Including Hydrologic and DES Soil Lot Sizing Groups)





From: Guide for Estimating Ksat from Soil Properties (**Exhibit 618-9**). (http://soils.usda.gov/technical/handbook/contents/part618ex.html)

Sponsored by the Society of Soil Scientists of Northern New England
SSSNNE Special Publication No. 5
September, 2009

K_{sat} VALUES FOR NEW HAMPSHIRE SOILS

ABOUT THE SOCIETY OF SOIL SCIENTISTS OF NORTHERN NEW ENGLAND

The Society of Soil Scientists of Northern New England (SSSNNE) is a non-profit professional organization of soil scientists, both in the private and public sectors, which is dedicated to the advancement of soil science. The Society fosters the profession of soil classification, mapping and interpretation, and encourages the dissemination of information concerning soil science. With the intent of contributing to the general human welfare, the Society seeks to educate the public on the wise use of soils and the associated natural resources.

INTRODUCTION

The publication "K_{sat} Values for New Hampshire Soils" is designed to assist soil scientists, engineers, and other professionals by assembling tables of existing data for all soil series currently on the state soil legend with regard to K_{sat} values and hydrologic groupings (Hyd.Grp.). The need for this information has become more important since the adoption by the New Hampshire Department of Environmental Services of the revised Alteration of Terrain rules for stormwater management. Additional information has been provided for each soil series with regard to landform, temperature regime (Temp.), soil textures, NHDES Soil Lot Size Groupings (Group), whether the soil is a Spodosol (Spodosol?) and other information which will be valuable to a variety of soil information users.

The data for each soil series has been sorted 3 ways for ease of searching:

Table A-Sorted by Numerical Legend
Table B-Sorted by Soil Series Name
Table C-Sorted by NHDES Soil Group for Establishing Lot Size

The report represents cumulative efforts by private soil scientists and NHDES staff with assistance from the USDA Natural Resource Conservation Service.

Comments or inquires on the information in this publication may be directed to the Board of Directors at the following address:

Society of Soil Scientists
of Northern New England
PO Box 76
Durham, NH 03824

SATURATED HYDRAULIC CONDUCTIVITY (K_{SAT})

K_{sat} refers to the ease with which pores in a saturated soil transmit water. The estimates presented here are expressed in terms of inches per hour (NRCS official data presents K_{sat} in both micrometers per second and inches per hour). K_{sat} values are based on soil characteristics observed in the field, particularly structure, consistence, porosity, and texture. (USDA NRCS, Web Soil Survey)

Saturated flow occurs when the soil water pressure is positive; that is, when the soil matric potential is zero (satiated wet condition). In most soils this situation takes place when about 95 percent of the total pore space is filled with water. The remaining 5 percent is filled with entrapped air. Saturated hydraulic conductivity cannot be used to describe water movement under unsaturated conditions. (Soil Survey Manual, 1993)

It is commonly known that soil features (and thus data) for a certain soil series name may be slightly different from one county soil survey to the next and the range in characteristics (via the Typical Pedon) may be slightly different. For example – a Marlow soil (series) in Carroll County may have a higher sand content in its B horizon as opposed to a Marlow soil (series) in Coos County; resulting in a slightly different Ksat range for the B horizon.

The K_{sat} data for this publication was obtained from the USDA-NRCS Soil Data Mart using the Typical Pedon from the county that best reflected the soil and/or had the most acres of that soil. This data is presented in B and C horizons only as it is assumed that the topsoil (A or A_p horizon) will be removed in typical construction practices.

References:

Web Soil Survey. *Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/.*

Soil Data Mart. *http://soildatamart.nrcs.usda.gov/.*

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

HYDROLOGIC SOIL GROUPS

Hydrologic group is a group of soils having the same runoff potential under similar storm and cover conditions.

Hydrologic groups are used in equations that estimate runoff from rainfall. These estimates are needed for solving hydrologic problems that arise in planning stormwater management, watershed protection, and flood-prevention projects and for planning or designing structures for the use, control, and disposal of water.

Classifications assigned to soils were based on the use of rainfall-runoff data from small watersheds and infiltrometer plots. From these data, relationships between soil properties and hydrologic groups were established. Assignment of soils to hydrologic groups is based on the relationship between soil properties and hydrologic groups. Wetness characteristics, permeability after prolonged wetting, and depth to very slowly permeable layers are properties that assist in estimating hydrologic groups. Minimum annual steady ponded infiltration rate for a bare ground surface determines the hydrologic soil groups.

Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonally high water table, intake rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. (The influence of ground cover is treated independently, not in hydrologic soil groups.).

The soils in the United States are placed into four groups, A, B, C, and D, and three dual classes, *A/D, B/D,* and *C/D.* In the definitions of the classes, infiltration rate is the rate at which water enters the soil at the surface and is controlled by the surface conditions. Transmission rate is the rate at which water moves in the soil and is controlled by soil properties. Definitions of the classes are as follows:

Group A- Saturated hydraulic conductivity is very high or in the upper half of high and internal free water occurrence is very deep. Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil. Group A soils typically have less than 10 percent clay and more than 90 percent sand or gravel and have gravel or sand textures. Some soils having loamy sand, sandy loam, loam or silt loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments. The limits on the diagnostic physical characteristics of group A are as follows. The saturated hydraulic conductivity of all soil layers exceeds 40.0 micrometers per second (5.67 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a water impermeable layer are in group A if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 10 micrometers per second (1.42 inches per hour).

Group B- Saturated hydraulic conductivity is in the lower half of high or in the upper half of moderately high and free water occurrence is deep or very deep. Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded. Group B soils typically have between 10 percent and 20 percent clay and 50 percent to 90 percent sand and have loamy sand or sandy loam textures. Some soils having loam, silt loam, silt, or sandy clay loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments. The limits on the diagnostic physical characteristics of group B are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 50 centimeters [20 inches] ranges from 10.0 micrometers per second (1.42 inches per hour) to 40.0 micrometers per second (5.67 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a water impermeable layer or water table are in group B if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 4.0 micrometers per second (0.57 inches per hour) but is less than 10.0 micrometers per second (1.42 inches per hour).

Group C- Saturated hydraulic conductivity is in the lower half of moderately high or in the upper half of moderately low and internal free water occurrence is deeper than shallow. Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted. Group C soils typically have between 20 percent and 40 percent clay and less than 50 percent sand and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures. Some soils having clay, silty clay, or sandy clay textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments. The limits on the diagnostic physical characteristics of group C are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 50 centimeters [20 inches] is between 1.0 micrometers per second (0.14 inches per hour) and 10.0 micrometers per second (1.42 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a restriction or water table are in group C if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 0.40 micrometers per second (0.06 inches per hour) but is less than 4.0 micrometers per second (0.57 inches per hour). .

Group D- Saturated hydraulic conductivity is below the upper half of moderately low, and/or internal free water occurrence is shallow or very shallow and transitory through permanent. Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted. Group D soils typically have greater than 40 percent clay, less than 50 percent sand, and have clayey textures. In some areas, they also have high shrink-swell potential. All soils with a depth to a water impermeable layer less than 50 centimeters [20 inches] and all soils with a water table within 60 centimeters [24 inches] of the surface are in this group, although some may have a dual classification, as described in the next section, if they can be adequately drained. The limits on the physical diagnostic characteristics of group D are as follows. For soils with a water impermeable layer at a depth between 50 centimeters and 100 centimeters [20 and 40 inches], the saturated hydraulic conductivity in the least transmissive soil layer is less than or equal to 1.0 micrometers per second (0.14 inches per hour). For soils that are deeper than 100 centimeters [40 inches] to a restriction or water table, the saturated hydraulic

conductivity of all soil layers within 100 centimeters [40 inches] of the surface is less than or equal to 0.40 micrometers per second (0.06 inches per hour).

Dual hydrologic soil groups-Certain wet soils are placed in group D based solely on the presence of a water table within 60 centimeters [24 inches] of the surface even though the saturated hydraulic conductivity may be favorable for water transmission. If these soils can be adequately drained, then they are assigned to dual hydrologic soil groups *(A/D, B/D,* and *C/D)* based on their saturated hydraulic conductivity and the water table depth when drained. The first letter applies to the drained condition and the second to the undrained condition. For the purpose of hydrologic soil group, adequately drained means that the seasonal high water table is kept at least 60 centimeters [24 inches] below the surface in a soil where it would be higher in a natural state.

References:

National Engineering Handbook, Natural Resource Conservation Service, U.S. Department of Agriculture.

Soil Data Mart. *http://soildatamart.nrcs.usda.gov/*.

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

TABLE A

NUMERICAL LEGEND

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Occum	1	0.6	2.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Suncook	2	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Lim	3	0.6	2.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Pootatuck	4	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Rippowam	5	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Saco	6	0.6	2.0	6.00	20.0	D	6	Flood Plain (Bottom Land)	mesic	silty	no	strata
Hadley	8	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Winooski	9	0.6	6.0	0.60	6.0	B		Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Merrimac	10	2.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Gloucester	11	6.0	20.0	6.00	20.0	A	1	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Hinckley	12	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Sheepscot	14	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Searsport	15	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Saugatuck	16	0.06	0.2	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Masardis	23	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Windsor	26	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	sandy	no	
Groveton	27	0.6	2.0	0.60	6.0	B	2	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Madawaska	28	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Woodbridge	29	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Unadilla	30	0.6	2.0	2.00	20.0	B	2	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Hartland	31	0.6	2.0	0.20	2.0	B	2	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Scitico	33	0.0	0.2	0.00	0.2	C	5	Silt and Clay Deposits	mesic	fine	no	
Wareham	34	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Melrose	37	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Millis	39					C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Montauk	44	0.6	6.0	0.06	0.6	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Henniker	46	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Madawaska, aquentic	48	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Whitman	49	0.0	0.2	0.00	0.2	D	6	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Hermon	55	2.0	20.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Waumbeck	58	2.0	20.0	6.00	20.0	B	3	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Charlton	62	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Paxton	66	0.6	2.0	0.00	0.2	C	3	Firm, platy, loamy till	mesic	loamy	no	
Sutton	68	0.6	6.0	0.60	6.0	B	3	Loose till, loamy textures	mesic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Marlow	76	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Peru	78	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	
Thorndike	84	0.6	2.0	0.60	2.0	C/D	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Hollis	86	0.6	6.0	0.60	6.0	C/D	4	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Winnecook	88	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Hogback	91	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Lyman	92	2.0	6.0	2.00	6.0	A/D	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Woodstock	93	2.0	6.0	2.00	6.0	C/D	4	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep
Rawsonville	98	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Tunbridge	99	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Ondawa	101	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Sunday	102	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Winooski	103	0.6	6.0	0.60	6.0	B	3	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Podunk	104	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Rumney	105	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	frigid	loamy	no	
Hadley	108	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Limerick	109	0.6	2.0	0.60	2.0	C	5	Flood Plain (Bottom Land)	mesic	silty	no	
Scarboro	115	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Finch	116					C	3	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)
Sudbury	118	2.0	6.0	2.00	20.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand
Telos	123	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Chesuncook	126	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Allagash	127	0.6	2.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Elliottsville	128	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Hitchcock	130	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Burnham	131	0.2	6.0	0.02	0.2	D	6	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over silt
Dartmouth	132	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Monson	133	0.6	2.0	0.60	2.0	D	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Maybid	134	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	mesic	fine	no	silt over clay
Shapleigh	136					C/D	4	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Monadnock	142	0.6	2.0	2.00	6.0	B	2	Loose till, sandy textures	frigid	loamy over sandy, sandy-skeletal	yes	gravelly loamy sand in C
Acton	146	2.0	20.0	2.00	20.0	B	3	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Vassalboro	150					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Success	154	2.0	6.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	cemented
Canterbury	166	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Sunapee	168	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	
Waskish	195					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Ondawa	201	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Sunday	202	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Fryeburg	208	0.6	2.0	2.00	6.0	B	2	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Charles	209	0.6	100.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	silty	no	
Warwick	210	2.0	6.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Naumburg	214	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Boscawen	220	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Bemis	224	0.6	0.2	0.00	0.2	C	5	Firm, platy, loamy till	cryic	loamy	no	
Bice	226	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	no	sandy loam
Lanesboro	228	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Poocham	230	0.6	2.0	0.20	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Buxton	232	0.1	0.6	0.00	0.2	C	3	Silt and Clay Deposits	frigid	fine	no	silty clay
Scantic	233	0.0	0.2	0.00	0.2	D	5	Silt and Clay Deposits	frigid	fine	no	
Biddeford	234	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	frigid	fine	no	organic over clay
Buckland	237	0.6	2.0	0.06	0.2	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Elmridge	238	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Brayton	240	0.6	2.0	0.06	0.6	C	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Lyme	246	0.6	6.0	0.60	6.0	C	5	Loose till, sandy textures	frigid	loamy	no	
Millsite	251	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Macomber	252	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Lombard	259	0.6	6.0	2.00	20.0	C/D	2	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Sunapee var	269	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	frigid dystrudept
Chatfield Var.	289	0.6	6.0	0.60	6.0	B	3	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Greenwood	295					A/D	6	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Catden	296					A/D	6	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Lovewell	307	0.6	2.0	0.60	2.0	B	3	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Quonset	310	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Deerfield	313	6.0	20.0	20.00	100.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	single grain in C

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Pipestone	314					B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Mashpee	315	6.0	20.0	6.00	20.0	B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Bernardston	330	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Roundabout	333	0.2	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Pittstown	334	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Elmwood	338	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Stissing	340	0.6	2.0	0.06	0.2	C	5	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Cardigan	357	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Kearsarge	359	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Dutchess	366	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Dixfield	378	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Timakwa	393			6.00	100.0	D	6	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Chocorua	395			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Ipswich	397					D	6	Tidal Flat	mesic	hemic/sapric	no	deep organic
Suncook	402	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Metallak	404	6.0	100.0	6.00	100.0	B	3	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Medomak	406	0.6	2.0	0.60	2.0	D	6	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Haven	410	0.6	2.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Duane	413	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Moosilauke	414	6.0	20.0	6.00	20.0	C	5	Loose till, sandy textures	frigid	sandy	no	
Grange	433	0.6	2.0	0.60	2.0	C	5	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Swanton	438	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Shaker	439	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Chichester	442	0.6	2.0	2.00	6.0	B		Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Newfields	444	0.6	2.0	0.60	2.0	B	3	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Scituate	448	0.6	2.0	0.06	0.2	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Metacomet	458	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Pennichuck	460	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Gilmanton	478	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Ossipee	495			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Natchaug	496			0.20	2.0	D	6	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Pawcatuck	497			20.00	100.0	D	6	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Abenaki	501	0.6	2.0	6.00	99.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Cohas	505	0.6	2.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Hoosic	510	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Ninigret	513	0.6	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Leicester	514	0.6	6.0	0.60	20.0	C	5	Loose till, loamy textures	mesic	loamy	no	
Au Gres	516					B	5	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Machias	520	2.0	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Stetson	523	0.6	6.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Caesar	526	20.0	100.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	coarse sand	no	
Scio	531	0.6	2.0	0.60	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	gravelly sand in 2C
Belgrade	532	0.6	2.0	0.06	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Raynham	533	0.2	2.0	0.06	0.2	C	5	Terraces and glacial lake plains	mesic	silty	no	
Binghamville	534	0.2	2.0	0.06	0.2	D	5	Terraces and glacial lake plains	mesic	silty	no	
Suffield	536	0.6	2.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Squamscott	538	6.0	20.0	0.06	0.6	C	5	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Raypol	540	0.6	2.0	6.00	100.0	D	5	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Walpole	546	2.0	6.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Peacham	549	0.6	2.0	0.00	0.2	D	6	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over loam
Skerry	558	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Plaisted	563	0.6	2.0	0.06	0.6	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Howland	566	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Monarda	569	0.2	2.0	0.02	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Bangor	572	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Dixmont	578	0.6	2.0	0.60	2.0	C	3	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Cabot	589	0.6	2.0	0.06	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Westbrook	597			0.00	2.0	D	6	Tidal Flat	mesic	loamy	no	organic over loam
Mundal	610	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	gravelly sandy loam in Cd
Croghan	613	20.0	100.0	20.00	100.0	B	3	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Kinsman	614	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Salmon	630	0.6	2.0	0.60	2.0	B	2	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Nicholville	632	0.6	2.0	0.60	2.0	C	3	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Pemi	633	0.6	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	
Pillsbury	646	0.6	2.0	0.06	0.2	C	5	Firm, platy, loamy till	frigid	silty	no	
Ridgebury	656	0.6	6.0	0.00	0.2	C	5	Firm, platy, loamy till	mesic	loamy	no	
Canaan	663	2.0	20.0	2.00	20.0	C	4	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Redstone	665	2.0	6.0	6.00	20.0	A	1	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Sisk	667	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Surplus	669	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Glebe	671	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Saddleback	673	0.6	2.0	0.60	2.0	C/D	4	Loose till, bedrock	cryic	loamy	yes	less than 20 in. deep
Ricker	674	2.0	6.0	2.00	6.0	A	4	Organic over bedrock (up to 4" of mineral)	cryic	fibric to hemic	no	well drained, less than 20 in. deep
Houghtonville	795	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Matunuck	797			20.00	100.0	D	6	Tidal Flat	mesic	sandy	no	organic over sand
Meadowsedge	894					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Bucksport	895					D	6	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Colonel	927	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Pondicherry	992			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Wonsqueak	995			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Glover	NA	0.6	2.0	0.60	2	D	4	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep

no longer recognized

organic materials

TABLE B

SOIL SERIES

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Abenaki	501	0.6	2.0	6.00	99.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Acton	146	2.0	20.0	2.00	20.0	B	3	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Allagash	127	0.6	2.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Au Gres	516					B	5	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Bangor	572	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Belgrade	532	0.6	2.0	0.06	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Bemis	224	0.6	0.2	0.00	0.2	C	5	Firm, platy, loamy till	cryic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Bernardston	330	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Bice	226	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	no	sandy loam
Biddeford	234	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	frigid	fine	no	organic over clay
Binghamville	534	0.2	2.0	0.06	0.2	D	5	Terraces and glacial lake plains	mesic	silty	no	
Boscawen	220	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Brayton	240	0.6	2.0	0.06	0.6	C	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Buckland	237	0.6	2.0	0.06	0.2	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Bucksport	895					D	6	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Burnham	131	0.2	6.0	0.02	0.2	D	6	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over silt
Buxton	232	0.1	0.6	0.00	0.2	C	3	Silt and Clay Deposits	frigid	fine	no	silty clay
Cabot	589	0.6	2.0	0.06	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Caesar	526	20.0	100.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	coarse sand	no	
Canaan	663	2.0	20.0	2.00	20.0	C	4	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Canterbury	166	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Cardigan	357	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Catden	296					A/D	6	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Charles	209	0.6	100.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	silty	no	
Charlton	62	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Chatfield Var.	289	0.6	6.0	0.60	6.0	B	3	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Chesuncook	126	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Chichester	442	0.6	2.0	2.00	6.0	B		Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Chocorua	395			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Cohas	505	0.6	2.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Colonel	927	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Croghan	613	20.0	100.0	20.00	100.0	B	3	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	6.0	20.0	20.00	100.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	0.6	2.0	0.60	2.0	C	3	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Dutchess	366	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elliottsville	128	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Elmridge	238	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116					C	3	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Fryeburg	208	0.6	2.0	2.00	6.0	B	2	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Gilmanton	478	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Glebe	671	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Gloucester	11	6.0	20.0	6.00	20.0	A	1	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Glover	NA	0.6	2.0	0.60	2	D	4	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep
Grange	433	0.6	2.0	0.60	2.0	C	5	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Greenwood	295					A/D	6	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Groveton	27	0.6	2.0	0.60	6.0	B	2	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Hadley	8	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Hadley	108	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Hartland	31	0.6	2.0	0.20	2.0	B	2	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Haven	410	0.6	2.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Henniker	46	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hermon	55	2.0	20.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Hinckley	12	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Hitchcock	130	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Hogback	91	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Hollis	86	0.6	6.0	0.60	6.0	C/D	4	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Hoosic	510	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Houghtonville	795	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Howland	566	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Ipswich	397					D	6	Tidal Flat	mesic	hemic/sapric	no	deep organic
Kearsarge	359	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Kinsman	614	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Lanesboro	228	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Leicester	514	0.6	6.0	0.60	20.0	C	5	Loose till, loamy textures	mesic	loamy	no	
Lim	3	0.6	2.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Limerick	109	0.6	2.0	0.60	2.0	C	5	Flood Plain (Bottom Land)	mesic	silty	no	
Lombard	259	0.6	6.0	2.00	20.0	C/D	2	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Lovewell	307	0.6	2.0	0.60	2.0	B	3	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Lyman	92	2.0	6.0	2.00	6.0	A/D	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Lyme	246	0.6	6.0	0.60	6.0	C	5	Loose till, sandy textures	frigid	loamy	no	
Machias	520	2.0	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Macomber	252	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Madawaska	28	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Madawaska, aquer	48	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Masardis	23	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Mashpee	315	6.0	20.0	6.00	20.0	B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Matunuck	797			20.00	100.0	D	6	Tidal Flat	mesic	sandy	no	organic over sand
Maybid	134	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	mesic	fine	no	silt over clay
Meadowsedge	894					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Medomak	406	0.6	2.0	0.60	2.0	D	6	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Melrose	37	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Merrimac	10	2.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Metacomet	458	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	6.0	100.0	6.00	100.0	B	3	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39					C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Millsite	251	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Monadnock	142	0.6	2.0	2.00	6.0	B	2	Loose till, sandy textures	frigid	oamy over sandy, sandy-skeleta	yes	gravelly loamy sand in C
Monarda	569	0.2	2.0	0.02	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Monson	133	0.6	2.0	0.60	2.0	D	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Montauk	44	0.6	6.0	0.06	0.6	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Moosilauke	414	6.0	20.0	6.00	20.0	C	5	Loose till, sandy textures	frigid	sandy	no	

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Mundal	610	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	gravelly sandy loam in Cd
Natchaug	496			0.20	2.0	D	6	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Naumburg	214	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Newfields	444	0.6	2.0	0.60	2.0	B	3	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Nicholville	632	0.6	2.0	0.60	2.0	C	3	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Ninigret	513	0.6	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Occum	1	0.6	2.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Ondawa	101	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Ondawa	201	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Ossipee	495			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Pawcatuck	497			20.00	100.0	D	6	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Paxton	66	0.6	2.0	0.00	0.2	C	3	Firm, platy, loamy till	mesic	loamy	no	
Peacham	549	0.6	2.0	0.00	0.2	D	6	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over loam
Pemi	633	0.6	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	
Pennichuck	460	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Peru	78	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	
Pillsbury	646	0.6	2.0	0.06	0.2	C	5	Firm, platy, loamy till	frigid	silty	no	
Pipestone	314					B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Pittstown	334	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Plaisted	563	0.6	2.0	0.06	0.6	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Podunk	104	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Pondicherry	992			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Poocham	230	0.6	2.0	0.20	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Pootatuck	4	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Quonset	310	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Rawsonville	98	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Raynham	533	0.2	2.0	0.06	0.2	C	5	Terraces and glacial lake plains	mesic	silty	no	
Raypol	540	0.6	2.0	6.00	100.0	D	5	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Redstone	665	2.0	6.0	6.00	20.0	A	1	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Ricker	674	2.0	6.0	2.00	6.0	A	4	rganic over bedrock (up to 4" of minera	cryic	fibric to hemic	no	well drained, less than 20 in. deep
Ridgebury	656	0.6	6.0	0.00	0.2	C	5	Firm, platy, loamy till	mesic	loamy	no	
Rippowam	5	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Roundabout	333	0.2	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Rumney	105	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	frigid	loamy	no	
Saco	6	0.6	2.0	6.00	20.0	D	6	Flood Plain (Bottom Land)	mesic	silty	no	strata
Saddleback	673	0.6	2.0	0.60	2.0	C/D	4	Loose till, bedrock	cryic	loamy	yes	less than 20 in. deep
Salmon	630	0.6	2.0	0.60	2.0	B	2	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Saugatuck	16	0.06	0.2	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Scantic	233	0.0	0.2	0.00	0.2	D	5	Silt and Clay Deposits	frigid	fine	no	
Scarboro	115	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Scio	531	0.6	2.0	0.60	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	gravelly sand in 2C
Scitico	33	0.0	0.2	0.00	0.2	C	5	Silt and Clay Deposits	mesic	fine	no	
Scituate	448	0.6	2.0	0.06	0.2	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Searsport	15	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Shaker	439	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Shapleigh	136					C/D	4	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Sheepscot	14	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Sisk	667	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Skerry	558	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Squamscott	538	6.0	20.0	0.06	0.6	C	5	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Stetson	523	0.6	6.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Stissing	340	0.6	2.0	0.06	0.2	C	5	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Success	154	2.0	6.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	cemented
Sudbury	118	2.0	6.0	2.00	20.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Suffield	536	0.6	2.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Sunapee	168	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	
Sunapee var	269	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	frigid dystrudept
Suncook	2	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Suncook	402	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Sunday	102	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Sunday	202	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Surplus	669	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Sutton	68	0.6	6.0	0.60	6.0	B	3	Loose till, loamy textures	mesic	loamy	no	
Swanton	438	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Telos	123	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Thorndike	84	0.6	2.0	0.60	2.0	C/D	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Timakwa	393			6.00	100.0	D	6	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Tunbridge	99	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Unadilla	30	0.6	2.0	2.00	20.0	B	2	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Vassalboro	150					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Walpole	546	2.0	6.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Wareham	34	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Warwick	210	2.0	6.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Waskish	195					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Waumbeck	58	2.0	20.0	6.00	20.0	B	3	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Westbrook	597			0.00	2.0	D	6	Tidal Flat	mesic	loamy	no	organic over loam
Whitman	49	0.0	0.2	0.00	0.2	D	6	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Windsor	26	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	sandy	no	
Winnecook	88	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Winooski	9	0.6	6.0	0.60	6.0	B		Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Winooski	103	0.6	6.0	0.60	6.0	B	3	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Wonsqueak	995			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Woodbridge	29	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Woodstock	93	2.0	6.0	2.00	6.0	C/D	4	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep

no longer recognized
organic materials

TABLE C

NHDES SOIL GROUPINGS

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Adams	36	1	6.0	20.0	20.00	99.0	A	Outwash and Stream Terraces	frigid	sandy	yes	
Boscawen	220	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Caesar	526	1	20.0	100.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	coarse sand	no	
Champlain	35	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	gravelly sand	no	
Colton	22	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Colton, gravelly	21	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Gloucester	11	1	6.0	20.0	6.00	20.0	A	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Hermon	55	1	2.0	20.0	6.00	20.0	A	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Hinckley	12	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Hoosic	510	1	2.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Masardis	23	1	6.0	20.0	6.00	20.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Merrimac	10	1	2.0	20.0	6.00	20.0	A	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Quonset	310	1	2.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Redstone	665	1	2.0	6.0	6.00	20.0	A	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Success	154	1	2.0	6.0	6.00	20.0	A	Sandy Till	frigid	sandy-skeletal	yes	cemented
Suncook	2	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Suncook	402	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Sunday	102	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Sunday	202	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Warwick	210	1	2.0	6.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Windsor	26	1	6.0	20.0	6.00	20.0	A	Outwash and Stream Terraces	mesic	sandy	no	
Abenaki	501	2	0.6	2.0	6.00	99.0	B	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Agawam	24	2	6.0	20.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Allagash	127	2	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Bangor	572	2	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam
Berkshire	72	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Bice	226	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	no	sandy loam
Canton	42	2	2.0	6.0	6.00	20.0	B	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Charlton	62	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Dutchess	366	2	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Fryeburg	208	2	0.6	2.0	2.00	6.0	B	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Groveton	27	2	0.6	2.0	0.60	6.0	B	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Hadley	8	2	0.6	2.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Hadley	108	2	0.6	2.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Hartland	31	2	0.6	2.0	0.20	2.0	B	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Haven	410	2	0.6	2.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Houghtonville	795	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Lombard	259	2	0.6	6.0	2.00	20.0	C/D	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Monadnock	142	2	0.6	2.0	2.00	6.0	B	Loose till, sandy textures	frigid	oamy over sandy, sandy-skeleta	yes	gravelly loamy sand in C
Occum	1	2	0.6	2.0	6.00	20.0	B	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Ondawa	101	2	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Ondawa	201	2	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Salmon	630	2	0.6	2.0	0.60	2.0	B	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Stetson	523	2	0.6	6.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Unadilla	30	2	0.6	2.0	2.00	20.0	B	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Chichester	442	2	0.6	2.0	2.00	6.0	B	Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Acton	146	3	2.0	20.0	2.00	20.0	B	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Becket	56	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Belgrade	532	3	0.6	2.0	0.06	2.0	B	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Bernardston	330	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Boxford	32	3	0.1	0.2	0.00	0.2	C	Silt and Clay Deposits	mesic	fine	no	silty clay loam

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Buckland	237	3	0.6	2.0	0.06	0.2	C	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Buxton	232	3	0.1	0.6	0.00	0.2	C	Silt and Clay Deposits	frigid	fine	no	silty clay
Canterbury	166	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Chatfield Var.	289	3	0.6	6.0	0.60	6.0	B	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Chesuncook	126	3	0.6	2.0	0.02	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Colonel	927	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Croghan	613	3	20.0	100.0	20.00	100.0	B	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	3	6.0	20.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	3	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Eldridge	38	3	6.0	20.0	0.06	0.6	C	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elmridge	238	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116	3					C	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)
Gilmanton	478	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Henniker	46	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hitchcock	130	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Howland	566	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Lanesboro	228	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Lovewell	307	3	0.6	2.0	0.60	2.0	B	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Machias	520	3	2.0	6.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Madawaska	28	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Madawaska, aquer	48	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Melrose	37	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Metacomet	458	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	3	6.0	100.0	6.00	100.0	B	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39	3					C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Montauk	44	3	0.6	6.0	0.06	0.6	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Mundal	610	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	gravelly sandy loam in Cd
Newfields	444	3	0.6	2.0	0.60	2.0	B	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Nicholville	632	3	0.6	2.0	0.60	2.0	C	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Ninigret	513	3	0.6	6.0	6.00	20.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Paxton	66	3	0.6	2.0	0.00	0.2	C	Firm, platy, loamy till	mesic	loamy	no	
Peru	78	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	
Pittstown	334	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Plaisted	563	3	0.6	2.0	0.06	0.6	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Podunk	104	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Poocham	230	3	0.6	2.0	0.20	2.0	B	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Pootatuck	4	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Scio	531	3	0.6	2.0	0.60	2.0	B	Terraces and glacial lake plains	mesic	silty	no	gravelly sand in 2C
Scituate	448	3	0.6	2.0	0.06	0.2	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Sheepscot	14	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Sisk	667	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Skerry	558	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Sudbury	118	3	2.0	6.0	2.00	20.0	B	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand
Suffield	536	3	0.6	2.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Sunapee	168	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	
Sunapee var	269	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	frigid dystrudept
Surplus	669	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Sutton	68	3	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	mesic	loamy	no	
Telos	123	3	0.6	2.0	0.02	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Waumbeck	58	3	2.0	20.0	6.00	20.0	B	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Winooski	103	3	0.6	6.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Woodbridge	29	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Winooski	9	3	0.6	6.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Canaan	663	4	2.0	20.0	2.00	20.0	C	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Cardigan	357	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Chatfield	89	4	0.6	6.0	0.60	6.0	B	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Elliottsville	128	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Glebe	671	4	2.0	6.0	2.00	6.0	C	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Glover	NA	4	0.6	2.0	0.60	2	D	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep
Hogback	91	4	2.0	6.0	2.00	6.0	C	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Hollis	86	4	0.6	6.0	0.60	6.0	C/D	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Kearsarge	359	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Lyman	92	4	2.0	6.0	2.00	6.0	A/D	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Macomber	252	4	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Millsite	251	4	0.6	6.0	0.60	6.0	C	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Monson	133	4	0.6	2.0	0.60	2.0	D	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Pennichuck	460	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Rawsonville	98	4	0.6	6.0	0.60	6.0	C	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Ricker	674	4	2.0	6.0	2.00	6.0	A	rganic over bedrock (up to 4" of minera	cryic	fibric to hemic	no	well drained, less than 20 in. deep
Saddleback	673	4	0.6	2.0	0.60	2.0	C/D	Loose till, bedrock	cryic	loamy	yes	less than 20 in. deep
Shapleigh	136	4					C/D	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Thorndike	84	4	0.6	2.0	0.60	2.0	C/D	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Tunbridge	99	4	0.6	6.0	0.60	6.0	C	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Winnecook	88	4	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Woodstock	93	4	2.0	6.0	2.00	6.0	C/D	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep
Au Gres	516	5					B	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Bemis	224	5	0.6	0.2	0.00	0.2	C	Firm, platy, loamy till	cryic	loamy	no	
Binghamville	534	5	0.2	2.0	0.06	0.2	D	Terraces and glacial lake plains	mesic	silty	no	
Brayton	240	5	0.6	2.0	0.06	0.6	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Cabot	589	5	0.6	2.0	0.06	0.2	D	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Charles	209	5	0.6	100.0	0.60	100.0	C	Flood Plain (Bottom Land)	frigid	silty	no	
Cohas	505	5	0.6	2.0	0.60	100.0	C	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Grange	433	5	0.6	2.0	0.60	2.0	C	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Kinsman	614	5	6.0	20.0	6.00	20.0	C	Outwash and Stream Terraces	frigid	sandy	yes	
Leicester	514	5	0.6	6.0	0.60	20.0	C	Loose till, loamy textures	mesic	loamy	no	
Lim	3	5	0.6	2.0	6.00	20.0	C	Flood Plain (Bottom Land)	mesic	loamy	no	
Limerick	109	5	0.6	2.0	0.60	2.0	C	Flood Plain (Bottom Land)	mesic	silty	no	
Lyme	246	5	0.6	6.0	0.60	6.0	C	Loose till, sandy textures	frigid	loamy	no	
Mashpee	315	5	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	mesic	sandy	yes	
Monarda	569	5	0.2	2.0	0.02	0.2	D	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Moosilauke	414	5	6.0	20.0	6.00	20.0	C	Loose till, sandy textures	frigid	sandy	no	
Naumburg	214	5	6.0	20.0	6.00	20.0	C	Outwash and Stream Terraces	frigid	sandy	yes	
Pemi	633	5	0.6	2.0	0.06	0.6	C	Terraces and glacial lake plains	frigid	silty	no	
Pillsbury	646	5	0.6	2.0	0.06	0.2	C	Firm, platy, loamy till	frigid	silty	no	
Pipestone	314	5					B	Outwash and Stream Terraces	mesic	sandy	yes	
Raynham	533	5	0.2	2.0	0.06	0.2	C	Terraces and glacial lake plains	mesic	silty	no	
Raypol	540	5	0.6	2.0	6.00	100.0	D	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Ridgebury	656	5	0.6	6.0	0.00	0.2	C	Firm, platy, loamy till	mesic	loamy	no	
Rippowam	5	5	0.6	6.0	6.00	20.0	C	Flood Plain (Bottom Land)	mesic	loamy	no	
Roundabout	333	5	0.2	2.0	0.06	0.6	C	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Rumney	105	5	0.6	6.0	6.00	20.0	C	Flood Plain (Bottom Land)	frigid	loamy	no	

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Saugatuck	16	5	0.06	0.2	6.00	20.0	C	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Scantic	233	5	0.0	0.2	0.00	0.2	D	Silt and Clay Deposits	frigid	fine	no	
Scitico	33	5	0.0	0.2	0.00	0.2	C	Silt and Clay Deposits	mesic	fine	no	
Shaker	439	5	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Squamscott	538	5	6.0	20.0	0.06	0.6	C	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Stissing	340	5	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Swanton	438	5	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Walpole	546	5	2.0	6.0	6.00	20.0	C	Outwash and Stream Terraces	mesic	sandy	no	
Wareham	34	5	6.0	20.0	6.00	20.0	C	Outwash and Stream Terraces	mesic	sandy	no	
Biddeford	234	6	0.0	0.2	0.00	0.2	D	Silt and Clay Deposits	frigid	fine	no	organic over clay
Bucksport	895	6					D	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Burnham	131	6	0.2	6.0	0.02	0.2	D	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over silt
Catden	296	6					A/D	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Chocorua	395	6			6.00	20.0	D	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Greenwood	295	6					A/D	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Ipswich	397	6					D	Tidal Flat	mesic	hemic/sapric	no	deep organic
Matunuck	797	6			20.00	100.0	D	Tidal Flat	mesic	sandy	no	organic over sand
Maybid	134	6	0.0	0.2	0.00	0.2	D	Silt and Clay Deposits	mesic	fine	no	silt over clay
Meadowsedge	894	6					D	Organic Materials - Freshwater	frigid	peat	no	deep organic
Medomak	406	6	0.6	2.0	0.60	2.0	D	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Natchaug	496	6			0.20	2.0	D	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Ossipee	495	6			0.20	2.0	D	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Pawcatuck	497	6			20.00	100.0	D	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Peacham	549	6	0.6	2.0	0.00	0.2	D	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over loam
Pondicherry	992	6			6.00	20.0	D	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Saco	6	6	0.6	2.0	6.00	20.0	D	Flood Plain (Bottom Land)	mesic	silty	no	strata
Scarboro	115	6	6.0	20.0	6.00	20.0	D	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Searsport	15	6	6.0	20.0	6.00	20.0	D	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Timakwa	393	6			6.00	100.0	D	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Vassalboro	150	6					D	Organic Materials - Freshwater	frigid	peat	no	deep organic
Waskish	195	6					D	Organic Materials - Freshwater	frigid	peat	no	deep organic
Westbrook	597	6			0.00	2.0	D	Tidal Flat	mesic	loamy	no	organic over loam
Whitman	49	6	0.0	0.2	0.00	0.2	D	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Wonsqueak	995	6			0.20	2.0	D	Organic Materials - Freshwater	frigid	loamy	no	organic over loam

no longer recognized organic materials denotes break betweenSoil Group

Sorted by DES Soil Group for Establishing Lot Size
K_{sat} B and C horizons
SSSNNE pub no. 5

ORDER FORM

Ksat VALUES
FOR
NEW HAMPSHIRE SOILS
(Including Hydrologic and Soil Lot Sizing Groups)

SSSNNE Publication #5

DATE_____

Mail Copy of Publication #5 to:

Name_____
Address_____
City_____State_____Zip_____

Quantity of Publications_____ @ $8.00 = Total Order: $_____

Amount Enclosed: $_____

Enclose check or money order for the full amount payable to:

Society of Soil Scientists of Northern New England
PO Box 76
Durham, NH 03824

Please allow 4 weeks for delivery.

SWPPP Cut Sheet:

Filtrexx® Sediment Control

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

Filtrexx® Sediment control is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for **perimeter control** of sediment and other soluble pollutants (such as phosphorus and petroleum hydrocarbons), on and around construction activities.

APPLICATION

Filtrexx® Sediment control is to be installed down slope of any disturbed area requiring erosion and sediment control and filtration of soluble pollutants from runoff. Sediment control is effective when installed perpendicular to sheet or low concentrated flow. Acceptable applications include:

- Site perimeters
- Above and below disturbed areas subject to sheet runoff, interrill and rill erosion
- Above and below exposed and erodable slopes
- Around area drains or inlets located in a 'sump'
- On compacted soils where trenching of silt fence is difficult or impossible
- Around sensitive trees where trenching of silt fence is not beneficial for tree survival or may unnecessarily disturb established vegetation.
- On frozen ground where trenching of silt fence is impossible.
- On paved surfaces where trenching of silt fence is impossible.

INSTALLATION

1. Sediment control used for perimeter control of sediment and soluble pollutants in storm runoff shall meet Filtrexx® Soxx™ Material Specifications and use Certified Filtrexx® FilterMedia™.
2. Contractor is required to be Filtrexx® Certified™, or use pre-filled Filtrexx® Sediment control products manufactured by a Filtrexx® Certified Manufacturer™ as determined by Filtrexx® International, LLC (440-926-2607 or visit www.filtrexx.com). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application. Look for the Filtrexx® Certified™ Seal.
3. Sediment control will be placed at locations indicated on plans as directed by the Engineer.
4. Sediment control should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second Sediment control shall be constructed at the top of the slope.
5. Effective Soxx™ height in the field should be as follows: 8" Diameter Sediment control = 6.5" high, 12" Diameter Sediment control = 9.5" high, 18" Diameter SiltSoxx™ = 14.5" high, 24" Diameter Sediment control = 19" high.
6. Stakes shall be installed through the middle of the Sediment control on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) hard wood stakes. In the event staking is not possible, i.e., when Sediment control is used on pavement, heavy concrete blocks shall be used behind the Sediment control to help stabilize during rainfall/runoff events.
7. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
8. Loose compost may be backfilled along the upslope side of the Sediment control, filling the seam between the soil surface and the device, improving filtration and sediment retention.
9. If the Sediment control is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for

establishment of permanent vegetation. The Engineer will specify seed requirements.

10. Filtrexx® Sediment control is not to be used in perennial, ephemeral, or intermittent streams.

See design drawing schematic for correct Filtrexx® Sediment control installation (Figure 1.1).

INSPECTION AND MAINTENANCE

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Sediment control should be regularly inspected to make sure they maintain their shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Sediment control may be required to reduce effective slope length or sediment removal may be necessary. Sediment control shall be inspected until area above has been permanently stabilized and construction activity has ceased

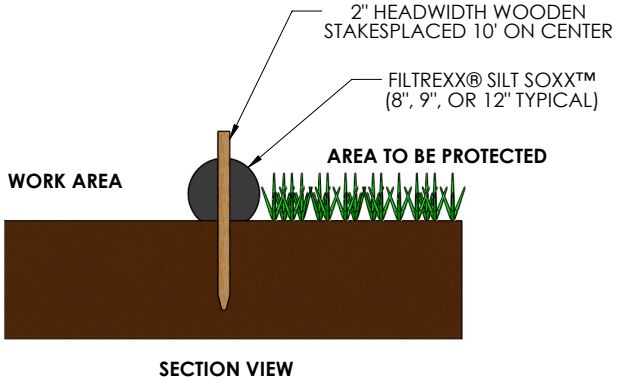
1. The Contractor shall maintain the Sediment control in a functional condition at all times and it shall be routinely inspected.
2. If the Sediment control has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of the Sediment control when accumulation has reached 1/2 of the effective height of the Sediment control, or as directed by the Engineer. Alternatively, a new Sediment control can be placed on top of and slightly behind the original one creating more sediment storage capacity without soil disturbance.
4. Sediment control shall be maintained until disturbed area above the device has been permanently stabilized and construction activity has ceased.
5. The FilterMedia™ will be dispersed on site once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.
6. For long-term sediment and pollution control applications, Sediment control can be seeded at the time of installation to create a vegetative filtering system for prolonged and increased filtration of sediment and soluble pollutants (contained vegetative filter strip). The appropriate seed mix shall be determined by the Engineer.

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	6.5 in (160 mm)**	9.5 in (240 mm) **	14.5 in (360 mm) **	19 in (480 mm) **	26 in (650 mm) **
2 (or less)	600 (180)	750 (225)	1000 (300)	1300 (400)	1650 (500)
5	400 (120)	500 (150)	550 (165)	650 (200)	750 (225)
10	200 (60)	250 (75)	300 (90)	400 (120)	500 (150)
15	140 (40)	170 (50)	200 (60)	325 (100)	450 (140)
20	100 (30)	125 (38)	140 (42)	260 (80)	400 (120)
25	80 (24)	100 (30)	110 (33)	200 (60)	275 (85)
30	60 (18)	75 (23)	90 (27)	130 (40)	200 (60)
35	60 (18)	75 (23)	80 (24)	115 (35)	150 (45)
40	60 (18)	75 (23)	80 (24)	100 (30)	125 (38)
45	40 (12)	50 (15)	60 (18)	80 (24)	100 (30)
50	40 (12)	50 (15)	55 (17)	65 (20)	75 (23)

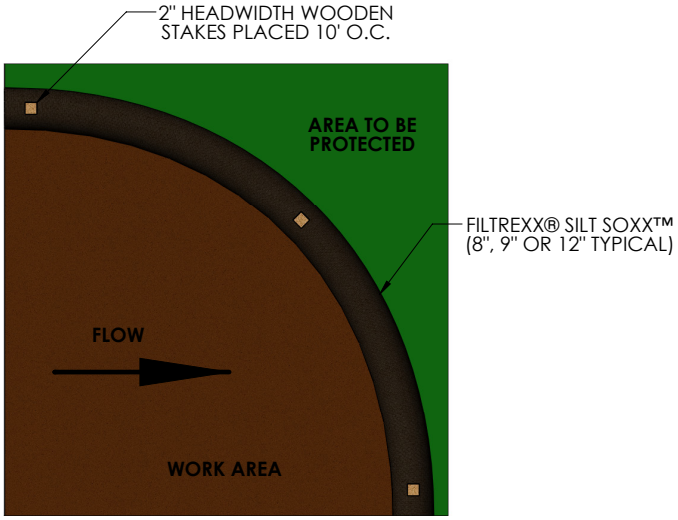
* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/ 24 hr (25 mm/24 hr) rain event.

** Effective height of Sediment control after installation and with constant head from runoff as determined by Ohio State University.

FILTREXX® SILT SOXX™

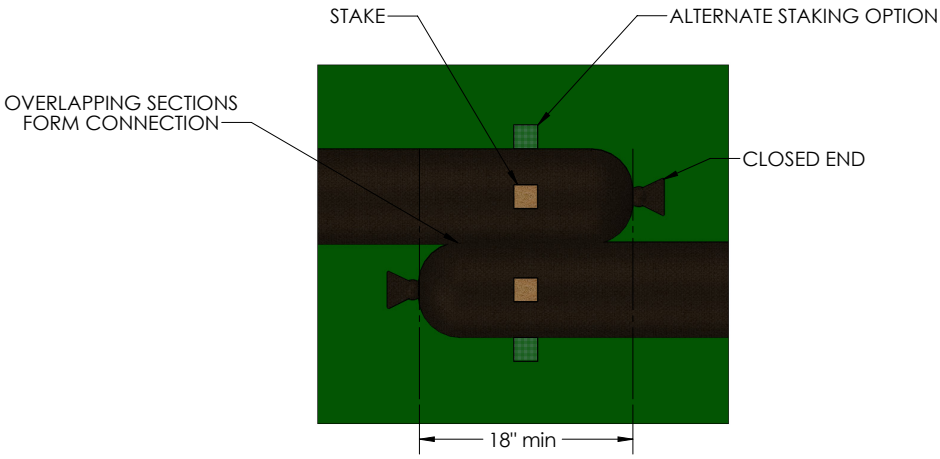


SECTION VIEW

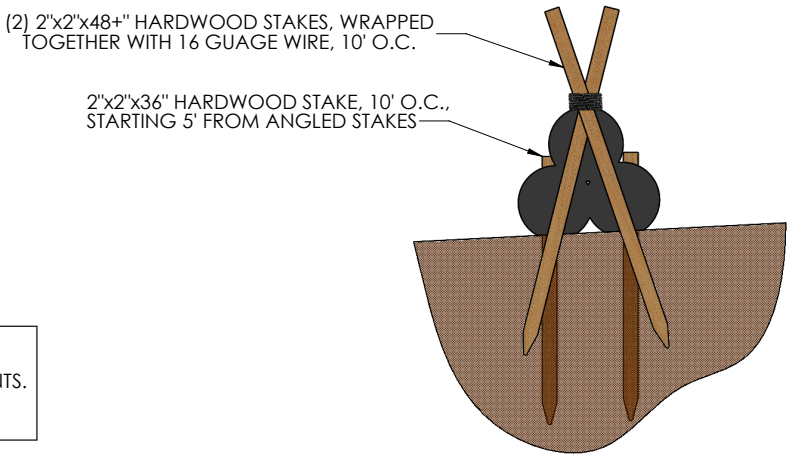


TOP VIEW

COMPOST SOCK CONNECTION/ATTACHMENT DETAIL



FILTREXX® PYRAMID STAKING DETAIL



NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. SILT SOXX™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

SWPPP Cut Sheet:

Filtrexx® Inlet Protection

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

Filtrexx® Inlet protection is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for storm drain **inlet protection** of sediment and soluble pollutants (such as phosphorus and petroleum hydrocarbons) on and around construction activities.

APPLICATION

Drain inlets are located in areas that receive runoff from surrounding lands, often exposed and disturbed soils, and are located at a low point, or in a sump. Inlet protection used around drain inlets (or *Drain* Inlet protection) should completely enclose the circumference of the drain and where possible should not be placed on a grade or slope. Inlet protection used around drain inlets should never be the only form of site sediment control and should be accompanied by erosion control/slope stabilization practices, such as Slope protection or rolled erosion control blankets (RECB). Inlet protection should never be placed where they divert runoff flow from the drain inlet, or on top of the inlet, which can cause flooding. Under high runoff and sediment loading conditions placement of 1-2 in (25-50 mm) diameter rock (AASHTO #2) may be placed around the outer circumference of the Inlet protection up to ½ the height of the Inlet protection. This will slow runoff velocity as it contacts the Inlet protection and will reduce sediment build-up and clogging of the Inlet protection.

Curb inlets are generally located on paved surfaces and are designed to rapidly drain storm runoff from roadways to prevent flooding that poses a hazard to vehicular traffic. Inlet protection devices should be placed in a manner which intercepts runoff prior to entering the inlet, but does not block or divert runoff from the inlet. To prevent diversion of runoff, Inlet protection used around curbs (or *Curb* Inlet protection) should be used in low points, or sumps, and minor slopes or grades. Inlet protection should never be placed in or on the curb inlet drain, or placed in a manner than obstructs vehicular traffic. Inlet protection height should be at least 1 in (25 mm) lower than top of curb inlet to allow for overflow into the drain and not over the curb. Maximum sediment removal efficiency occurs when minor ponding exists behind Inlet protection but should never lead to flooding.

Curb sediment containment systems are used to reduce the sediment and pollutant load flowing to a curb inlet. They are generally placed on paved surfaces perpendicular to runoff flow and should be lower than the height of the curb. Curb sediment containment systems should never cause flooding or placed where they are a hazard to vehicular traffic. Inlet protection used for curb sediment containment (or *Curb Sediment Containment* Inlet protection) can be placed on a grade but should never be placed directly upslope from curb inlet where it may inadvertently divert runoff from entering curb inlet.

INSTALLATION

1. Inlet protection used for inlet protection to reduce sediment and soluble pollutants entering storm drains shall meet Filtrexx® FilterSoxx™ Material Specifications and use Certified Filtrexx® FilterMedia™.
2. Contractor is required to be a Filtrexx® Certified™ Installer as determined by Filtrexx® International, LLC (440-926-2607 or visit web site at Filtrexx.com). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application (current list of installers can be found at www.filtrexx.com). Look for the Filtrexx® Certified™ Installer Seal.

3. Filtrexx® Inlet protection shall be placed at locations indicated on plans as directed by the Engineer. Inlet protection should be installed in a pattern that allows complete protection of the inlet area.
4. Installation of curb Inlet protection will ensure a minimal overlap of at least 1 ft (300mm) on either side of the opening being protected. The Inlet protection will be anchored to the soil behind the curb using staples, stakes or other devices capable of holding the Inlet protection in place.
5. Standard Inlet protection for curb inlet protection and curb sediment containment will use 8 in (200mm) diameter Inlet protection, and drain inlets on soil will use 12 in (300mm) or 18 in (450mm) diameter Inlet protection. In severe flow situations, larger Inlet protection may be specified by the Engineer. During curb installation, Inlet protection shall be compacted to be slightly shorter than curb height.
6. If Inlet protection becomes clogged with debris and sediment, they shall be maintained so as to assure proper drainage and water flow into the storm drain. In severe storm events, overflow of the Inlet protection may be acceptable in order to keep the area from flooding.
7. Curb and drain Inlet protection shall be positioned so as to provide a permeable physical barrier to the drain itself, allowing sediment to collect on the outside of the Inlet protection.
8. For drains and inlets that have only curb cuts, without street grates, a spacer is required in order to keep the Inlet protection away from the drain opening. This spacer should be a hog wire screen bent to overlap the grate opening and keep the sock from falling into the opening. Use at least one spacer for every 4 ft (1.2m) of curb drain opening. The wire grid also prevents other floatable waste from passing over the Inlet protection.
9. Stakes shall be installed through the middle of the drain Inlet protection on 5 ft (1.5m) centers, using 2 in (50mm) x 2 in (50mm) x 3 ft (1m) wood stakes.
10. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.

INSPECTION AND MAINTENANCE

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Inlet protection should be regularly inspected to make sure they maintain their shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Inlet protection may be required or sediment removal may be necessary. Inlet protection shall be inspected until contributing drainage area has been permanently stabilized and construction activity has ceased

1. The Contractor shall maintain the Inlet protection in a functional condition at all times and it shall be routinely inspected.
2. If the Inlet protection has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of the Inlet protection when accumulation has reached 1/2 of the effective height of the Inlet protection, or as directed by the Engineer. Alternatively, for drain Inlet protection a new Soxx™ may be placed on top of the original increasing the sediment storage capacity without soil disturbance.
4. Inlet protection shall be maintained until disturbed area above or around the device has been permanently stabilized and construction activity has ceased.
5. Regular maintenance includes lifting the Inlet protection and cleaning around and under them as sediment collects.
6. The FilterMedia™ will be removed from paved areas or dispersed on site soil or behind curb once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.

Table 2.4 Spacing for Curb Sediment Containment Systems.

Grade (%)	Spacing (ft)	Spacing (mm)
0.5	100	30
1.0	50	15
2.0	25	8
3.0	16	5
4.0	13	4
5.0	10	3

Source: Fifield, 2001.

Figure 2.1. Engineering Design Drawing for Curb and Drain Inlet Protection

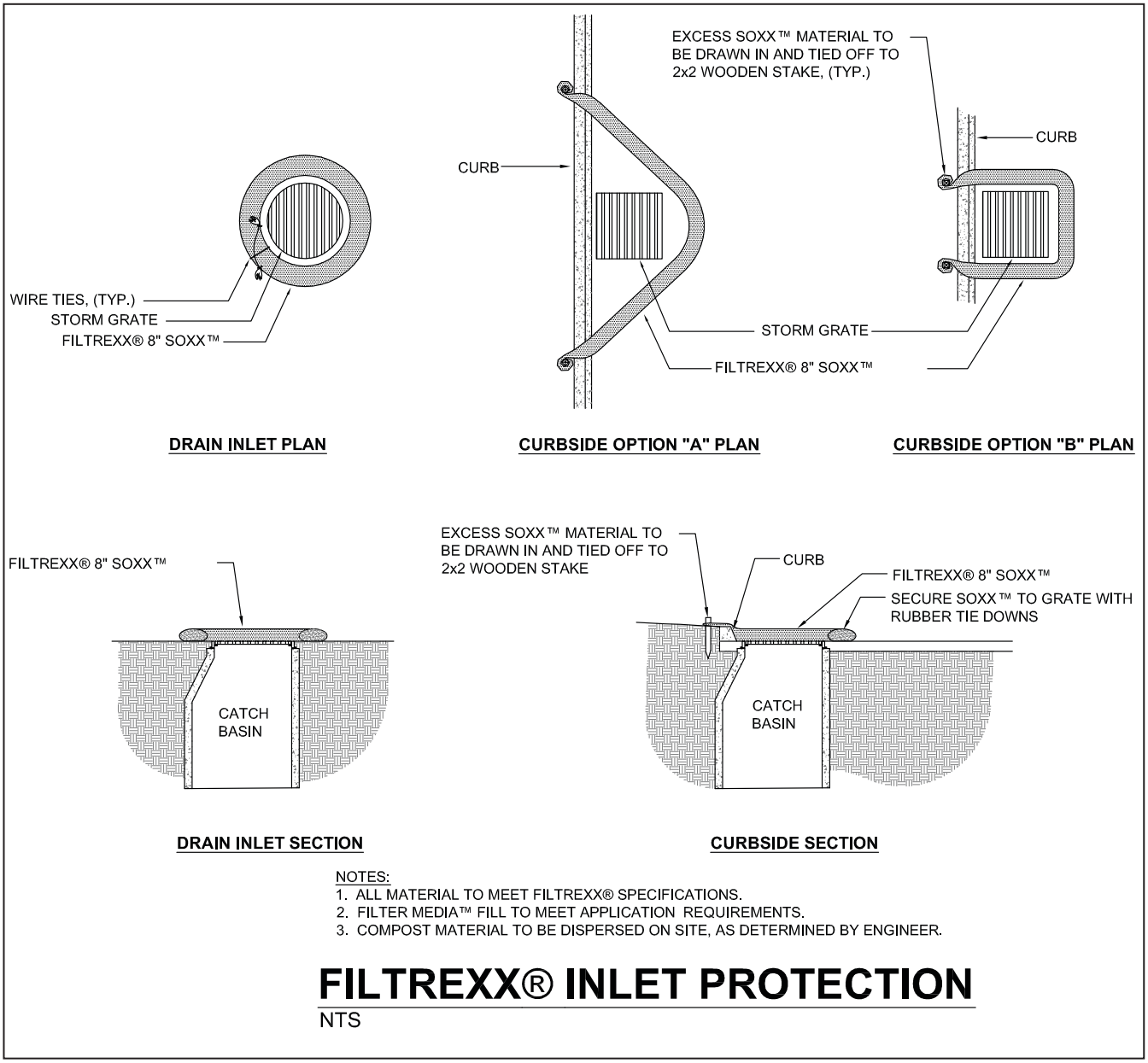


Figure 2.2. Engineering Design Drawing for Curb Sediment Containment Inlet Protection