VILLAGE OF SOUTH BLOOMING GROVE
APR 03 2019
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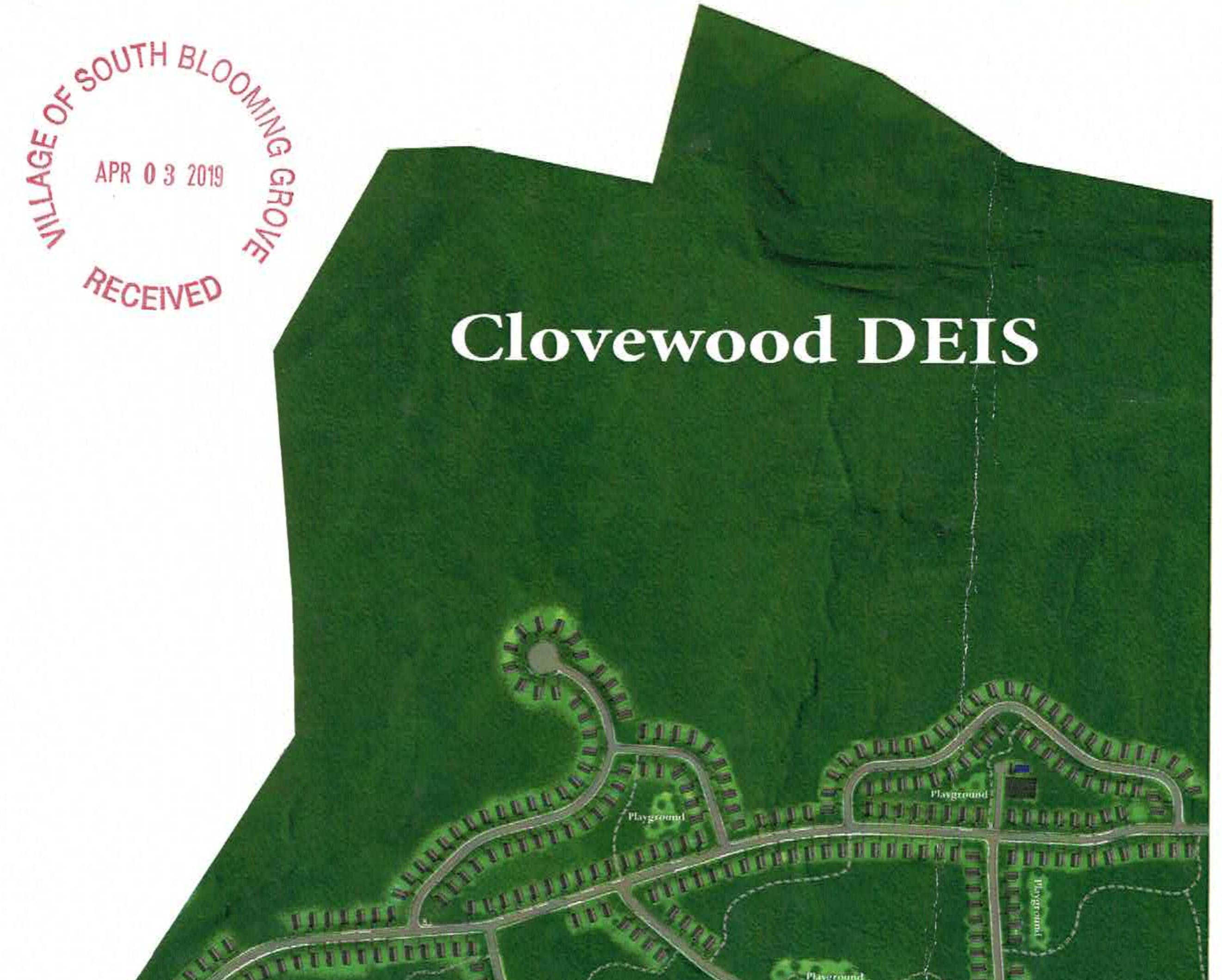
Clovewood DEIS



Appendix H

CLOVEWOOD
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Community Planning Consultants

P.O. Box 2020, Monroe New York 10949
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CLOVEWOOD

Draft Environmental Impact Statement

Appendix H
Draft Stormwater Pollution Prevention Plan (SWPPP)

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Community Planning Consultants
CPC
P.O. Box 2020, Monroe New York 10949
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Preliminary Stormwater Pollution Prevention Plan

CLOVEWOOD SUBDIVISION

Village of South Blooming Grove
Orange County, NY

Revised January 2019
Prepared March 2018

VILLAGE OF SOUTH BLOOMING GROVE
APR 03 2019
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Kirk Rother, PE, PLLC
5 Saint Stephens Lane
Warwick, NY 10990

Summary

This Stormwater Pollution Prevention Plan (SWPPP) is prepared for a project known as Clovewood, a proposed development comprised of 600 residential lots situated on approximately 708 acres of land lying on the south side of NYS Route 208 and County Route 27 within the Village of South Blooming Grove in Orange County NY. The objective of the SWPPP is to minimize potential impacts to the watershed from the development. A full stormwater analysis has been performed in accordance with New York State SPDES Permit GP-0-15-002 requirements. Erosion and sediment control, stormwater quantity management, run-off reduction features and stormwater quality control measures will be implemented in conformance with the *NYS Stormwater Design Manual, (Jan. 2015 ed.)*, the *NYS Standards for Erosion and Sediment Control, (Nov. 2016 ed.)*, and SPDES permit criteria. A pre and post developed hydrologic analysis has been completed and the impacts from the proposed development have been quantified. This SWPPP narrative, with attached Appendices, together with the drainage system and erosion control engineered drawings, constitute the contract documents necessary to obtain coverage under the NYS SPDES Permit. With proper implementation and maintenance, the best management practices chosen for the Clovewood Project will meet all SPDES Permit criteria while mitigating potential impacts to downstream and off-site properties to the greatest extent practical.

Property and Contact Information

Property Address:

505 Clove Road
Monroe, NY 10950

Coordinates:

Latitude: 41.387
Longitude:-74.166

Owner:

Keen Equities, LLC
C/o Y.C. Rubin
4922 11th Avenue
Brooklyn, NY 11219

Developer:

CPC LLC
C/o Simon Gelb
PO Box 2020
Monroe, NY 10949
845-774-8000
cpcnynj@gmail.com

Engineer:

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Kirk Rother, PE
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845-988-0620
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NYS DEC Region:

Region 3

NYS DEC Spill Hotline:

800-457-7362 or
631-444-0320 (Region 3 spill office)

Underground Utilities:

Dig Safely NY
Dial 811

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Clovewood
Village of South Blooming Grove
Orange County, New York

Contractor's Certification Statement

To be signed by all Contractors and Sub-Contractors performing any site work that involves ground disturbance.

I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations.

____

Contractor's Name

____

Contractor's Address

____

Responsible Agent's Name (Print)

____

Responsible Agent's Title

____ ____________________

Responsible Agent's Signature Date

____

List SWPPP Components Contractor is responsible for.

Provide additional Contractor Certification Sheets if more than one contractor will be involved in ground disturbance.

Section 1 – Introduction and Document Requirements

This Stormwater Pollution Prevention Plan is prepared for Clovewood, a proposed multi-family residential development comprised of approximately 600 dwelling units situated on approximately 708 acres of land which lies on the east side of NYS Route 208 and County Route 27 (a.k.a. Clove Road) within the Village of South Blooming Grove. The property is bounded on the north by the Village of South Blooming Grove – Town of Blooming Grove municipal boundary, on the east by the ridgeline of Schunnemunk Mountain, on the south primarily by vacant land and on the west by Route 208 and Clove Road. The site is identified as Tax Lot Section 208 Block 1 Lot 2 and Lot 3 on current Village of South Blooming Grove tax maps and lies entirely within the Village's RC-1 and RR Zoning Districts. The project's purpose is to serve the housing needs of South Blooming Grove and surrounding communities.

This SWPPP is prepared to minimize potential impacts to the watershed from the development. Potential impacts include soil erosion during site construction and the introduction of pollutants such as garbage, construction debris, chemicals and sediments from roof tops, roadways, construction equipment and people both during and after construction. The SWPPP also addresses potential downstream impacts, such as flooding and channel erosion, caused by the conversion of natural areas to impervious surfaces which increases the rate and volume of stormwater run-off.

Stormwater quantity management, run-off reduction practices, stormwater quality control measures and erosion control measures have been designed and will be implemented in conformance with NYS SPDES Permit GP-0-15-002 requirements. The text of the SPDES Permit, together with associated Permit Forms, can be found in Appendix A of this document. The specific best management practices to be implemented are based on standardized criteria as set forth in the *NYS Stormwater Design Manual, (Jan. 2015 ed., hereinafter referred to as the Manual)* and the *NYS Standards for Erosion and Sediment Control, (Nov. 2016 ed.)*.

Planned improvements include the construction of the 600 residential structures with associated roadways and parking areas. Four community center facilities are also proposed to be built. Accessory improvements include such features as sidewalks, playground areas, park and ride facilities, water and sewer utilities and underground telephone, electric and gas. A more detailed project description can be found in Section 2 of this report.

The 708 acre site lies entirely within the Lower Hudson River Drainage Basin, Hudson-Wappingers Sub Basin, Moodna Creek watershed. The site slopes from its highest elevations at the ridge of Schunnemunk Mountain on the east downward toward the lowest elevations of the site in the southwest. Run off leaves the site via Perry Creek to the north and three unnamed tributaries to Satterly Creek to the south. The property is currently improved by the remains of a former county club known as the Lake Ann Country Club. The remains of the county club are concentrated in the north western extremities of the site leaving the majority parcel as vacant woodland.

A review of State and Federal data reveal that there are no flood plains, state wetlands or impaired waters in the area of the development. Several areas of federal wetland exist within the parcel with all of these wetland areas to be preserved by the design of the subdivision. A more detailed description of existing site hydrology can be found in Section 3 of this report with associated regulatory mapping and supporting information located in Appendix B.

Stormwater management will be accomplished via an open and closed storm drain infrastructure which consists roof leaders, splash blocks, rain-gardens, drainage swales, catch basins, pipes, culverts, bio-retention areas, and stormwater detention ponds. Run-off reduction practices will be implemented in an effort to retain stormwater run-off at its source with the primary run-off reduction practice used on the Clovewood project being rain gardens on individual lots, where practical, or bio-retention practices for larger impervious areas. Approximately 80% of the site is slated to remain as open space allowing for substantial reduction in water quality needs due to the preservation of the existing natural landscape. A minimum 100-foot riparian buffer is being proposed from all water courses and wetlands allowing for additional stormwater quality reductions. Impervious area reduction will be accomplished by the planting of trees in the areas adjacent to buildings and roadways. The conservation type subdivision design proposed for the Clovewood development results in substantial reductions in roadway lengths and thereby less impervious area.   Additional description of run-off reduction measures and water quality volume can be found in Section 4 of this report with supporting maps and worksheets included in Appendix C.

Detention will be provided to limit peak post-developed flow rates to pre-developed levels. A TR-20 Hydrologic Analysis has been performed for the 1-, 10-, and 100-year storm events and attenuation of the peak discharge rates for the aforementioned storms will satisfy

SPDES permit requirements for Channel Protection (Cpv), Over bank Flood Control (Qp) and Extreme Flood Control (Qf). Given that the properties topographic setting includes the ridge of Schunnemunk Mountain, upstream run-off will not enter the site which eliminates the need to design the stormwater management facilities for the ultimate upstream build-out.

Detention will be accomplished by a system of fourteen stormwater management ponds that area situated throughout the developed area of the site. All stormwater conveyance infrastructure has been sized to safely pass flow rates for the 25-year storm. Stormwater conveyance features that have been designed to allow upstream run-off from undeveloped portions of the site to pass through the developed areas have been sized to accommodate the 100-year storm event. A more detailed description of stormwater quantity control, including a pre and post developed hydrologic analysis, can be found in Section 5 of this report. The supporting HydroCAD model based on TR-20 methodology can be found in Appendix D. Drainage Basin Maps depicting the pre and post developed hydrologic conditions can be found in Appendix F.

Erosion control will be accomplished via means of temporary and permanent erosion control measures. Erosion control features will be implemented prior to the start of construction activities. The design and placement of the erosion control practices can be found on the *Erosion Control Plan* sheet of the Clovewood drawings with associated construction details being found on in the *Erosion Control Details* sheet. Erosion control measures shall be inspected daily by a “Trained Contractor” to be employed by the excavation company. A thorough review and report by a “Qualified Inspector” must be performed at least once every seven days. Defects noted shall be corrected immediately. Weekly inspection logs shall be kept at the project site and made available for review by the Regulatory Agency having jurisdiction. A more detailed discussion of erosion and sediment control can be found in Section 6 of this report with *Erosion Control Checklists* and a sample *Construction Site Logbook* located in Appendix E. Maintenance of erosion control measures will be the responsibility of the project sponsor. Included in the erosion control plan is a general sequence of construction.

A “Notice of Intent” and “MS4 Acceptance” Form has been completed and will be filed with the New York State Department of Environmental Conservation to obtain coverage under the SPDES Permit. A copy of these Forms can be found in Appendix A. All contractors and subcontractors involved in activities which will result in site disturbance, or effect stormwater runoff, shall familiarize themselves with both this written SWPPP and the water quality, quantity and erosion control measures shown on the approved Site Plan. Said parties shall attest to their familiarity with the stormwater documents by signing of the written certification found at the beginning of this report.

A copy of the approved Clovewood Subdivision Plan, this written Stormwater Pollution Prevention Plan report, signed Contractor Certification Statement, completed Notice of Intent, completed MS4 Acceptance Form and Department of Environmental Conservation acknowledgement letter with the site specific permit number shall be kept at the construction site. All Maintenance Inspection Checklists and a Construction Site Log Book, samples of which can be found in Appendix E, shall also be kept at the construction site and made available for review by regulatory agencies. Upon completion of construction activities and full vegetative stabilization of the fully built site, a "Notice of Termination" will be filed with the New York State Department of Environmental Conservation to terminate SPDES Permit coverage.

By implementing the above best management practices, stormwater quality objectives shall meet or exceed those required by the New York State SPDES Permit for Construction Activities.

Section 2 – Project Description

The 708 acres comprising Clovewood are currently improved by the remains of the Lake Ann Country Club. These improvements include 47 single family structures, four single story multi-family structures, several outbuildings, roadways the remains of a former golf course and Lake Ann itself, which is a man-made lake. Several existing trails also traverse the property. The presence of stone walls reveals prior agricultural uses of the property and a review of USDA aerial surveys from the *USDA Soil Survey of Orange County, NY*, taken in the 1970's, indicate that the western portions of the property were being farmed at that time.

Soils on the site are comprised predominantly of Mardin types soils which make up approximately 50% of the land area, with the second most predominant soil type being Swartswood type soil comprising approximately 25% of the land area. The aforementioned soils are of hydrologic soil groups D and C respectively. The remaining acreage is a mix of silt loams, sand and gravels, and water surface area with hydrologic soil classifications ranging from A to D. Areas of the south western portion of the property, comprised of Udorthents type sand and gravel show evidence of prior mining activities.

Topography on the site varies from relatively flat in the central western portions the site, adjacent to Clove Road in the area of wetland #1, too steeply sloping in the easternmost extremities of the site comprising the ridgeline of Schunnemunk Mountain. The highest elevations on the ridge are found to be approximately 1,370 feet above sea level with the lowest elevation of the site, lying in the southwesterly corner of the property, having an elevation of approximately 480 feet above sea level. The resultant elevation change is found to be approximately 890 feet. A preliminary analysis of slopes reveals that approximately 20% of the property is sloping at less than 10%, approximately 70% of the site slopes in the range of 10% to 15%, with the remaining 10% of the site being sloped in excess of 15%.

Cover conditions on the site are found to include approximately 592 acres of woodland, 54 acres of meadow and brush, 42 acres of old golf course area, 14 acres of lawn, 35 acres of wetlands, and 5 acres of impervious surfaces.

Proposed improvements include the construction of 600 detached dwelling units, four community centers with associated improvements, two Park and Ride facilities providing parking for approximately 640 vehicles and other improvements such as utilities, roadways, sidewalks and stormwater management system.

Access to the site will be by means of two connection points to the existing road network. The southerly entrance will connect directly to NYS Route 208 with the northerly entrance connecting to Clove Road. The entry points will convey vehicle and pedestrian traffic onto approximately 32,000 linear feet of new roadway and approximately 65,000 linear feet of new, five-foot-wide sidewalk.

Fourteen stormwater management ponds and other stormwater management appurtenances will accomplish the stormwater management objectives. Sanitary sewer will be accomplished by a new, on-site sewage treatment plant that will discharge treated sewage to one of the existing on-site tributaries to Satterly Creek. A new gravity collection system comprised of sewer mains and manholes, together with one proposed sewer pump station, will convey raw sewage to the plant. Water supply will be accomplished by a new central water system comprised of multiple on-site water wells, new distribution piping, fire hydrants and an on-site water storage tank.

Post developed impervious area is computed to be approximately 56 acres. The total area of disturbance is computed to be approximately 165 acres, with approximately 109 acres of lawns, landscaping and recreational areas. The balance of the site, or approximately 80% of the project, will be preserved as open space.

Section 3 – Site Hydrology

The Clovewood site lies entirely within the Lower Hudson River Drainage Basin, Hudson-Wappingers Sub Basin, Moodna Creek watershed. Stormwater from the site discharges in two general directions. The northern portions of the site comprise the headwaters of Perry Creek and discharge off-site to the north to form Perry Creek. Perry Creek then flows to the north and west for approximately three miles to connect with Moodna Creek. The remaining majority of the site discharges to the south via two existing box culverts under New York State Route 208 and one existing box culvert that discharges under CR 27 then under Route 208 then continuing to flow to the south and west into Satterly Creek. Satterly Creek continues its course of drainage to the west to its confluence with Moodna Creek just east of the Village of Washingtonville.

Several areas of regulated Wetland exist on the site with the most prominent wetland area lying in the central western extremities of the site, adjacent to Clove Road and comprising the water surface of Lake Anne. The area is identified as Wetland Area #1 of the freshwater wetland map prepared for the project. Although the area is not inventoried on New York State Freshwater Wetland mapping, the New York State Department of Environmental Conservation has indicated that it would be their preference to have the project adhere to New York State freshwater wetland protection criteria in so far as Wetland #1 is found to be approximately 23 acres in size and would qualify as a state protected wetland. In addition to Wetland Area #1 there are fourteen additional Federal Wetland areas identified as Wetlands “E” through “T” having a cumulative size of approximately 11.8 acres. A single non-jurisdictional wetland, identified as Wetland “P”, is also present on the site has an area of approximately 0.4 acres.

Given the size and slope of the property, several on-site streams have formed which convey runoff from the upper portions of the site to the lower extremities and ultimately to the discharge points described above. Sixteen distinct stream channels have been identified on the property having a total area of approximately 2.1 acres. Existing water surface area on the property is found to be approximately 4.5 acres. A map of pre and post developed run-off areas with corresponding time of concentration paths, together with a map of the freshwater wetland areas and on-site streams can be found in Appendix F.

There is no proposed disturbance or fill within any of the federal wetlands, Wetland #1 or the non-jurisdictional wetland. Approximately 2,280 LF of temporary disturbance is proposed within the voluntary 100-foot buffer to Wetland #1 for the purposes of installing a gravity sewer main and force main. It is noted that the area within which the disturbance is proposed is already improved by an existing dirt road that has historically been the main access point the property. Approximately 2,400 Linear feet of various drainage channels or ephemeral stream will be piped or rerouted due to the development.

Section 4 – Run-off Reduction and Stormwater Quality

Water quality objectives for Clovewood are based on the 90% rule as set forth in Chapter 4 - Unified Sizing Criteria in the *NYS Stormwater Design Manual* (the Manual). The specific goal is to capture and treat run-off from 90% of the 24-hour rainfall events that can be expected to occur at a site. The volume of water to be treated is directly proportional to both the area that is tributary to the practice and the amount of impervious cover. The 90th Percentile – 24-hour Rainfall value for the Clovewood property, as interpolated from Figure 4.1 of the Design Manual, is taken to be 1.42 inches. The resultant water quality volume, or WQv, as computed using the Unified Sizing Criteria is found to be 337,394 cubic feet.

Run-off Reduction is a component of water quality. It encourages the recharge of groundwater into the aquifer while reducing the volume of storm water run-off to levels that are as close to pre-developed levels as practical. This is best accomplished by leaving areas in their natural state. Where improvements are proposed run off reduction is typically accomplished by infiltrating stormwater into the underlying soil. Managing stormwater in a distributed manner via multiple, interspersed practices that are placed near the impervious source of the run-off is another best management practice used for reducing run-off.

The Run-off Reduction objective set forth by the Design Manual is to reduce the volume of run-off equal to 100% of the computed water quality volume. The primary means of meeting this goal from developed areas is through infiltration. Site constraints, such as seasonal high groundwater, shallow depth to bedrock or soils with low permeability often preclude the use of infiltration practices thereby impeding the ability to reduce of 100% of the water quality volume. In the event site constraints preclude reduction of 100% of the water quality volume, a minimum Runoff Reduction volume must be met.

The soils found on the Clovewood site are a mix of soils belonging to hydrologic soil groups A, B, C and D with the most prevalent soil being those of hydrologic soil group D. USDA soil descriptions together with a map of the soil types can be found in Appendix B. The soil class, combined with the topographic setting and the presence of wetlands, precludes reduction of 100% of the water quality volume for the Clovewood project through infiltration. The minimum runoff reduction volume computed for the site using the RRv formula set forth in Chapter 4 of the Design Manual is computed to be 65,232 cubic feet. This value will be met by using stormwater management practices with runoff reduction capacity, namely rain gardens and bio-retention facilities, together with the area reductions through tree planting, preservation of natural space and preservation of riparian buffers.

100-foot buffers are proposed from all wetland areas thereby providing an undisturbed riparian edge to these sensitive waters. Twelve bio-retention areas are proposed that will provide approximately 84,000 square feet of filter area and 100,000 cubic feet of water quality volume capacity of which approximately 40,200 cubic feet is credited toward run-off reduction volume. On lot rain gardens capable of treating up to 1,000 SF of impervious area each are proposed on all lots where topographic conditions permit. Approximately 1600 street trees will be planted in 40-foot intervals on both sides of the proposed roadways providing 100 SF per tree, or approximately 3.67 total acres, of impervious area reduction. Finally, approximately 80% of the site, or over 560 acres, will remain undisturbed as preserved open space.

Remaining water quality volume will be accomplished by standard stormwater management practices consisting of wet stormwater management ponds. Approximately 160,350 additional cubic feet of water quality volume will be provided by a system of fourteen wet ponds spread throughout the developed portions of the site.

Computations associated with water quality volume, minimum run-off reduction volume, bio-retention filter sizing and tree planting area credit utilizing the NYS DEC Runoff Reduction Worksheets can be found in Appendix C. The net result is that Clovewood will exceed the minimum water quality volume objectives set forth by the Unified Sizing Criteria.

Section 5 – Detention and Stormwater Quantity

An integral part of the stormwater pollution prevention plan calls for the attenuation of peak runoff flow rates to pre-developed levels. Doing so mitigates against the adverse impacts caused by the conversion of natural areas to impervious surfaces and the increased speed at which rain water sheds these areas. Attenuation of peak flow rates is accomplished by detaining stormwater run-off in a pond or reservoir to be released slowly over an extended period of time.

A hydrologic analysis has been performed for the Clovewood site utilizing HydroCAD stormwater modeling software. HydroCAD methodology is based on the National Resources Conservation Service (NRCS - formerly SCS) TR-20 watershed analysis model. To compute the analysis, the amount of rainfall that can be expected for a given storm event, together with the distribution of that rainfall over a given time interval, must be determined. The Northeast Regional Climate Center (NRCC), in collaboration with Cornell University and the National Resource Conservation Service, publishes an interactive Web Tool for extreme precipitation analysis. The Web Tool provides site specific rainfall data based on a project's geographic location. The NYS Department of Environmental Conservation encourages the use of NRCC data when possible.

Rainfall values for the Clovewood site as taken from the NRCC Web Tool are summarized in the following table:

Table 1 - 24 Hour Rainfall Values	
Storm Frequency	Rainfall (in.)
1 year	2.63
2 year	3.22
10 year	4.83
25 year	6.09
100 year	8.68

Source: precip.eas.cornell.edu

Utilizing the pre-developed drainage catchment data depicted on the Pre-Developed Drainage Basin Map, which can be found in Appendix F, a pre-developed hydrologic model was prepared. Six pre-developed sub catchments were identified. Five of the sub catchments flow toward four points at which channelized flow leaves the property. The sixth sub catchment, identified as sub catchment “F”, sheet flows off site to the north.

These four points at which channelized flow leaves the property were taken to be the points to be used for comparison of the pre and post developed condition. The analysis points coincide with the inlets of existing culverts described as follows: Analysis Point #4 (AP4) was taken to be an approximate 3.4-foot-wide by 2.6-foot-high concrete box culvert that flows under NYS Route 208 at the southern limits of the drainage area. Catchment D is tributary to AP4. Analysis Point #3 is a concrete box culvert approximately 8 feet wide by 3.9 feet high also flowing under NYS Route 208 just south of an existing commercial plaza which lies near the intersection of Route 208 with Clover Road. Catchment C is tributary to AP3. Analysis Point #2, which carries the largest flows, is the inlet of an existing concrete box culvert approximately 20.6 feet wide by 6.8 feet high and is located on the County Route 27 leg of the “Y” intersection of Route 27 and Route 208. Flow from the Analysis Point 3 culvert discharges toward a second box culvert approximately 50 feet downstream that carries flows under Route 208. The latter culvert is approximately 13.5 feet wide by 8 feet high and was not modeled in the analysis. Catchment’s A and B are tributary to AP2. Analysis Point 5 is the point at which the start of Perry Creek discharges off the property to the north. Catchment E is tributary to AP5. It is noted that for the model does not have an analysis point identified as Analysis Point 1.

Computed pre-developed peak flow rates for the 1-, 10-, and 100-year storm events for the pre-developed sub catchments are summarized as follows:

Table 2 - Pre-Developed Runoff Calculations						
Basin # Analysis Point #	Area (Ac.)	CN	TC (min.)	Q peak 1 Yr. (cfs)	Q peak 10 Yr.(cfs)	Q peak 100 Yr. (cfs)
Catchment A	37.2	71	28.9	11.2	44.7	112
Catchment B	258.6	75	27.1	117	379	872

Table 2 - Pre-Developed Runoff Calculations						
Catchment C	300.7	75	23.4	147	474	1,087
Catchment D	3.2	77	19.2	2.0	6.2	13.2
Catchment E	174.5	77	32.0	84.5	254	566
Catchment F	10.6	77	26.8	5.6	16.9	37.4

With the above data in place, the post developed site condition was modeled. The build out of the project together with the installation of drainage improvements has the effect of altering the site hydrology in the post developed condition. As a result, the post developed sub catchments are segmented when compared to the pre-developed areas. The delineation of the respective post developed sub catchments are primarily based on the proposed stormwater management practice to which the area is tributary. A map of the post developed sub catchment areas can be found in Appendix F.

The stormwater detention ponds with their respective stage-storage values were calculated. Outlet control structures with orifices of various sizes and elevations were modeled. A summary of the post developed sub catchment areas together with their corresponding peak runoff rates for the 1-, 10-, and 100-year storm events follows:

Table 3 - Post-Developed Runoff Calculations						
Catchment#	Area (Ac.)	CN	TC (min.)	Q peak 1 Yr. (cfs)	Q peak 10 Yr.(cfs)	Q peak 100 Yr. (cfs)
A	37.2	71	29.1	11.2	44.7	111
B1	60.7	78	16.1	44.8	126.8	273
B2	5.4	85	13.4	6.8	15	29
B3	24.4	85	17.2	27.3	62	119
B4	10.1	88	10.8	16.6	34	62
B5	4.5	86	8.8	7.0	16	29
B6	13.7	80	11.4	13.7	36	73

Table 3 - Post-Developed Runoff Calculations						
B7	8.9	88	12.0	14.0	29	52
B8	11.3	79	22.3	7.6	21	45
B9	5.9	87	21.0	6.7	14	27
B10	17.1	79	21.1	11.9	33	70
B11	12.8	82	11.4	14.6	36	70
Basin #	Area (Ac.)	CN	TC (min.)	Q peak 1 Yr. (cfs)	Q peak 10 Yr.(cfs)	Q peak 100 Yr. (cfs)
B12	24.4	78	13.2	19.8	56	119
B13	24.3	73	25.5	9.6	34	81
B14	9.4	85	18.5	10.2	23	44
B15	6.1	84	11.6	7.8	18	34
B16	3.7	83	10.0	4.7	11	21
C1	9.2	89	9.4	16.4	33	58
C2	6.2	86	13.6	8.2	18	34
C3	6.0	80	19.6	4.6	12	26
C4	7.5	83	14.0	8.2	20	39
C5/C9	124.1	75	23.2	60.7	196	450
C6	18.9	81	12.7	19.1	48	98
C7	21.3	84	11.5	27.2	63	121
C8	85.0	76	23.4	45.0	139	313
C10	21.4	83	15.3	22.7	55	107
C11	11.2	80	21.6	8.2	22	46
C12	5.2	63	14.8	0.6	6	17
D	2.7	78	14.7	2.1	6	13

Table 3 - Post-Developed Runoff Calculations						
E1	167.1	77	31.9	81.1	244	542
E2	8.9	86	18.2	10.3	28	43
F	10.6	77	26.8	5.6	17	37

To accurately analyze the impacts of the development, a comparison of the pre and post developed peak flow rates at the four respective Analysis Points must be made. A table summarizing of the pre-and post-developed peak flow rates at the four Analysis Points together with the computed decrease in run-off rate follows:

Table 4 - Comparison of Pre- & Post-Developed Peak Flow Rates			
Storm Event	1 Year (cfs)	10 Year (cfs)	100 Year (cfs)
Analysis Point #1			
Pre-Developed	128	423	982
Post-Developed	92	325	949
Difference	- 36	- 98	- 33
Analysis Point #2			
Pre-Developed	147	474	1087
Post-Developed	132	426	1063
Difference	- 15	- 48	- 24
Analysis Point #3			
Pre-Developed	2	6	13
Post-Developed	2	6	13
Difference	0	0	0
Analysis Point #4			
Pre-Developed	84	254	566
Post-Developed	82	248	557
Difference	- 2	- 6	- 9

As can be seen in the above table, post developed peak flow rates are at or below pre-developed levels for all storm events at all six of the analysis points. Attenuation of the peak discharge rates for the aforementioned storms will satisfy SPDES permit requirements for Channel Protection (Cpv), Over bank Flood Control (Qp) and Extreme Flood Control (Qf). The pre and post developed HydroCAD model for the 1-, 2-, 10- and 100- year storm events can be found in Appendix D.

Section 6 – Erosion and Sediment Control

Proposed erosion control measures will be in accordance with a publication entitled *New York State Standards and Specifications for Erosion and Sediment Control (Nov. 2016 ed.)*. Erosion control will be accomplished by means of temporary and permanent measures with the timing of the installation of said measures to be in accordance with the construction sequence found on the Erosion Control Plan sheet of the approved drawings.

Temporary erosion control measures will include stabilized construction entrances, silt fence, temporary sediment traps, temporary diversion swales, stone check dams, inlet protection, mulching, land grading, and temporary topsoil stockpiling stabilization and seeding and haying. Areas to be disturbed shall have the area of disturbance delineated. Areas in proximity to construction activities but that are to remain un-disturbed shall be protected with a perimeter construction fence, or snow fence.

Upon completion of clearing and grubbing activities, topsoil will be stripped and temporary topsoil stockpiles created in locations out of the way of construction activities. Temporary topsoil stockpiles shall also be placed away from potential water courses. Stockpiles will be surrounded with silt fence and immediately stabilized seed and hay per the temporary seeding schedule depicted on the Plans. Temporary seeding will be placed in all areas that are expected to remain disturbed for a period of 14 days. Dust control by means of spraying water shall be incorporated as necessary. The locations of the specific erosion control practices to be implemented, with associated construction details, are depicted on the Clovewood Erosion Control Plans.

Permanent erosion control measures will include downspout splash blocks, rip-rap inlet and outlet protection, grass lined waterways, permanent seeding and landscaping, land grading, mulching, and slope stabilization. Slope stabilization will be accomplished utilizing rolled erosion control matting in all areas of slopes of two horizontal to one vertical or steeper.

Erosion control measures shall be routinely inspected daily by a "*Trained Contractor"* to be employed by the excavation company. The definition of a Trained Contractor and Qualified Inspector can be found in the SPDES Permit text located in Appendix A. Inspection logs identifying site conditions, impacts to adjacent properties or water bodies, defects in erosion control measures, together with photographs of the site, shall be prepared by t Inspector. Defects identified shall be reported to the project owner in a timely manner which is taken to mean within one business day or less. Corrections shall be made immediately.

All weekly inspection logs shall be kept at the project site in mailbox clearly labeled with the letters "DEC". Any reports and the SWPPP plan shall be made available for review by the Regulatory Agency having jurisdiction. Maintenance of erosion control measures will be the responsibility of the project sponsor. Included in the erosion control plan is a general sequence of construction.
he Qualified

Section 7 – General Construction Sequence

1. Obtain necessary approvals and permits from municipal and regulatory agencies.
2. Pre-construction meeting with applicable regulatory agencies. Submittal of Notice of Intent.
3. Contractors shall sign "Contractor's Certification Statement". Install on site mailbox for SPDES related documents.
4. Delineation of limits of clearing and disturbance. Trees to be saved shall be protected with perimeter fence.
5. Install stabilized construction entrances at beginning of proposed access roads.
6. Install silt fence down-gradient of work areas and all proposed construction areas.

7. Excavate temporary sediment traps. Install diversion swales, culverts and rip rap outlets as shown on the erosion control plan.
8. Perform clearing and grubbing activities as required for construction. Site disturbance shall not exceed beyond the disturbance limit line depicted on the Site Development Plans. Areas which will remain disturbed for a period of more than 14 days shall be stabilized with rye grass in accordance with the temporary seeding schedule shown on the erosion control plan.
9. Strip and stockpile topsoil, stabilize with rye grass seed and perimeter silt fence.
10. Perform mass earth work. No more than five acres shall be disturbed at any one time. Complete rough-grading of either roadways, building pads or parking areas as depicted on the Erosion Control phasing plans. Fine grade and stabilize all embankments upon completion of rough grading.
11. Upon completion of rough-grading of site in accordance with Site Plan, begin installation of drainage infrastructure. Install utilities within roadway. Areas to remain disturbed for a period of more than 14 days shall be seeded with a temporary mixture of rye grass in accordance with the temporary seeding schedule shown on the erosion control plans.
12. Begin excavation for building foundations. Complete proposed stormwater conveyance systems, drainage infrastructure and drainage culverts. Install rip-rap lined inlet and outlet protection. Stabilize catch basins with appropriate protection measures such as silt fence.
13. Install roadway and parking lot sub-bas. Pave roadway with base course if feasible.
14. Construct buildings and utility connections.
15. complete fine-grading of disturbed areas and embankments, amend soils as required. Seed and stabilize with mulch, jute netting or hydro seed.
16. Review final stormwater infrastructure improvement checklists. Construct stormwater management appurtenances to permanent size and geometry. Remove any trapped sediment and fines and discard off-site.
17. Complete surfacing of roadways and parking lots.
18. Upon final grading, placement of rip-rap line channels and establishment of permanent vegetation, remove erosion control measures beginning at the most upstream points and then work downstream.
19. Perform any fine-grading and seeding as required. Maintain and repair vegetative cover as required. Maintain and repair wash-outs as required and

after each storm event until all erosion control and water quality treatment measures are fully established.

20. Upon full build out of the project, and permanent stabilization of all disturbed areas, including at least 80% vegetative ground cover, a final inspection shall be performed and Notice of Termination (NOT) Form submitted to the NYS Department of Environmental Conservation to close the project's SPDES Permit coverage.

Section 8 – Operation and Maintenance

The stormwater management infrastructure will either be maintained by the Clovewood Homeowner's Association or, if mandated by the Village of South Blooming Grove, the Village's DPW. Easements over the stormwater management features will be created to the benefit of the entities that are determined to be responsible for their maintenance. If the municipality takes the responsibility for maintenance there will often be a drainage district created to recoup the costs of maintenance of the stormwater manage infrastructure. Maintenance of bio-retention areas, rain gardens and other water quality features that are located on the individual lots will be the will be the responsibility of the Clovewood Homeowner's Association.

Maintenance measures shall include routine mowing of grassed areas, removal of undesirable trees and bush and other woody vegetation and the repairing of wash-outs. Swales shall be cleaned and regarded as needed. Bio-retention and rain garden practices shall be re-mulched every spring and replanted as older planting die off.

Stormwater management ponds shall be cleaned of garbage and floatable materials every spring. Sediment shall be removed from pond forebays once every six years or once the available volume of storage has reached 50%.

References

Federal Emergency Management Agency [FEMA]. (n.d.). FEMA Flood Map Service Center. https://msc.fema.gov/portal.

NYS Department of Environmental Conservation [NYS DEC]. (2015, January). *NYS General Permit for Stormwater Discharges from Construction Activity – GP-0-15-002.* Retrieved from: http://www.dec.ny.gov/chemical/43133.html.

NYS Department of Environmental Conservation [NYS DEC]. (2015, January). *NYS Stormwater Management Design Manual.* Retrieved from: http://www.dec.ny.gov/chemical/29072.html.

NYS Department of Environmental Conservation [NYS DEC]. (2016, November). *NYS Standards and Specifications for Erosion and Sediment Control.* Retrieved from: http://www.dec.ny.gov/chemical/29066.html.

NYS Department of Environmental Conservation [NYS DEC]. (n.d.). Construction Stormwater Toolbox. http://www.dec.ny.gov/chemical/8694.html.

NYS Department of Environmental Conservation [NYS DEC]. (n.d.). Environmental Resource Mapper. http://www.dec.ny.gov/animals/38801.html.

NYS Office of Parks, Recreation and Historic Preservation [OPRHP]. (n.d.). Cultural Resource Information System (CRIS). https://cris.parks.ny.gov/.

StormTech. (2015). *MC-3500 and MC-4500 Design Manual.* Retrieved from: http://www.stormtech.com/resources/downloads.html#manuals.

United States Department of Agriculture [USDA]. (1986, June). *Urban Hydrology for Small Watersheds, TR-55.* Retrieved from: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044171.pdf.

United States Department of Agriculture, Natural Resources Conservation Service [NRCS]. (n.d.). Web Soil Survey. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

United States Environmental Protection Agency [EPA]. (n.d.). NHDPlus (National Hydrography Dataset Plus). https://www.epa.gov/waterdata/nhdplus-national-hydrography-dataset-plus.

United States Fish and Wildlife Service. (n.d.). National Wetlands Inventory Wetlands Mapper. https://www.fws.gov/wetlands/data/Mapper.html.

Appendix A

Notice of Intent Form; MS-4 Acceptance Form; Notice of Termination Form; SPDES Permit GP 0-15-002

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-15-002

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State

Zip -

Phone (Owner/Operator) - -

Fax (Owner/Operator) - -

Email (Owner/Operator)

FED TAX ID - (not required for individuals)

Project Site Information

Project/Site Name

Street Address (NOT P.O. BOX)

Side of Street
- ○ **North**
- ○ **South**
- ○ **East**
- ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)

State: N Y

Zip: -

County

DEC Region

Name of Nearest Cross Street

Distance to Nearest Cross Street (Feet)

Project In Relation to Cross Street
- ○ **North**
- ○ **South**
- ○ **East**
- ○ **West**

Tax Map Numbers
Section-Block-Parcel

Tax Map Numbers

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

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

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

X Coordinates (Easting)

Y Coordinates (Northing): 4

2. What is the nature of this construction project?

- ○ **New Construction**
- ○ **Redevelopment with increase in impervious area**
- ○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	**Total Area To Be Disturbed**	**Existing Impervious Area To Be Disturbed**	**Future Impervious Area Within Disturbed Area**
.	.	.	.

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ○ **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	**B**	**C**	**D**
%	%	%	%

7. Is this a phased project? ○ **Yes** ○ **No**

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

Start Date / / - **End Date** / /

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-15-002? ○ **Yes** ○ **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002? ○ **Yes** ○ **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ○ **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ○ **No**
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ○ **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ **Yes** ○ **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ○ **No** ○ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ **Yes** ○ **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ○ **No**

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ **Yes** ○ **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ○ **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ○ **Yes** ○ **No**
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ○ **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ○ **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer

Contact Name (Last, Space, First)

Mailing Address

City

State Zip -

Phone - -

Fax - -

Email

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-15-002. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name **MI**

Last Name

Signature

Date / /

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

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ○ Silt Fence
- ○ Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ○ Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

○ **Preservation of Undisturbed Areas**

○ **Preservation of Buffers**

○ **Reduction of Clearing and Grading**

○ **Locating Development in Less Sensitive Areas**

○ **Roadway Reduction**

○ **Sidewalk Reduction**

○ **Driveway Reduction**

○ **Cul-de-sac Reduction**

○ **Building Footprint Reduction**

○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

○ All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

☐☐☐.☐☐☐ **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)	.	and/or	.
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	.	and/or	.
○ Tree Planting/Tree Pit (RR-3)	.	and/or	.
○ Disconnection of Rooftop Runoff (RR-4)	.	and/or	.
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			.
○ Rain Garden (RR-6)			.
○ Stormwater Planter (RR-7)			.
○ Rain Barrel/Cistern (RR-8)			.
○ Porous Pavement (RR-9)			.
○ Green Roof (RR-10)			.
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			.
○ Infiltration Basin (I-2)			.
○ Dry Well (I-3)			.
○ Underground Infiltration System (I-4)			.
○ Bioretention (F-5)			.
○ Dry Swale (O-1)			.
Standard SMPs			
○ Micropool Extended Detention (P-1)			.
○ Wet Pond (P-2)			.
○ Wet Extended Detention (P-3)			.
○ Multiple Pond System (P-4)			.
○ Pocket Pond (P-5)			.
○ Surface Sand Filter (F-1)			.
○ Underground Sand Filter (F-2)			.
○ Perimeter Sand Filter (F-3)			.
○ Organic Filter (F-4)			.
○ Shallow Wetland (W-1)			.
○ Extended Detention Wetland (W-2)			.
○ Pond/Wetland System (W-3)			.
○ Pocket Wetland (W-4)			.
○ Wet Swale (O-2)			.

Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ Hydrodynamic	.
○ Wet Vault	.
○ Media Filter	.
○ Other	.

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

. **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ○ **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

. **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

○ **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

[ ][ ][ ].[ ][ ][ ] **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). [ ][ ][ ].[ ][ ][ ]

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ○ **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required [ ][ ][ ].[ ][ ][ ] **acre-feet**

CPv Provided [ ][ ][ ].[ ][ ][ ] **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development [ ][ ][ ].[ ][ ][ ] **CFS**

Post-development [ ][ ][ ].[ ][ ][ ] **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development [ ][ ][ ].[ ][ ][ ] **CFS**

Post-development [ ][ ][ ].[ ][ ][ ] **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ○ **No**

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

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a)
This space can also be used for other pertinent project information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP N Y R
- ○ Other
- ○ None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ Yes ○ No
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ Yes ○ No
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ Yes ○ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. N Y R

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name **MI**

Print Last Name

Owner/Operator Signature

Date

/ /

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information
1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information
8. SWPPP Reviewed by:
9. Title/Position:
10. Date Final SWPPP Reviewed and Accepted:
IV. Regulated MS4 Information
11. Name of MS4:
12. MS4 SPDES Permit Identification Number: NYR20A ____
13. Contact Person:
14. Street Address:
15. City/State/Zip:
16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): ___________________________

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? ______________________________ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:	
Title/Position:	
Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

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

From

CONSTRUCTION ACTIVITY

Permit No. GP-0-15-002

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

Effective Date: January 29, 2015 Expiration Date: January 28, 2020

Modification Date:

July 14, 2015 – Correction of typographical error in definition of "New Development", Appendix A

November 23, 2016 – Updated to require the use of the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. The use of this standard will be required as of February 1, 2017.

John J. Ferguson
Chief Permit Administrator

Authorized Signature 11·14·16
Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York's *State Pollutant Discharge Elimination System ("SPDES")* is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law ("ECL").*

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

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a point source and therefore, pursuant to Article 17-0505 of the ECL, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. They cannot wait until there is an actual *discharge* from the construction site to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

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

Part I. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the Stormwater Pollution Prevention Plan ("SWPPP") the reason(s) for the deviation or alternative design and provide information

which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

(i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

(ii) Control stormwater *discharge*s to *minimize* channel and streambank erosion and scour in the immediate vicinity of the *discharge* points;

(iii) *Minimize* the amount of soil exposed during *construction activity*;

(iv) *Minimize* the disturbance of *steep slopes*;

(v) *Minimize* sediment *discharge*s from the site;

(vi) Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

(vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted; and

(viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from dewatering activities, including *discharge*s from dewatering of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. ***Sizing Criteria* for *New Development***

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:

(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or

(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) Overbank Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:

(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that overbank control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:

(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that overbank control is not required.

b. ***Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed**

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:

(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or

(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) Overbank Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:

(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that overbank control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:

(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that overbank control is not required.

c. ***Sizing Criteria* for *Redevelopment Activity***

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or
(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or
(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or
(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) Overbank Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

d. ***Sizing Criteria*** **for Combination of** ***Redevelopment Activity*** **and** ***New Development***

Construction projects that include both *New Development* and *Redevelopment Activity* shall provide post-construction stormwater management controls that meet the *sizing criteria* calculated as an aggregate of the *Sizing Criteria* in Part I.C.2.a. or b. of this permit for the *New Development* portion of the project and Part I.C.2.c of this permit for *Redevelopment Activity* portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s from *construction activities*.

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

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an endangered or threatened species unless the *owner or operator* has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.C.2 of this permit.

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which disturb one or more acres of land with no existing *impervious cover*; and

   c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture ("USDA") Soil Survey for the County where the disturbance will occur.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which disturb two or more acres of land with no existing *impervious cover*; and

   c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the USDA Soil Survey for the County where the disturbance will occur.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.C.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the construction site within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the construction site within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:
      (i) No Affect
      (ii) No Adverse Affect

(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. OBTAINING PERMIT COVERAGE

A.Notice of Intent (NOI) Submittal

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the Department in order to be authorized to *discharge* under this permit. An *owner or operator* shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address.

NOTICE OF INTENT
NYS DEC, Bureau of Water Permits
625 Broadway, 4th Floor
Albany, New York 12233-3505

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department. An *owner or operator* shall use either the electronic (eNOI) or paper version of the NOI.

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

The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.E. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4*.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

B. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied <u>all</u> of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621) have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

   c. the final SWPPP has been prepared, and

   d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.B.2 above

will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

(ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

(iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

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

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

5. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.B. of this permit.

C. General Requirements For Owners or Operators With Permit Coverage

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

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-15-002), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, and all documentation necessary to demonstrate eligibility with this permit at the construction site until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

   a. The *owner or operator* shall

have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

5. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the *regulated, traditional land use control MS4* in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice

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

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

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-15-002.

E. Change of *Owner or Operator*

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.A.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or operator* was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP:

   a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

   b. whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the *discharge* of *pollutants*; and

   c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority.

5. The Department may notify the *owner or operator* at any time that the

SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.C.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   > "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

   In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the construction site. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

a. Background information about the scope of the project, including the location, type and size of project;

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the construction site; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

   b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

   c. A Stormwater Modeling and Analysis Report that includes:

      (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

      (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

      (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

      (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

(v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

(vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* <u>and</u> all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, <u>with the exception of</u>:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E;

   b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E;

   c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

   d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.C.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* <u>and</u> all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* <u>and</u> all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.A.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of *discharge* from the construction site.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the construction site. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

(Part IV.C.4.i)

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.C.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.A.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; <u>and</u> all areas of disturbance have achieved *final stabilization*; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

   b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; <u>and</u> all areas disturbed as of the project shutdown date have achieved *final stabilization*; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

   c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.E. of this permit.

   d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

(Part V.A.5)

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

   b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

   c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

   d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION OF RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.A.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

   a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

      (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any *owner or operator* authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any *discharge*r authorized by a general permit to apply for an individual SPDES permit, it shall notify the *discharge*r in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the *owner or operator* to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from *owner or operator* receipt of the notification letter, whereby the authorization to

discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a construction site which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the *owner's or operator's* premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with *construction activity* covered by this permit, the *owner or operator* of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A

Definitions

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both “sewage” and “stormwater”.

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for “*Construction Activity(ies)*” also.

***Construction Activity*(ies) -** means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a construction site by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a construction site to a separate storm sewer system and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or point source.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State
or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters,

ditches, man-made
channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer <u>licensed to practice in the State of New York.</u>.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is required to gain coverage under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Stream bank restoration projects (does not include the placement of spoil material),
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that makes the transition between the road shoulder and the ditch or embankment,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or embankment,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), Overbank Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture ("USDA") Soil Survey for the County where the disturbance will occur.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for point source discharges, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part

621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B

Required SWPPP Components by Project Type

Table 1
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres: • Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E • Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E • Construction of a barn or other agricultural building, silo, stock yard or pen.
The following construction activities that involve soil disturbances of one (1) or more acres of land: • Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains • Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects • Bike paths and trails • Sidewalk construction projects that are not part of a road/ highway construction or reconstruction project • Slope stabilization projects • Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics • Spoil areas that will be covered with vegetation • Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), excluding projects that *alter hydrology from pre to post development* conditions • Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions • Demolition project where vegetation will be established and no redevelopment is planned • Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover* • Structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State”, excluding projects that involve soil disturbances of less than five acres and construction activities that include the construction or reconstruction of impervious area
The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land: • All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other agricultural building(e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional, includes hospitals, prisons, schools and colleges
- Industrial facilities, includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's and water treatment plants
- Office complexes
- Sports complexes
- Racetracks, includes racetracks with earthen (dirt) surface
- Road construction or reconstruction
- Parking lot construction or reconstruction
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project , wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- All other construction activities that include the construction or reconstruction of *impervious area* <u>or</u> *alter the hydrology from pre to post development* conditions, <u>and</u> are not listed in Table 1

APPENDIX C

Watersheds Where Enhanced Phosphorus Removal Standards Are Required

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

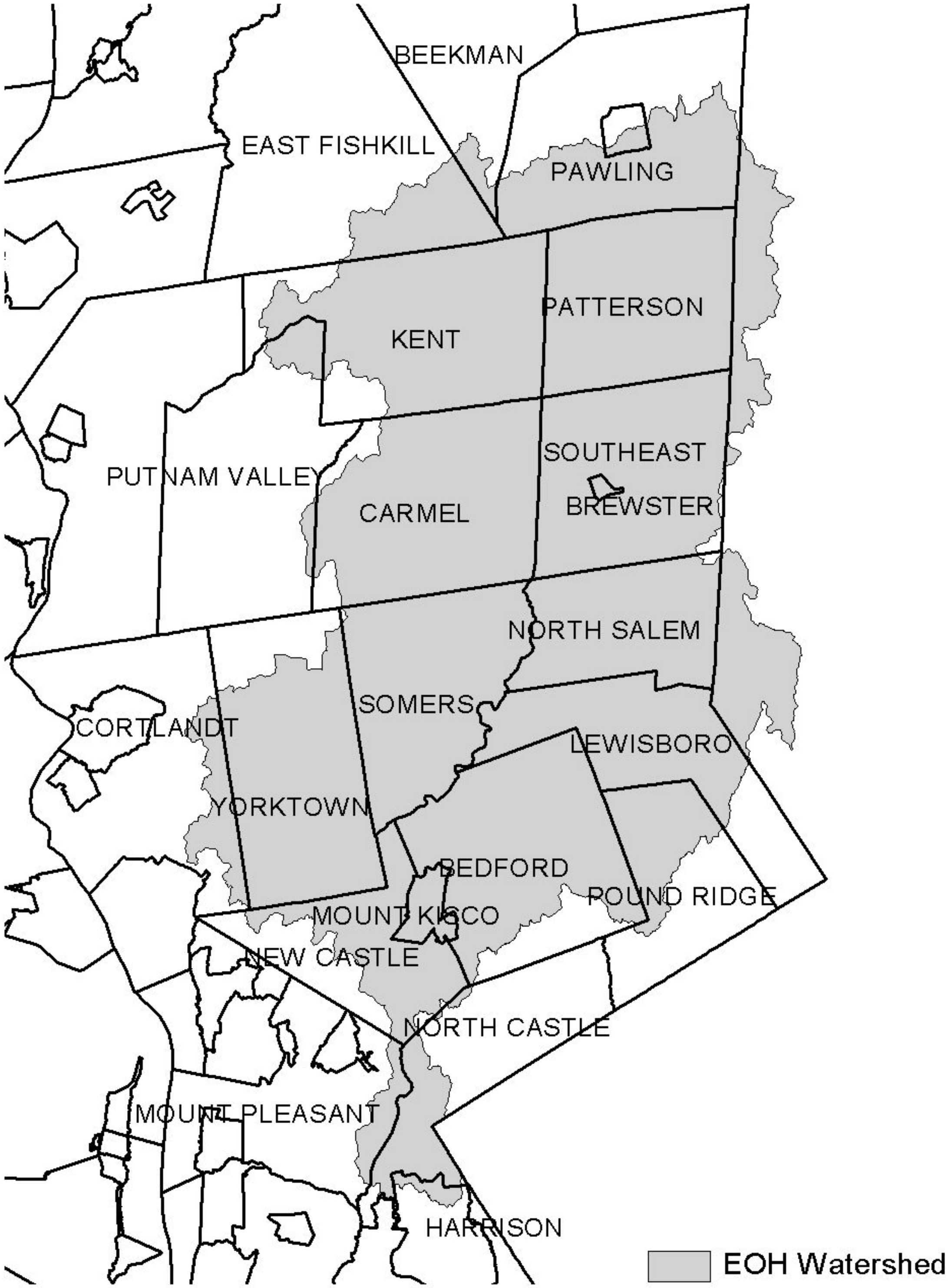


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

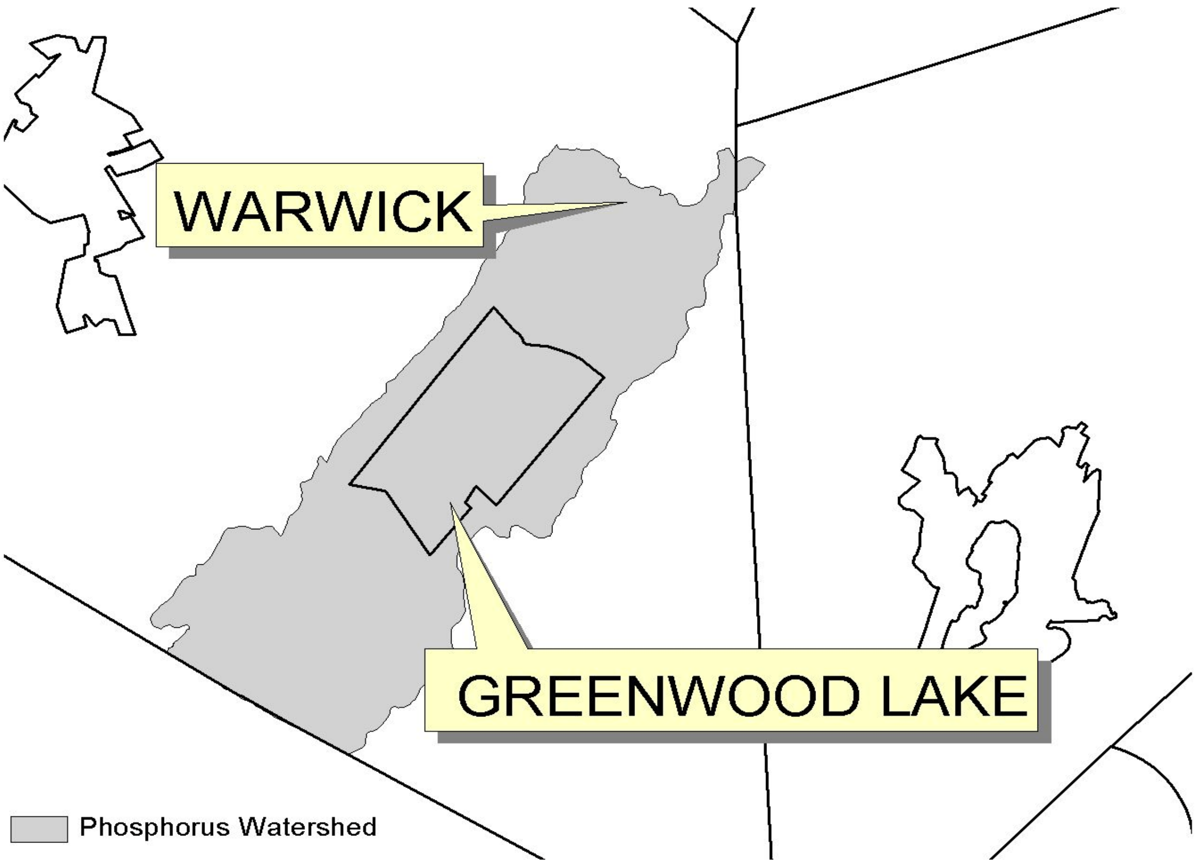


Figure 4 - Oscawana Lake Watershed

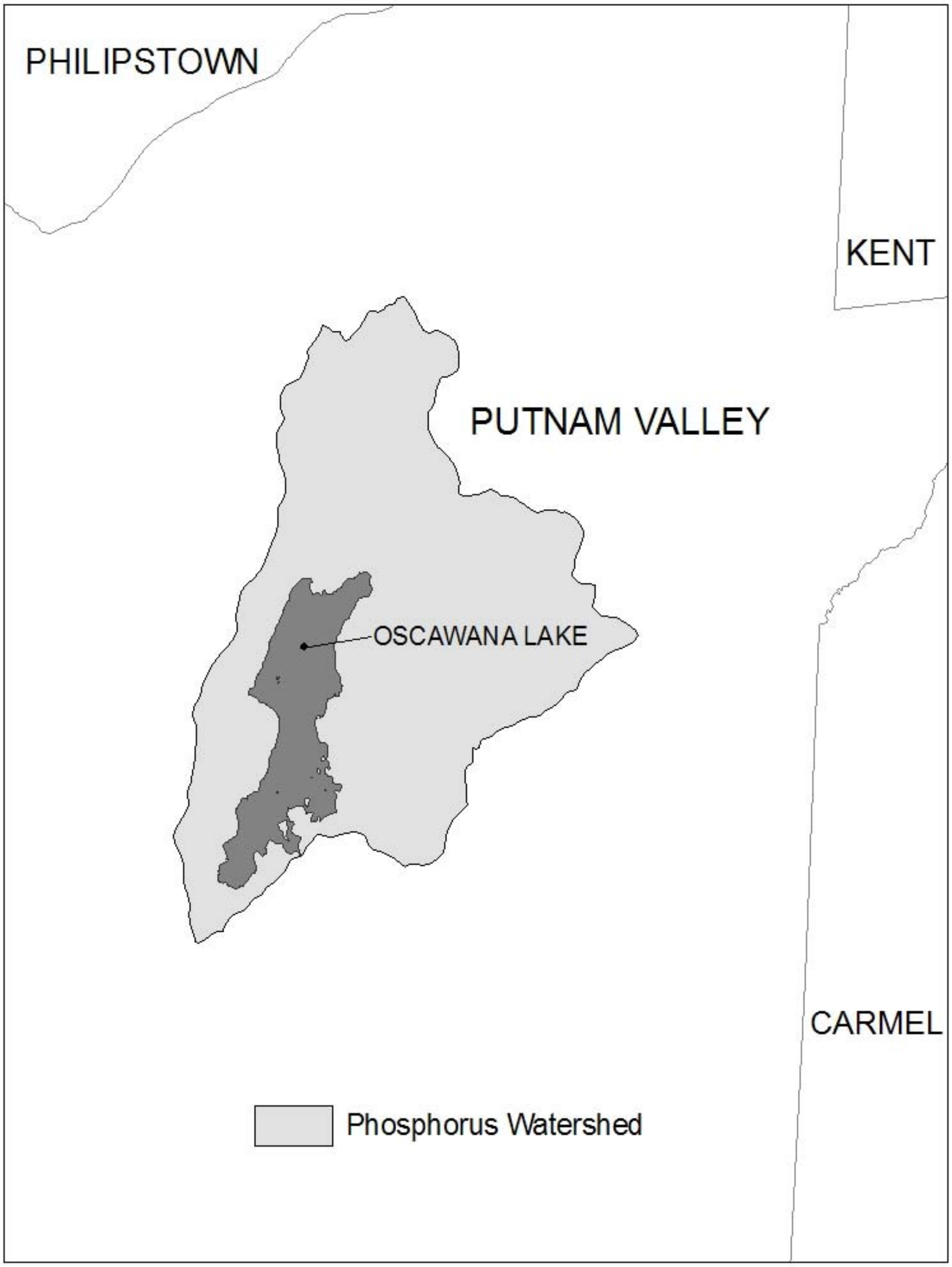
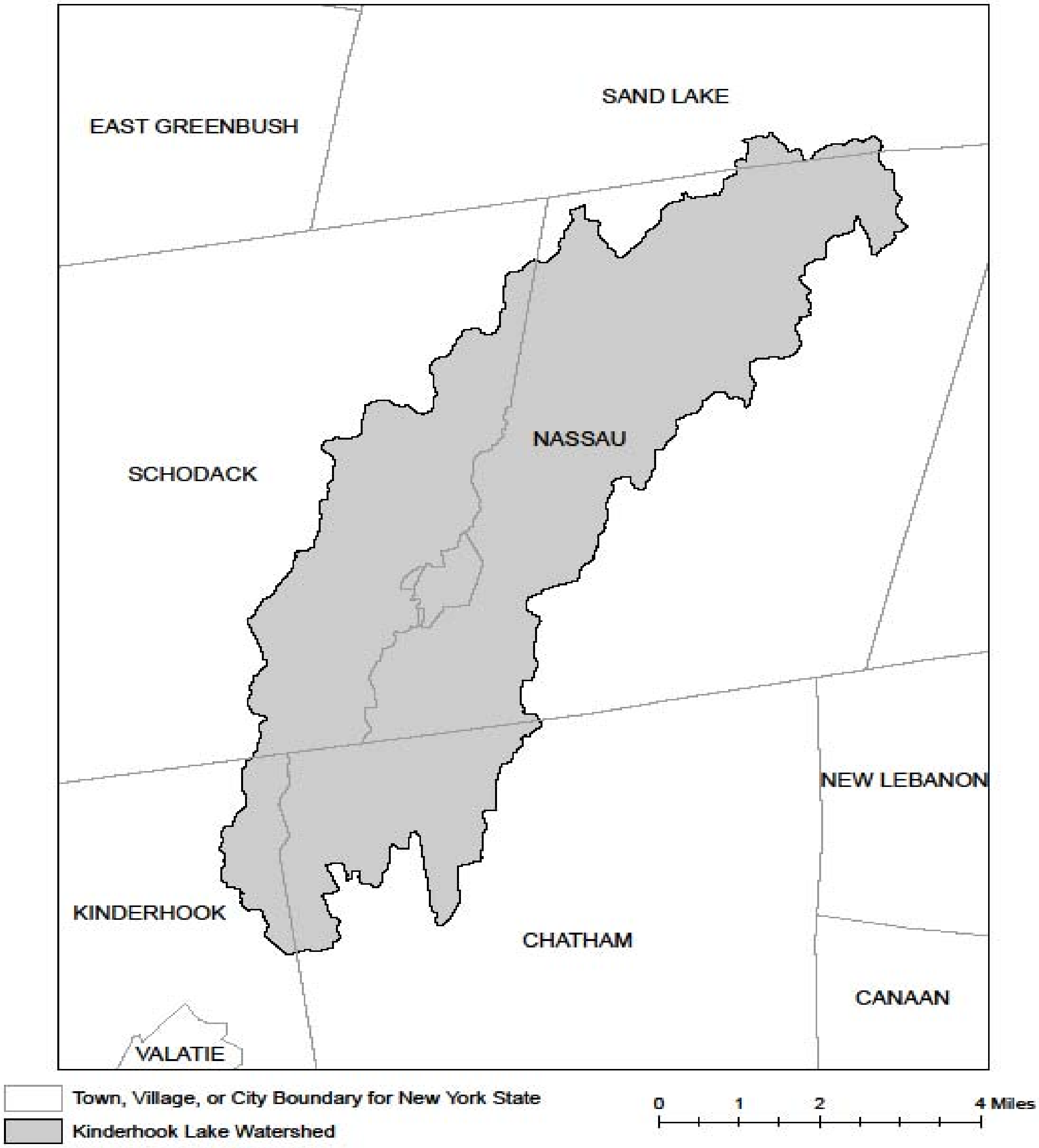


Figure 5: Kinderhook Lake Watershed



APPENDIX D

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual (“Design Manual”), dated January 2015.

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

APPENDIX E

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

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

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

APPENDIX F

LIST OF NYS DEC REGIONAL OFFICES

Region	COVERING THE FOLLOWING COUNTIES:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS	DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, PO BOX 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROAD AVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVE. BUFFALO, NY 14203-2999 TEL. (716) 851-7070

Appendix B

USDA Soils Information; FEMA Map; NWI Map; NYS DEC Environmental Resource Map; OPRHP Cultural Resourse Sensitivity Map

United States Department of Agriculture

NRCS

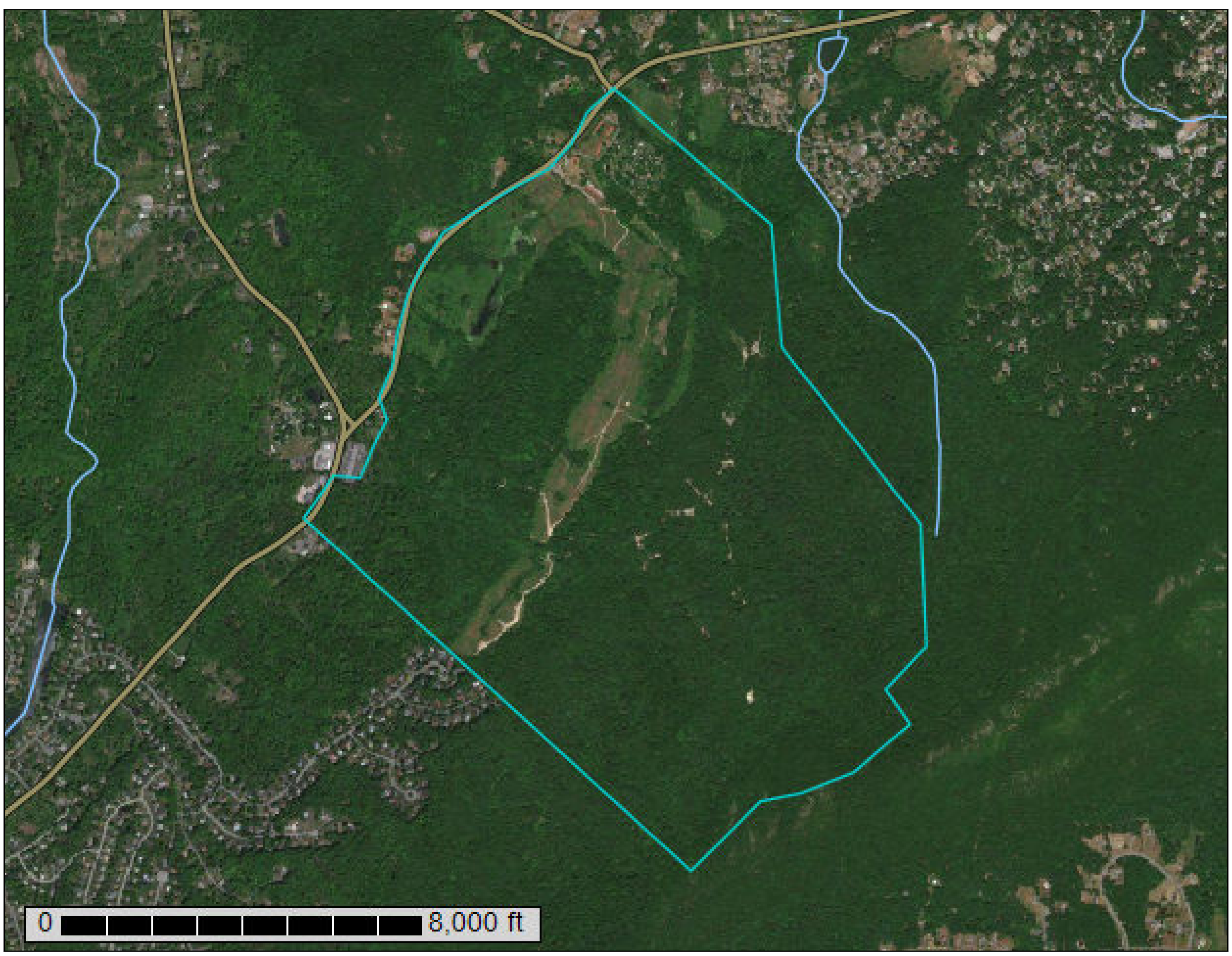
Natural Resources Conservation Service

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

Custom Soil Resource Report for

Orange County, New York

Clovewood



March 15, 2018

Preface

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

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

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

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

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

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

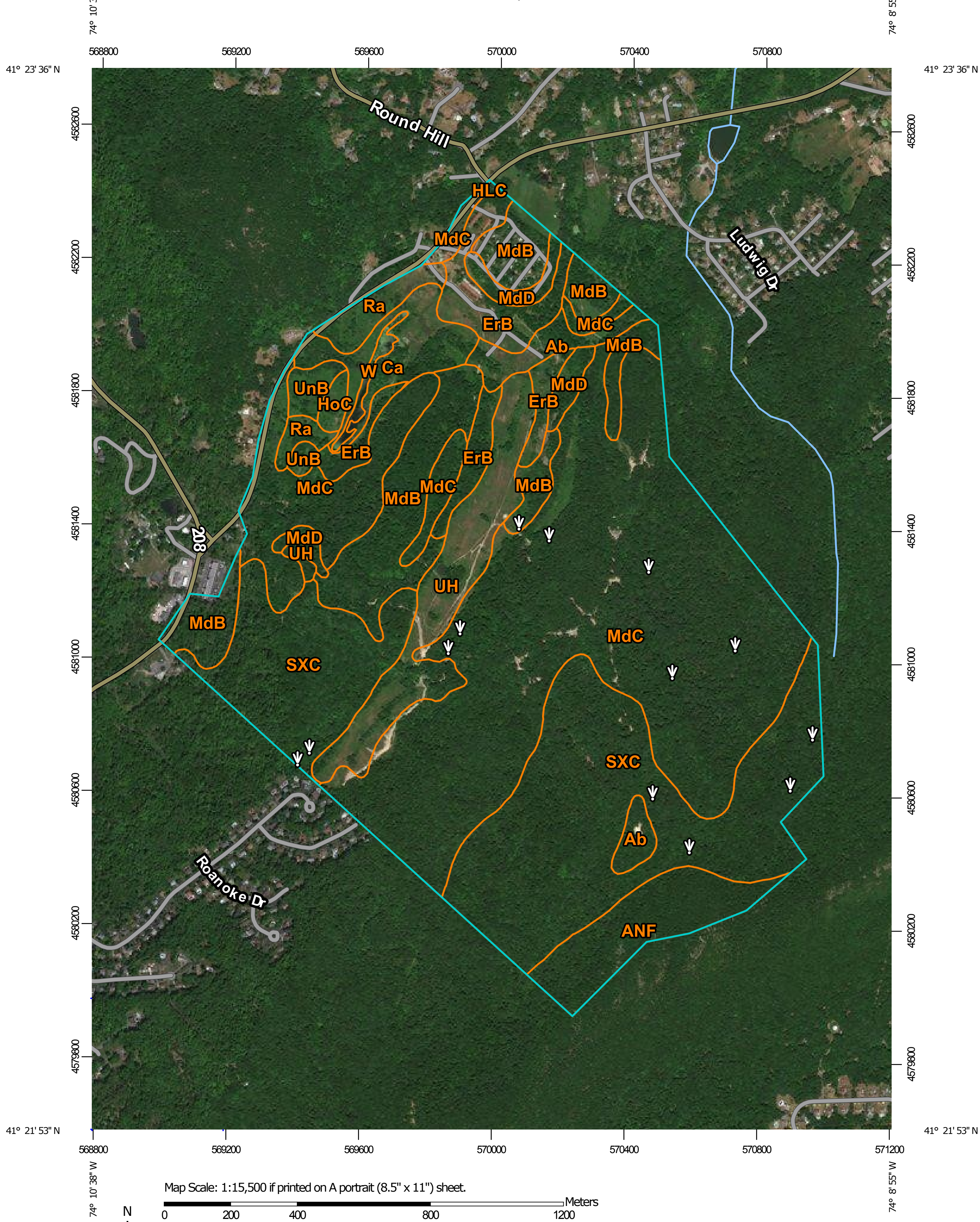
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:15,500 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 200, 400, 800, 1200

Feet: 0, 500, 1000, 2000, 3000

N

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Orange County, New York
Survey Area Data: Version 18, Oct 8, 2017

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

Date(s) aerial images were photographed: Oct 7, 2013—Feb 26, 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
Ab	Alden silt loam	14.4	2.0%
ANF	Arnot-Lordstown complex, very steep	29.5	4.2%
Ca	Canandaigua silt loam	20.9	2.9%
ErB	Erie gravelly silt loam, 3 to 8 percent slopes	33.4	4.7%
HLC	Hollis soils, sloping	0.6	0.1%
HoC	Hoosic gravelly sandy loam, 8 to 15 percent slopes	2.8	0.4%
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	68.5	9.7%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	286.8	40.5%
MdD	Mardin gravelly silt loam, 15 to 25 percent slopes	11.4	1.6%
Ra	Raynham silt loam	12.1	1.7%
SXC	Swartswood and Mardin soils, sloping, very stony	176.6	24.9%
UH	Udorthents, smoothed	42.6	6.0%
UnB	Unadilla silt loam, 0 to 8 percent slopes	6.3	0.9%
W	Water	2.9	0.4%
Totals for Area of Interest		**708.7**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Orange County, New York

Ab—Alden silt loam

Map Unit Setting

National map unit symbol: 9vtc
Elevation: 300 to 1,500 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Alden

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: A silty mantle of local deposition overlying loamy till

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 36 inches: silt loam
H3 - 36 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Canandaigua

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

Carlisle

Percent of map unit: 5 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Erie

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

Wayland

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

ANF—Arnot-Lordstown complex, very steep

Map Unit Setting

National map unit symbol: 9vtk
Elevation: 750 to 1,800 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Arnot and similar soils: 65 percent
Lordstown and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arnot

Setting

Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from acid sandstone, siltstone, and shale

Typical profile

H1 - 0 to 3 inches: channery silt loam
H2 - 3 to 13 inches: very channery silt loam
H3 - 13 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 35 to 50 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Lordstown

Setting

Landform: Hills, benches, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Oa - 0 to 2 inches: highly decomposed plant material
H1 - 2 to 7 inches: channery silt loam
H2 - 7 to 21 inches: channery loam
H3 - 21 to 34 inches: channery loam
H4 - 34 to 43 inches: unweathered bedrock

Properties and qualities

Slope: 35 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Erie

Percent of map unit: 2 percent
Hydric soil rating: No

Mardin

Percent of map unit: 2 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Hydric soil rating: Unranked

Swartswood

Percent of map unit: 2 percent
Hydric soil rating: No

Wurtsboro

Percent of map unit: 2 percent
Hydric soil rating: No

Ca—Canandaigua silt loam

Map Unit Setting

National map unit symbol: 9vtq
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canandaigua and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canandaigua

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 35 inches: silty clay loam
H3 - 35 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent

Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Alden

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

Halsey

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

Madalin

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

Palms

Percent of map unit: 5 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Raynham

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

ErB—Erie gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vv9
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Erie

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, sandstone, shale, and limestone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 18 inches: channery silt loam
H3 - 18 to 54 inches: channery silt loam
H4 - 54 to 70 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 21 inches to fragipan
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Alden

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

Bath

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

Mardin

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

Wurtsboro

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

HLC—Hollis soils, sloping

Map Unit Setting

National map unit symbol: 9vvh
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Hollis

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: A thin mantle of loamy till derived mainly from schist, granite, and gneiss

Typical profile

Oa - 0 to 3 inches: highly decomposed plant material
H1 - 3 to 8 inches: gravelly loam
H2 - 8 to 18 inches: gravelly loam
H3 - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Charlton

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

Unnamed soils

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

Paxton

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

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: Unranked

HoC—Hoosic gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9vvm
Elevation: 100 to 1,100 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Hoosic

Setting

Landform: Terraces, deltas, outwash plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 5 inches: gravelly sandy loam
H2 - 5 to 25 inches: very gravelly sandy loam
H3 - 25 to 60 inches: very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

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

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

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

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

MdB—Mardin gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2v30j
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

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

Description of Mardin

Setting
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

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

Minor Components

Bath

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop, interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

MdC—Mardin gravelly silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v30l
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Mardin

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

MdD—Mardin gravelly silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2v30p
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Mardin

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 15 to 25 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Bath

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ra—Raynham silt loam

Map Unit Setting

National map unit symbol: 9vwd
Elevation: 50 to 500 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Raynham, poorly drained, and similar soils: 50 percent
Raynham, somewhat poorly drained, and similar soils: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Raynham, Poorly Drained

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Glaciolacustrine, eolian, or old alluvial deposits, comprised mainly of silt and very fine sand

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 26 inches: silt loam
H3 - 26 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Description of Raynham, Somewhat Poorly Drained

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Glaciolacustrine, eolian, or old alluvial deposits, comprised mainly of silt and very fine sand

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 26 inches: silt loam
H3 - 26 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Canandaigua

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

Madalin

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

Palms

Percent of map unit: 5 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Scio

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

Unadilla

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

SXC—Swartswood and Mardin soils, sloping, very stony

Map Unit Setting

National map unit symbol: 2v30r
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Swartswood, very stony, and similar soils: 40 percent
Mardin, very stony, and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swartswood, Very Stony

Setting

Landform: Hills, till plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from quartzite, conglomerate, and sandstone

Typical profile

H1 - 0 to 3 inches: gravelly loam
H2 - 3 to 31 inches: gravelly fine sandy loam
H3 - 31 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 36 inches to fragipan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 23 to 31 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

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

Description of Mardin, Very Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

A - 0 to 4 inches: gravelly silt loam
Bw - 4 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

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

Minor Components

Bath, very stony

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Volusia, very stony

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Wurtsboro, very stony

Percent of map unit: 5 percent
Landform: Hills, till plains

Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

UH—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9vxc
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Typical profile

H1 - 0 to 4 inches: channery loam
H2 - 4 to 70 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Alden

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

Bath

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

Fredon

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

Raynham

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

Wurtsboro

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

UnB—Unadilla silt loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vxd
Elevation: 600 to 1,800 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Unadilla and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Unadilla

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Glaciolacustrine deposits, eolian deposits, or old alluvium, comprised mainly of silt and very fine sand

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 44 inches: silt loam
H3 - 44 to 60 inches: stratified very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: High (about 9.4 inches)

Interpretive groups

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

Minor Components

Allard

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

Collamer

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

Chenango

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

Raynham

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

Scio

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

W—Water

Map Unit Setting

National map unit symbol: 9vxh
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days

Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

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

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

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

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography provided by the New York Sate Office of Cyber Security & Critical Infrastructure Coordination. This information was provided as 30-centimeter and 60-centimeter resolution natural color orthoimagery from photography dated April-May 2004.

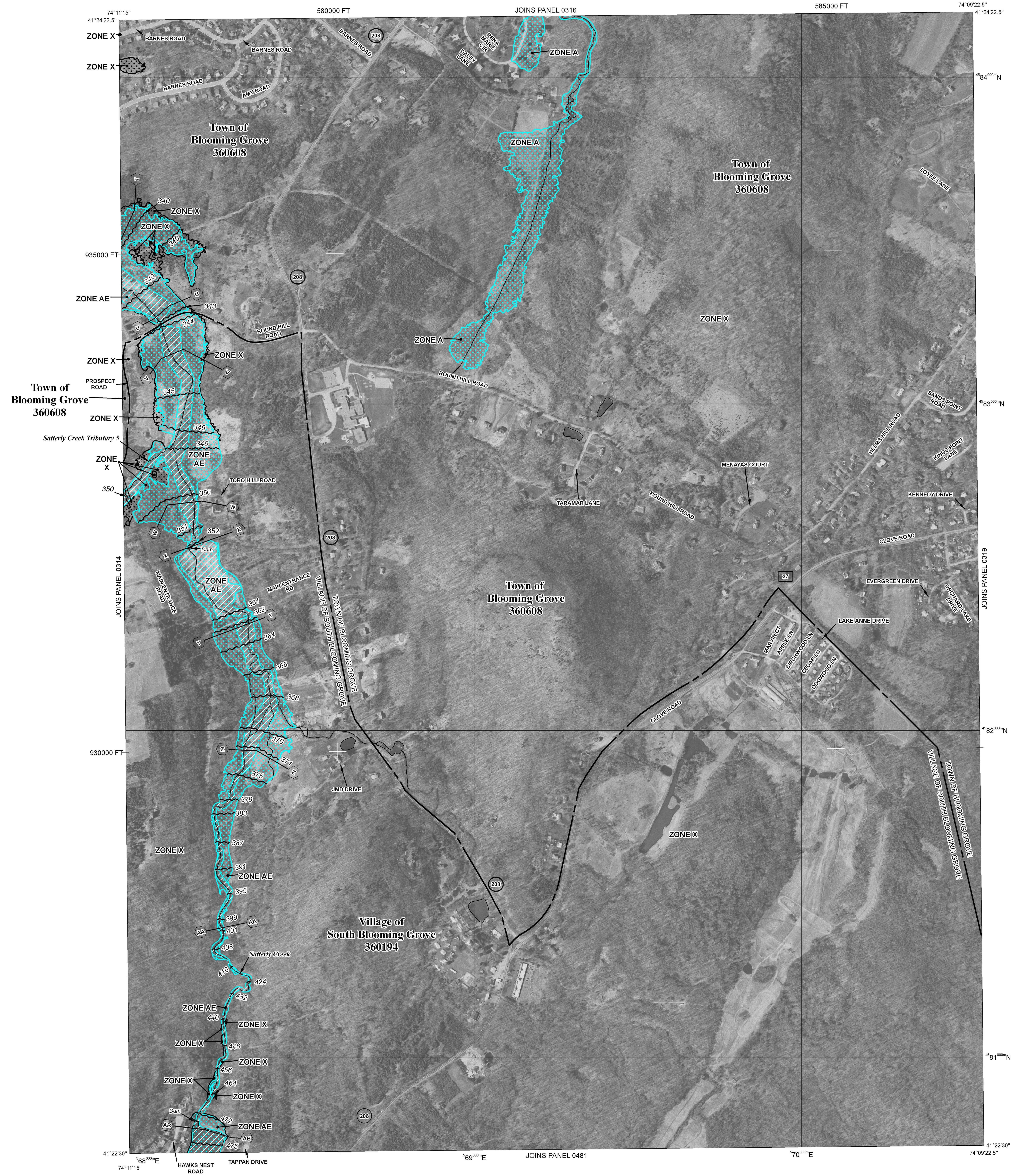
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
3 — 3	Limited detail cross section line
23 - - - 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{24}76^{000m}$N	1000-meter Universal Transverse Mercator grid values, zone 18N
600000 FT	5000-foot grid ticks: New York State Plane coordinate system, East zone (FIPSZONE 3101), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 3, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0318E

FIRM
FLOOD INSURANCE RATE MAP

for ORANGE COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
BLOOMING GROVE, TOWN OF	360608
SOUTH BLOOMING GROVE, VILLAGE OF	360194

PANEL 318 OF 630
MAP SUFFIX: E
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The **Map Number** shown below should be used when placing map orders: the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
36071C0318E

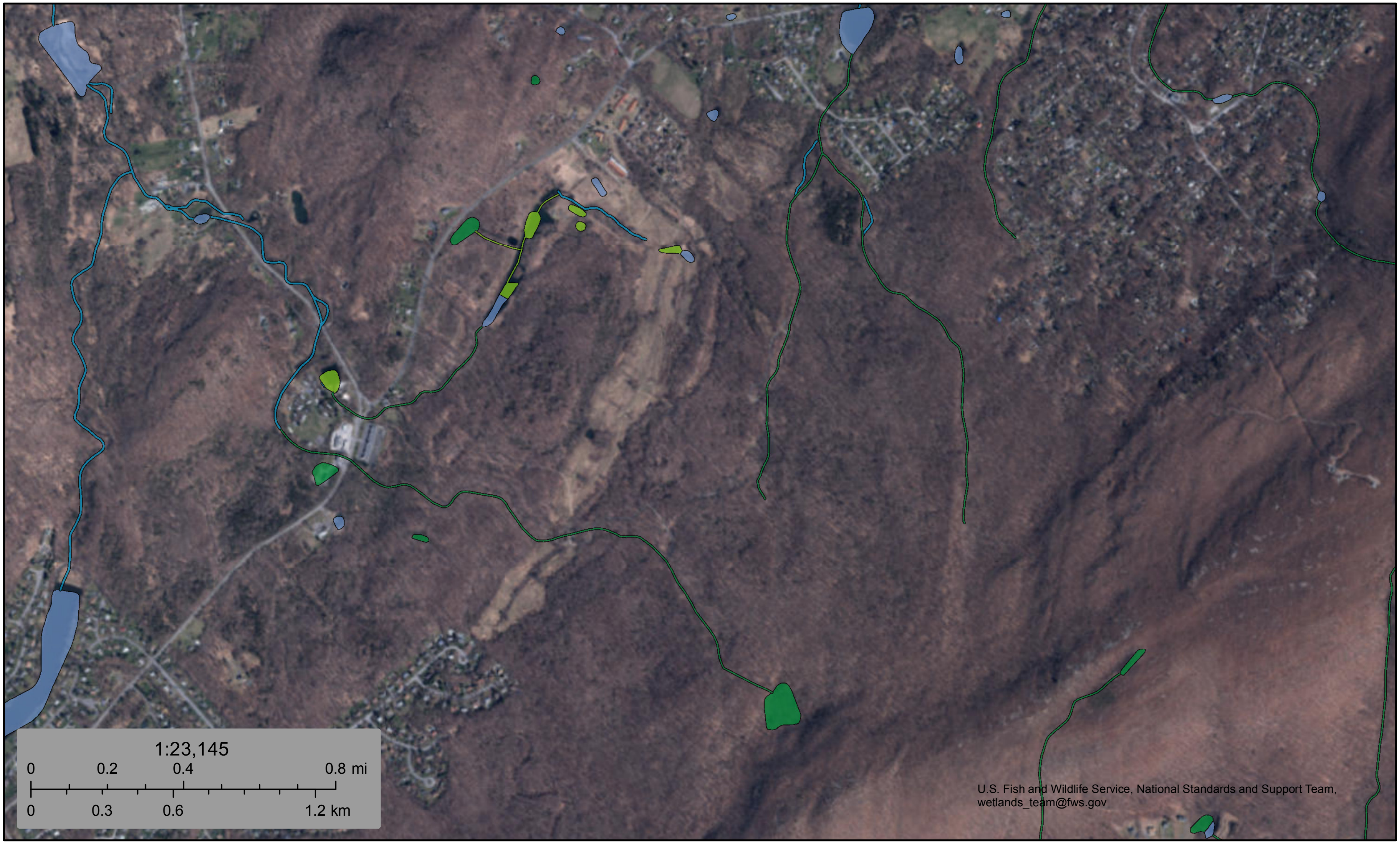
EFFECTIVE DATE
AUGUST 3, 2009

Federal Emergency Management Agency

U.S. Fish and Wildlife Service

National Wetlands Inventory

Clovewood Image



March 15, 2018

Wetlands

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

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

NEW YORK STATE - DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

Search	Layers & Legend	Tell Me More...
Need a Permit?	Contacts	Help

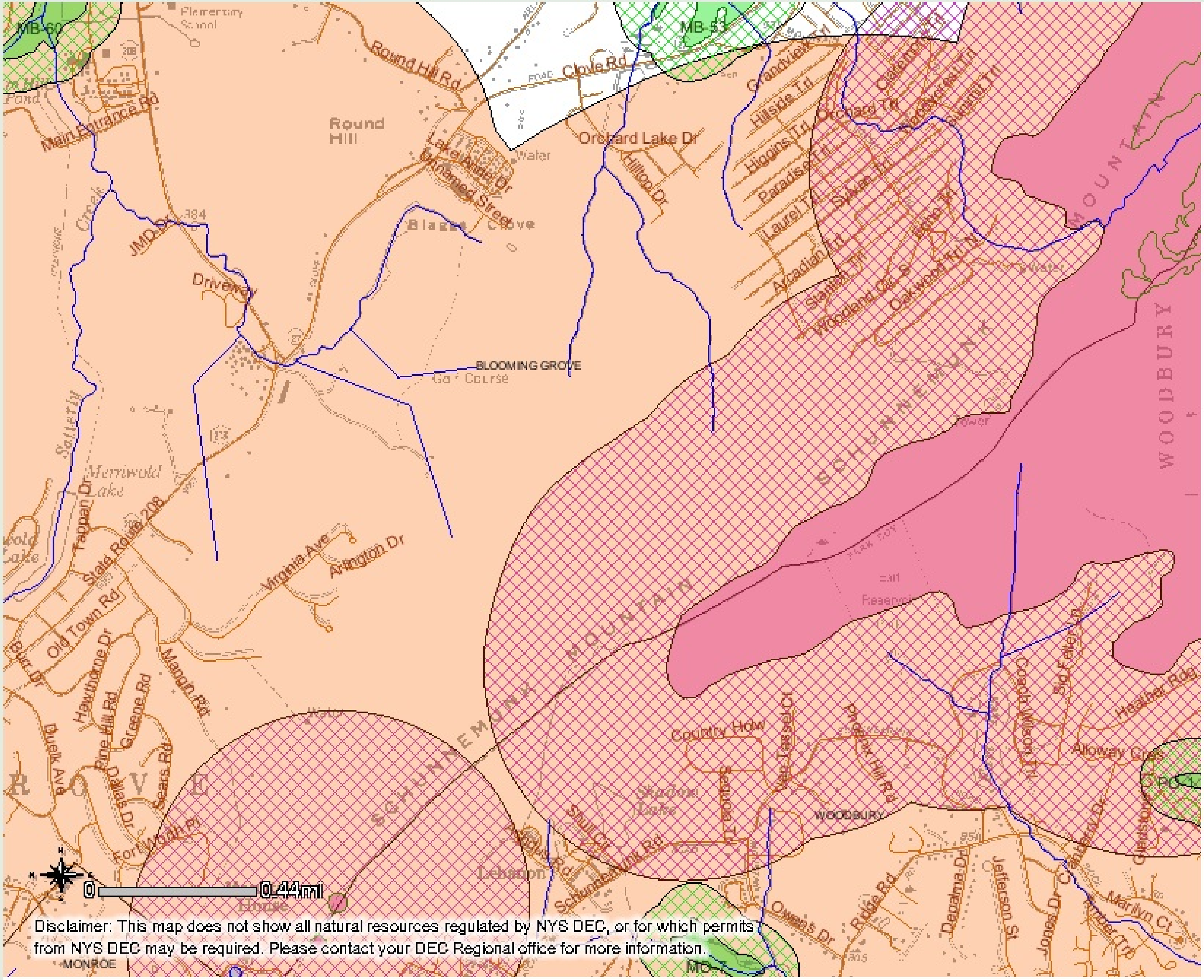
Map Layers & Legend

More layers appear as you zoom in.

- ☑ Classified Water Bodies
- ☑ Unique Geological Features
- ☑ Classified Water Bodies
- ☑ State-Regulated Freshwater Wetlands
- Wetland Checkzone ?
- ☑ Rare Plants and Rare Animals
- ☑ Significant Natural Communities
- Natural Communities Vicinity ?
- ☑ Background Map
- ☑ Adirondack Park Boundary
- ☑ Counties

Click "Refresh Layers" to activate and deactivate layers.

Refresh Layers



CRIS Cultural Resource Information System

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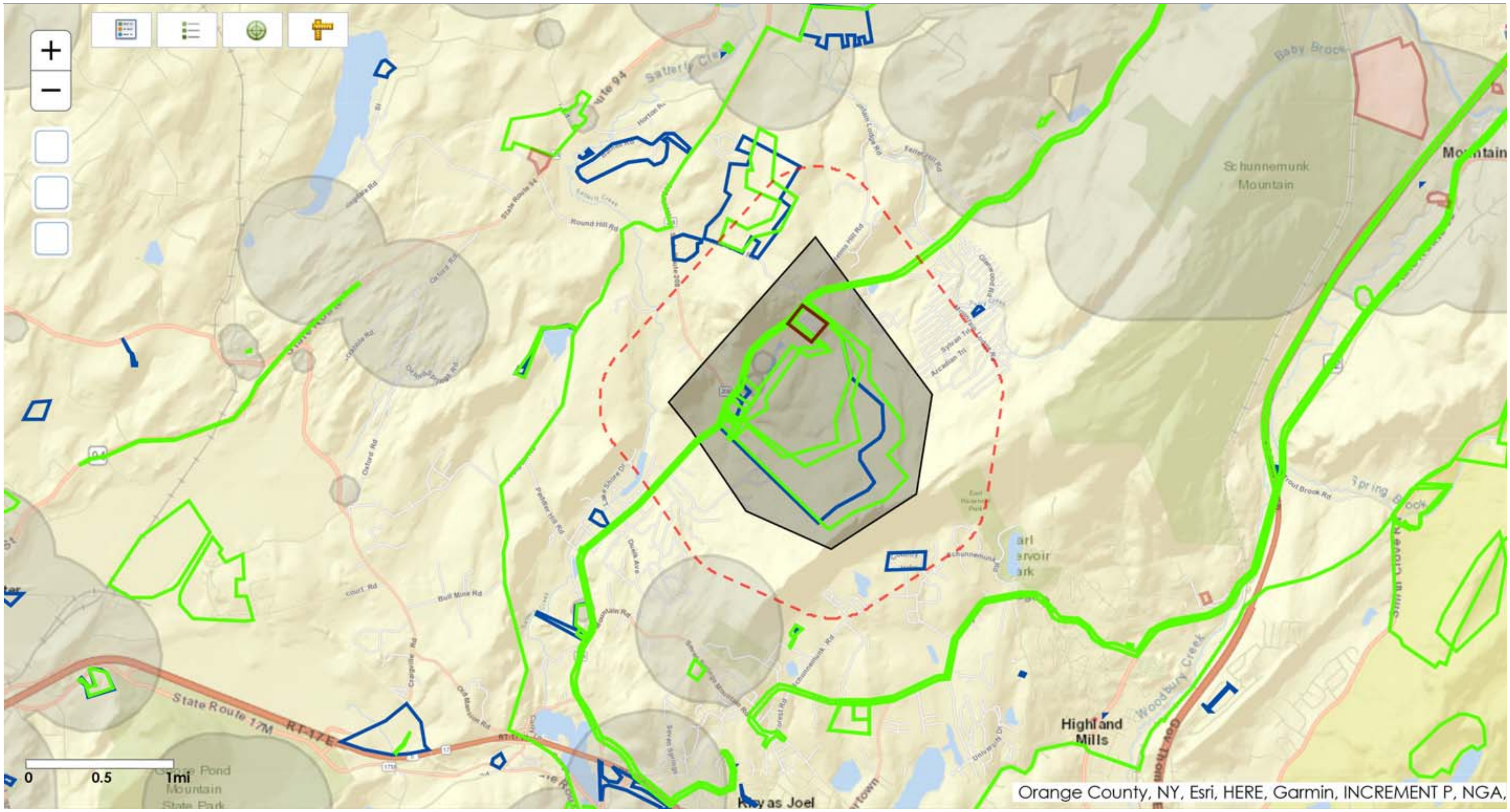

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Versior

Appendix C

Water Quality and Run off Reduction

Calculation Spreadsheets

Version 1.8 | Total Water Quality Volume Calculation
Last Updated: 11/09/2015 | WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?...		
Design Point:		
P=	1.42	*inch*

Breakdown of Subcatchments						
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Description**
1	60.69	6.22	10%	0.14	44,497	B1
2	17.05	2.45	14%	0.18	15,760	B10
3	12.80	0.40	3%	0.08	5,155	B11
4	24.40	4.80	20%	0.23	28,556	B12
5	9.40	1.40	15%	0.18	8,917	B14
6	6.10	0.65	11%	0.15	4,588	B15
7	3.65	0.10	3%	0.07	1,405	B16
8	5.40	0.50	9%	0.13	3,711	B2
9	24.35	5.05	21%	0.24	29,703	B3
10	10.10	4.40	44%	0.44	23,015	B4
Subtotal (1-30)	311.54	55.42	18%	0.21	**337,394**	**Subtotal 1**
Total	311.54	55.42	18%	0.21	**337,394**	**Initial WQv**

Identify Runoff Reduction Techniques By Area			
Technique	**Total Contributing Area** *(Acre)*	**Contributing Impervious Area** *(Acre)*	**Notes**
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques					
	Total Area *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient Rv**	**WQv** *(ft^3)*
"<<Initial WQv"	311.54	55.42	18%	0.21	337,394
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**311.54**	**55.42**	18%	0.21	337,394
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	311.54	55.42	18%	0.21	**337,394**
WQv reduced by Area Reduction techniques					0

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

Additional Subcatchments						
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Description**
11	4.50	1.20	27%	0.29	6,727	B5
12	8.90	3.27	37%	0.38	17,464	B6
13	13.65	3.90	29%	0.31	21,611	B7
14	11.30	0.35	3%	0.08	4,536	B8
15	5.90	1.40	24%	0.26	8,015	B9
16	9.15	4.46	49%	0.49	23,049	C1
17	21.40	2.45	11%	0.15	16,881	C10
18	6.20	2.00	32%	0.34	10,876	C2
19	7.50	1.67	22%	0.25	9,680	C4
20	18.90	2.39	13%	0.16	15,959	C6
21	21.30	4.42	21%	0.24	25,995	C7
22	8.90	1.94	22%	0.25	11,294	E2
23						
24						
25						
26						
27						
28						
29						
30						
Subtotal	137.60	29.45	21%	0.24	**172,086**	**Subtotal**

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

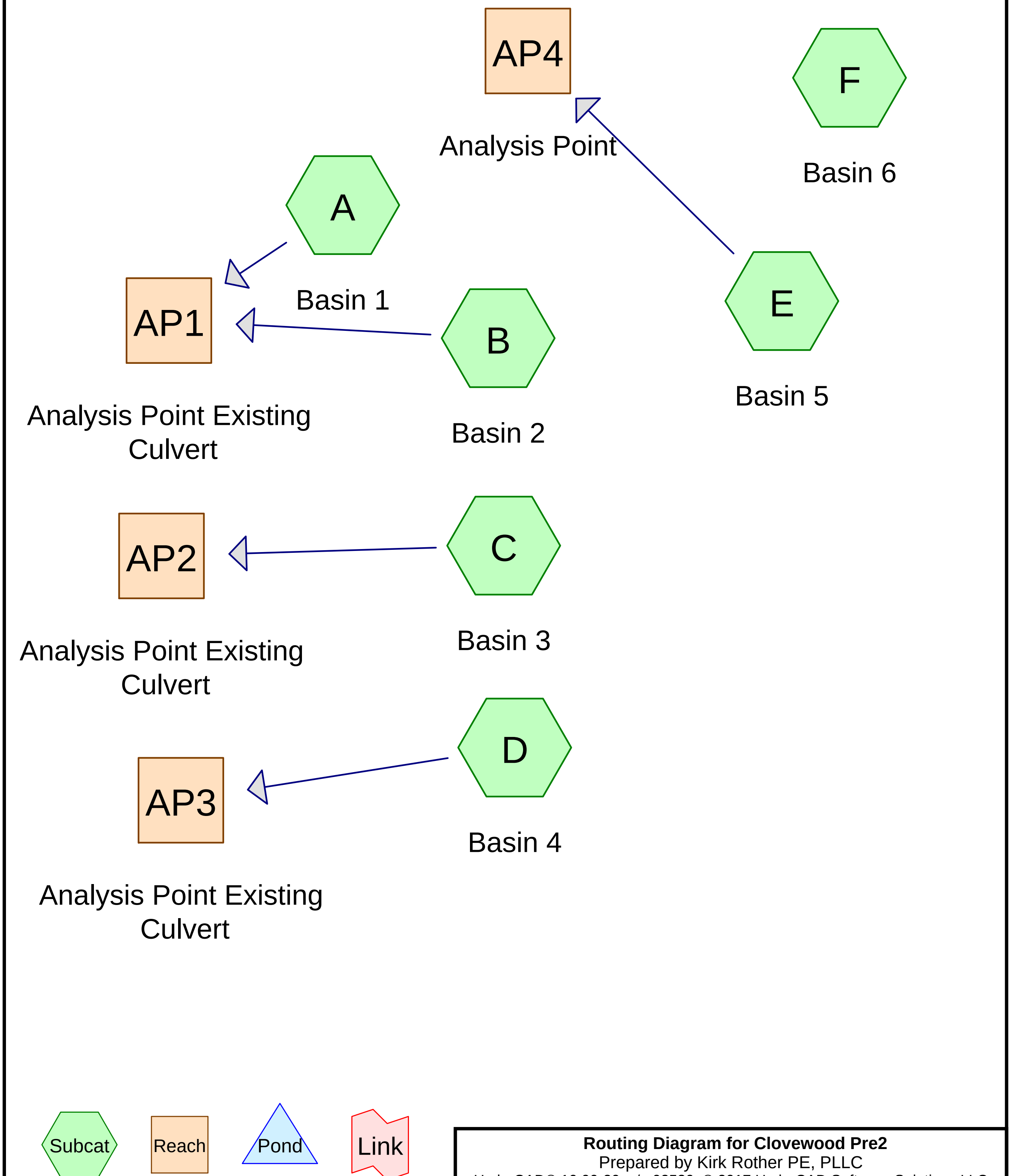
All Subcatchments						
Catchment	Total Area (Acres)	Impervious Cover (Acres)	Percent Impervious %	Runoff Coefficient Rv	WQv (ft^3)	Description
1	60.69	6.22	0.10	0.14	44497.08	B1
2	17.05	2.45	0.14	0.18	15,760	B10
3	12.80	0.40	0.03	0.08	5154.60	B11
4	24.40	4.80	0.20	0.23	28556.48	B12
5	9.40	1.40	0.15	0.18	8917.46	B14
6	6.10	0.65	0.11	0.15	4587.59	B15
7	3.65	0.10	0.03	0.07	1404.63	B16
8	5.40	0.50	0.09	0.13	3711.31	B2
9	24.35	5.05	0.21	0.24	29703.38	B3
10	10.10	4.40	0.44	0.44	23015.29	B4
11	4.50	1.20	0.27	0.29	6726.75	B5
12	8.90	3.27	0.37	0.38	17463.78	B6
13	13.65	3.90	0.29	0.31	21610.66	B7
14	11.30	0.35	0.03	0.08	4536.05	B8
15	5.90	1.40	0.24	0.26	8015.40	B9
16	9.15	4.46	0.49	0.49	23048.79	C1
17	21.40	2.45	0.11	0.15	16881.32	C10
18	6.20	2.00	0.32	0.34	10876.21	C2
19	7.50	1.67	0.22	0.25	9680.34	C4
20	18.90	2.39	0.13	0.16	15958.64	C6
21	21.30	4.42	0.21	0.24	25994.65	C7
22	8.90	1.94	0.22	0.25	11293.73	E2
23						
24						
25						
26						
27						
28						
29						
30						

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A	16.00	55%
B		40%
C	76.00	30%
D	**235.00**	20%
Total Area	327	
Calculate the Minimum RRv		
S =	**0.24**	
Impervious =	55.42	*acre*
Precipitation	1.42	*in*
Rv	0.95	
Minimum RRv	**65,232**	***ft3***
	1.50	af

Appendix D

TR-20 HydroCAD model



Routing Diagram for Clovewood Pre2
Prepared by Kirk Rother PE, PLLC
HydroCAD® 10.00-20 s/n 02530 © 2017 HydroCAD Software Solutions LLC

Time span=1.00-36.00 hrs, dt=0.05 hrs, 701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment A: Basin 1 Runoff Area=37.220 ac 2.79% Impervious Runoff Depth=0.56"
Flow Length=2,020' Tc=28.9 min CN=71 Runoff=11.18 cfs 1.729 af

Subcatchment B: Basin 2 Runoff Area=258.600 ac 3.58% Impervious Runoff Depth=0.73"
Flow Length=7,510' Tc=27.1 min CN=75 Runoff=116.57 cfs 15.683 af

Subcatchment C: Basin 3 Runoff Area=300.700 ac 0.18% Impervious Runoff Depth=0.73"
Flow Length=6,605' Tc=23.4 min CN=75 Runoff=146.53 cfs 18.236 af

Subcatchment D: Basin 4 Runoff Area=3.220 ac 0.00% Impervious Runoff Depth=0.82"
Flow Length=1,815' Tc=19.2 min CN=77 Runoff=2.03 cfs 0.221 af

Subcatchment E: Basin 5 Runoff Area=174.500 ac 0.00% Impervious Runoff Depth=0.82"
Flow Length=7,660' Tc=32.0 min CN=77 Runoff=84.47 cfs 11.969 af

Subcatchment F: Basin 6 Runoff Area=10.600 ac 0.00% Impervious Runoff Depth=0.82"
Flow Length=1,400' Tc=26.8 min CN=77 Runoff=5.64 cfs 0.727 af

Reach AP1: Analysis Point Existing Culvert Inflow=127.54 cfs 17.412 af
Outflow=127.54 cfs 17.412 af

Reach AP2: Analysis Point Existing Culvert Inflow=146.53 cfs 18.236 af
Outflow=146.53 cfs 18.236 af

Reach AP3: Analysis Point Existing Culvert Inflow=2.03 cfs 0.221 af
Outflow=2.03 cfs 0.221 af

Reach AP4: Analysis Point Inflow=84.47 cfs 11.969 af
Outflow=84.47 cfs 11.969 af

Total Runoff Area = 784.840 ac Runoff Volume = 48.565 af Average Runoff Depth = 0.74"
98.62% Pervious = 774.020 ac 1.38% Impervious = 10.820 ac

Summary for Subcatchment A: Basin 1

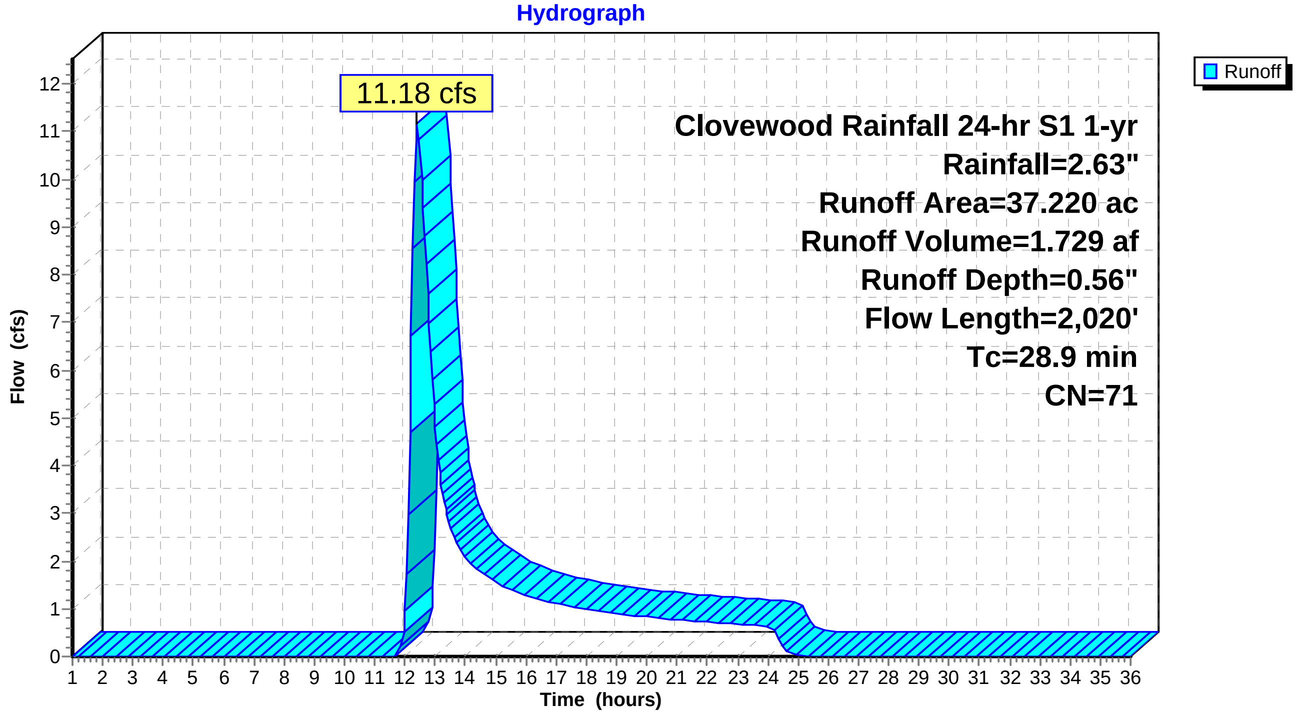
Runoff = 11.18 cfs @ 12.41 hrs, Volume= 1.729 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	7.350	89	Wetlands
*	1.040	98	Impervious Surfaces
	1.000	80	>75% Grass cover, Good, HSG D
	0.310	30	Woods, Good, HSG A
	1.240	55	Woods, Good, HSG B
	0.480	70	Woods, Good, HSG C
	5.970	77	Woods, Good, HSG D
	2.310	30	Brush, Good, HSG A
	3.810	48	Brush, Good, HSG B
	4.810	65	Brush, Good, HSG C
	8.040	73	Brush, Good, HSG D
*	0.040	75	Dirt roads, HSG A
*	0.100	84	Dirt roads, HSG B
*	0.030	88	Dirt roads, HSG C
*	0.690	90	Dirt roads, HSG D
	37.220	71	Weighted Average
	36.180		97.21% Pervious Area
	1.040		2.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	690	0.0200	2.28		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
2.7	690	0.0700	4.26		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
0.6	540	0.0400	15.27	213.78	Parabolic Channel,
					W=7.00' D=3.00' Area=14.0 sf Perim=9.6' n= 0.025
28.9	2,020	Total			

Subcatchment A: Basin 1



Summary for Subcatchment B: Basin 2

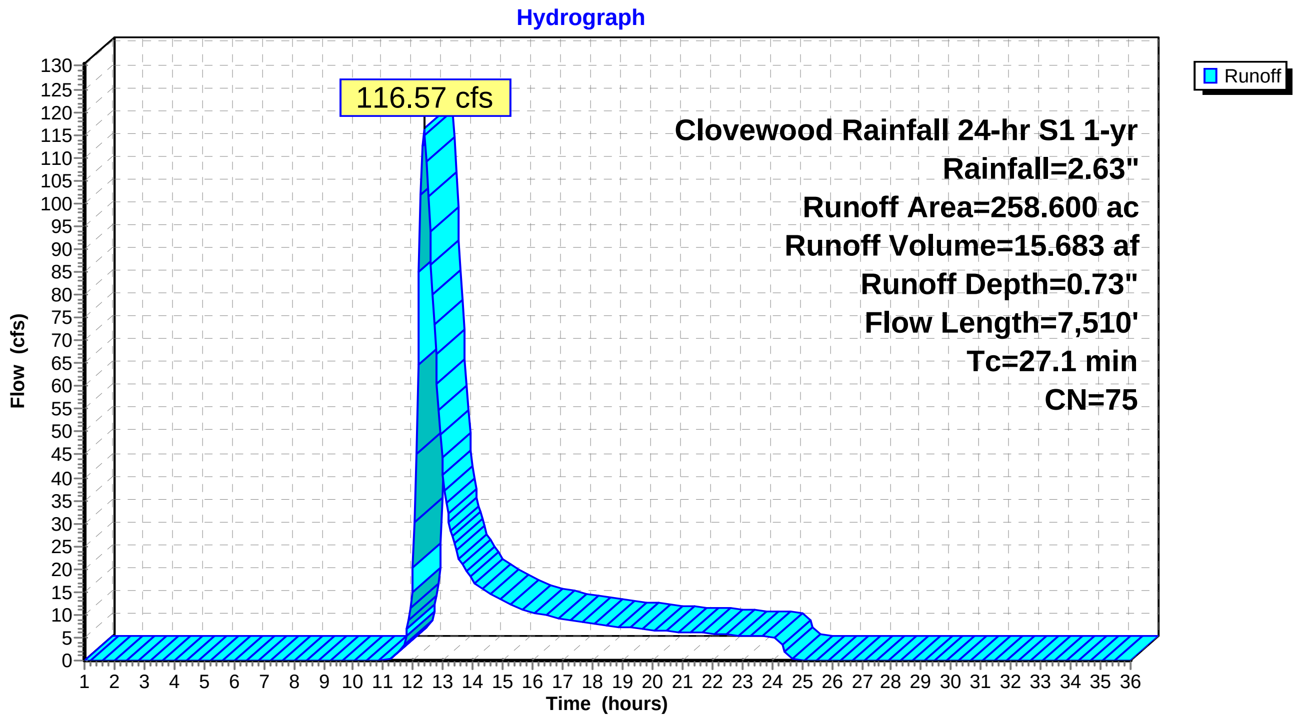
Runoff = 116.57 cfs @ 12.36 hrs, Volume= 15.683 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	13.090	89	Wetlands
*	4.300	79	Old Golf Course, HSG D
*	21.840	35	Old Golf Course, HSG A
	2.860	30	Woods, Good, HSG A
	157.080	77	Woods, Good, HSG D
	0.120	70	Woods, Good, HSG C
*	3.820	98	Water surface
*	5.430	98	Impervious surfaces
*	2.380	90	Dirt roads, HSG D
	13.380	80	>75% Grass cover, Good, HSG D
	27.860	78	Meadow, non-grazed, HSG D
	6.440	71	Meadow, non-grazed, HSG C
	258.600	75	Weighted Average
	249.350		96.42% Pervious Area
	9.250		3.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
12.6	3,220	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.1	2,250	0.0300	17.87	714.87	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
1.6	1,940	0.0400	20.64	825.46	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
27.1	7,510	Total			

Subcatchment B: Basin 2



Summary for Subcatchment C: Basin 3

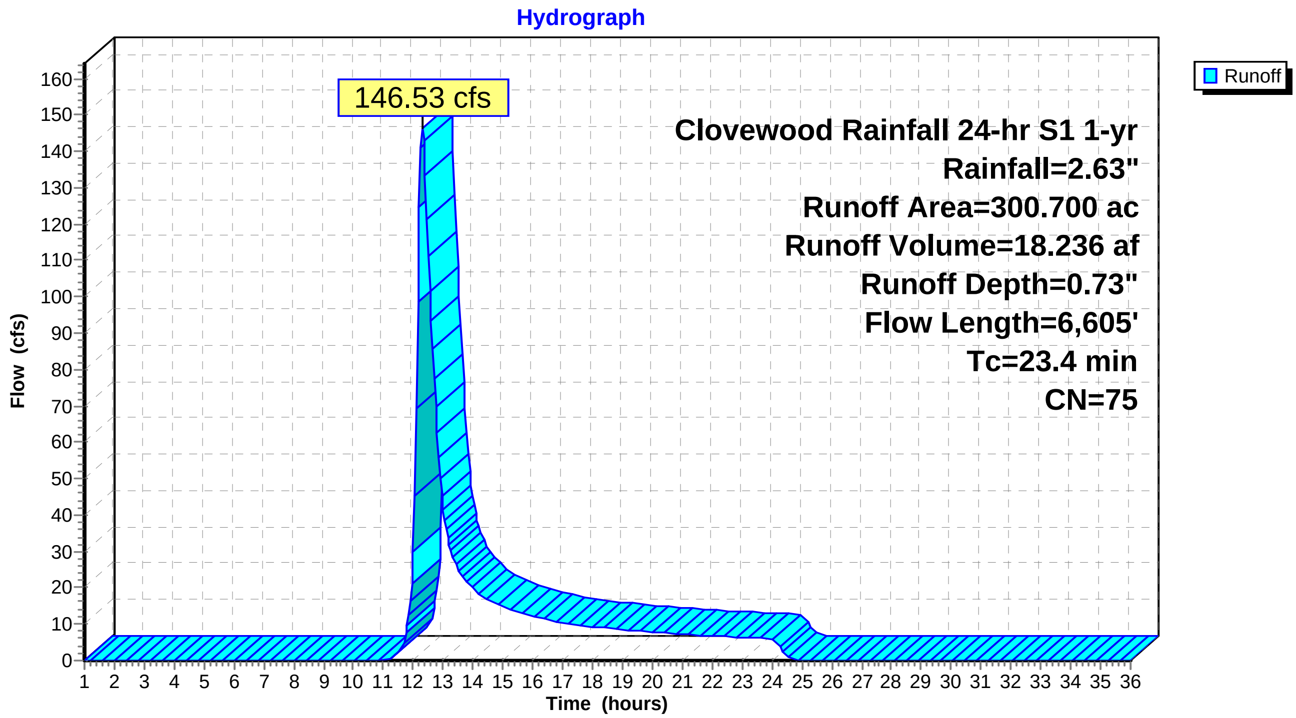
Runoff = 146.53 cfs @ 12.31 hrs, Volume= 18.236 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	7.060	89	Wetlands
*	0.530	98	Impervious Surfaces
	6.250	30	Woods, Good, HSG A
	271.850	77	Woods, Good, HSG D
*	0.620	80	Lawn, Good, HSG D
*	4.210	79	Old Golf Course, HSG D
*	10.080	35	Old Golf Course, HSG A
	0.100	78	Meadow, non-grazed, HSG D
	300.700	75	Weighted Average
	300.170		99.82% Pervious Area
	0.530		0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.5	360	0.5900	12.37		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
10.4	3,630	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.9	1,275	0.0900	23.77	380.30	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
0.8	1,240	0.0400	24.69	790.00	Parabolic Channel, W=12.00' D=4.00' Area=32.0 sf Perim=14.9' n= 0.020
23.4	6,605	Total			

Subcatchment C: Basin 3



Summary for Subcatchment D: Basin 4

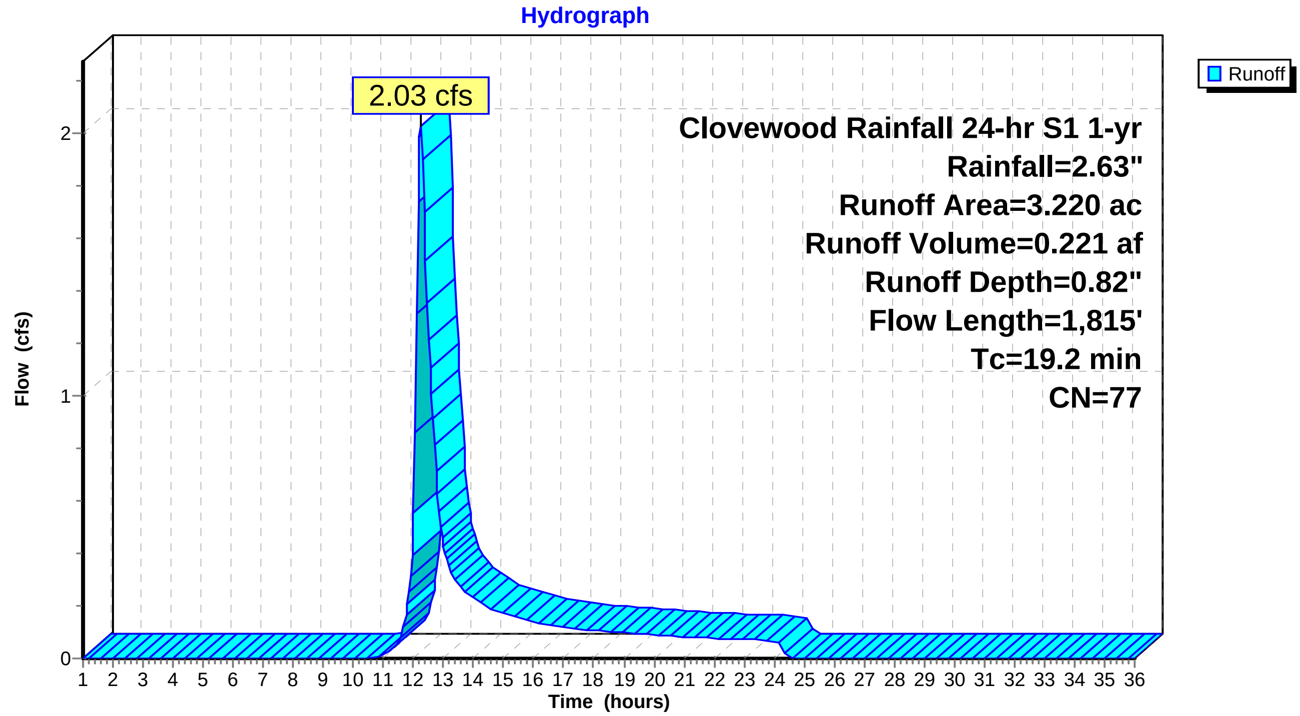
Runoff = 2.03 cfs @ 12.24 hrs, Volume= 0.221 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

Area (ac)	CN	Description
3.220	77	Woods, Good, HSG D
3.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.9	1,040	0.1400	6.02		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	675	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
19.2	1,815	Total			

Subcatchment D: Basin 4



Summary for Subcatchment E: Basin 5

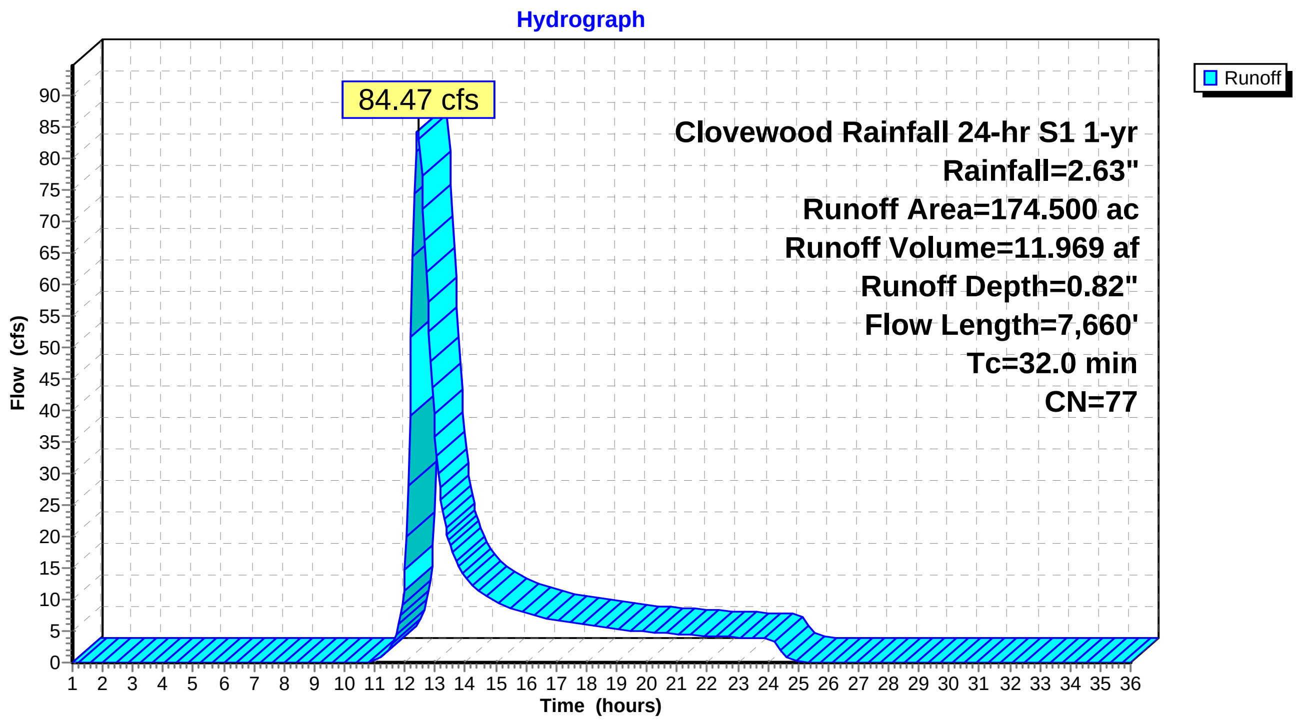
Runoff = 84.47 cfs @ 12.42 hrs, Volume= 11.969 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
	170.800	77	Woods, Good, HSG D
	0.400	30	Meadow, non-grazed, HSG A
*	3.300	89	Wetlands
	174.500	77	Weighted Average
	174.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	630	0.2800	8.52		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.6	2,300	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.7	4,630	0.0700	20.96	335.39	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
32.0	7,660	Total			

Subcatchment E: Basin 5



Summary for Subcatchment F: Basin 6

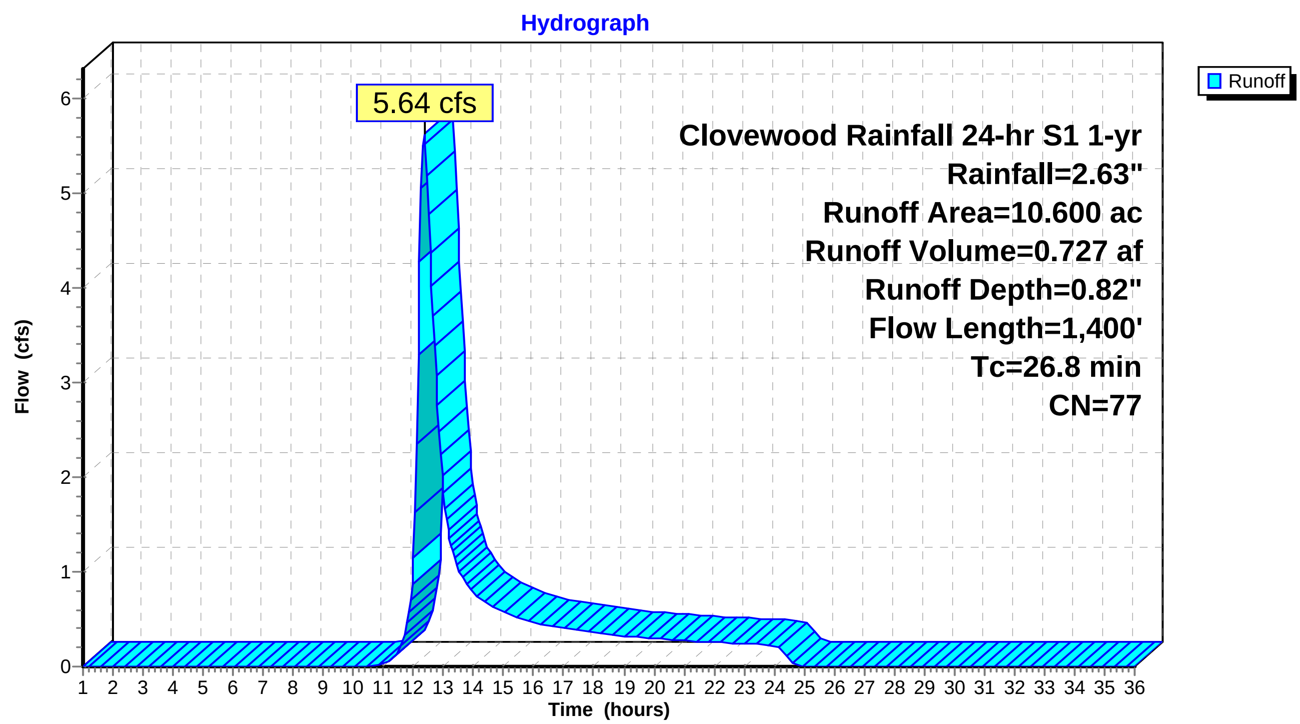
Runoff = 5.64 cfs @ 12.35 hrs, Volume= 0.727 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

Area (ac)	CN	Description
10.600	77	Woods, Good, HSG D
10.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0600	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.50"
3.8	1,300	0.1250	5.69		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
26.8	1,400	Total			

Subcatchment F: Basin 6

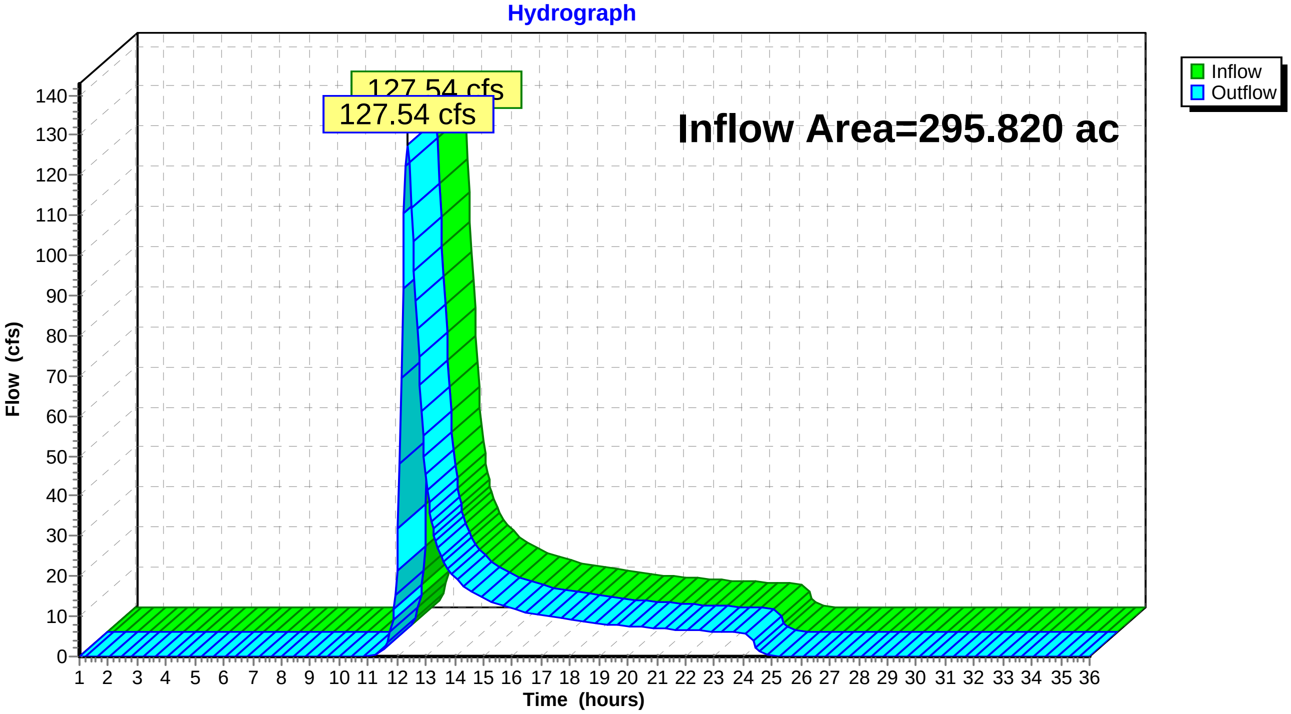


Summary for Reach AP1: Analysis Point Existing Culvert

Inflow Area = 295.820 ac, 3.48% Impervious, Inflow Depth = 0.71" for 1-yr event
Inflow = 127.54 cfs @ 12.37 hrs, Volume= 17.412 af
Outflow = 127.54 cfs @ 12.37 hrs, Volume= 17.412 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP1: Analysis Point Existing Culvert

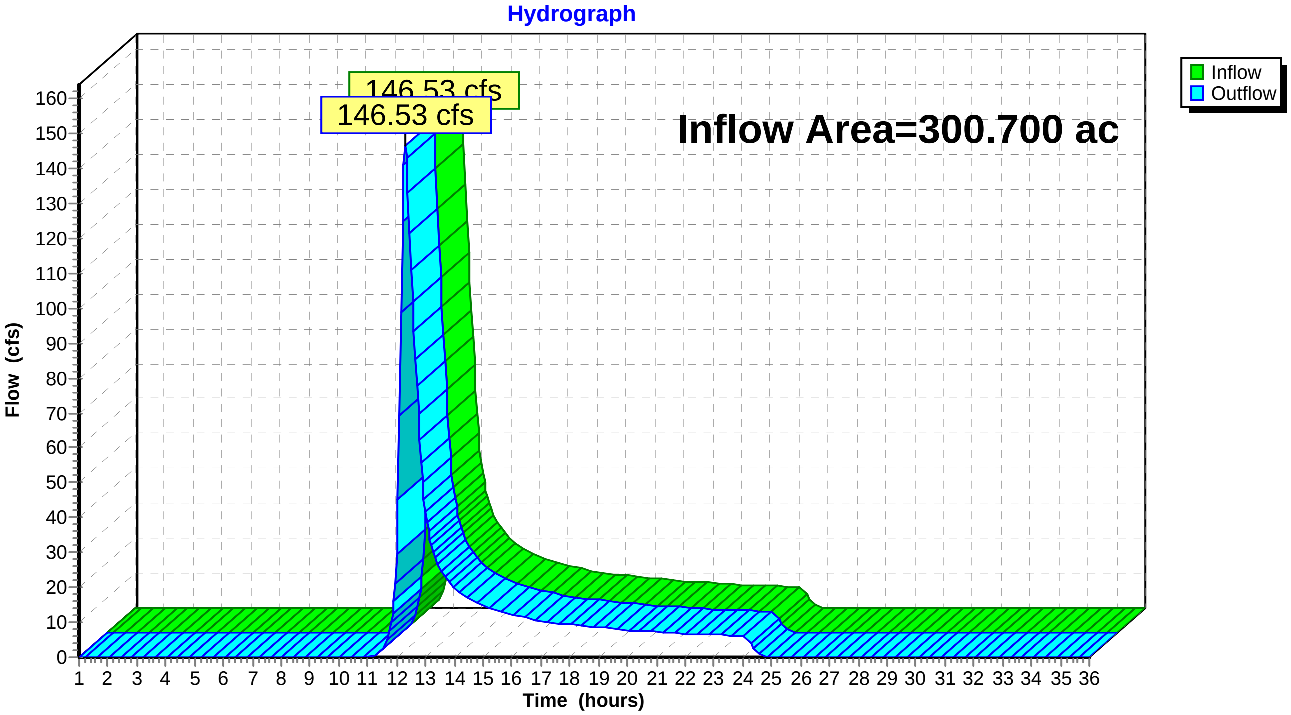


Summary for Reach AP2: Analysis Point Existing Culvert

Inflow Area = 300.700 ac, 0.18% Impervious, Inflow Depth = 0.73" for 1-yr event
Inflow = 146.53 cfs @ 12.31 hrs, Volume= 18.236 af
Outflow = 146.53 cfs @ 12.31 hrs, Volume= 18.236 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP2: Analysis Point Existing Culvert

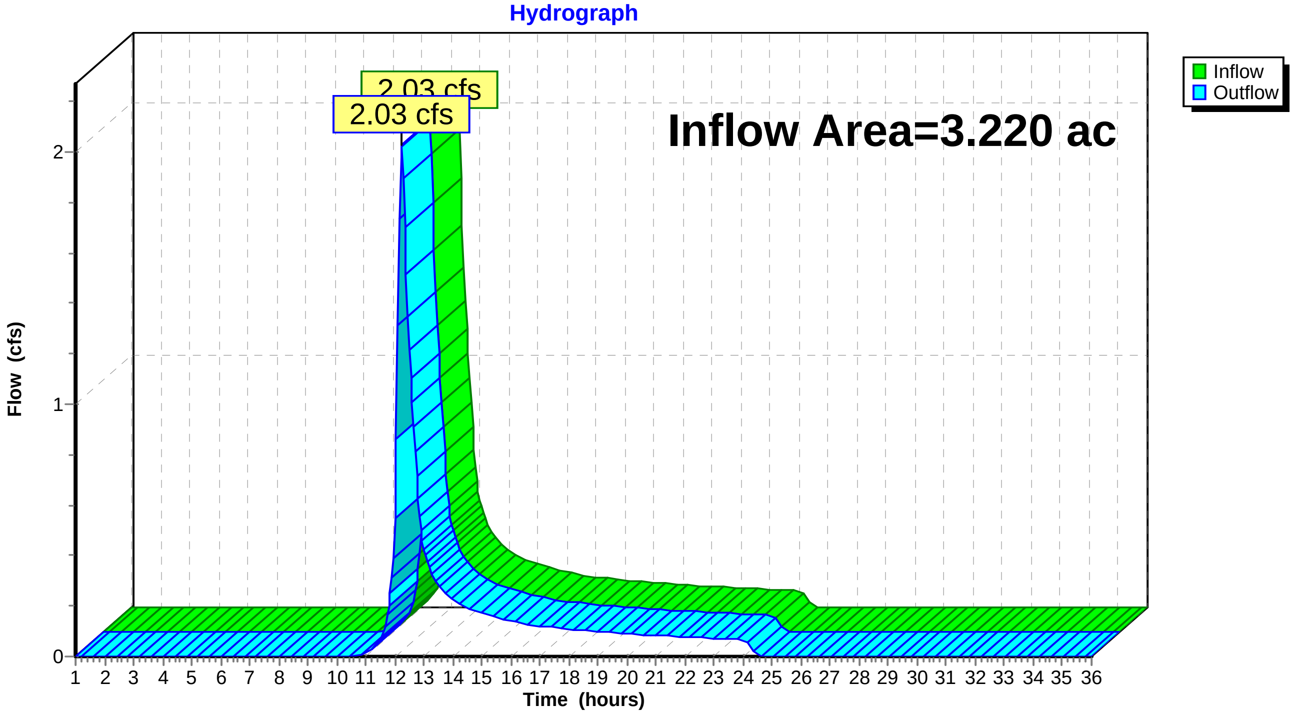


Summary for Reach AP3: Analysis Point Existing Culvert

Inflow Area =	3.220 ac,	0.00% Impervious,	Inflow Depth = 0.82"	for 1-yr event	
Inflow =	2.03 cfs @	12.24 hrs,	Volume=	0.221 af	
Outflow =	2.03 cfs @	12.24 hrs,	Volume=	0.221 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP3: Analysis Point Existing Culvert

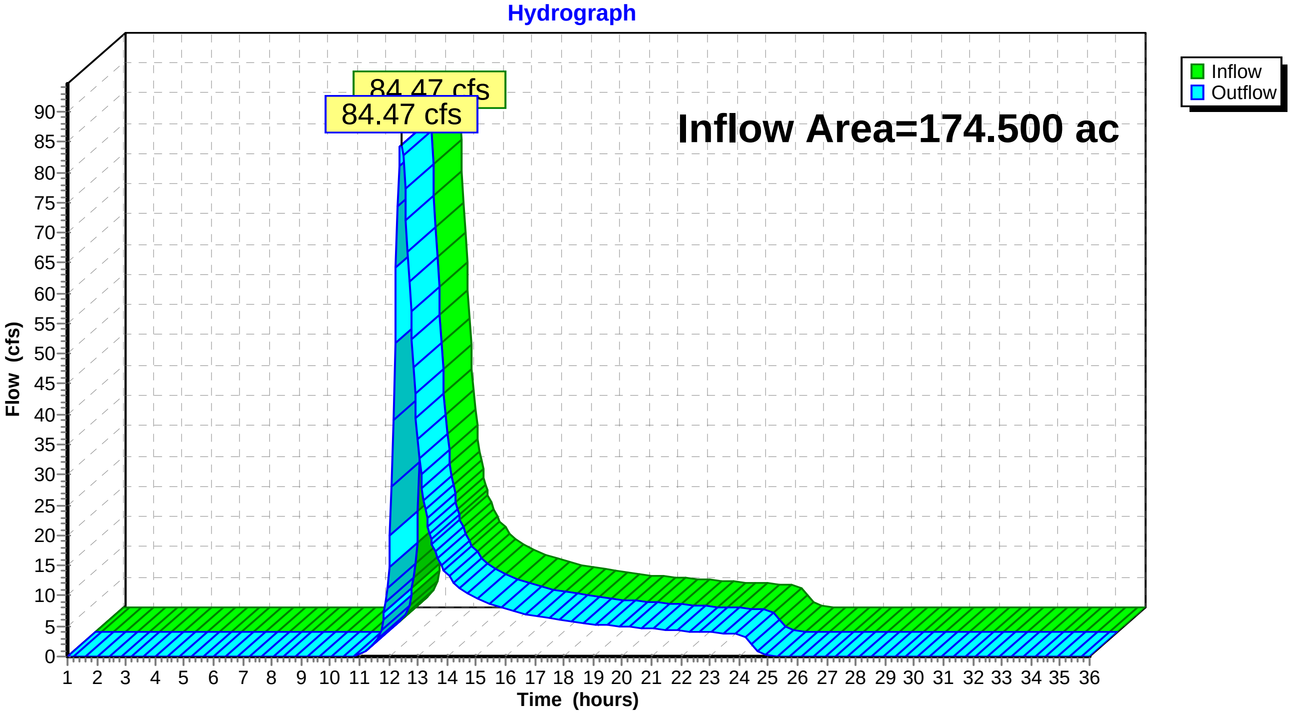


Summary for Reach AP4: Analysis Point

Inflow Area = 174.500 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
Inflow = 84.47 cfs @ 12.42 hrs, Volume= 11.969 af
Outflow = 84.47 cfs @ 12.42 hrs, Volume= 11.969 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP4: Analysis Point



Time span=1.00-36.00 hrs, dt=0.05 hrs, 701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment A: Basin 1 Runoff Area=37.220 ac 2.79% Impervious Runoff Depth=1.99"
Flow Length=2,020' Tc=28.9 min CN=71 Runoff=44.70 cfs 6.169 af

Subcatchment B: Basin 2 Runoff Area=258.600 ac 3.58% Impervious Runoff Depth=2.31"
Flow Length=7,510' Tc=27.1 min CN=75 Runoff=378.90 cfs 49.827 af

Subcatchment C: Basin 3 Runoff Area=300.700 ac 0.18% Impervious Runoff Depth=2.31"
Flow Length=6,605' Tc=23.4 min CN=75 Runoff=474.12 cfs 57.938 af

Subcatchment D: Basin 4 Runoff Area=3.220 ac 0.00% Impervious Runoff Depth=2.48"
Flow Length=1,815' Tc=19.2 min CN=77 Runoff=6.02 cfs 0.666 af

Subcatchment E: Basin 5 Runoff Area=174.500 ac 0.00% Impervious Runoff Depth=2.48"
Flow Length=7,660' Tc=32.0 min CN=77 Runoff=254.29 cfs 36.084 af

Subcatchment F: Basin 6 Runoff Area=10.600 ac 0.00% Impervious Runoff Depth=2.48"
Flow Length=1,400' Tc=26.8 min CN=77 Runoff=16.88 cfs 2.192 af

Reach AP1: Analysis Point Existing Culvert Inflow=423.26 cfs 55.995 af
Outflow=423.26 cfs 55.995 af

Reach AP2: Analysis Point Existing Culvert Inflow=474.12 cfs 57.938 af
Outflow=474.12 cfs 57.938 af

Reach AP3: Analysis Point Existing Culvert Inflow=6.02 cfs 0.666 af
Outflow=6.02 cfs 0.666 af

Reach AP4: Analysis Point Inflow=254.29 cfs 36.084 af
Outflow=254.29 cfs 36.084 af

Total Runoff Area = 784.840 ac Runoff Volume = 152.876 af Average Runoff Depth = 2.34"
98.62% Pervious = 774.020 ac 1.38% Impervious = 10.820 ac

Summary for Subcatchment A: Basin 1

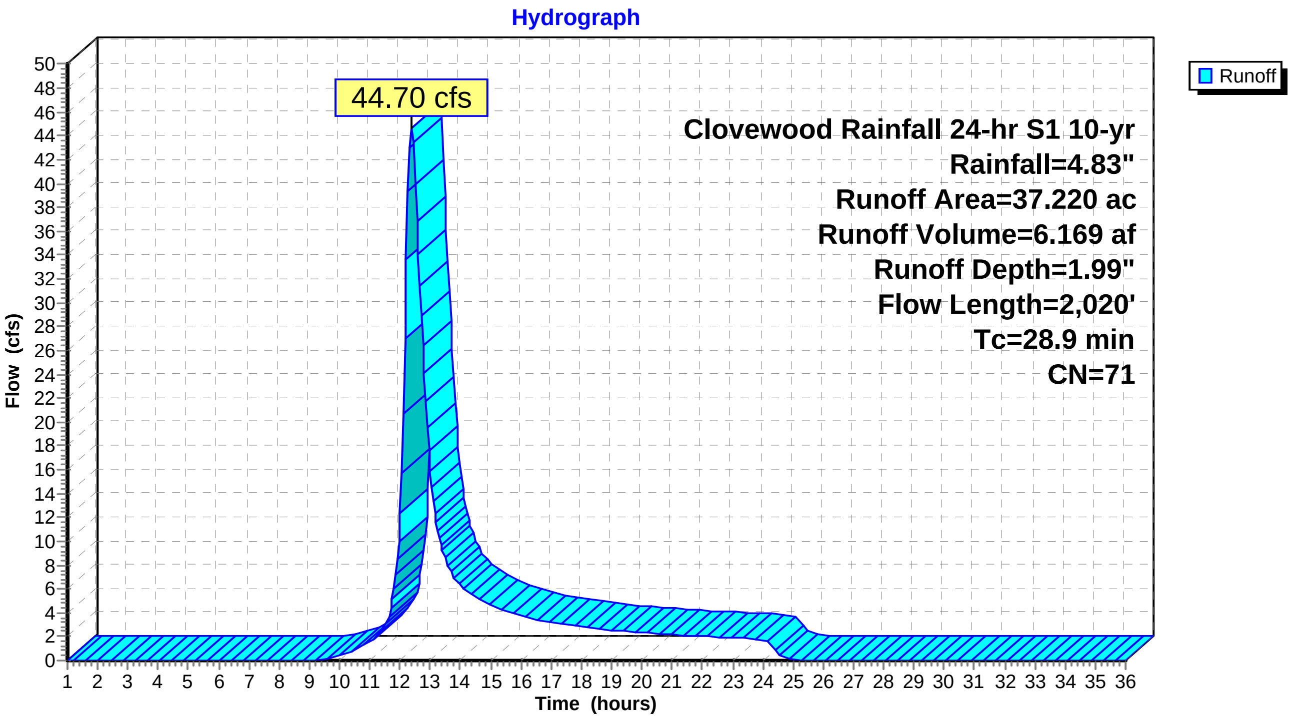
Runoff = 44.70 cfs @ 12.37 hrs, Volume= 6.169 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	7.350	89	Wetlands
*	1.040	98	Impervious Surfaces
	1.000	80	>75% Grass cover, Good, HSG D
	0.310	30	Woods, Good, HSG A
	1.240	55	Woods, Good, HSG B
	0.480	70	Woods, Good, HSG C
	5.970	77	Woods, Good, HSG D
	2.310	30	Brush, Good, HSG A
	3.810	48	Brush, Good, HSG B
	4.810	65	Brush, Good, HSG C
	8.040	73	Brush, Good, HSG D
*	0.040	75	Dirt roads, HSG A
*	0.100	84	Dirt roads, HSG B
*	0.030	88	Dirt roads, HSG C
*	0.690	90	Dirt roads, HSG D
	37.220	71	Weighted Average
	36.180		97.21% Pervious Area
	1.040		2.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	690	0.0200	2.28		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.7	690	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.6	540	0.0400	15.27	213.78	Parabolic Channel, W=7.00' D=3.00' Area=14.0 sf Perim=9.6' n= 0.025
28.9	2,020	Total			

Subcatchment A: Basin 1



Summary for Subcatchment B: Basin 2

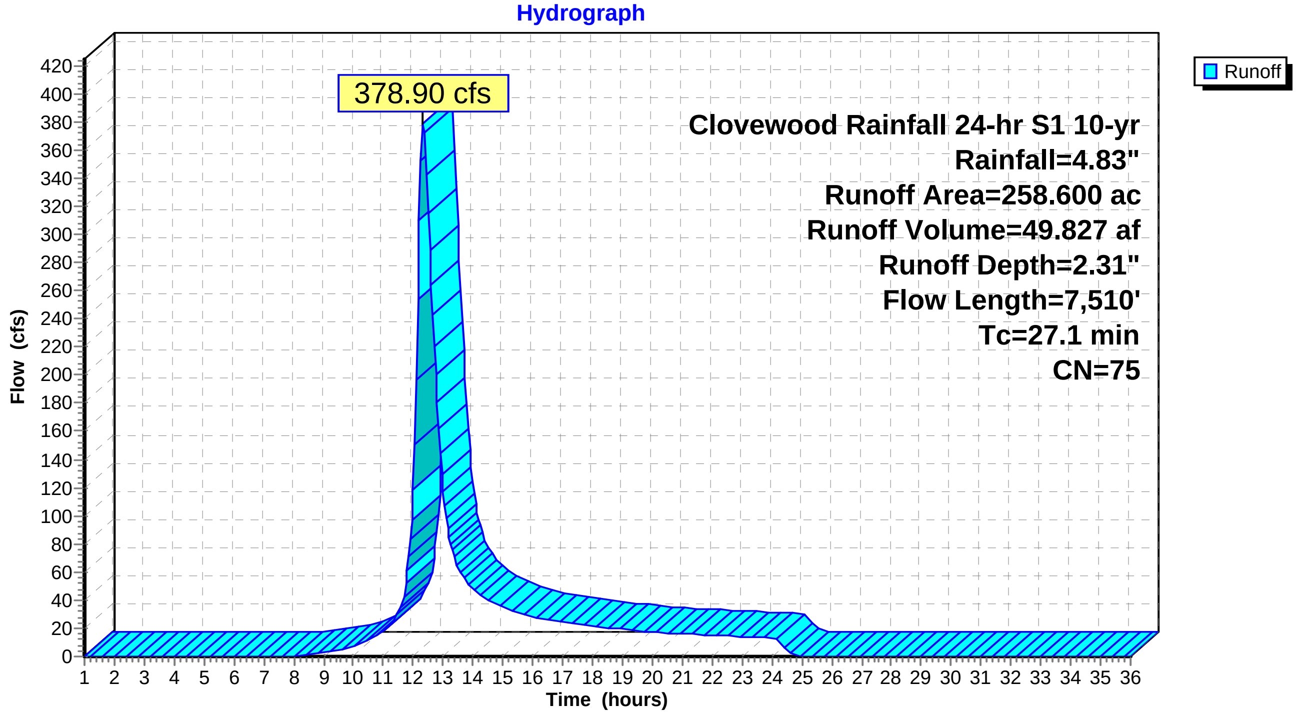
Runoff = 378.90 cfs @ 12.34 hrs, Volume= 49.827 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	13.090	89	Wetlands
*	4.300	79	Old Golf Course, HSG D
*	21.840	35	Old Golf Course, HSG A
	2.860	30	Woods, Good, HSG A
	157.080	77	Woods, Good, HSG D
	0.120	70	Woods, Good, HSG C
*	3.820	98	Water surface
*	5.430	98	Impervious surfaces
*	2.380	90	Dirt roads, HSG D
	13.380	80	>75% Grass cover, Good, HSG D
	27.860	78	Meadow, non-grazed, HSG D
	6.440	71	Meadow, non-grazed, HSG C
	258.600	75	Weighted Average
	249.350		96.42% Pervious Area
	9.250		3.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.50"
12.6	3,220	0.0700	4.26		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
2.1	2,250	0.0300	17.87	714.87	Parabolic Channel,
					W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
1.6	1,940	0.0400	20.64	825.46	Parabolic Channel,
					W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
27.1	7,510	Total			

Subcatchment B: Basin 2



Summary for Subcatchment C: Basin 3

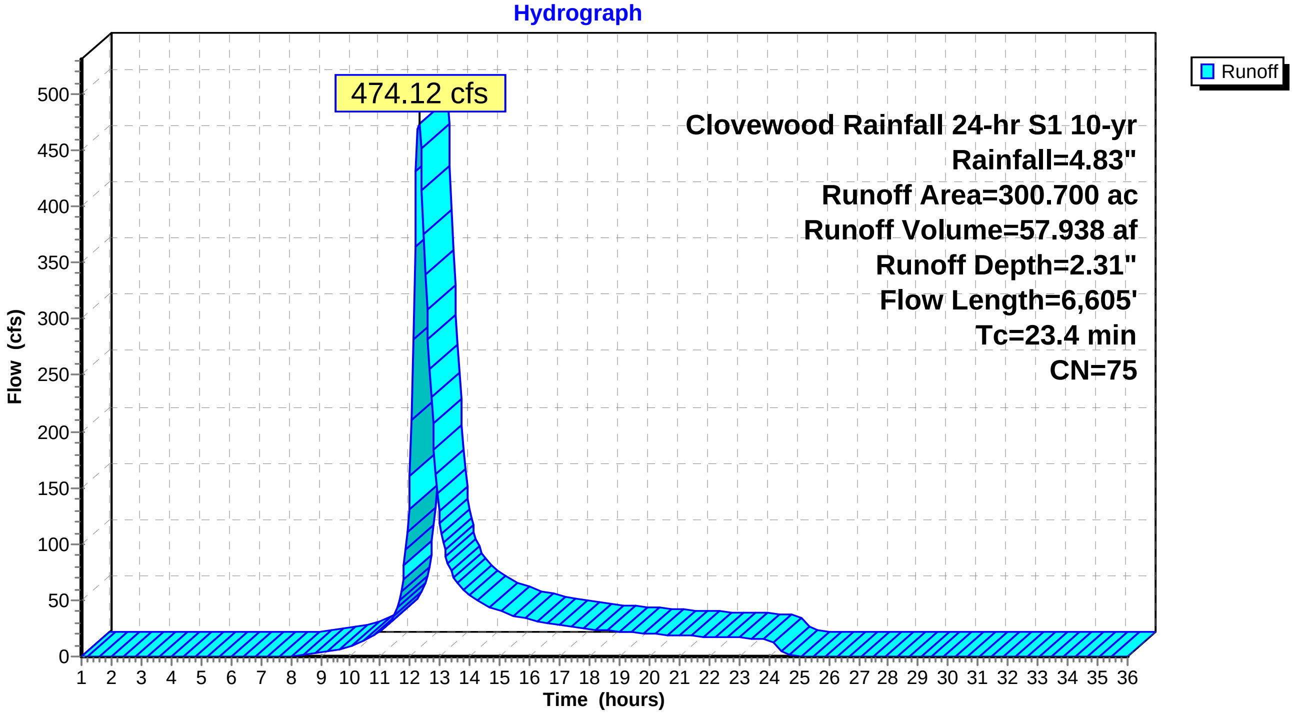
Runoff = 474.12 cfs @ 12.28 hrs, Volume= 57.938 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	7.060	89	Wetlands
*	0.530	98	Impervious Surfaces
	6.250	30	Woods, Good, HSG A
	271.850	77	Woods, Good, HSG D
*	0.620	80	Lawn, Good, HSG D
*	4.210	79	Old Golf Course, HSG D
*	10.080	35	Old Golf Course, HSG A
	0.100	78	Meadow, non-grazed, HSG D
	300.700	75	Weighted Average
	300.170		99.82% Pervious Area
	0.530		0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.5	360	0.5900	12.37		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
10.4	3,630	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.9	1,275	0.0900	23.77	380.30	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
0.8	1,240	0.0400	24.69	790.00	Parabolic Channel, W=12.00' D=4.00' Area=32.0 sf Perim=14.9' n= 0.020
23.4	6,605	Total			

Subcatchment C: Basin 3



Summary for Subcatchment D: Basin 4

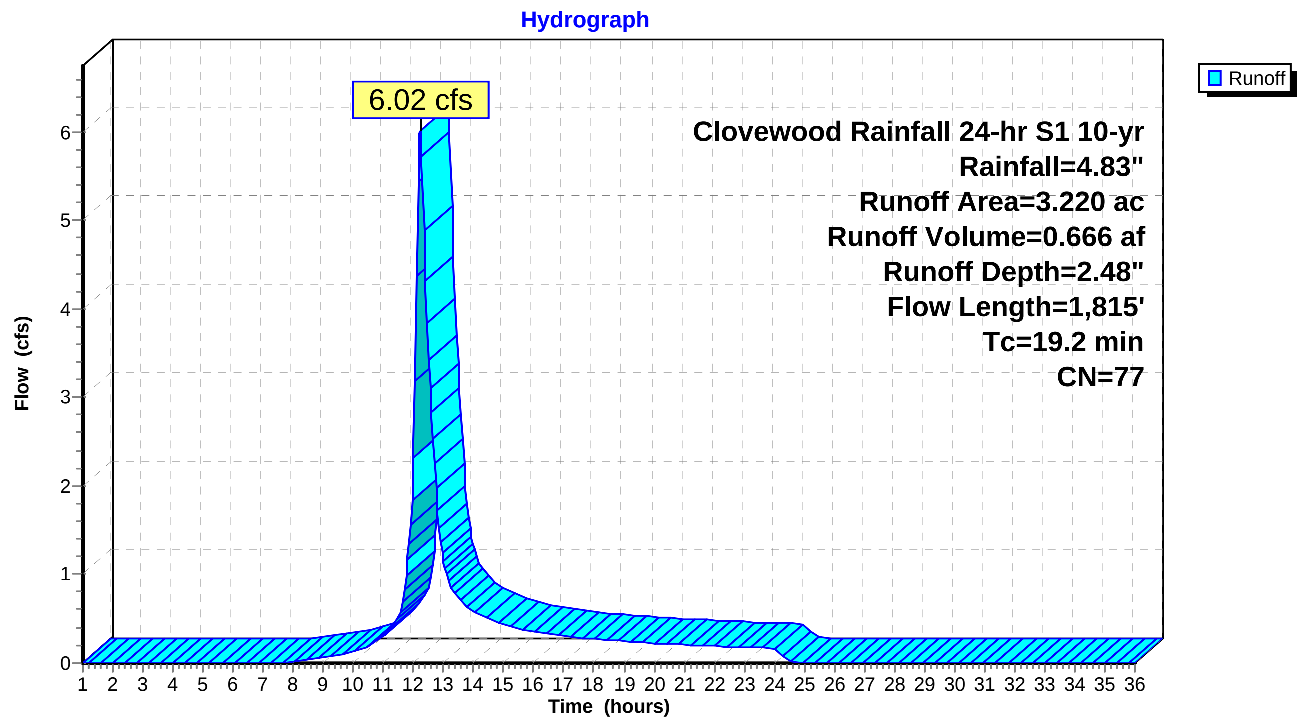
Runoff = 6.02 cfs @ 12.22 hrs, Volume= 0.666 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

Area (ac)	CN	Description
3.220	77	Woods, Good, HSG D
3.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.9	1,040	0.1400	6.02		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	675	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
19.2	1,815	Total			

Subcatchment D: Basin 4



Summary for Subcatchment E: Basin 5

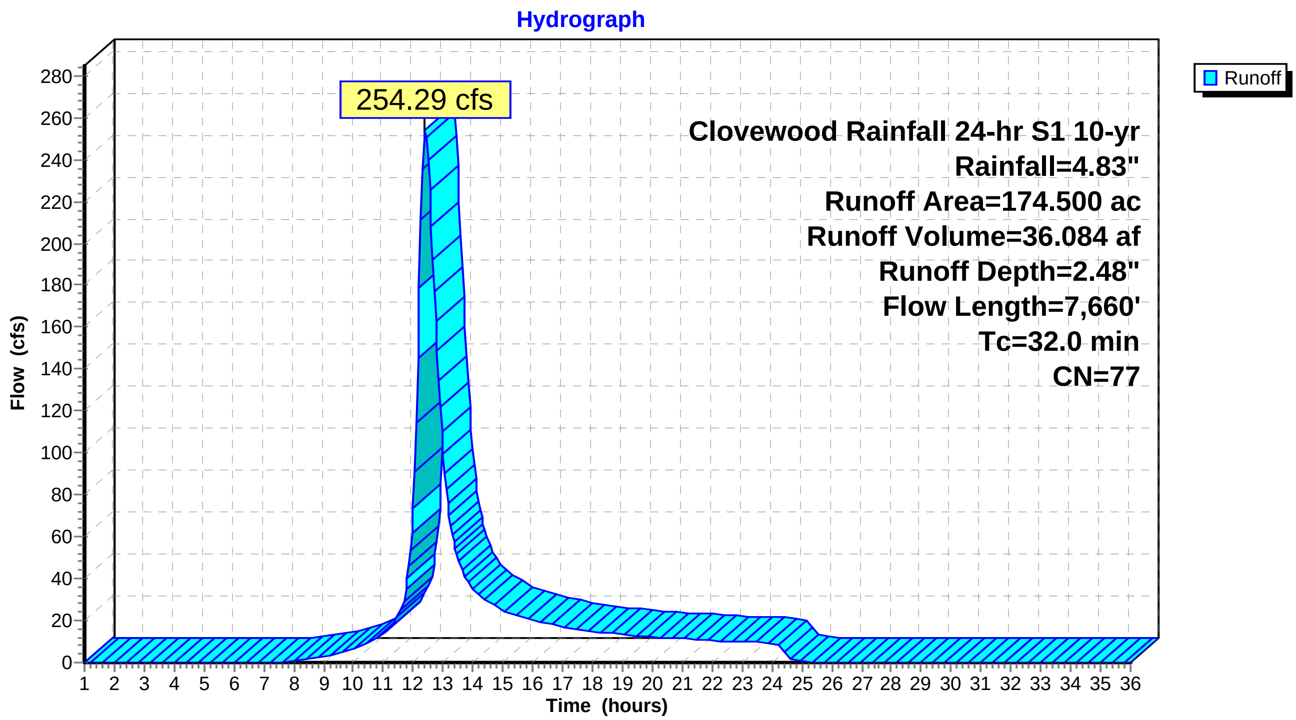
Runoff = 254.29 cfs @ 12.40 hrs, Volume= 36.084 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
	170.800	77	Woods, Good, HSG D
	0.400	30	Meadow, non-grazed, HSG A
*	3.300	89	Wetlands
	174.500	77	Weighted Average
	174.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	630	0.2800	8.52		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.6	2,300	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.7	4,630	0.0700	20.96	335.39	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
32.0	7,660	Total			

Subcatchment E: Basin 5



Summary for Subcatchment F: Basin 6

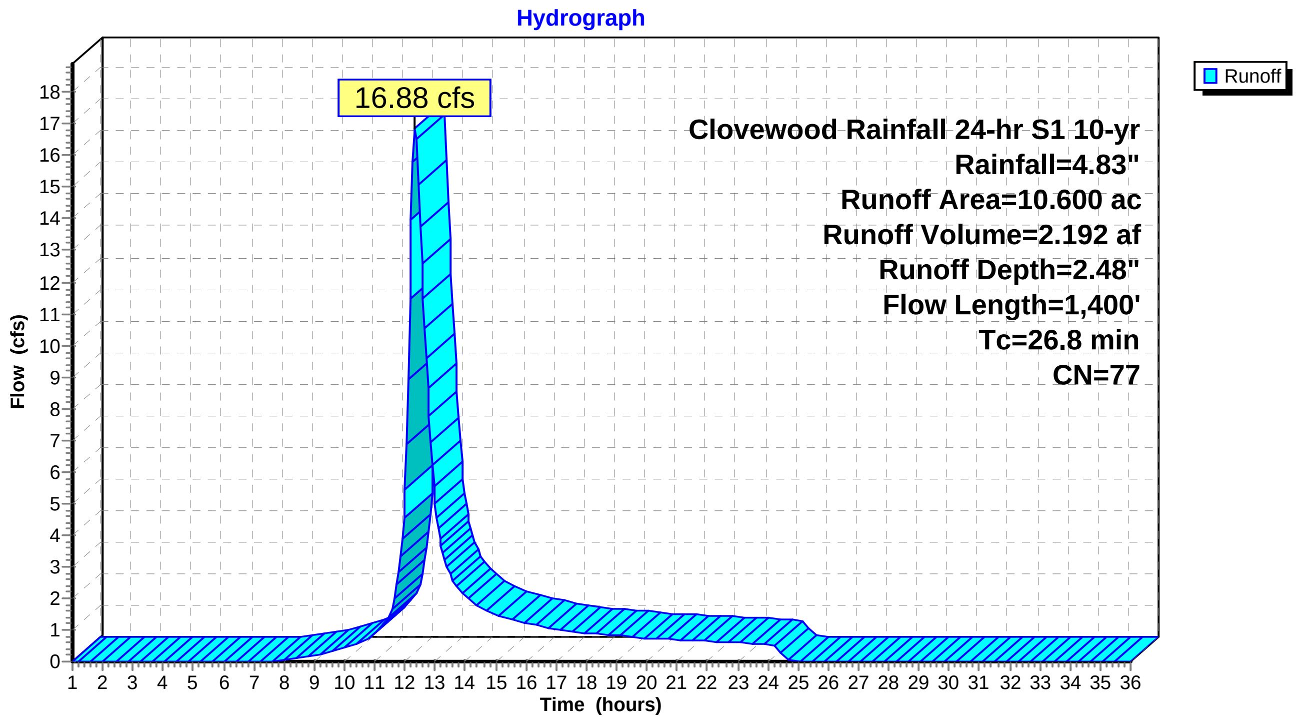
Runoff = 16.88 cfs @ 12.33 hrs, Volume= 2.192 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

Area (ac)	CN	Description
10.600	77	Woods, Good, HSG D
10.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0600	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.50"
3.8	1,300	0.1250	5.69		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
26.8	1,400	Total			

Subcatchment F: Basin 6

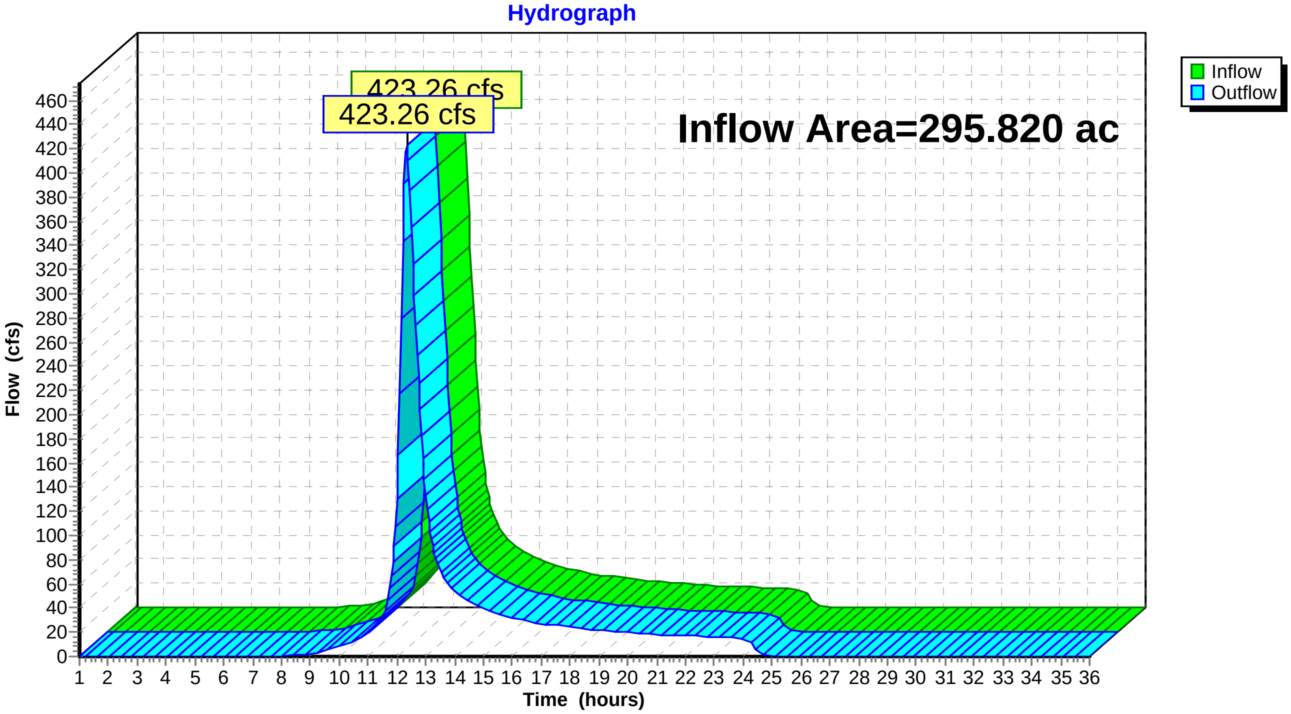


Summary for Reach AP1: Analysis Point Existing Culvert

Inflow Area = 295.820 ac, 3.48% Impervious, Inflow Depth = 2.27" for 10-yr event
Inflow = 423.26 cfs @ 12.34 hrs, Volume= 55.995 af
Outflow = 423.26 cfs @ 12.34 hrs, Volume= 55.995 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP1: Analysis Point Existing Culvert

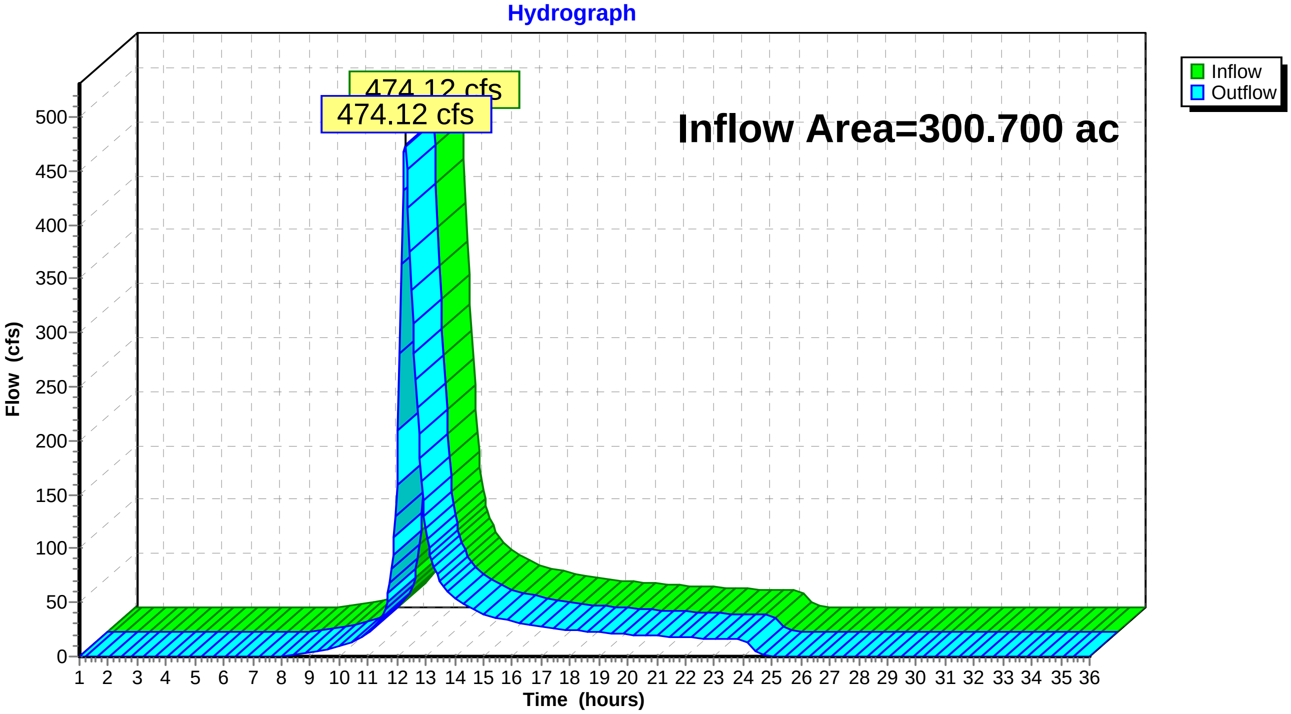


Summary for Reach AP2: Analysis Point Existing Culvert

Inflow Area = 300.700 ac, 0.18% Impervious, Inflow Depth = 2.31" for 10-yr event
Inflow = 474.12 cfs @ 12.28 hrs, Volume= 57.938 af
Outflow = 474.12 cfs @ 12.28 hrs, Volume= 57.938 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP2: Analysis Point Existing Culvert

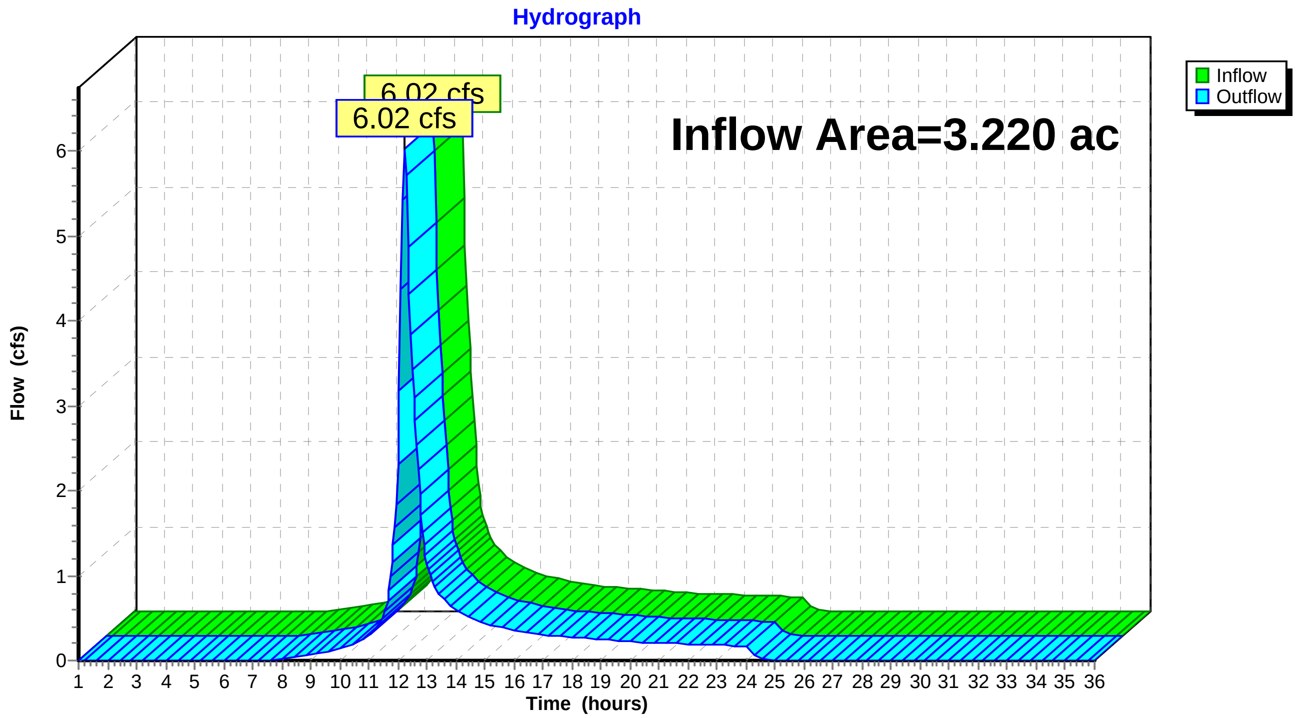


Summary for Reach AP3: Analysis Point Existing Culvert

Inflow Area = 3.220 ac, 0.00% Impervious, Inflow Depth = 2.48" for 10-yr event
Inflow = 6.02 cfs @ 12.22 hrs, Volume= 0.666 af
Outflow = 6.02 cfs @ 12.22 hrs, Volume= 0.666 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP3: Analysis Point Existing Culvert

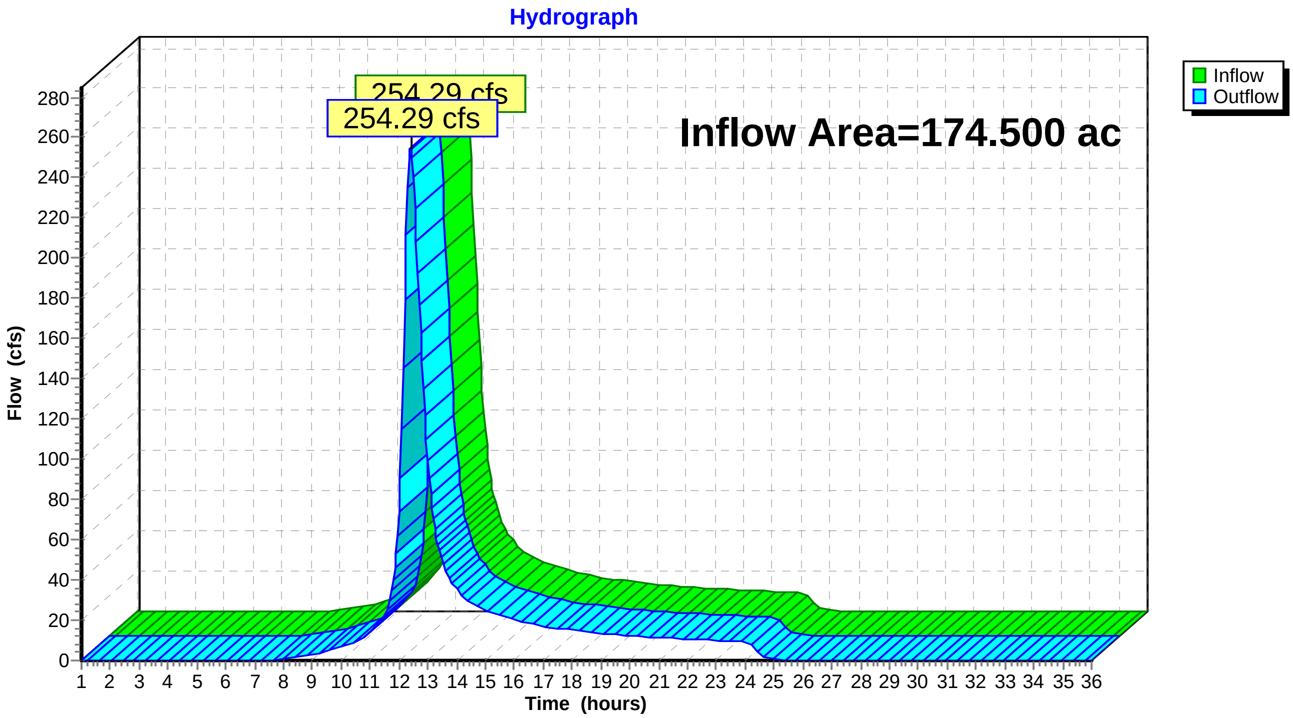


Summary for Reach AP4: Analysis Point

Inflow Area = 174.500 ac, 0.00% Impervious, Inflow Depth = 2.48" for 10-yr event
Inflow = 254.29 cfs @ 12.40 hrs, Volume= 36.084 af
Outflow = 254.29 cfs @ 12.40 hrs, Volume= 36.084 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP4: Analysis Point



Time span=1.00-36.00 hrs, dt=0.05 hrs, 701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment A: Basin 1 Runoff Area=37.220 ac 2.79% Impervious Runoff Depth=5.17"
Flow Length=2,020' Tc=28.9 min CN=71 Runoff=111.67 cfs 16.051 af

Subcatchment B: Basin 2 Runoff Area=258.600 ac 3.58% Impervious Runoff Depth=5.66"
Flow Length=7,510' Tc=27.1 min CN=75 Runoff=872.33 cfs 121.957 af

Subcatchment C: Basin 3 Runoff Area=300.700 ac 0.18% Impervious Runoff Depth=5.66"
Flow Length=6,605' Tc=23.4 min CN=75 Runoff=1,087.35 cfs 141.811 af

Subcatchment D: Basin 4 Runoff Area=3.220 ac 0.00% Impervious Runoff Depth=5.90"
Flow Length=1,815' Tc=19.2 min CN=77 Runoff=13.22 cfs 1.584 af

Subcatchment E: Basin 5 Runoff Area=174.500 ac 0.00% Impervious Runoff Depth=5.90"
Flow Length=7,660' Tc=32.0 min CN=77 Runoff=565.57 cfs 85.819 af

Subcatchment F: Basin 6 Runoff Area=10.600 ac 0.00% Impervious Runoff Depth=5.90"
Flow Length=1,400' Tc=26.8 min CN=77 Runoff=37.41 cfs 5.213 af

Reach AP1: Analysis Point Existing Culvert Inflow=982.12 cfs 138.008 af
Outflow=982.12 cfs 138.008 af

Reach AP2: Analysis Point Existing Culvert Inflow=1,087.35 cfs 141.811 af
Outflow=1,087.35 cfs 141.811 af

Reach AP3: Analysis Point Existing Culvert Inflow=13.22 cfs 1.584 af
Outflow=13.22 cfs 1.584 af

Reach AP4: Analysis Point Inflow=565.57 cfs 85.819 af
Outflow=565.57 cfs 85.819 af

Total Runoff Area = 784.840 ac Runoff Volume = 372.434 af Average Runoff Depth = 5.69"
98.62% Pervious = 774.020 ac 1.38% Impervious = 10.820 ac

Summary for Subcatchment A: Basin 1

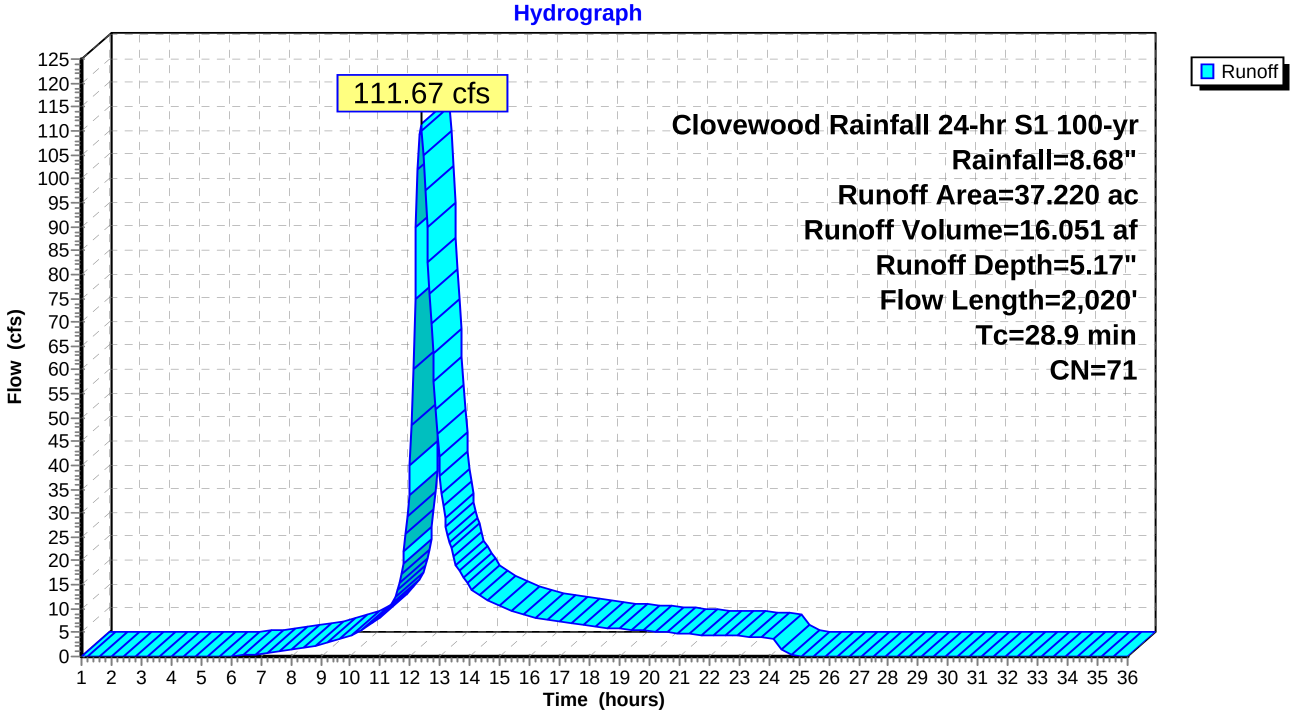
Runoff = 111.67 cfs @ 12.35 hrs, Volume= 16.051 af, Depth= 5.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	7.350	89	Wetlands
*	1.040	98	Impervious Surfaces
	1.000	80	>75% Grass cover, Good, HSG D
	0.310	30	Woods, Good, HSG A
	1.240	55	Woods, Good, HSG B
	0.480	70	Woods, Good, HSG C
	5.970	77	Woods, Good, HSG D
	2.310	30	Brush, Good, HSG A
	3.810	48	Brush, Good, HSG B
	4.810	65	Brush, Good, HSG C
	8.040	73	Brush, Good, HSG D
*	0.040	75	Dirt roads, HSG A
*	0.100	84	Dirt roads, HSG B
*	0.030	88	Dirt roads, HSG C
*	0.690	90	Dirt roads, HSG D
	37.220	71	Weighted Average
	36.180		97.21% Pervious Area
	1.040		2.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	690	0.0200	2.28		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.7	690	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.6	540	0.0400	15.27	213.78	Parabolic Channel, W=7.00' D=3.00' Area=14.0 sf Perim=9.6' n= 0.025
28.9	2,020	Total			

Subcatchment A: Basin 1



Summary for Subcatchment B: Basin 2

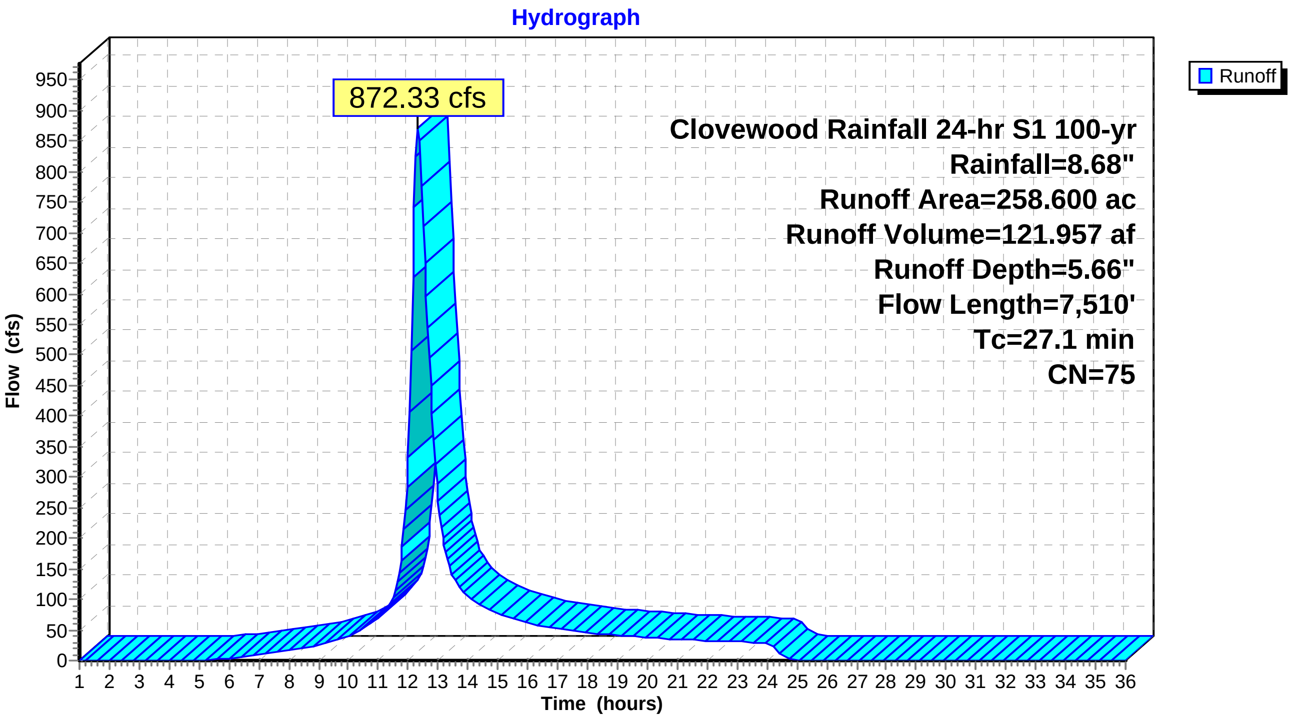
Runoff = 872.33 cfs @ 12.32 hrs, Volume= 121.957 af, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	13.090	89	Wetlands
*	4.300	79	Old Golf Course, HSG D
*	21.840	35	Old Golf Course, HSG A
	2.860	30	Woods, Good, HSG A
	157.080	77	Woods, Good, HSG D
	0.120	70	Woods, Good, HSG C
*	3.820	98	Water surface
*	5.430	98	Impervious surfaces
*	2.380	90	Dirt roads, HSG D
	13.380	80	>75% Grass cover, Good, HSG D
	27.860	78	Meadow, non-grazed, HSG D
	6.440	71	Meadow, non-grazed, HSG C
	258.600	75	Weighted Average
	249.350		96.42% Pervious Area
	9.250		3.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
12.6	3,220	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.1	2,250	0.0300	17.87	714.87	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
1.6	1,940	0.0400	20.64	825.46	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
27.1	7,510	Total			

Subcatchment B: Basin 2



Summary for Subcatchment C: Basin 3

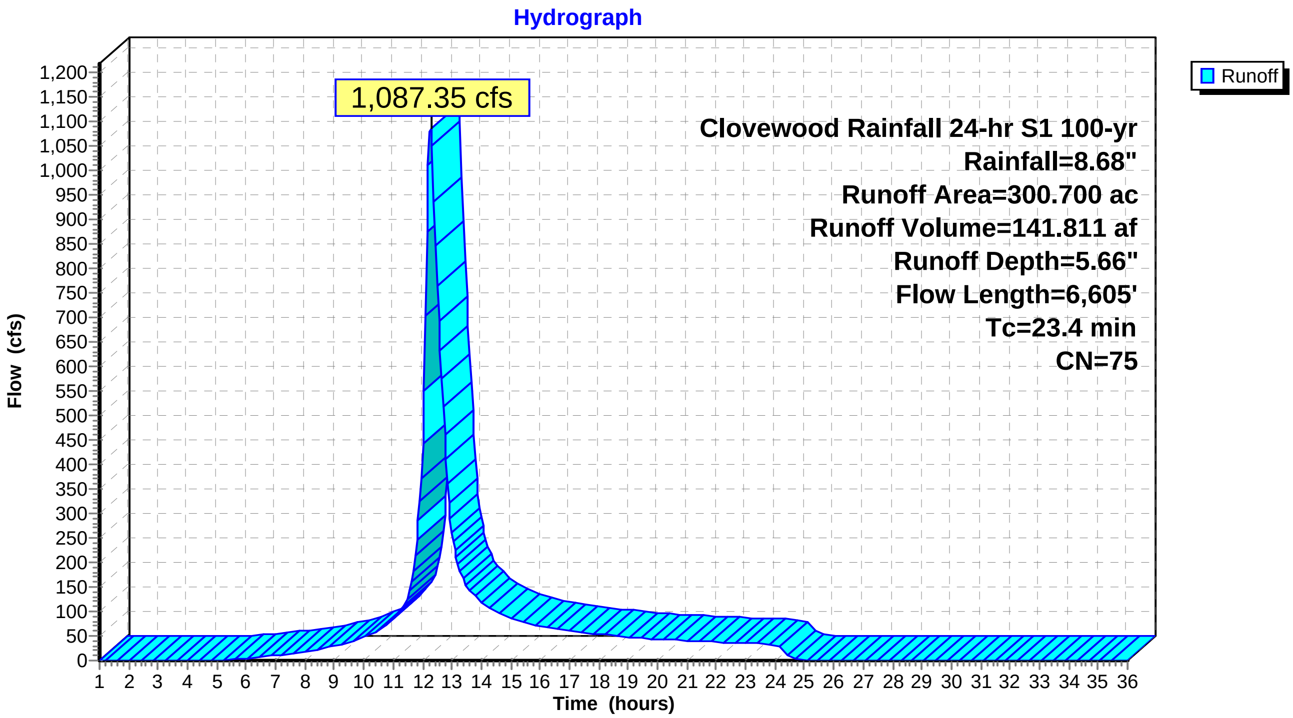
Runoff = 1,087.35 cfs @ 12.27 hrs, Volume= 141.811 af, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	7.060	89	Wetlands
*	0.530	98	Impervious Surfaces
	6.250	30	Woods, Good, HSG A
	271.850	77	Woods, Good, HSG D
*	0.620	80	Lawn, Good, HSG D
*	4.210	79	Old Golf Course, HSG D
*	10.080	35	Old Golf Course, HSG A
	0.100	78	Meadow, non-grazed, HSG D
	300.700	75	Weighted Average
	300.170		99.82% Pervious Area
	0.530		0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.5	360	0.5900	12.37		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
10.4	3,630	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.9	1,275	0.0900	23.77	380.30	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
0.8	1,240	0.0400	24.69	790.00	Parabolic Channel, W=12.00' D=4.00' Area=32.0 sf Perim=14.9' n= 0.020
23.4	6,605	Total			

Subcatchment C: Basin 3



Summary for Subcatchment D: Basin 4

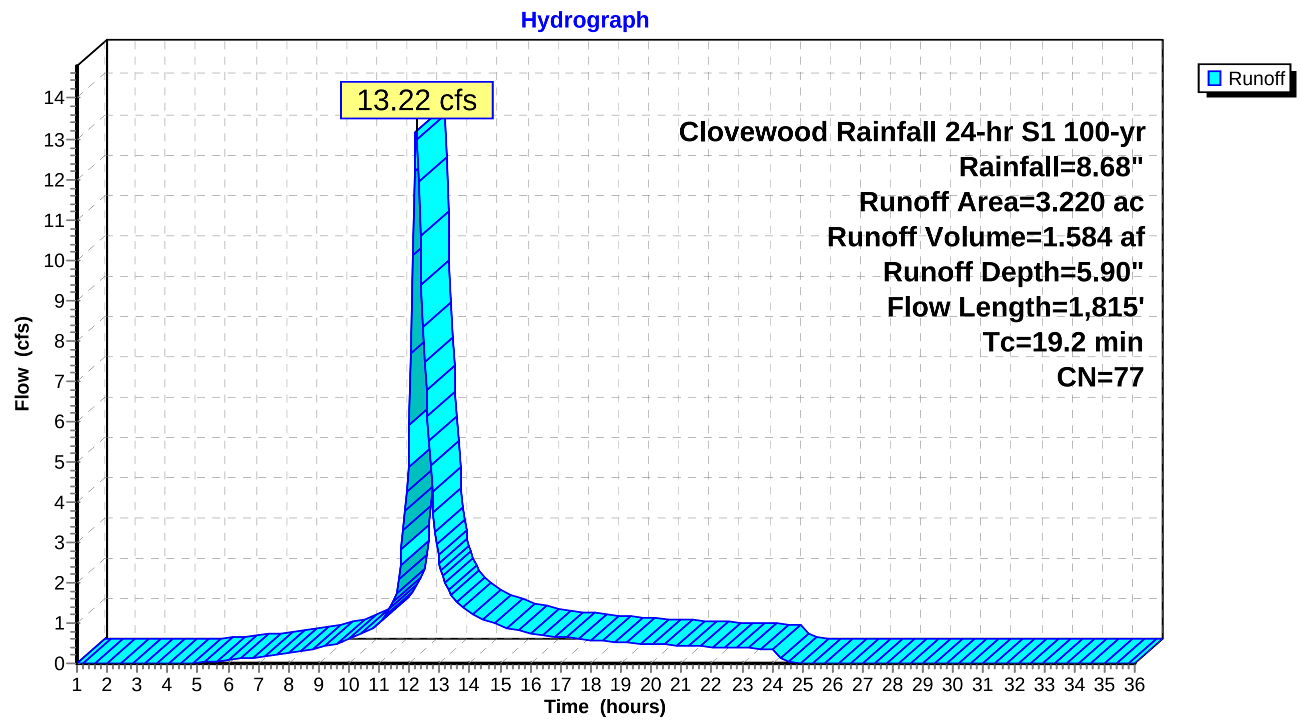
Runoff = 13.22 cfs @ 12.22 hrs, Volume= 1.584 af, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

Area (ac)	CN	Description
3.220	77	Woods, Good, HSG D
3.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.9	1,040	0.1400	6.02		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	675	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
19.2	1,815	Total			

Subcatchment D: Basin 4



Summary for Subcatchment E: Basin 5

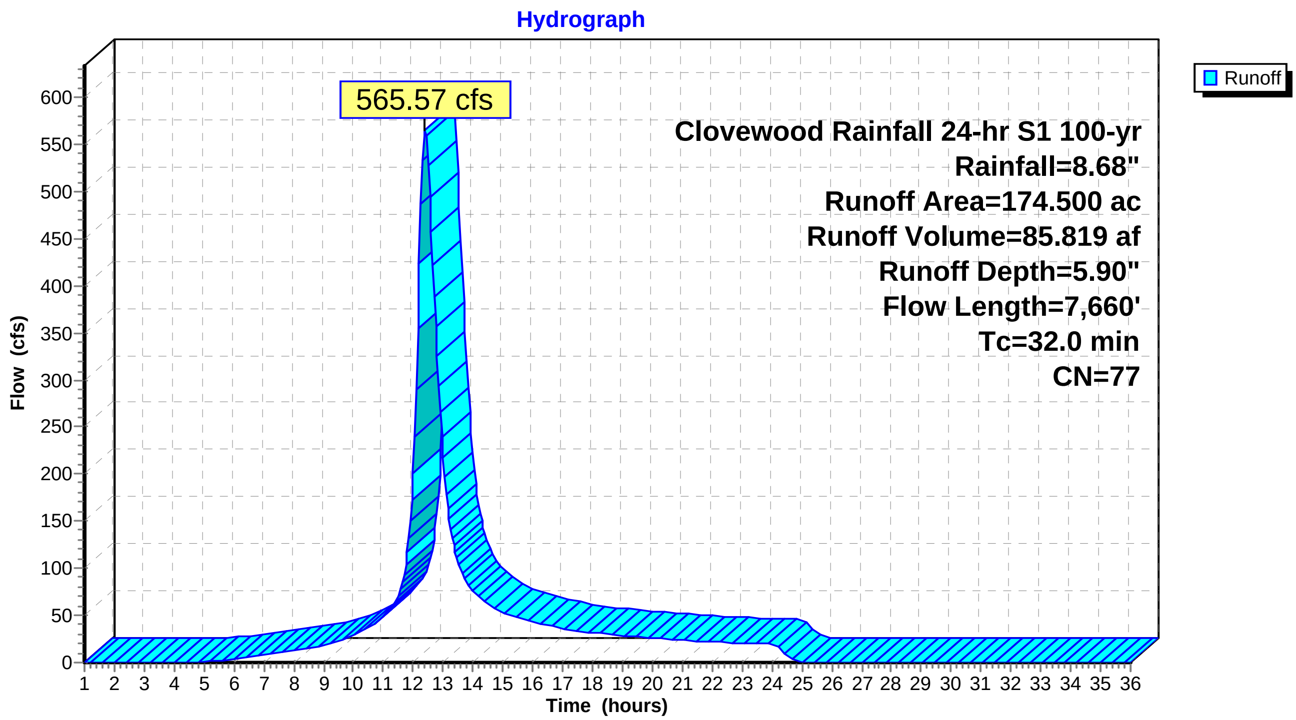
Runoff = 565.57 cfs @ 12.39 hrs, Volume= 85.819 af, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
	170.800	77	Woods, Good, HSG D
	0.400	30	Meadow, non-grazed, HSG A
*	3.300	89	Wetlands
	174.500	77	Weighted Average
	174.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	630	0.2800	8.52		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.6	2,300	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.7	4,630	0.0700	20.96	335.39	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
32.0	7,660	Total			

Subcatchment E: Basin 5



Summary for Subcatchment F: Basin 6

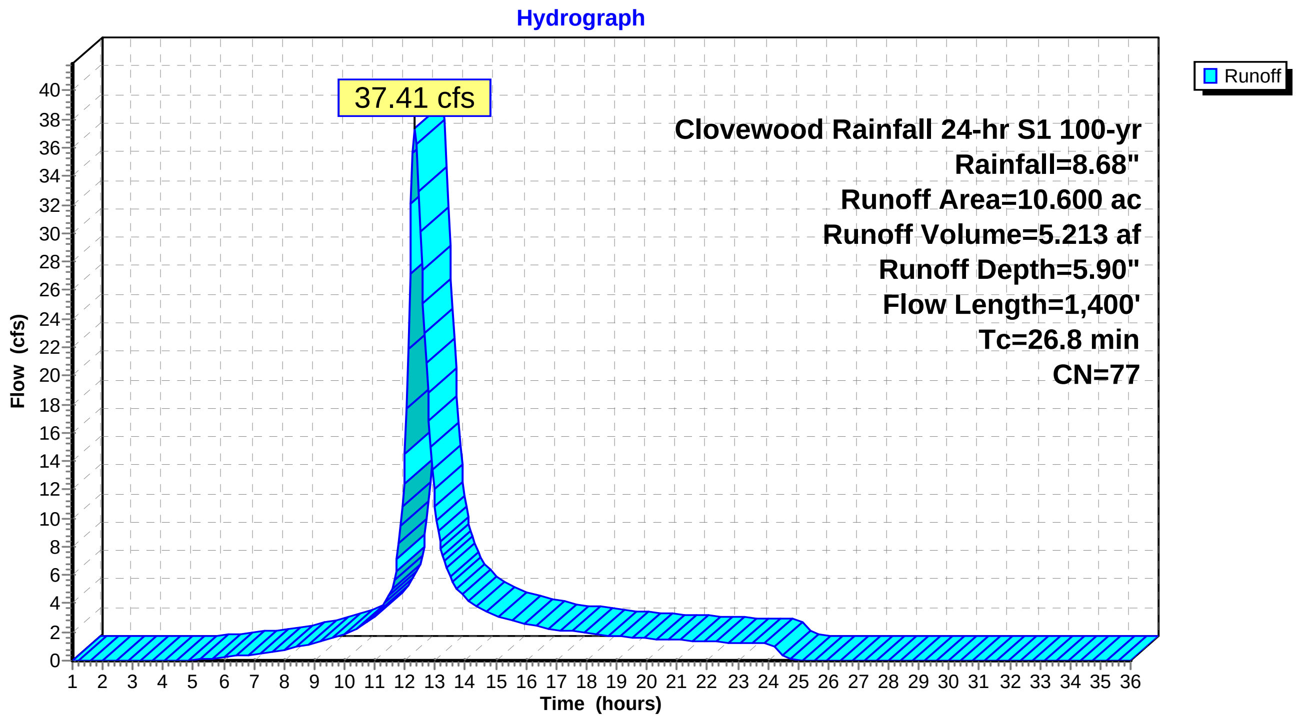
Runoff = 37.41 cfs @ 12.32 hrs, Volume= 5.213 af, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

Area (ac)	CN	Description
10.600	77	Woods, Good, HSG D
10.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0600	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.50"
3.8	1,300	0.1250	5.69		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
26.8	1,400	Total			

Subcatchment F: Basin 6

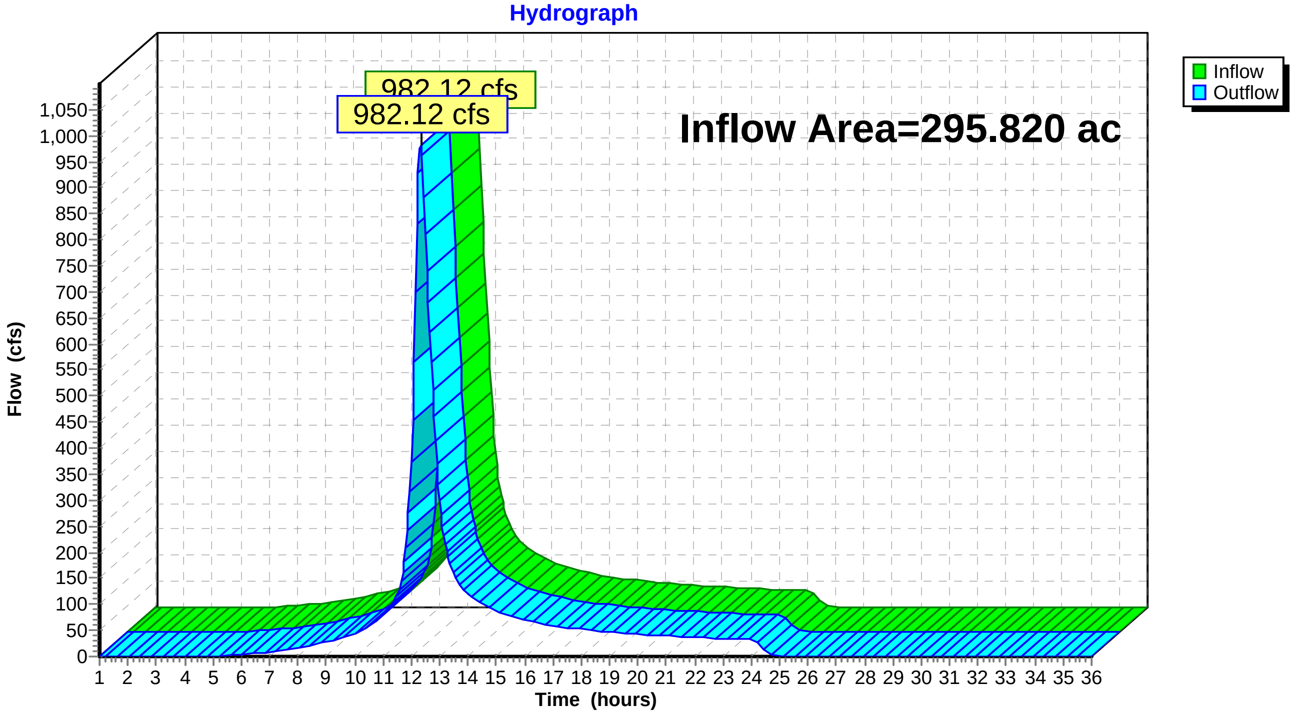


Summary for Reach AP1: Analysis Point Existing Culvert

Inflow Area = 295.820 ac, 3.48% Impervious, Inflow Depth = 5.60" for 100-yr event
Inflow = 982.12 cfs @ 12.33 hrs, Volume= 138.008 af
Outflow = 982.12 cfs @ 12.33 hrs, Volume= 138.008 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP1: Analysis Point Existing Culvert

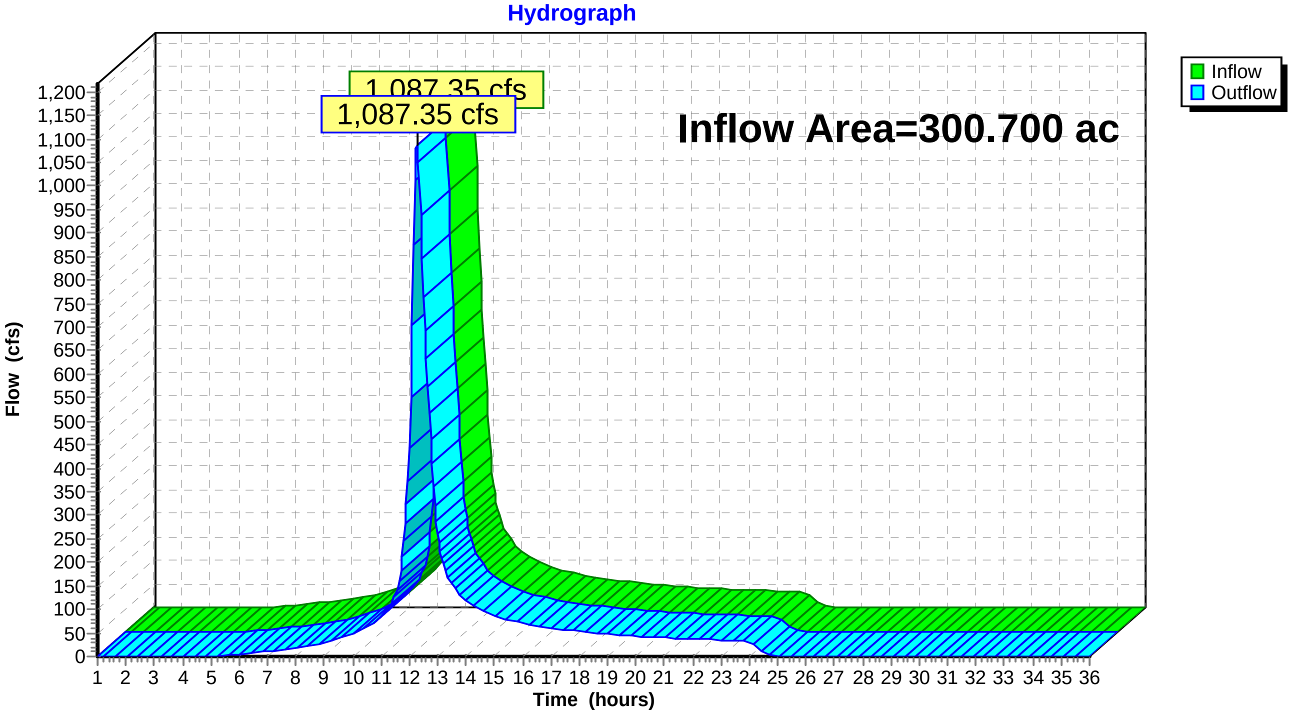


Summary for Reach AP2: Analysis Point Existing Culvert

Inflow Area = 300.700 ac, 0.18% Impervious, Inflow Depth = 5.66" for 100-yr event
Inflow = 1,087.35 cfs @ 12.27 hrs, Volume= 141.811 af
Outflow = 1,087.35 cfs @ 12.27 hrs, Volume= 141.811 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP2: Analysis Point Existing Culvert

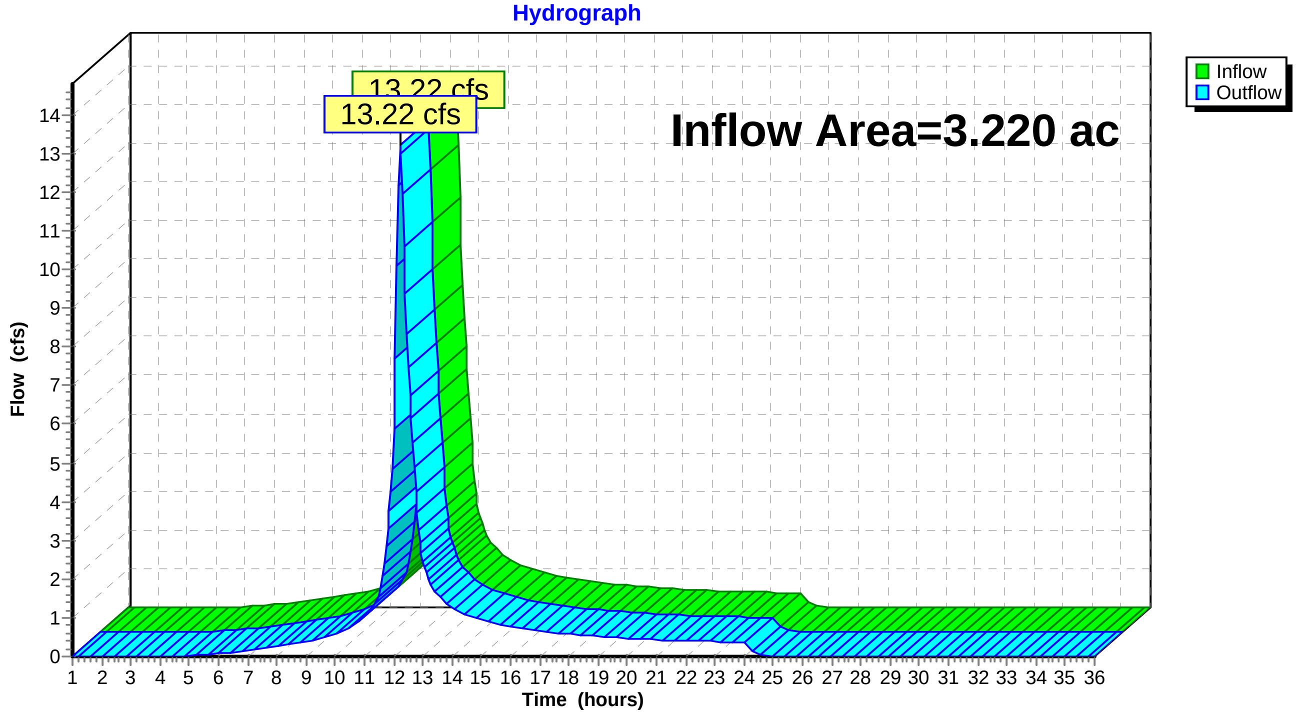


Summary for Reach AP3: Analysis Point Existing Culvert

Inflow Area = 3.220 ac, 0.00% Impervious, Inflow Depth = 5.90" for 100-yr event
Inflow = 13.22 cfs @ 12.22 hrs, Volume= 1.584 af
Outflow = 13.22 cfs @ 12.22 hrs, Volume= 1.584 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP3: Analysis Point Existing Culvert

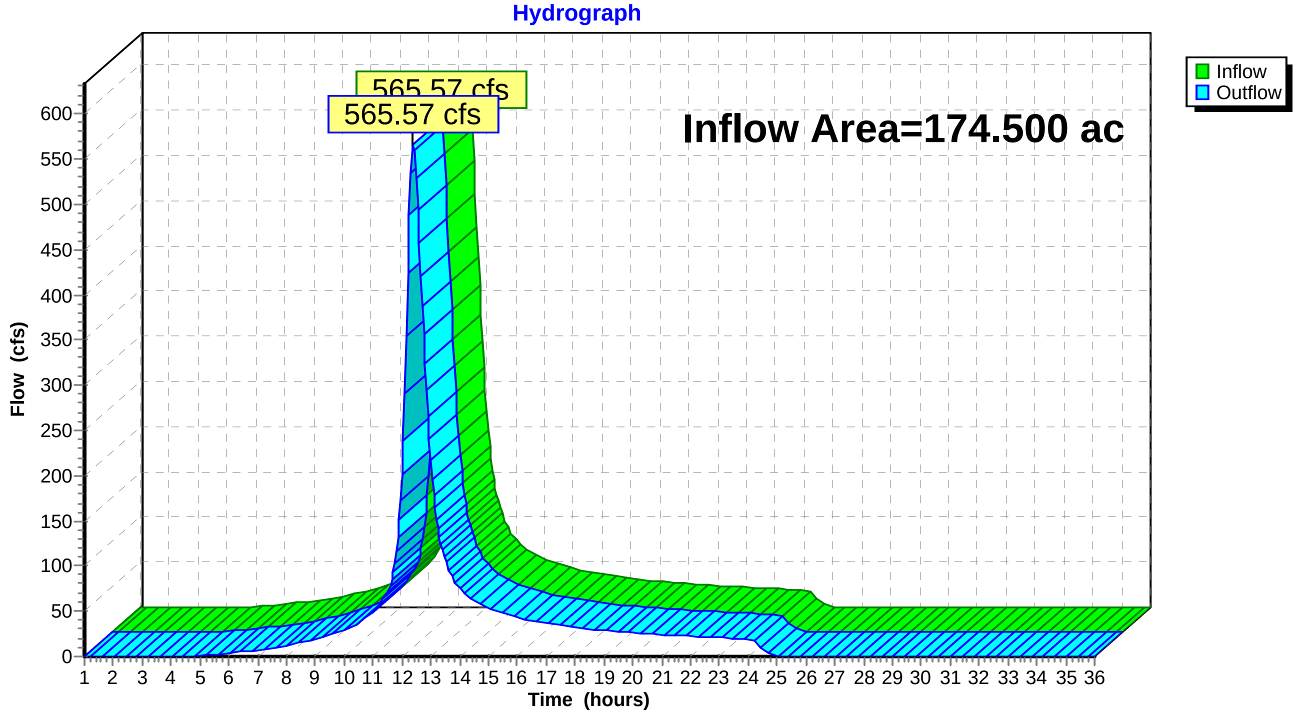


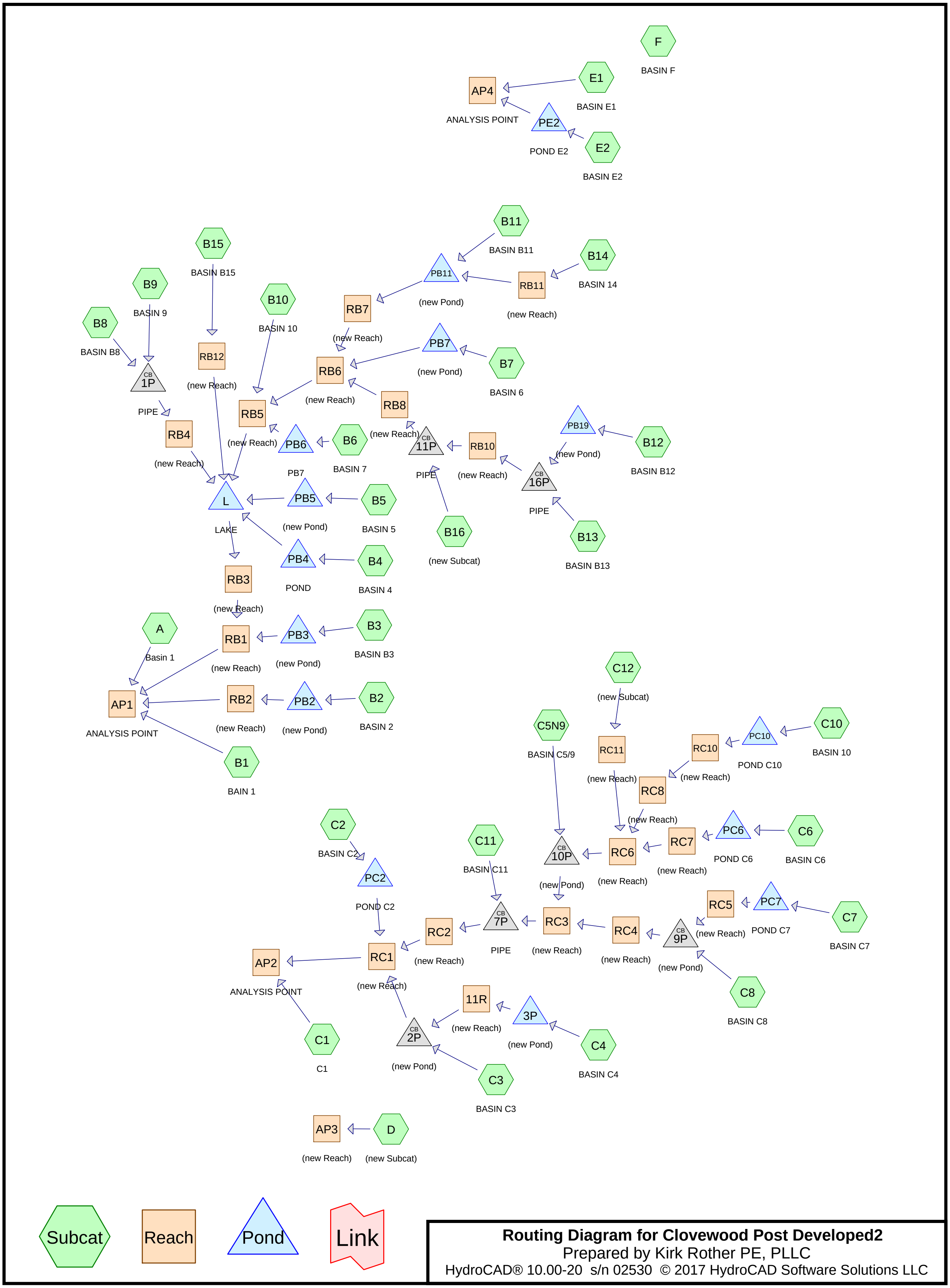
Summary for Reach AP4: Analysis Point

Inflow Area = 174.500 ac, 0.00% Impervious, Inflow Depth = 5.90" for 100-yr event
Inflow = 565.57 cfs @ 12.39 hrs, Volume= 85.819 af
Outflow = 565.57 cfs @ 12.39 hrs, Volume= 85.819 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP4: Analysis Point





Routing Diagram for Clovewood Post Developed2
Prepared by Kirk Rother PE, PLLC
HydroCAD® 10.00-20 s/n 02530 © 2017 HydroCAD Software Solutions LLC

Time span=1.00-36.00 hrs, dt=0.05 hrs, 701 points
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 A: Basin 1 — Runoff Area=37.220 ac 2.79% Impervious Runoff Depth=0.56"
Flow Length=2,020' Tc=29.1 min CN=71 Runoff=11.20 cfs 1.729 af

Subcatchment B1: BAIN 1 — Runoff Area=60.690 ac 10.25% Impervious Runoff Depth=0.87"
Flow Length=4,940' Tc=16.1 min CN=78 Runoff=44.77 cfs 4.417 af

Subcatchment B10: BASIN 10 — Runoff Area=17.050 ac 14.37% Impervious Runoff Depth=0.93"
Flow Length=1,250' Tc=21.1 min CN=79 Runoff=11.88 cfs 1.315 af

Subcatchment B11: BASIN B11 — Runoff Area=12.800 ac 3.13% Impervious Runoff Depth=1.09"
Flow Length=840' Tc=11.4 min CN=82 Runoff=14.57 cfs 1.167 af

Subcatchment B12: BASIN B12 — Runoff Area=24.400 ac 19.67% Impervious Runoff Depth=0.87"
Flow Length=2,130' Tc=13.2 min CN=78 Runoff=19.76 cfs 1.776 af

Subcatchment B13: BASIN B13 — Runoff Area=24.300 ac 0.00% Impervious Runoff Depth=0.64"
Flow Length=2,880' Tc=25.5 min CN=73 Runoff=9.52 cfs 1.295 af

Subcatchment B14: BASIN 14 — Runoff Area=9.400 ac 14.89% Impervious Runoff Depth=1.28"
Flow Length=1,060' Tc=18.5 min CN=85 Runoff=10.16 cfs 1.005 af

Subcatchment B15: BASIN B15 — Runoff Area=6.100 ac 10.66% Impervious Runoff Depth=1.22"
Flow Length=615' Tc=11.6 min CN=84 Runoff=7.76 cfs 0.619 af

Subcatchment B16: (new Subcat) — Runoff Area=3.650 ac 2.74% Impervious Runoff Depth=1.15"
Flow Length=100' Slope=0.1200 '/' Tc=10.0 min CN=83 Runoff=4.65 cfs 0.351 af

Subcatchment B2: BASIN 2 — Runoff Area=5.400 ac 9.26% Impervious Runoff Depth=1.28"
Flow Length=770' Tc=13.4 min CN=85 Runoff=6.80 cfs 0.577 af

Subcatchment B3: BASIN B3 — Runoff Area=24.350 ac 20.74% Impervious Runoff Depth=1.28"
Flow Length=970' Tc=17.2 min CN=85 Runoff=27.26 cfs 2.603 af

Subcatchment B4: BASIN 4 — Runoff Area=10.100 ac 43.56% Impervious Runoff Depth=1.49"
Flow Length=760' Tc=10.8 min CN=88 Runoff=16.56 cfs 1.257 af

Subcatchment B5: BASIN 5 — Runoff Area=4.500 ac 26.44% Impervious Runoff Depth=1.35"
Flow Length=580' Tc=8.8 min CN=86 Runoff=7.04 cfs 0.506 af

Subcatchment B6: BASIN 7 — Runoff Area=8.900 ac 36.74% Impervious Runoff Depth=1.49"
Flow Length=560' Tc=12.0 min CN=88 Runoff=13.94 cfs 1.108 af

Subcatchment B7: BASIN 6 — Runoff Area=13.650 ac 28.57% Impervious Runoff Depth=0.98"
Flow Length=390' Tc=11.4 min CN=80 Runoff=13.65 cfs 1.115 af

Subcatchment B8: BASIN B8 — Runoff Area=11.300 ac 3.10% Impervious Runoff Depth=0.93"
Flow Length=2,065' Tc=22.3 min CN=79 Runoff=7.64 cfs 0.872 af

Subcatchment B9: BASIN 9
Runoff Area=5.900 ac 23.73% Impervious Runoff Depth=1.42"
Flow Length=1,500' Tc=21.0 min CN=87 Runoff=6.69 cfs 0.698 af

Subcatchment C1: C1
Runoff Area=9.150 ac 48.74% Impervious Runoff Depth=1.57"
Flow Length=950' Tc=9.4 min CN=89 Runoff=16.39 cfs 1.196 af

Subcatchment C10: BASIN 10
Runoff Area=21.400 ac 11.45% Impervious Runoff Depth=1.15"
Flow Length=2,180' Tc=15.3 min CN=83 Runoff=22.72 cfs 2.060 af

Subcatchment C11: BASIN C11
Runoff Area=11.150 ac 0.00% Impervious Runoff Depth=0.98"
Flow Length=1,060' Tc=21.6 min CN=80 Runoff=8.23 cfs 0.910 af

Subcatchment C12: (new Subcat)
Runoff Area=5.200 ac 0.00% Impervious Runoff Depth=0.29"
Flow Length=990' Tc=14.8 min CN=63 Runoff=0.64 cfs 0.125 af

Subcatchment C2: BASIN C2
Runoff Area=6.200 ac 32.26% Impervious Runoff Depth=1.35"
Flow Length=1,070' Tc=13.6 min CN=86 Runoff=8.20 cfs 0.698 af

Subcatchment C3: BASIN C3
Runoff Area=5.950 ac 0.00% Impervious Runoff Depth=0.98"
Flow Length=910' Tc=19.6 min CN=80 Runoff=4.60 cfs 0.486 af

Subcatchment C4: BASIN C4
Runoff Area=7.500 ac 22.27% Impervious Runoff Depth=1.15"
Flow Length=1,450' Tc=14.0 min CN=83 Runoff=8.24 cfs 0.722 af

Subcatchment C5N9: BASIN C5/9
Runoff Area=124.100 ac 0.00% Impervious Runoff Depth=0.73"
Flow Length=6,080' Tc=23.2 min CN=75 Runoff=60.72 cfs 7.526 af

Subcatchment C6: BASIN C6
Runoff Area=18.900 ac 12.65% Impervious Runoff Depth=1.04"
Flow Length=1,400' Tc=12.7 min CN=81 Runoff=19.05 cfs 1.632 af

Subcatchment C7: BASIN C7
Runoff Area=21.300 ac 20.75% Impervious Runoff Depth=1.22"
Flow Length=1,370' Tc=11.5 min CN=84 Runoff=27.22 cfs 2.161 af

Subcatchment C8: BASIN C8
Runoff Area=84.980 ac 0.55% Impervious Runoff Depth=0.77"
Flow Length=5,705' Tc=23.4 min CN=76 Runoff=44.92 cfs 5.485 af

Subcatchment D: (new Subcat)
Runoff Area=2.700 ac 0.00% Impervious Runoff Depth=0.87"
Flow Length=1,415' Tc=14.7 min CN=78 Runoff=2.09 cfs 0.197 af

Subcatchment E1: BASIN E1
Runoff Area=167.100 ac 0.00% Impervious Runoff Depth=0.82"
Flow Length=7,510' Tc=31.9 min CN=77 Runoff=81.07 cfs 11.461 af

Subcatchment E2: BASIN E2
Runoff Area=8.900 ac 21.80% Impervious Runoff Depth=1.35"
Flow Length=1,800' Tc=18.2 min CN=86 Runoff=10.26 cfs 1.002 af

Subcatchment F: BASIN F
Runoff Area=10.600 ac 0.00% Impervious Runoff Depth=0.82"
Flow Length=1,400' Tc=26.8 min CN=77 Runoff=5.64 cfs 0.727 af

Reach 11R: (new Reach)
Avg. Flow Depth=0.15' Max Vel=3.37 fps Inflow=0.47 cfs 0.674 af
n=0.025 L=230.0' S=0.0739 '/' Capacity=185.34 cfs Outflow=0.47 cfs 0.674 af

Reach AP1: ANALYSIS POINT
Inflow=91.78 cfs 21.071 af
Outflow=91.78 cfs 21.071 af

Reach AP2: ANALYSIS POINT
Inflow=131.57 cfs 22.543 af
Outflow=131.57 cfs 22.543 af

Reach AP3: (new Reach)
Inflow=2.09 cfs 0.197 af
Outflow=2.09 cfs 0.197 af

Reach AP4: ANALYSIS POINT
Inflow=82.30 cfs 12.426 af
Outflow=82.30 cfs 12.426 af

Reach RB1: (new Reach)
Avg. Flow Depth=1.06' Max Vel=8.65 fps Inflow=47.13 cfs 14.516 af
n=0.025 L=1,055.0' S=0.0360 '/' Capacity=783.31 cfs Outflow=47.03 cfs 14.509 af

Reach RB10: (new Reach)
Avg. Flow Depth=0.54' Max Vel=11.13 fps Inflow=10.30 cfs 2.846 af
n=0.020 L=180.0' S=0.1000 '/' Capacity=344.79 cfs Outflow=10.30 cfs 2.846 af

Reach RB11: (new Reach)
Avg. Flow Depth=0.50' Max Vel=9.90 fps Inflow=10.16 cfs 1.005 af
n=0.020 L=1,200.0' S=0.0833 '/' Capacity=179.58 cfs Outflow=10.03 cfs 1.005 af

Reach RB12: (new Reach)
Avg. Flow Depth=0.69' Max Vel=4.21 fps Inflow=7.76 cfs 0.619 af
n=0.020 L=600.0' S=0.0100 '/' Capacity=158.46 cfs Outflow=7.46 cfs 0.619 af

Reach RB2: (new Reach)
Avg. Flow Depth=0.10' Max Vel=2.61 fps Inflow=0.24 cfs 0.417 af
n=0.025 L=450.0' S=0.0711 '/' Capacity=132.71 cfs Outflow=0.24 cfs 0.416 af

Reach RB3: (new Reach)
Avg. Flow Depth=0.97' Max Vel=9.41 fps Inflow=45.18 cfs 12.010 af
n=0.025 L=885.0' S=0.0475 '/' Capacity=899.13 cfs Outflow=45.03 cfs 12.005 af

Reach RB4: (new Reach)
Avg. Flow Depth=0.69' Max Vel=3.50 fps Inflow=14.29 cfs 1.570 af
n=0.025 L=400.0' S=0.0100 '/' Capacity=139.80 cfs Outflow=14.17 cfs 1.570 af

Reach RB5: (new Reach)
Avg. Flow Depth=1.01' Max Vel=3.18 fps Inflow=26.91 cfs 8.142 af
n=0.025 L=800.0' S=0.0050 '/' Capacity=516.81 cfs Outflow=26.73 cfs 8.132 af

Reach RB6: (new Reach)
Avg. Flow Depth=0.84' Max Vel=4.66 fps Inflow=17.88 cfs 5.775 af
n=0.025 L=285.0' S=0.0140 '/' Capacity=488.96 cfs Outflow=17.87 cfs 5.773 af

Reach RB7: (new Reach)
Avg. Flow Depth=0.55' Max Vel=4.09 fps Inflow=8.35 cfs 2.133 af
n=0.025 L=960.0' S=0.0187 '/' Capacity=565.16 cfs Outflow=8.27 cfs 2.132 af

Reach RB8: (new Reach)
Avg. Flow Depth=0.66' Max Vel=7.29 fps Inflow=12.15 cfs 3.197 af
n=0.020 L=190.0' S=0.0316 '/' Capacity=281.59 cfs Outflow=12.15 cfs 3.197 af

Reach RC1: (new Reach)
Avg. Flow Depth=1.69' Max Vel=14.19 fps Inflow=125.26 cfs 21.348 af
n=0.020 L=390.0' S=0.0359 '/' Capacity=748.39 cfs Outflow=125.26 cfs 21.346 af

Reach RC10: (new Reach)
Avg. Flow Depth=0.44' Max Vel=3.42 fps Inflow=4.64 cfs 2.021 af
n=0.030 L=600.0' S=0.0250 '/' Capacity=272.18 cfs Outflow=4.63 cfs 2.020 af

Reach RC11: (new Reach)
Inflow=0.64 cfs 0.125 af
Outflow=0.64 cfs 0.125 af

Reach RC2: (new Reach)	Avg. Flow Depth=1.37' Max Vel=18.75 fps Inflow=120.42 cfs 19.584 af n=0.020 L=370.0' S=0.0811 '/' Capacity=1,124.76 cfs Outflow=120.42 cfs 19.583 af
Reach RC3: (new Reach)	Avg. Flow Depth=1.42' Max Vel=16.56 fps Inflow=112.50 cfs 18.674 af n=0.020 L=480.0' S=0.0604 '/' Capacity=970.91 cfs Outflow=112.49 cfs 18.673 af
Reach RC4: (new Reach)	Avg. Flow Depth=1.00' Max Vel=15.08 fps Inflow=46.43 cfs 7.455 af n=0.025 L=470.0' S=0.1277 '/' Capacity=452.93 cfs Outflow=46.43 cfs 7.455 af
Reach RC5: (new Reach)	Avg. Flow Depth=0.27' Max Vel=3.70 fps Inflow=2.09 cfs 1.971 af n=0.030 L=360.0' S=0.0556 '/' Capacity=620.69 cfs Outflow=2.09 cfs 1.970 af
Reach RC6: (new Reach)	Avg. Flow Depth=0.47' Max Vel=7.12 fps Inflow=7.02 cfs 3.694 af n=0.025 L=700.0' S=0.0729 '/' Capacity=342.17 cfs Outflow=7.02 cfs 3.693 af
Reach RC7: (new Reach)	Avg. Flow Depth=0.30' Max Vel=5.09 fps Inflow=2.11 cfs 1.549 af n=0.030 L=300.0' S=0.0967 '/' Capacity=176.63 cfs Outflow=2.11 cfs 1.549 af
Reach RC8: (new Reach)	Avg. Flow Depth=0.34' Max Vel=6.10 fps Inflow=4.63 cfs 2.020 af n=0.025 L=620.0' S=0.0790 '/' Capacity=468.67 cfs Outflow=4.63 cfs 2.020 af
Pond 1P: PIPE	Peak Elev=554.97' Inflow=14.29 cfs 1.570 af 36.0" Round Culvert n=0.012 L=130.0' S=0.0115 '/' Outflow=14.29 cfs 1.570 af
Pond 2P: (new Pond)	Peak Elev=500.88' Inflow=4.92 cfs 1.160 af 30.0" Round Culvert n=0.012 L=300.0' S=0.0133 '/' Outflow=4.92 cfs 1.160 af
Pond 3P: (new Pond)	Peak Elev=551.44' Storage=17,267 cf Inflow=8.24 cfs 0.722 af Outflow=0.47 cfs 0.674 af
Pond 7P: PIPE	Peak Elev=508.59' Inflow=120.42 cfs 19.584 af 72.0" Round Culvert x 2.00 n=0.012 L=90.0' S=0.0111 '/' Outflow=120.42 cfs 19.584 af
Pond 9P: (new Pond)	Peak Elev=607.33' Inflow=46.43 cfs 7.455 af 60.0" Round Culvert n=0.012 L=290.0' S=0.0345 '/' Outflow=46.43 cfs 7.455 af
Pond 10P: (new Pond)	Peak Elev=546.93' Inflow=66.07 cfs 11.219 af 60.0" Round Culvert x 2.00 n=0.012 L=295.0' S=0.0339 '/' Outflow=66.07 cfs 11.219 af
Pond 11P: PIPE	Peak Elev=571.22' Inflow=12.15 cfs 3.197 af 48.0" Round Culvert n=0.012 L=180.0' S=0.0417 '/' Outflow=12.15 cfs 3.197 af
Pond 16P: PIPE	Peak Elev=592.85' Inflow=10.30 cfs 2.846 af 36.0" Round Culvert x 2.00 n=0.012 L=300.0' S=0.0100 '/' Outflow=10.30 cfs 2.846 af
Pond L: LAKE	Inflow=45.18 cfs 12.010 af Primary=45.18 cfs 12.010 af
Pond PB11: (new Pond)	Peak Elev=579.77' Storage=33,920 cf Inflow=22.15 cfs 2.172 af Outflow=8.35 cfs 2.133 af
Pond PB19: (new Pond)	Peak Elev=596.84' Storage=39,378 cf Inflow=19.76 cfs 1.776 af Outflow=1.32 cfs 1.551 af

Pond PB2: (new Pond) Peak Elev=505.13' Storage=16,238 cf Inflow=6.80 cfs 0.577 af
Outflow=0.24 cfs 0.417 af

Pond PB3: (new Pond) Peak Elev=521.93' Storage=56,393 cf Inflow=27.26 cfs 2.603 af
Outflow=2.65 cfs 2.511 af

Pond PB4: POND Peak Elev=559.67' Storage=26,804 cf Inflow=16.56 cfs 1.257 af
Outflow=1.51 cfs 1.229 af

Pond PB5: (new Pond) Peak Elev=563.63' Storage=12,823 cf Inflow=7.04 cfs 0.506 af
Outflow=0.29 cfs 0.460 af

Pond PB6: PB7 Peak Elev=657.72' Storage=26,806 cf Inflow=13.94 cfs 1.108 af
Outflow=0.81 cfs 1.054 af

Pond PB7: (new Pond) Peak Elev=561.18' Storage=38,717 cf Inflow=13.65 cfs 1.115 af
Outflow=0.24 cfs 0.446 af

Pond PC10: POND C10 Peak Elev=672.92' Storage=34,725 cf Inflow=22.72 cfs 2.060 af
Outflow=4.64 cfs 2.021 af

Pond PC2: POND C2 Peak Elev=499.50' Storage=18,129 cf Inflow=8.20 cfs 0.698 af
Outflow=0.37 cfs 0.605 af

Pond PC6: POND C6 Peak Elev=639.06' Storage=31,808 cf Inflow=19.05 cfs 1.632 af
Outflow=2.11 cfs 1.549 af

Pond PC7: POND C7 Peak Elev=661.05' Storage=47,945 cf Inflow=27.22 cfs 2.161 af
Outflow=2.09 cfs 1.971 af

Pond PE2: POND E2 Peak Elev=589.07' Storage=20,357 cf Inflow=10.26 cfs 1.002 af
Outflow=1.44 cfs 0.965 af

Total Runoff Area = 784.840 ac Runoff Volume = 58.799 af Average Runoff Depth = 0.90"
92.75% Pervious = 727.920 ac 7.25% Impervious = 56.920 ac

Summary for Subcatchment A: Basin 1

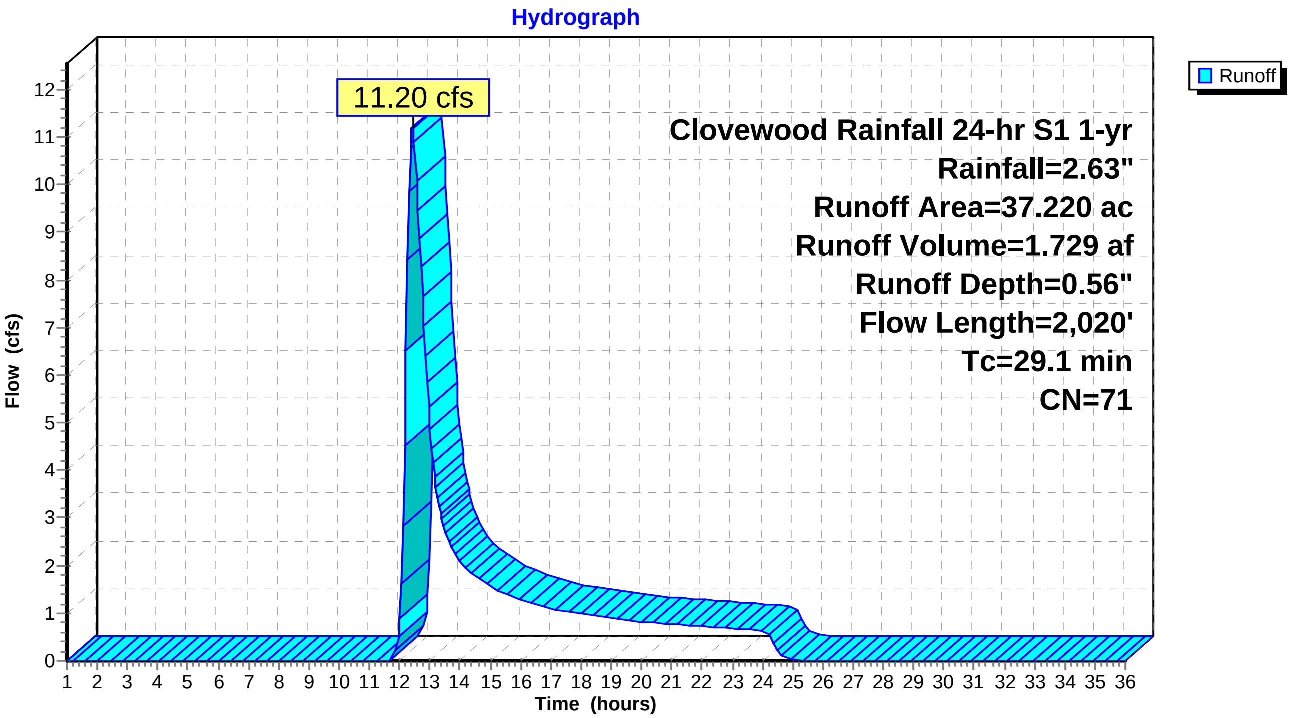
Runoff = 11.20 cfs @ 12.42 hrs, Volume= 1.729 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	7.350	89	Wetlands
*	1.040	98	Impervious Surfaces
	1.000	80	>75% Grass cover, Good, HSG D
	0.310	30	Woods, Good, HSG A
	1.240	55	Woods, Good, HSG B
	0.480	70	Woods, Good, HSG C
	5.970	77	Woods, Good, HSG D
	2.310	30	Brush, Good, HSG A
	3.810	48	Brush, Good, HSG B
	4.810	65	Brush, Good, HSG C
	8.040	73	Brush, Good, HSG D
*	0.040	75	Dirt roads, HSG A
*	0.100	84	Dirt roads, HSG B
*	0.030	88	Dirt roads, HSG C
*	0.690	90	Dirt roads, HSG D
	37.220	71	Weighted Average
	36.180		97.21% Pervious Area
	1.040		2.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	690	0.0200	2.28		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.7	690	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.8	540	0.0400	10.91	152.70	Parabolic Channel, W=7.00' D=3.00' Area=14.0 sf Perim=9.6' n= 0.035
29.1	2,020	Total			

Subcatchment A: Basin 1



Summary for Subcatchment B1: BAIN 1

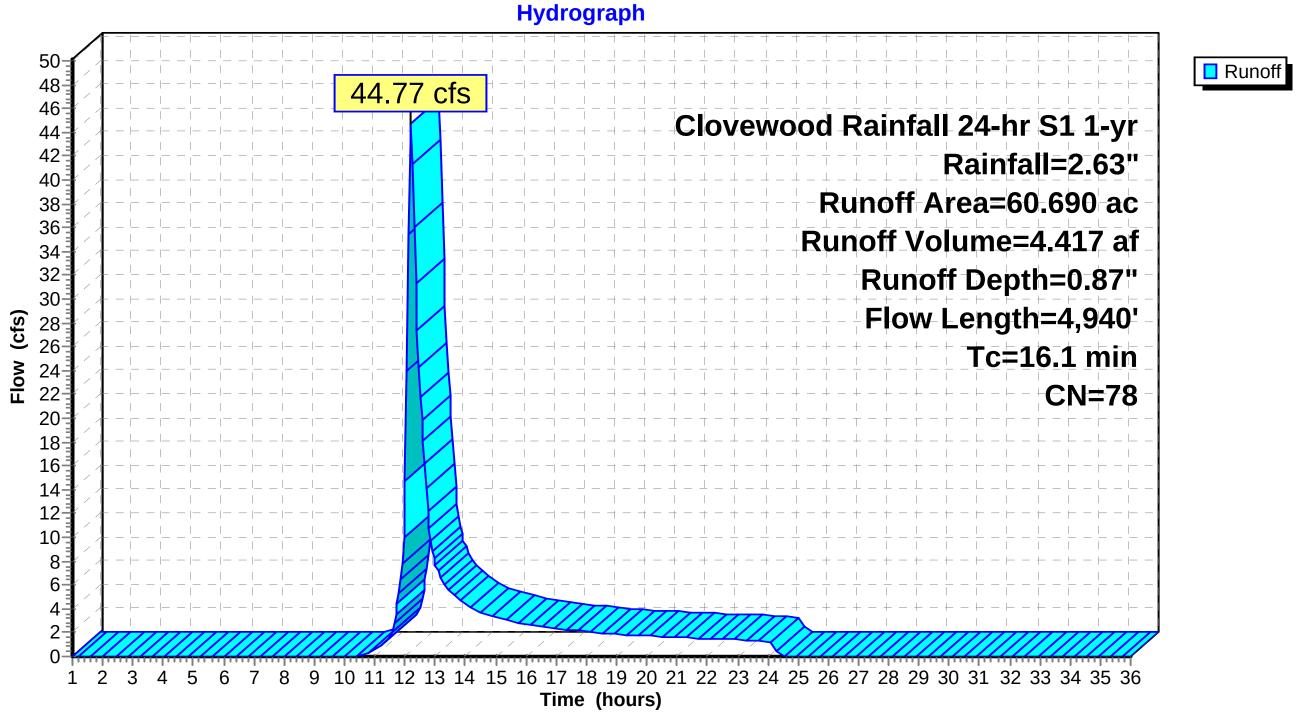
Runoff = 44.77 cfs @ 12.19 hrs, Volume= 4.417 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	3.820	98	WATER SURFACE
*	11.670	89	WETLANDS
*	1.550	35	OLD COURSE, A
*	0.500	90	DIRT ROAD
	20.000	77	Woods, Good, HSG D
*	3.000	85	LOTS, D
*	2.400	98	SHOPPING CENTER
	2.300	80	>75% Grass cover, Good, HSG D
	11.650	78	Meadow, non-grazed, HSG D
	2.000	30	Meadow, non-grazed, HSG A
	1.800	30	Woods, Good, HSG A
	60.690	78	Weighted Average
	54.470		89.75% Pervious Area
	6.220		10.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.7	2,900	0.0300	17.87	714.87	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
1.6	1,940	0.0400	20.64	825.46	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
16.1	4,940	Total			

Subcatchment B1: BAIN 1



Summary for Subcatchment B10: BASIN 10

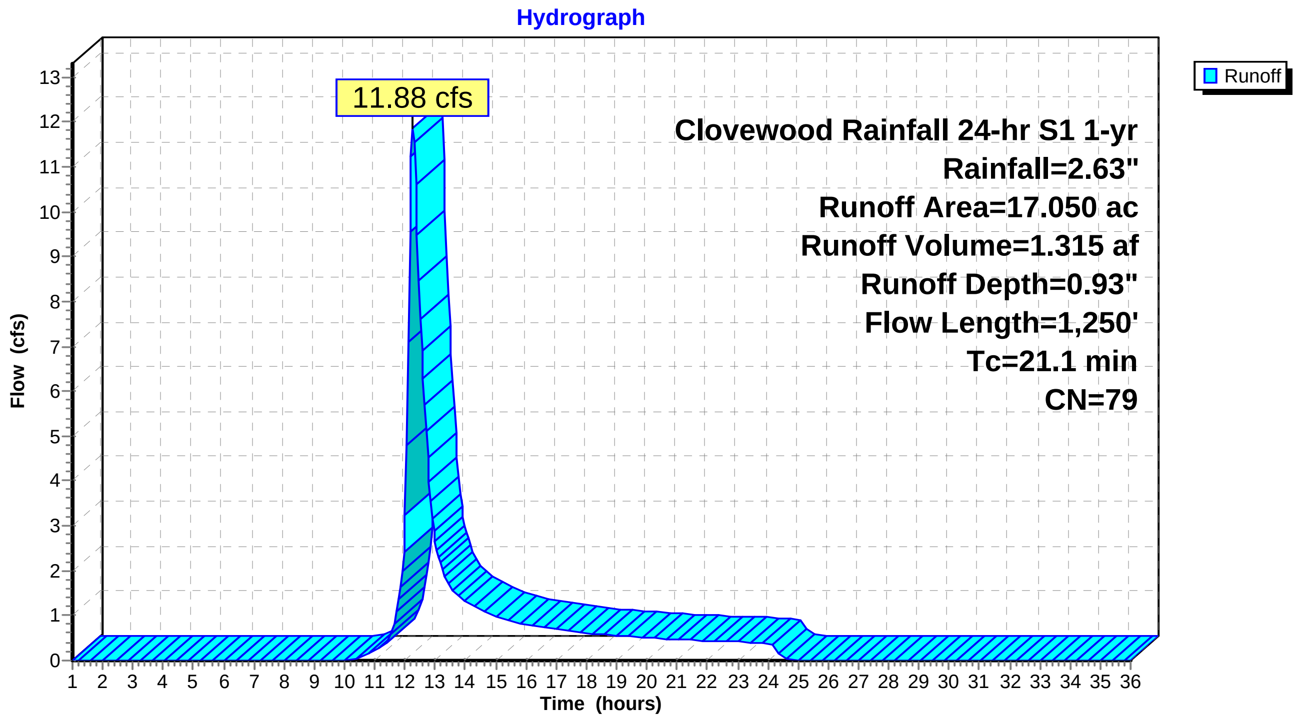
Runoff = 11.88 cfs @ 12.26 hrs, Volume= 1.315 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	5.350	85	LOTS, D
*	1.900	98	ROADS, WALKS
*	0.550	98	BUILDING, PARKING
	2.200	77	Woods, Good, HSG D
	1.300	39	>75% Grass cover, Good, HSG A
	2.500	78	Meadow, non-grazed, HSG D
	2.500	80	>75% Grass cover, Good, HSG D
*	0.450	60	LOTS, A
	0.300	30	Woods, Good, HSG A
	17.050	79	Weighted Average
	14.600		85.63% Pervious Area
	2.450		14.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.8	100	0.0250	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	250	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	700	0.0350	12.05	21.29	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.1	200	0.1000	23.49	156.61	Parabolic Channel, W=5.00' D=2.00' Area=6.7 sf Perim=6.7' n= 0.020
21.1	1,250	Total			

Subcatchment B10: BASIN 10



Summary for Subcatchment B11: BASIN B11

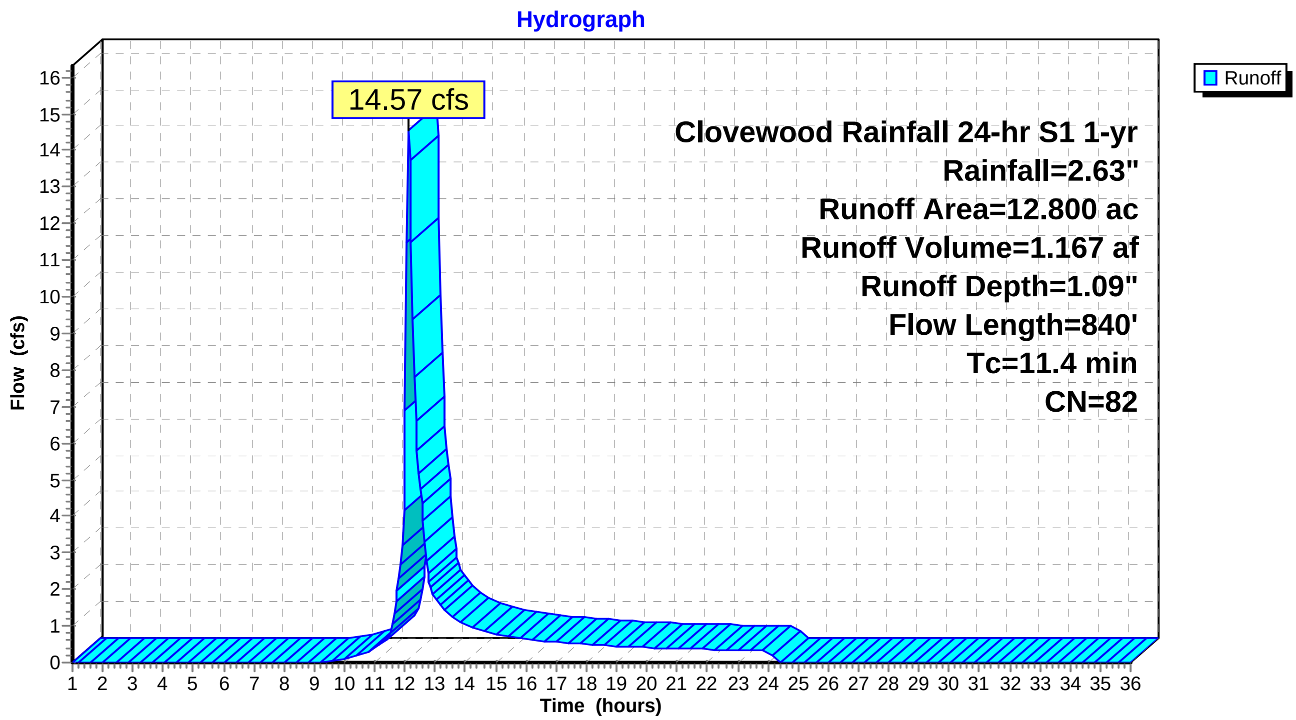
Runoff = 14.57 cfs @ 12.12 hrs, Volume= 1.167 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.400	98	POND
*	5.600	85	LOTS, D
	2.300	80	>75% Grass cover, Good, HSG D
	4.500	77	Woods, Good, HSG D
	12.800	82	Weighted Average
	12.400		96.88% Pervious Area
	0.400		3.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	120	0.1500	6.24		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.3	620	0.1000	40.98	327.87	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.012
11.4	840	Total			

Subcatchment B11: BASIN B11



Summary for Subcatchment B12: BASIN B12

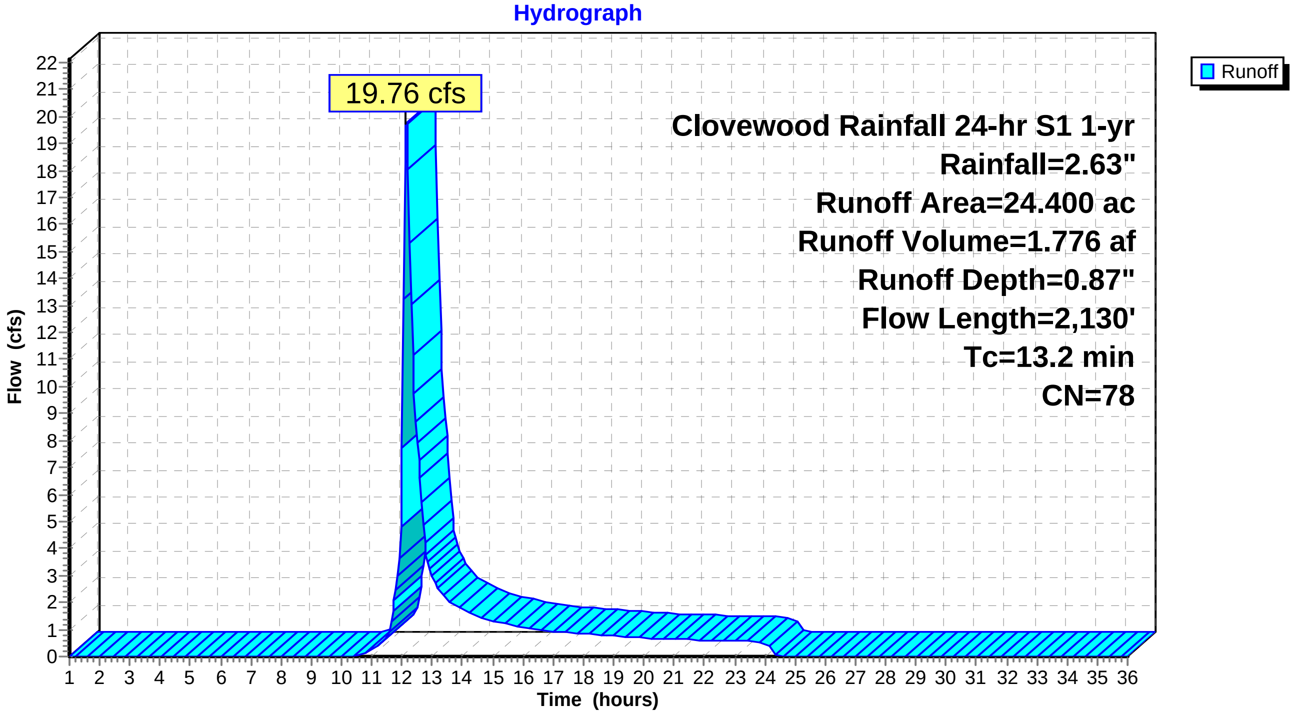
Runoff = 19.76 cfs @ 12.15 hrs, Volume= 1.776 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.750	98	POND
*	3.050	98	ROADS, WALKS
*	4.200	60	LOTS, A
	0.750	30	Woods, Good, HSG A
	0.550	39	>75% Grass cover, Good, HSG A
*	5.600	85	LOTS, D
*	1.000	98	BUILDING, PARKING
	2.000	80	>75% Grass cover, Good, HSG D
	6.500	77	Woods, Good, HSG D
	24.400	78	Weighted Average
	19.600		80.33% Pervious Area
	4.800		19.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	120	0.1500	6.24		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	120	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	930	0.0300	11.15	19.71	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.2	360	0.1600	27.74	147.92	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.020
0.4	200	0.0200	9.29	99.08	Parabolic Channel, W=8.00' D=2.00' Area=10.7 sf Perim=9.2' n= 0.025
0.2	300	0.1000	32.33	228.50	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
13.2	2,130	Total			

Subcatchment B12: BASIN B12



Summary for Subcatchment B13: BASIN B13

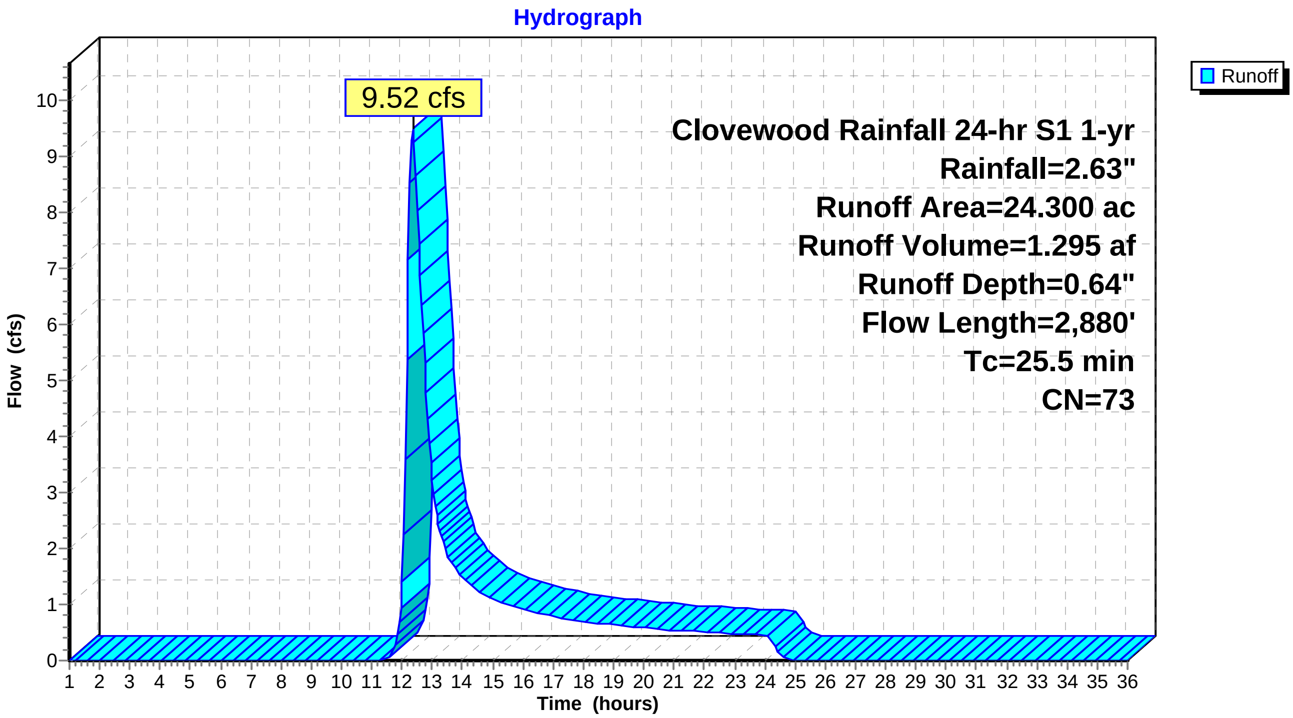
Runoff = 9.52 cfs @ 12.35 hrs, Volume= 1.295 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	2.400	60	LOTS, A
*	6.200	85	LOTS, D
*	1.420	89	WETLANDS
	0.900	39	>75% Grass cover, Good, HSG A
	2.000	30	Woods, Good, HSG A
	2.000	80	>75% Grass cover, Good, HSG D
	9.380	77	Woods, Good, HSG D
	24.300	73	Weighted Average
	24.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0700	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
12.7	2,480	0.0410	3.26		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	300	0.0100	12.38	155.61	**Pipe Channel,** 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.012
25.5	2,880	Total			

Subcatchment B13: BASIN B13



Summary for Subcatchment B14: BASIN 14

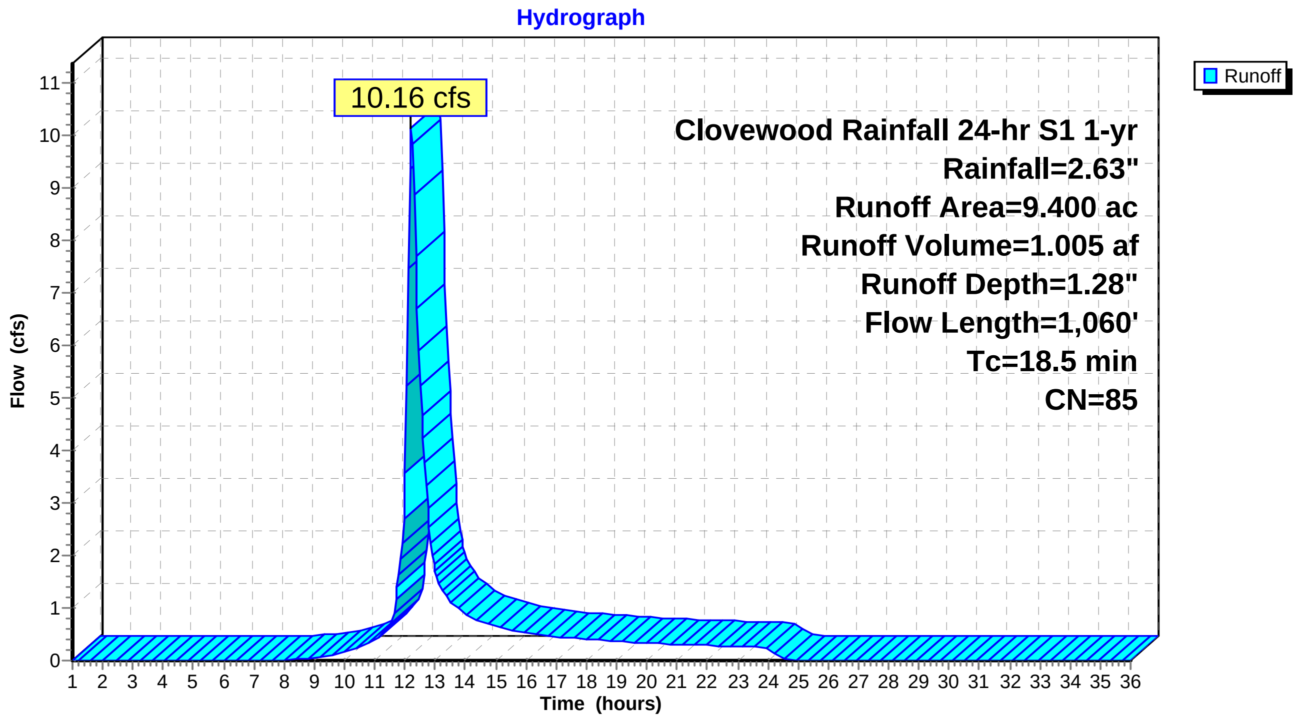
Runoff = 10.16 cfs @ 12.21 hrs, Volume= 1.005 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	5.400	85	LOTS, D
*	1.400	98	ROADS, WALKS
	0.500	80	>75% Grass cover, Good, HSG D
	2.100	77	Woods, Good, HSG D
	9.400	85	Weighted Average
	8.000		85.11% Pervious Area
	1.400		14.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	700	0.0900	4.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	80	0.0300	3.52		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	180	0.1000	24.67	77.50	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
18.5	1,060	Total			

Subcatchment B14: BASIN 14



Summary for Subcatchment B15: BASIN B15

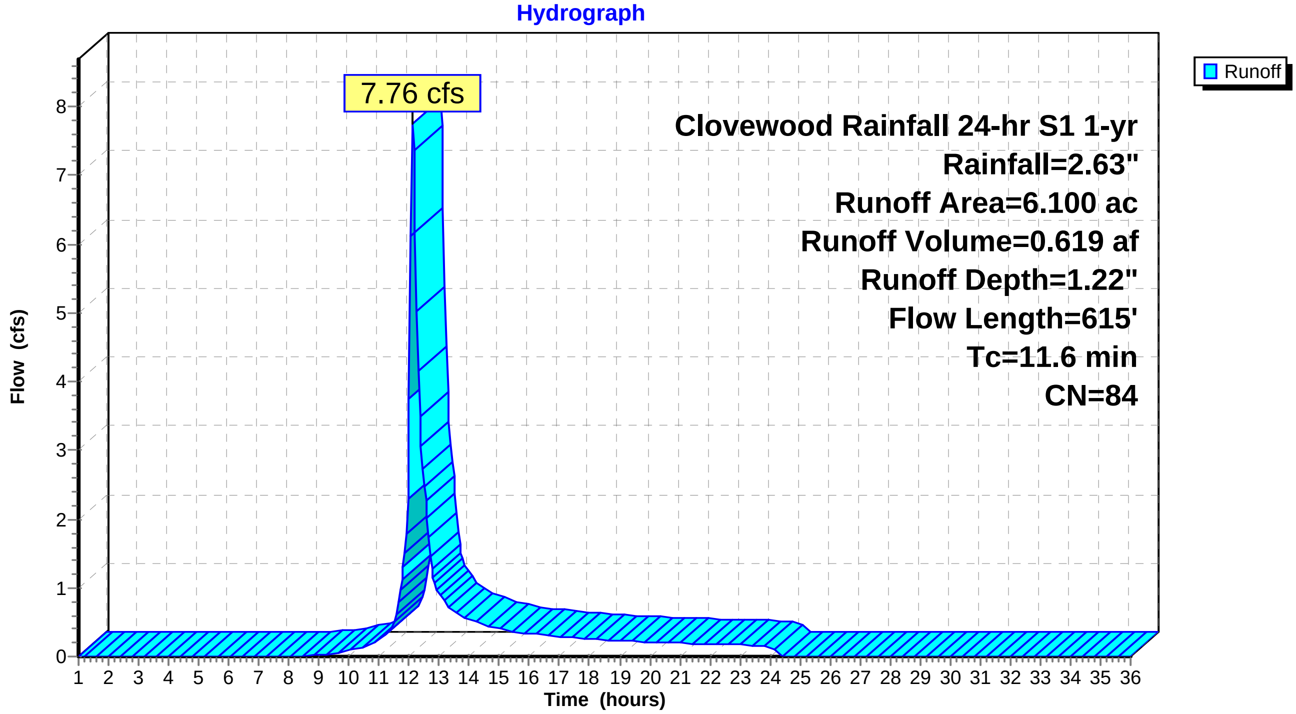
Runoff = 7.76 cfs @ 12.12 hrs, Volume= 0.619 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	3.050	85	LOTS, D
*	0.400	98	ROADS, WALKS
*	0.250	98	BUILDING
	1.900	80	>75% Grass cover, Good, HSG D
	0.500	77	Woods, Good, HSG D
	6.100	84	Weighted Average
	5.450		89.34% Pervious Area
	0.650		10.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	215	0.1600	6.44		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.2	300	0.0500	22.86	161.57	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.6	615	Total			

Subcatchment B15: BASIN B15



Summary for Subcatchment B16: (new Subcat)

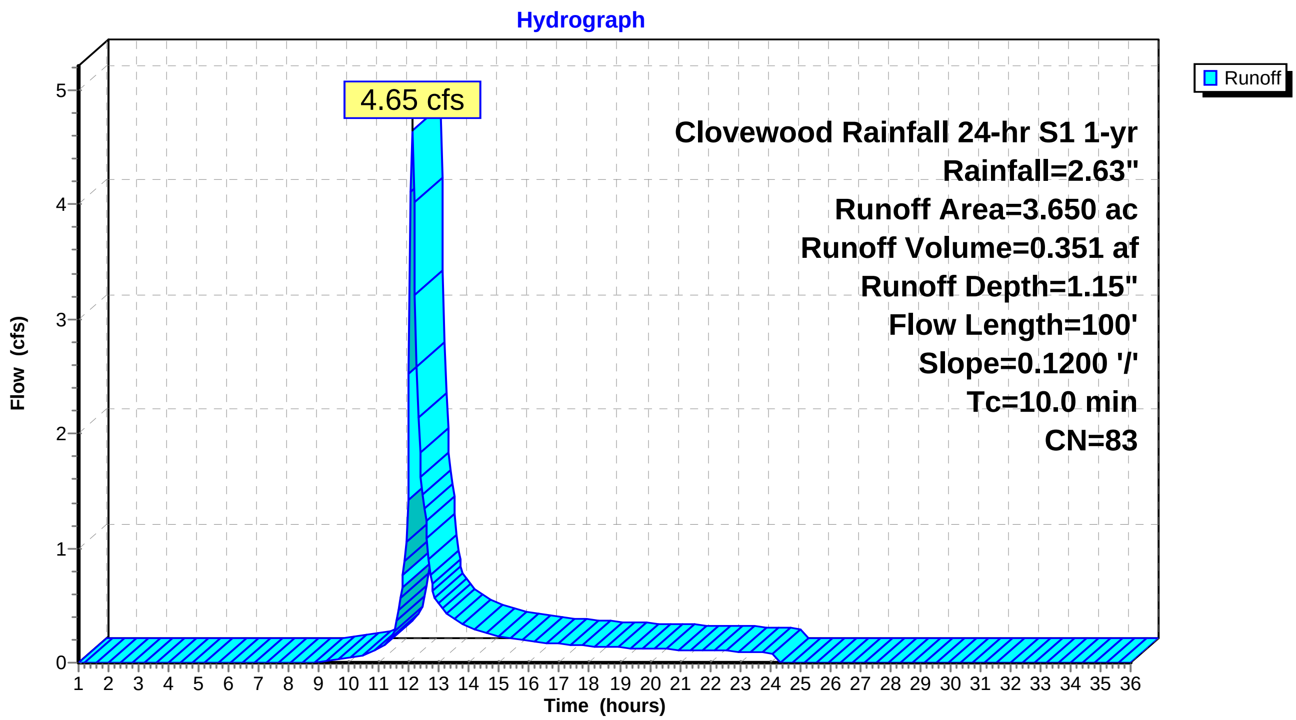
Runoff = 4.65 cfs @ 12.10 hrs, Volume= 0.351 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	2.100	85	LOTS, D
*	0.100	98	PARKING
	0.500	80	>75% Grass cover, Good, HSG D
	0.950	77	Woods, Good, HSG D
	3.650	83	Weighted Average
	3.550		97.26% Pervious Area
	0.100		2.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"

Subcatchment B16: (new Subcat)



Summary for Subcatchment B2: BASIN 2

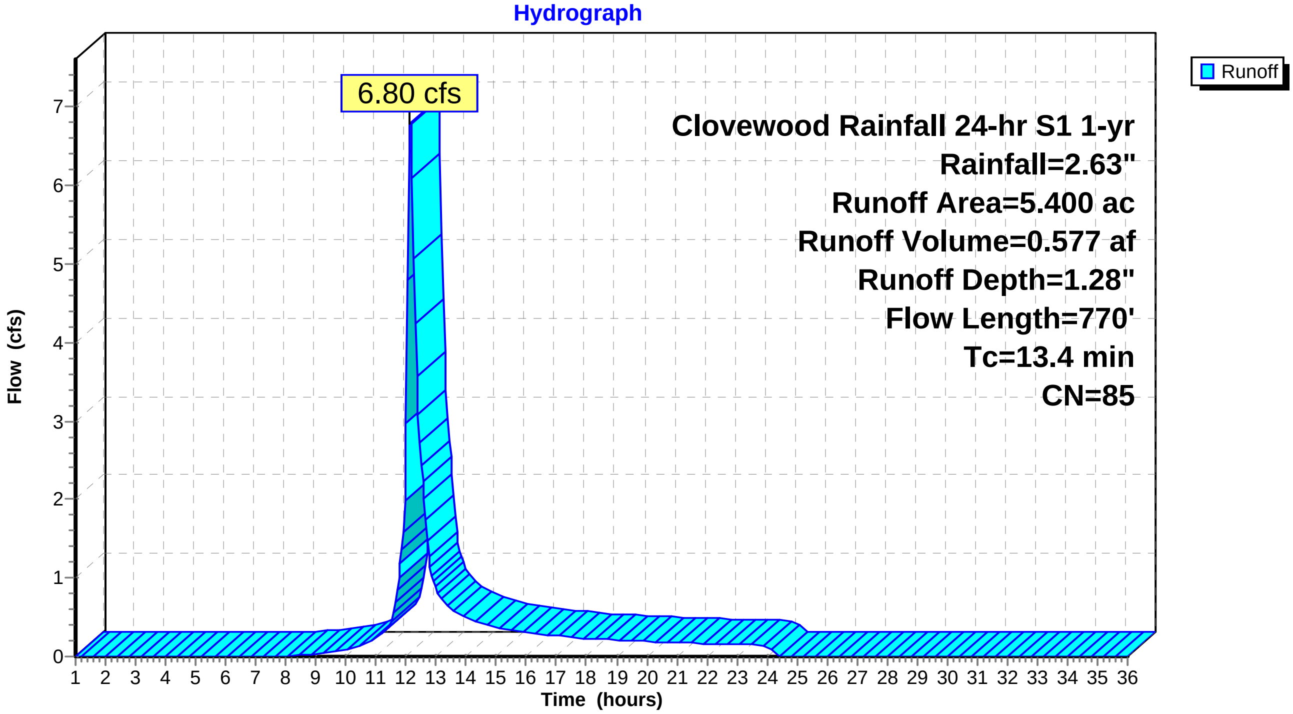
Runoff = 6.80 cfs @ 12.14 hrs, Volume= 0.577 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.500	98	ROADS, WALKS
	0.900	77	Woods, Good, HSG D
	0.400	80	>75% Grass cover, Good, HSG D
*	3.600	85	LOTS, D
	5.400	85	Weighted Average
	4.900		90.74% Pervious Area
	0.500		9.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	350	0.1500	6.24		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	150	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	170	0.0600	15.77	27.87	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
13.4	770	Total			

Subcatchment B2: BASIN 2



Summary for Subcatchment B3: BASIN B3

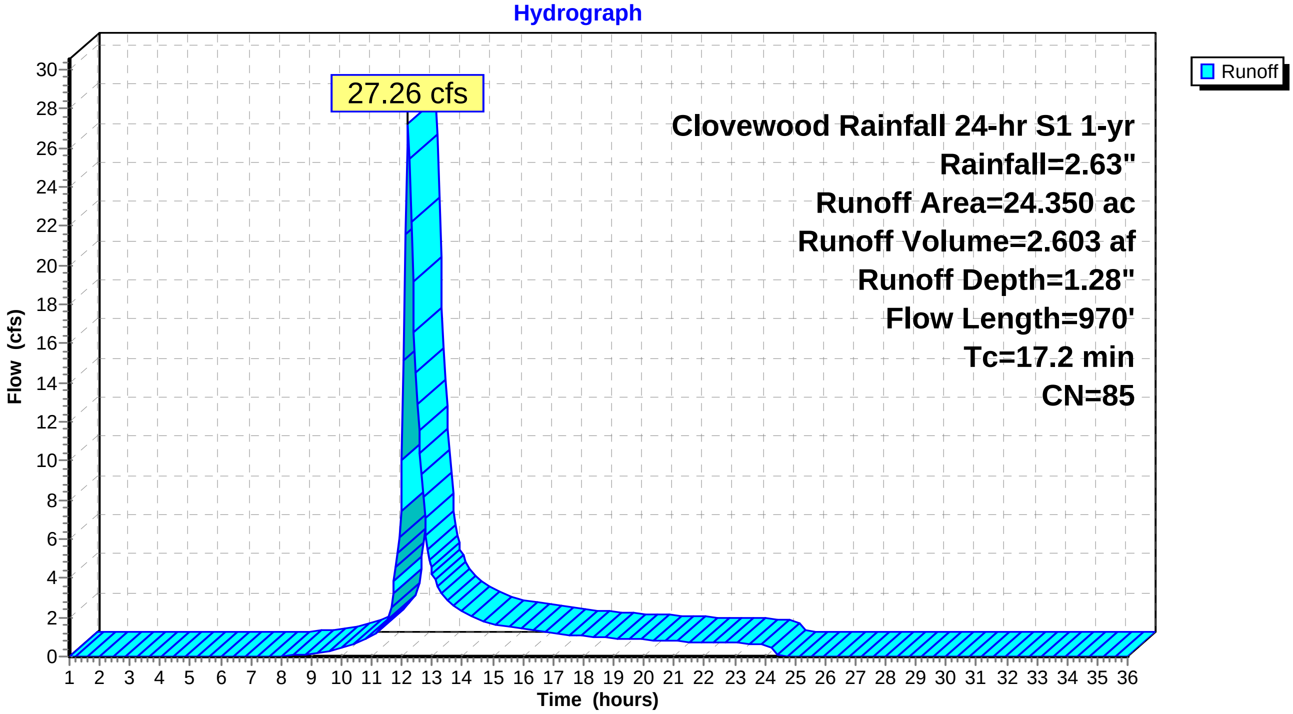
Runoff = 27.26 cfs @ 12.19 hrs, Volume= 2.603 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.600	98	POND
*	0.300	30	Meadow, non-grazed, HSG A
*	4.450	98	ROADS, WALKS
	1.500	80	>75% Grass cover, Good, HSG D
	4.500	77	Woods, Good, HSG D
*	13.000	85	LOTS, D
	24.350	85	Weighted Average
	19.300		79.26% Pervious Area
	5.050		20.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	220	0.0800	4.55		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.8	650	0.0500	14.40	25.45	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.2	970	Total			

Subcatchment B3: BASIN B3



Summary for Subcatchment B4: BASIN 4

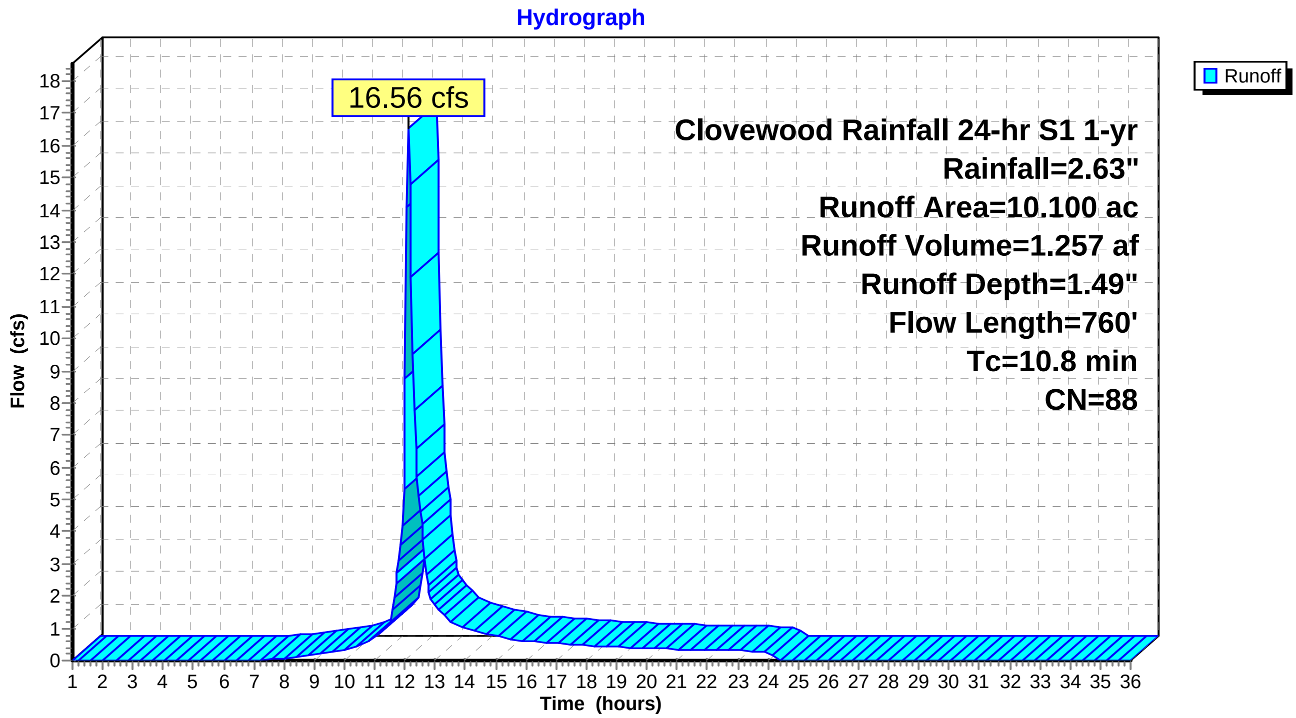
Runoff = 16.56 cfs @ 12.10 hrs, Volume= 1.257 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.350	98	POND
*	0.350	98	ROADS, WALKS
*	2.000	85	LOTS, D
*	0.500	98	BUILDINGS
*	0.200	98	PARKING
*	3.000	98	FUTURE DEV
	1.700	80	>75% Grass cover, Good, HSG D
	2.000	77	Woods, Good, HSG D
	10.100	88	Weighted Average
	5.700		56.44% Pervious Area
	4.400		43.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1300	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	360	0.0150	7.62	60.95	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
0.3	300	0.0700	17.04	30.11	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
10.8	760	Total			

Subcatchment B4: BASIN 4



Summary for Subcatchment B5: BASIN 5

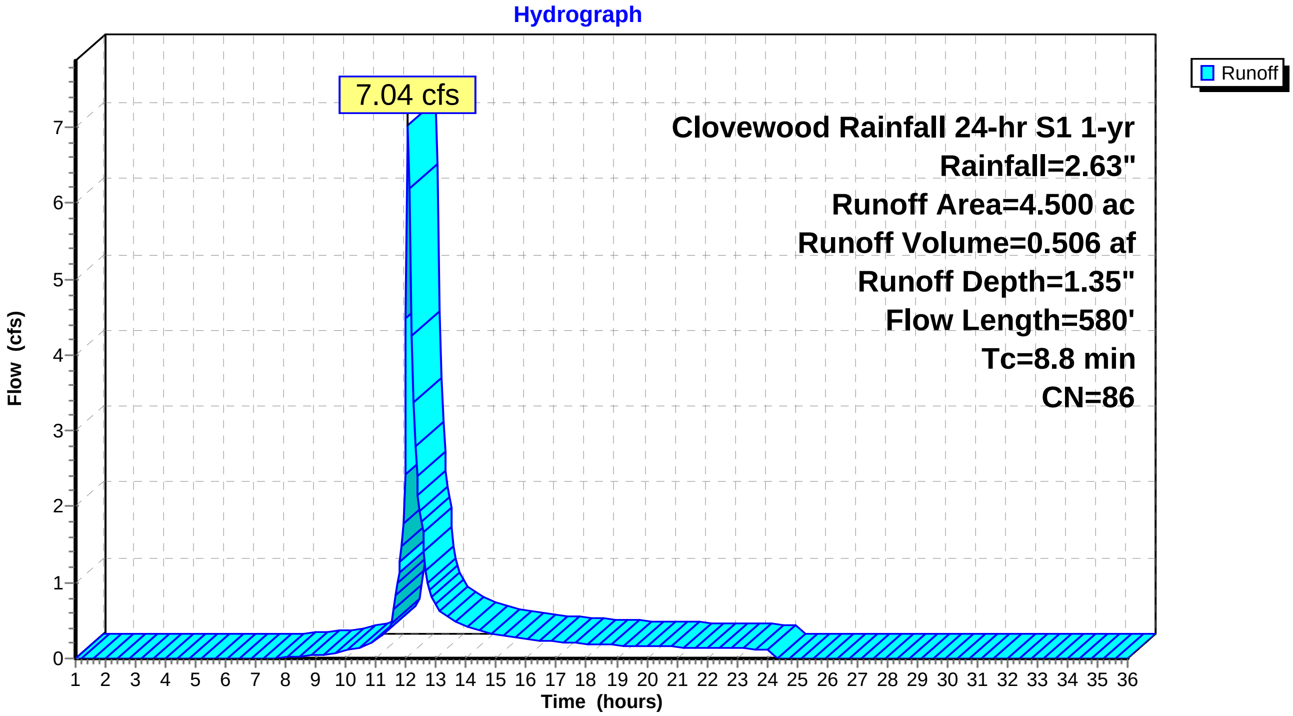
Runoff = 7.04 cfs @ 12.08 hrs, Volume= 0.506 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.340	98	ROADS, WALKS
*	0.150	98	POND
*	0.700	98	PARKING
*	1.800	85	LOTS, D
	0.700	80	>75% Grass cover, Good, HSG D
	0.810	77	Woods, Good, HSG D
	4.500	86	Weighted Average
	3.310		73.56% Pervious Area
	1.190		26.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.2000	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	130	0.1800	6.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.3	350	0.0700	17.04	30.11	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
8.8	580	Total			

Subcatchment B5: BASIN 5



Summary for Subcatchment B6: BASIN 7

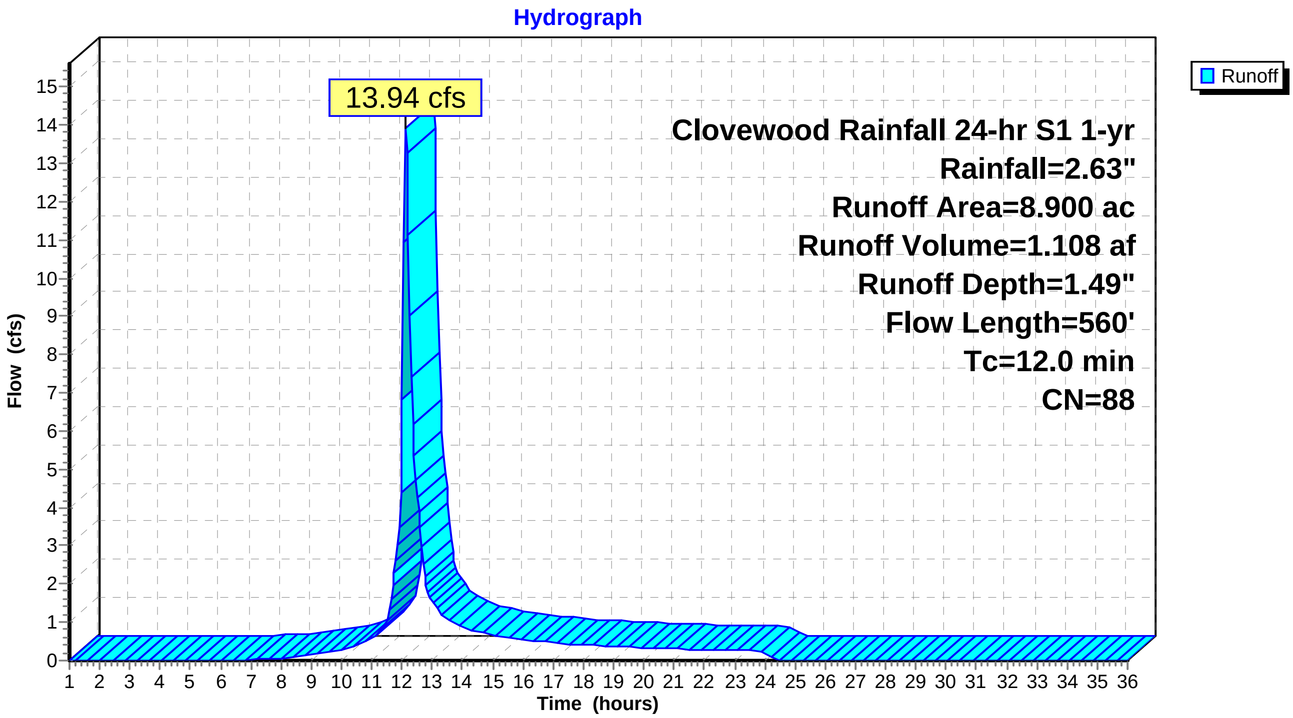
Runoff = 13.94 cfs @ 12.12 hrs, Volume= 1.108 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.850	98	ROADS, WLAKS
*	0.420	98	POND
*	2.800	85	LOTS, D
*	2.000	98	PARKING
	0.800	80	>75% Grass cover, Good, HSG D
	2.030	77	Woods, Good, HSG D
	8.900	88	Weighted Average
	5.630		63.26% Pervious Area
	3.270		36.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.1	290	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	170	0.1000	24.67	77.50	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
12.0	560	Total			

Subcatchment B6: BASIN 7



Summary for Subcatchment B7: BASIN 6

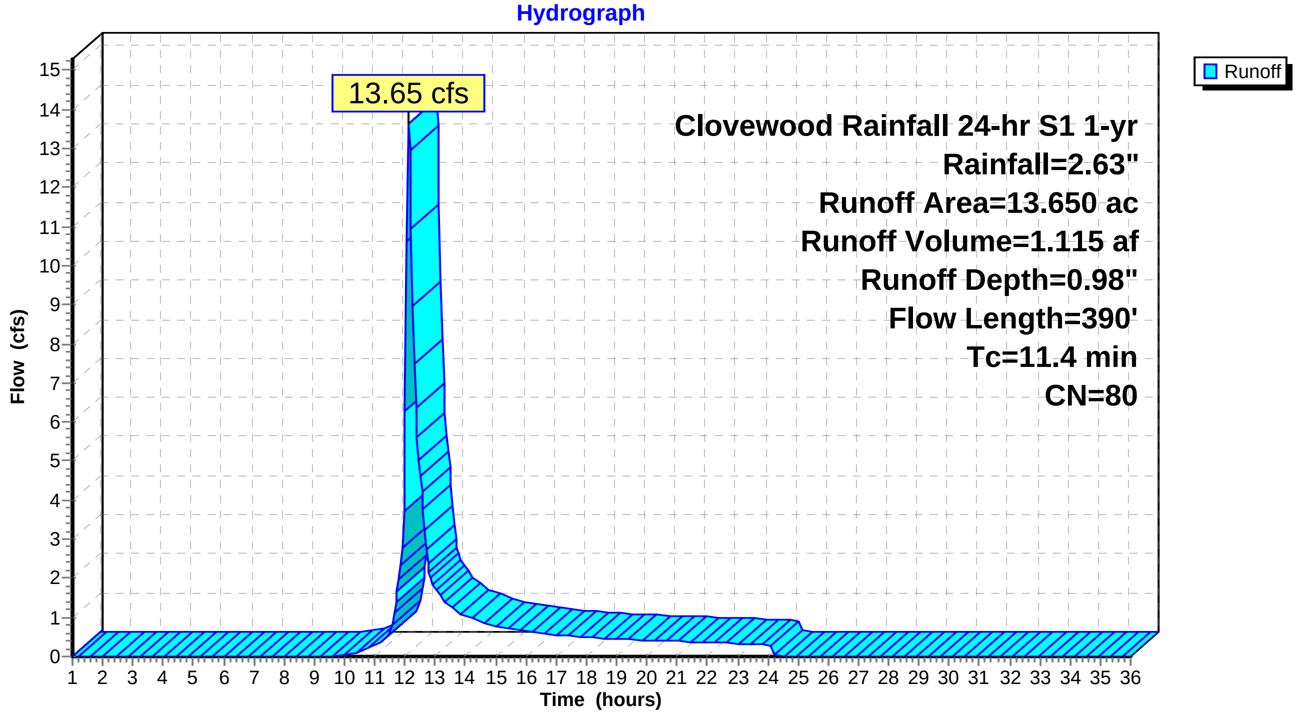
Runoff = 13.65 cfs @ 12.12 hrs, Volume= 1.115 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	3.200	98	ROADS, WALK
*	3.850	85	LOTS, D
*	0.700	98	POND
*	2.150	60	LOTS, A
	1.000	39	>75% Grass cover, Good, HSG A
	1.250	80	>75% Grass cover, Good, HSG D
	1.500	77	Woods, Good, HSG D
	13.650	80	Weighted Average
	9.750		71.43% Pervious Area
	3.900		28.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.0900	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.1	290	0.1000	32.33	228.50	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.4	390	Total			

Subcatchment B7: BASIN 6



Summary for Subcatchment B8: BASIN B8

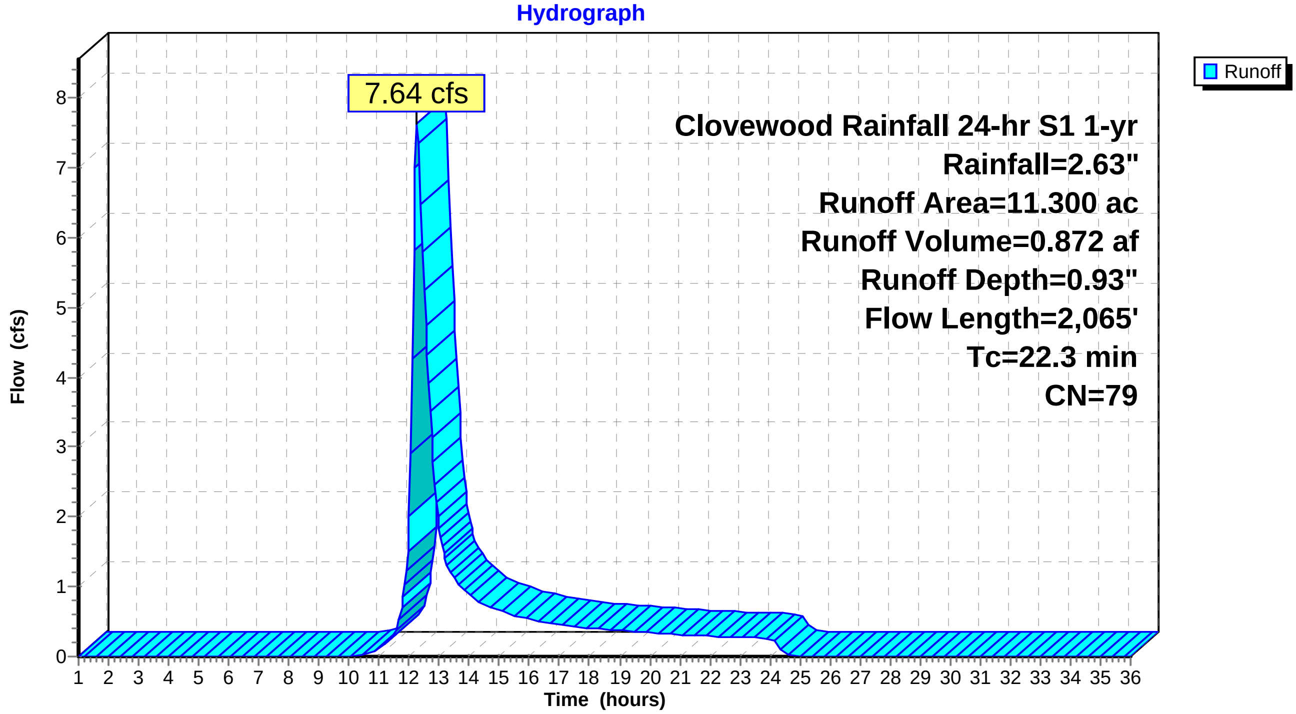
Runoff = 7.64 cfs @ 12.28 hrs, Volume= 0.872 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.200	90	DIRT ROAD, HSG D
*	0.350	98	ROAD
	3.500	77	Woods, Good, HSG D
	2.500	80	>75% Grass cover, Good, HSG D
	4.750	78	Meadow, non-grazed, HSG D
	11.300	79	Weighted Average
	10.950		96.90% Pervious Area
	0.350		3.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	915	0.0350	3.01		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.5	950	0.0300	10.77	86.20	**Parabolic Channel,** W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
0.1	100	0.0300	17.71	125.15	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
22.3	2,065	Total			

Subcatchment B8: BASIN B8



Summary for Subcatchment B9: BASIN 9

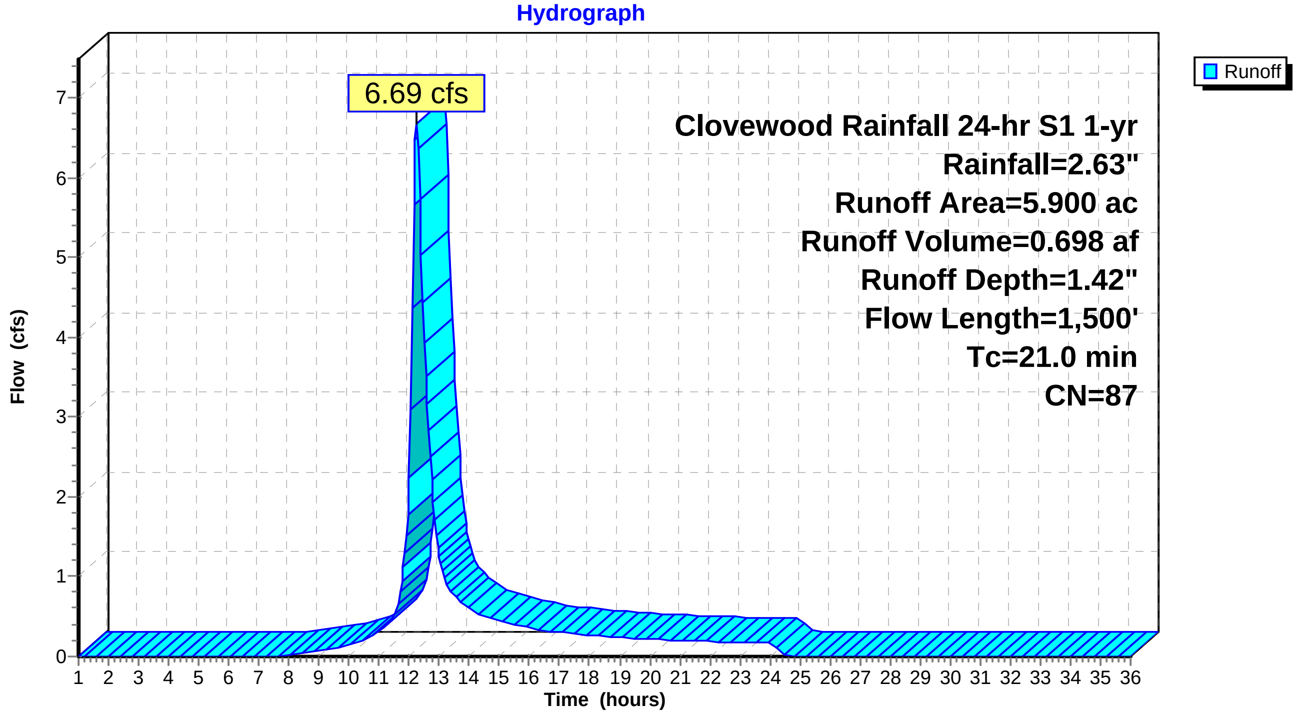
Runoff = 6.69 cfs @ 12.24 hrs, Volume= 0.698 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	3.000	85	LOTS, D
*	1.400	98	ROADS, WALKS
	0.750	80	>75% Grass cover, Good, HSG D
	0.750	79	Woods/grass comb., Good, HSG D
	5.900	87	Weighted Average
	4.500		76.27% Pervious Area
	1.400		23.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
4.5	1,150	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	120	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	130	0.0300	11.15	19.71	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
21.0	1,500	Total			

Subcatchment B9: BASIN 9



Summary for Subcatchment C1: C1

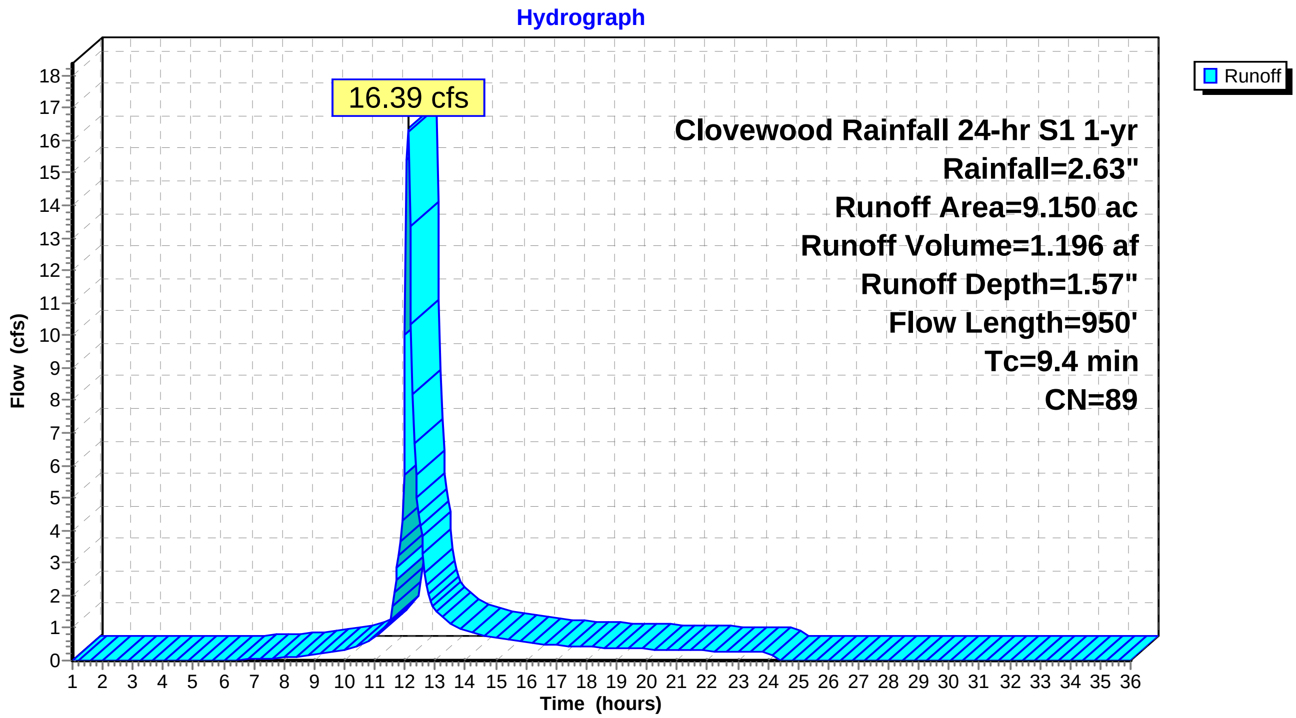
Runoff = 16.39 cfs @ 12.09 hrs, Volume= 1.196 af, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	4.460	98	ROADS, WALKS, PARKING
	4.090	80	>75% Grass cover, Good, HSG D
	0.600	77	Woods, Good, HSG D
	9.150	89	Weighted Average
	4.690		51.26% Pervious Area
	4.460		48.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0800	0.31		Sheet Flow, Grass: Short n= 0.150 P2= 3.50"
0.7	150	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.2	250	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.8	250	0.0100	2.38	15.86	Parabolic Channel, W=20.00' D=0.50' Area=6.7 sf Perim=20.0' n= 0.030
0.3	200	0.0200	11.03	34.66	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
9.4	950	Total			

Subcatchment C1: C1



Summary for Subcatchment C10: BASIN 10

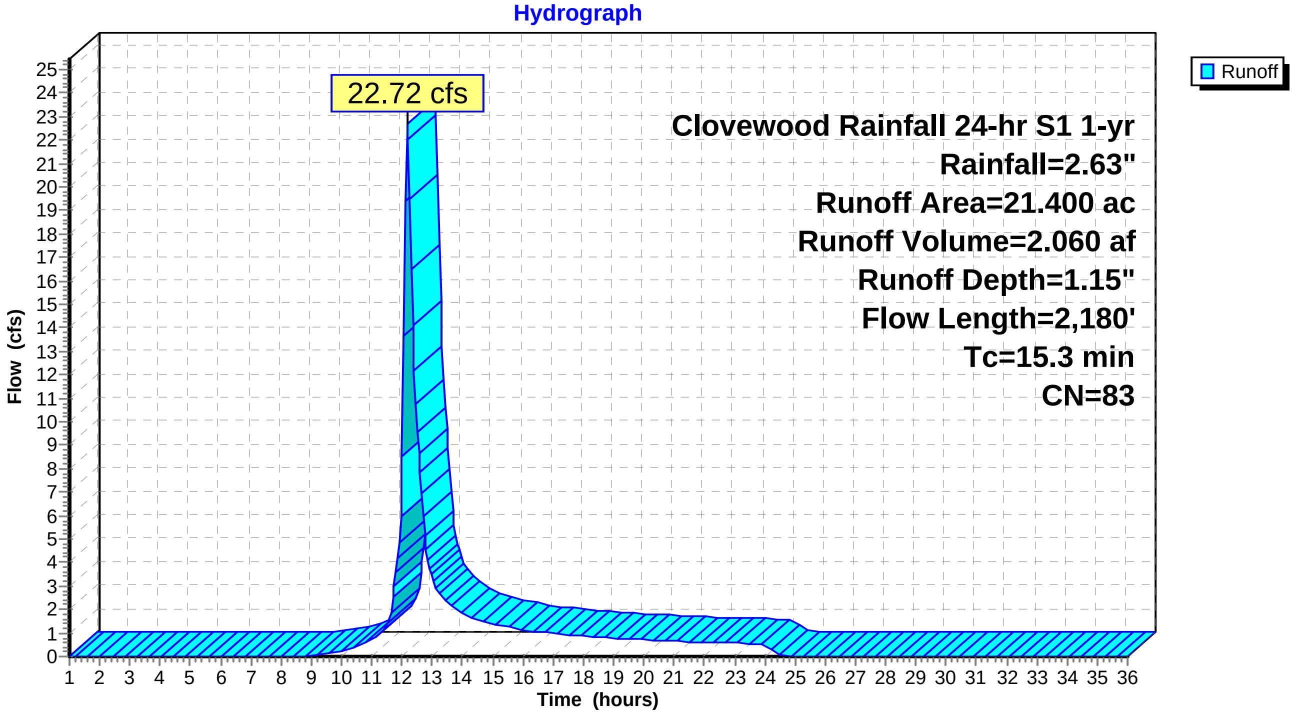
Runoff = 22.72 cfs @ 12.17 hrs, Volume= 2.060 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	10.000	85	LOTS, D
*	1.850	98	ROADS, WALKS
	1.500	80	>75% Grass cover, Good, HSG D
*	0.600	98	POND
	7.450	77	Woods, Good, HSG D
	21.400	83	Weighted Average
	18.950		88.55% Pervious Area
	2.450		11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	880	0.1500	6.24		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.1	1,200	0.0850	18.77	33.18	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
15.3	2,180	Total			

Subcatchment C10: BASIN 10



Summary for Subcatchment C11: BASIN C11

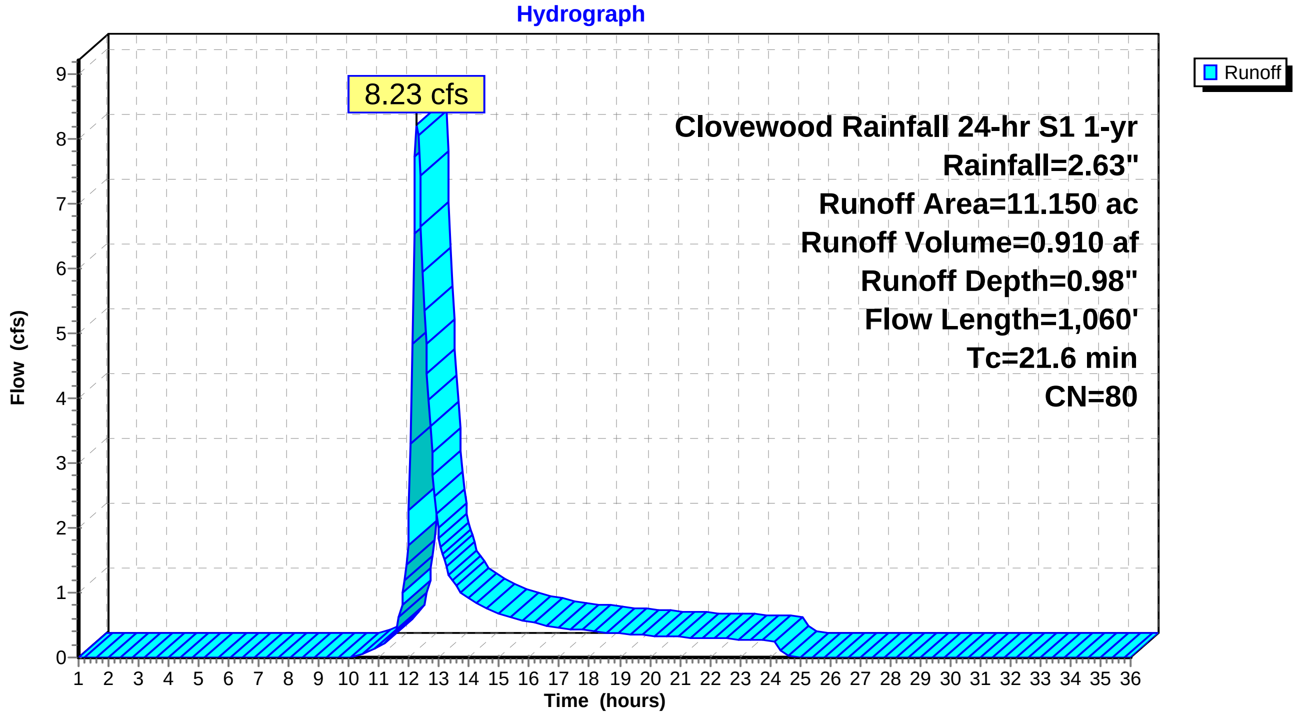
Runoff = 8.23 cfs @ 12.26 hrs, Volume= 0.910 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	4.150	85	LOTS, D
	1.000	80	>75% Grass cover, Good, HSG D
	6.000	77	Woods, Good, HSG D
	11.150	80	Weighted Average
	11.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	300	0.2500	8.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.5	660	0.0800	22.41	358.55	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
21.6	1,060	Total			

Subcatchment C11: BASIN C11



Summary for Subcatchment C12: (new Subcat)

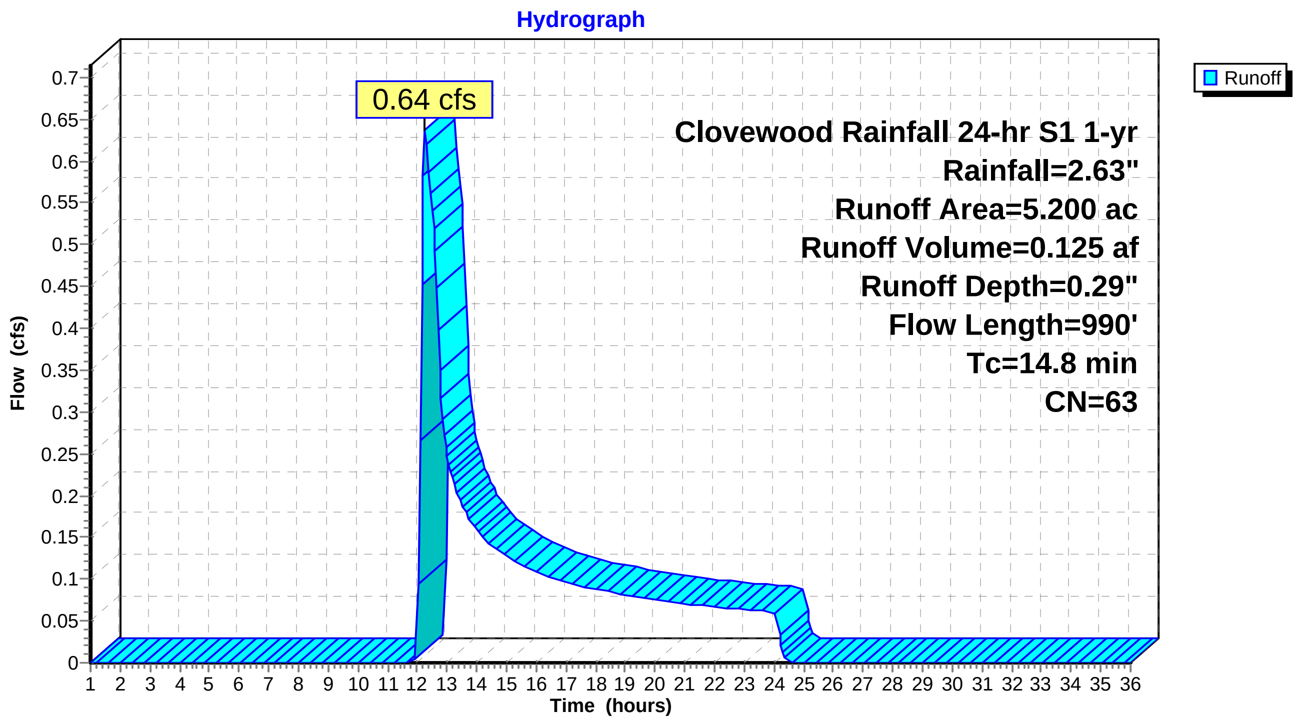
Runoff = 0.64 cfs @ 12.27 hrs, Volume= 0.125 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.860	85	LOTS, D
	1.300	30	Woods, Good, HSG A
*	1.150	60	LOTS, A
	0.500	78	Meadow, non-grazed, HSG D
	1.390	77	Woods, Good, HSG D
	5.200	63	Weighted Average
	5.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0700	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.6	450	0.0900	4.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.8	440	0.0150	9.55	30.02	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.8	990	Total			

Subcatchment C12: (new Subcat)



Summary for Subcatchment C2: BASIN C2

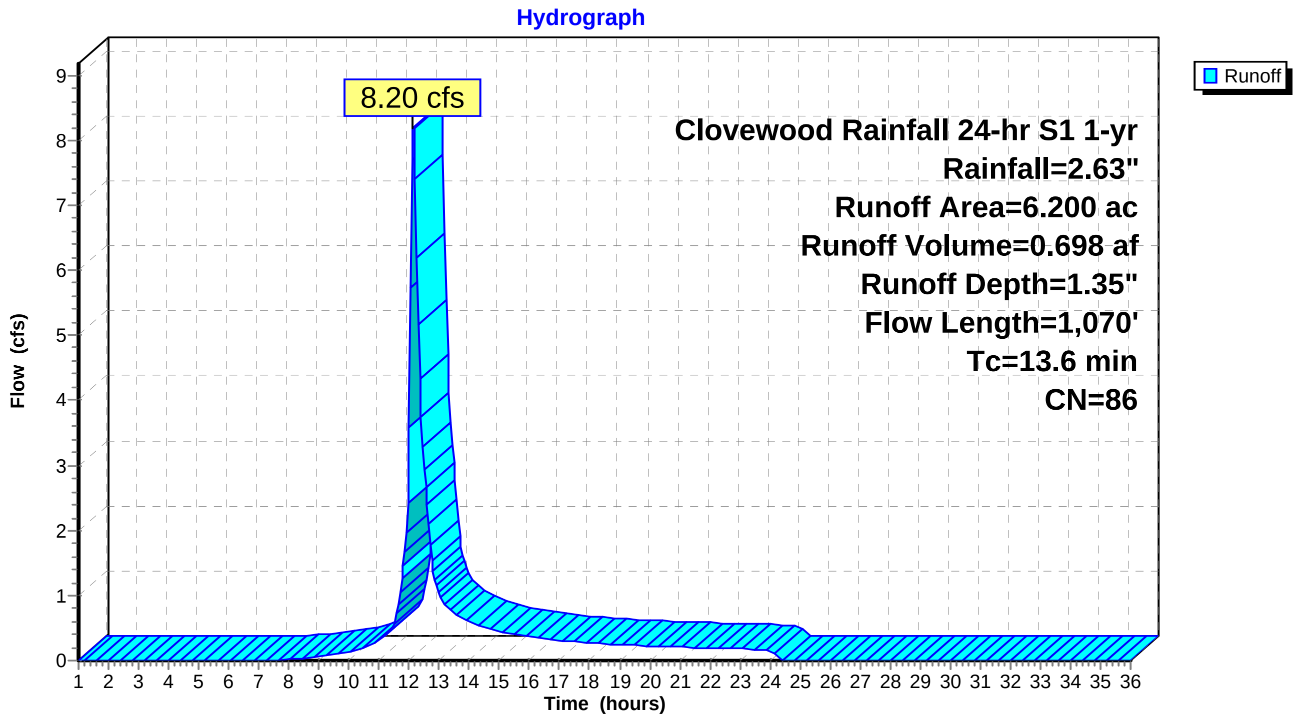
Runoff = 8.20 cfs @ 12.14 hrs, Volume= 0.698 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.250	98	POND
*	1.750	98	ROADS, WALKS
*	1.850	85	LOTS, D
	0.600	80	>75% Grass cover, Good, HSG D
	1.750	77	Woods, Good, HSG D
	6.200	86	Weighted Average
	4.200		67.74% Pervious Area
	2.000		32.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.0	390	0.1800	6.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.8	580	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
13.6	1,070	Total			

Subcatchment C2: BASIN C2



Summary for Subcatchment C3: BASIN C3

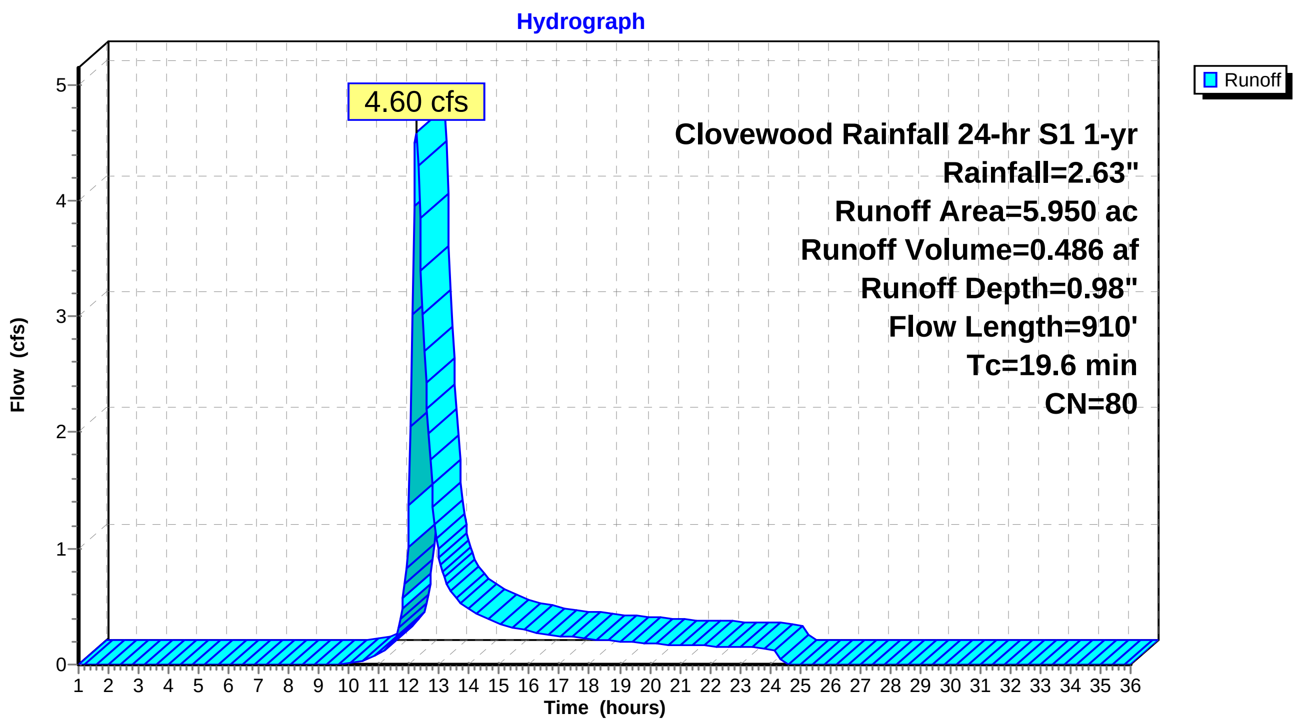
Runoff = 4.60 cfs @ 12.24 hrs, Volume= 0.486 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.380	89	WETLANDS
*	1.400	85	LOTS, D
	0.150	78	Meadow, non-grazed, HSG D
	4.020	77	Woods, Good, HSG D
	5.950	80	Weighted Average
	5.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0300	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.9	660	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.2	150	0.0500	15.24	152.43	Parabolic Channel, W=6.00' D=2.50' Area=10.0 sf Perim=8.1' n= 0.025
19.6	910	Total			

Subcatchment C3: BASIN C3



Summary for Subcatchment C4: BASIN C4

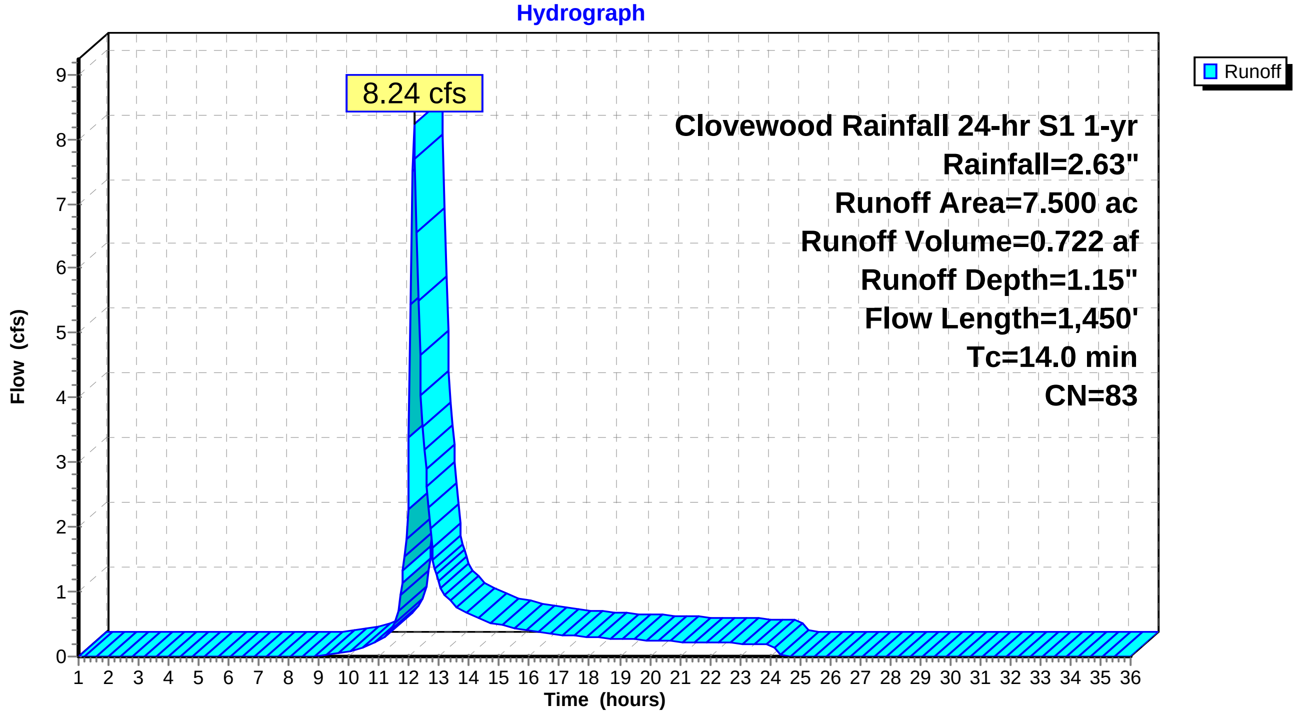
Runoff = 8.24 cfs @ 12.15 hrs, Volume= 0.722 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	1.420	98	ROADS/ WALKS
*	3.300	85	LOTS, D
*	0.250	98	POND
	0.400	78	Meadow, non-grazed, HSG D
*	0.240	60	LOTS, A
	0.230	30	Woods, Good, HSG A
	1.660	77	Woods, Good, HSG D
	7.500	83	Weighted Average
	5.830		77.73% Pervious Area
	1.670		22.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0850	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	370	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	790	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.1	190	0.2000	24.81	132.31	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
14.0	1,450	Total			

Subcatchment C4: BASIN C4



Summary for Subcatchment C5N9: BASIN C5/9

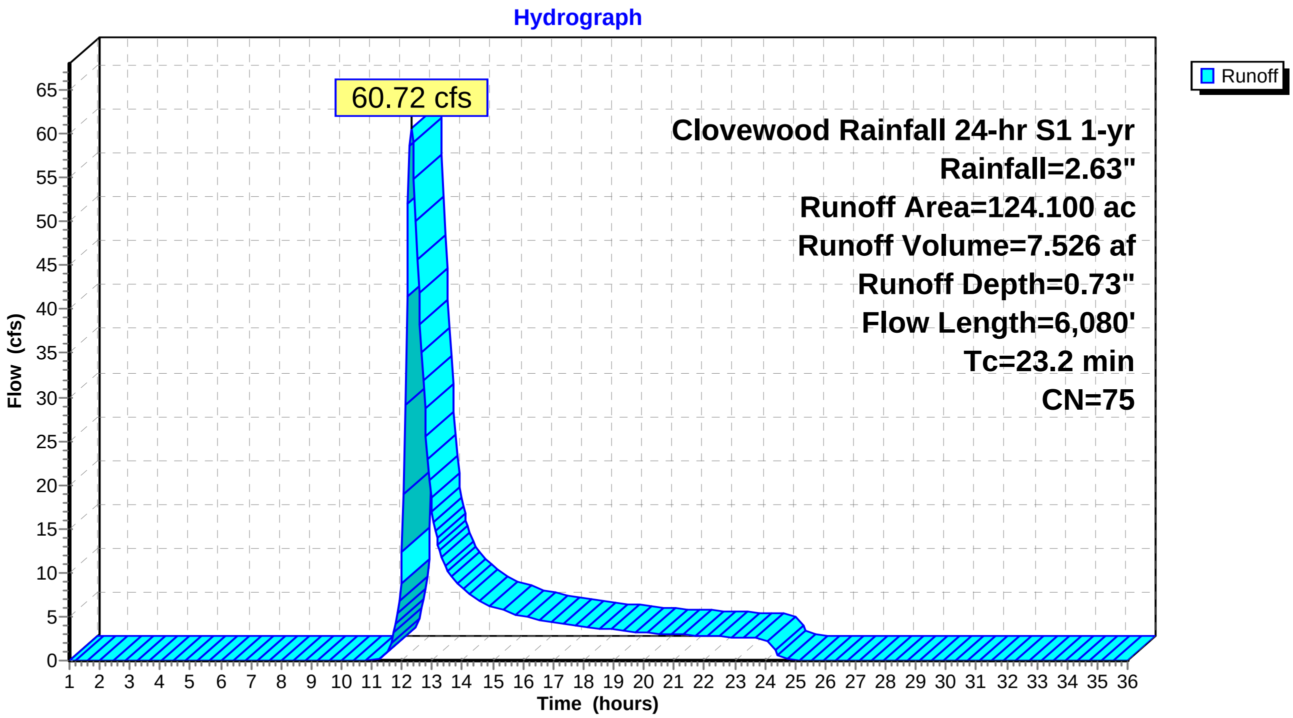
Runoff = 60.72 cfs @ 12.30 hrs, Volume= 7.526 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	4.780	89	WETLANDS
	105.670	77	Woods, Good, HSG D
*	5.100	85	
	1.100	80	>75% Grass cover, Good, HSG D
	0.400	39	>75% Grass cover, Good, HSG A
*	0.850	60	
	6.200	30	Woods, Good, HSG A
	124.100	75	Weighted Average
	124.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0300	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.7	965	0.3500	9.52		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	610	0.0200	9.74	155.77	Parabolic Channel, W=12.00' D=2.00' Area=16.0 sf Perim=12.8' n= 0.025
1.4	2,190	0.1400	25.51	255.07	Parabolic Channel, W=6.00' D=2.50' Area=10.0 sf Perim=8.1' n= 0.025
0.2	350	0.1000	32.33	228.50	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
1.4	1,865	0.0800	22.41	358.55	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
23.2	6,080	Total			

Subcatchment C5N9: BASIN C5/9



Summary for Subcatchment C6: BASIN C6

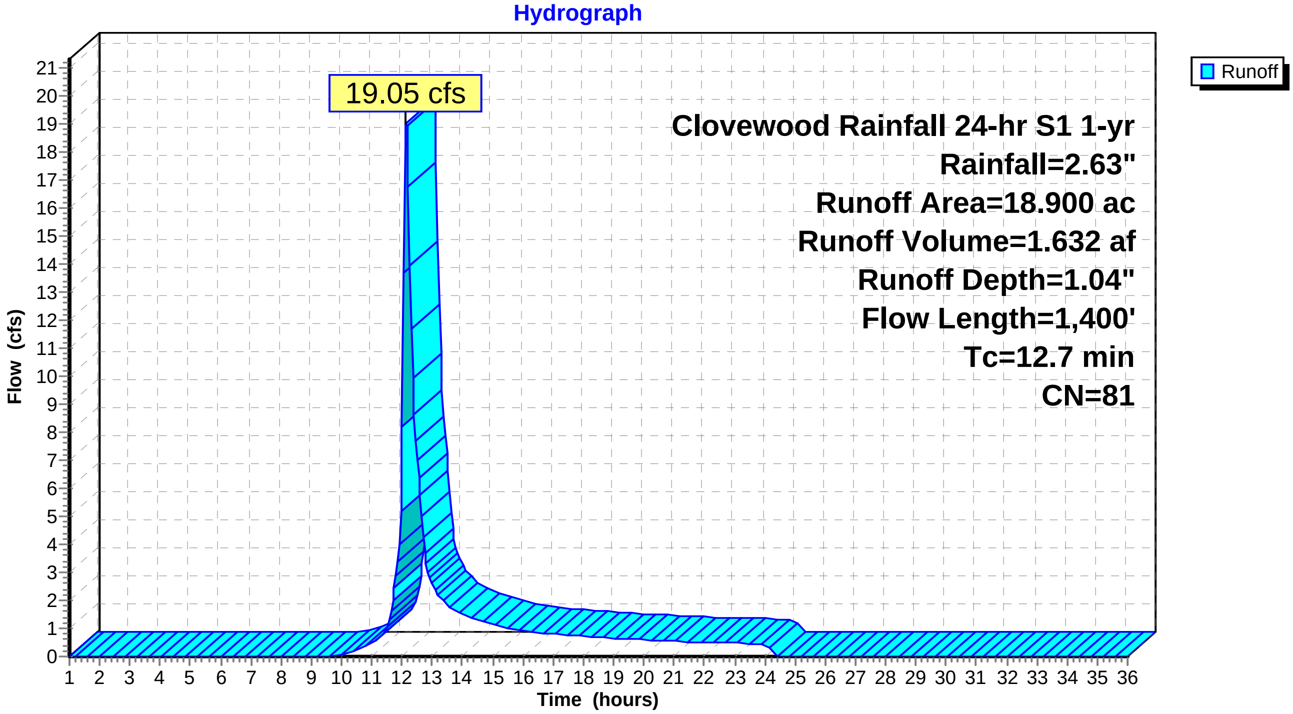
Runoff = 19.05 cfs @ 12.14 hrs, Volume= 1.632 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.600	98	POND
*	1.110	60	LOTS, A
*	1.790	98	ROADS, WALKS
*	10.700	85	LOTS, D
	1.170	39	>75% Grass cover, Good, HSG A
	1.530	80	>75% Grass cover, Good, HSG D
	2.000	77	Woods, Good, HSG D
	18.900	81	Weighted Average
	16.510		87.35% Pervious Area
	2.390		12.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	150	0.0700	4.26		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.1	860	0.0400	12.88	22.76	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.2	290	0.1400	23.28	186.21	**Parabolic Channel,** W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
12.7	1,400	Total			

Subcatchment C6: BASIN C6



Summary for Subcatchment C7: BASIN C7

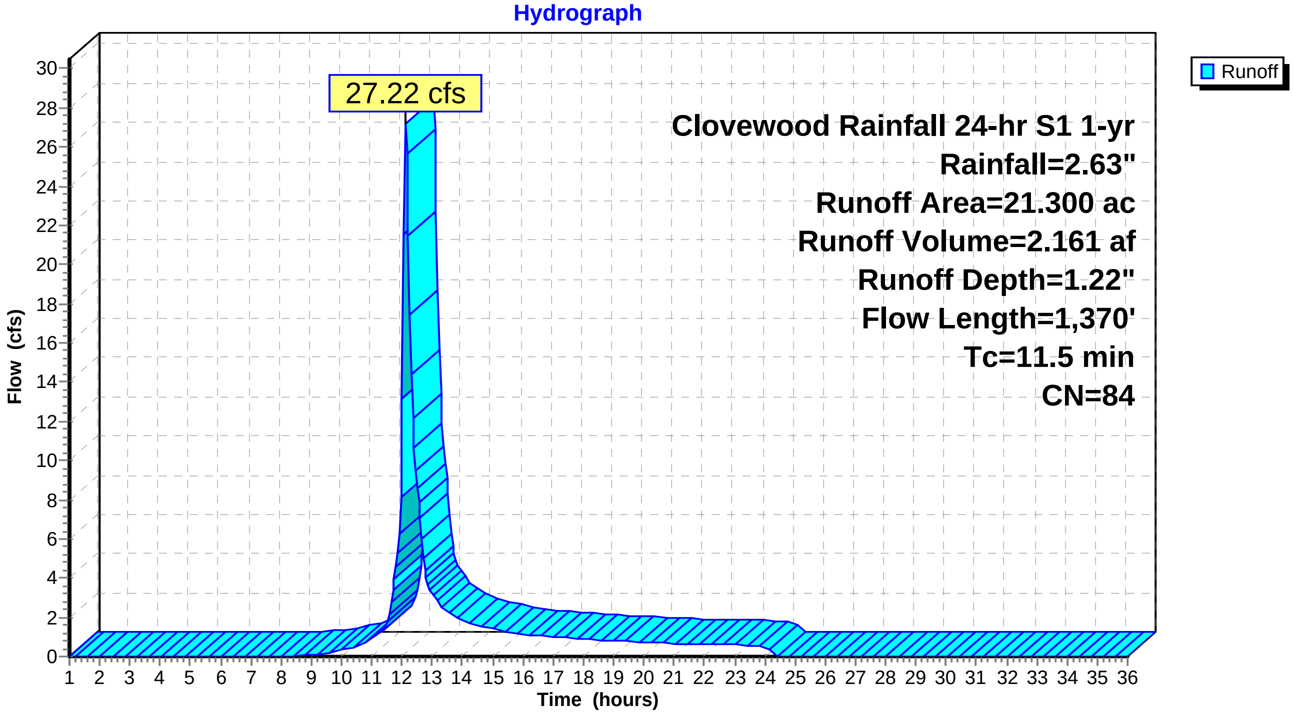
Runoff = 27.22 cfs @ 12.12 hrs, Volume= 2.161 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	2.920	98	ROADS / WALKS
*	0.500	98	BLDG
*	9.900	85	LOTS, D
*	1.000	98	POND
	0.480	30	Woods, Good, HSG A
	0.200	39	>75% Grass cover, Good, HSG A
	2.500	80	>75% Grass cover, Good, HSG D
	3.800	77	Woods, Good, HSG D
	21.300	84	Weighted Average
	16.880		79.25% Pervious Area
	4.420		20.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.4	440	0.1200	19.22	102.48	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
1.0	750	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.1	80	0.2000	24.81	132.31	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
11.5	1,370	Total			

Subcatchment C7: BASIN C7



Summary for Subcatchment C8: BASIN C8

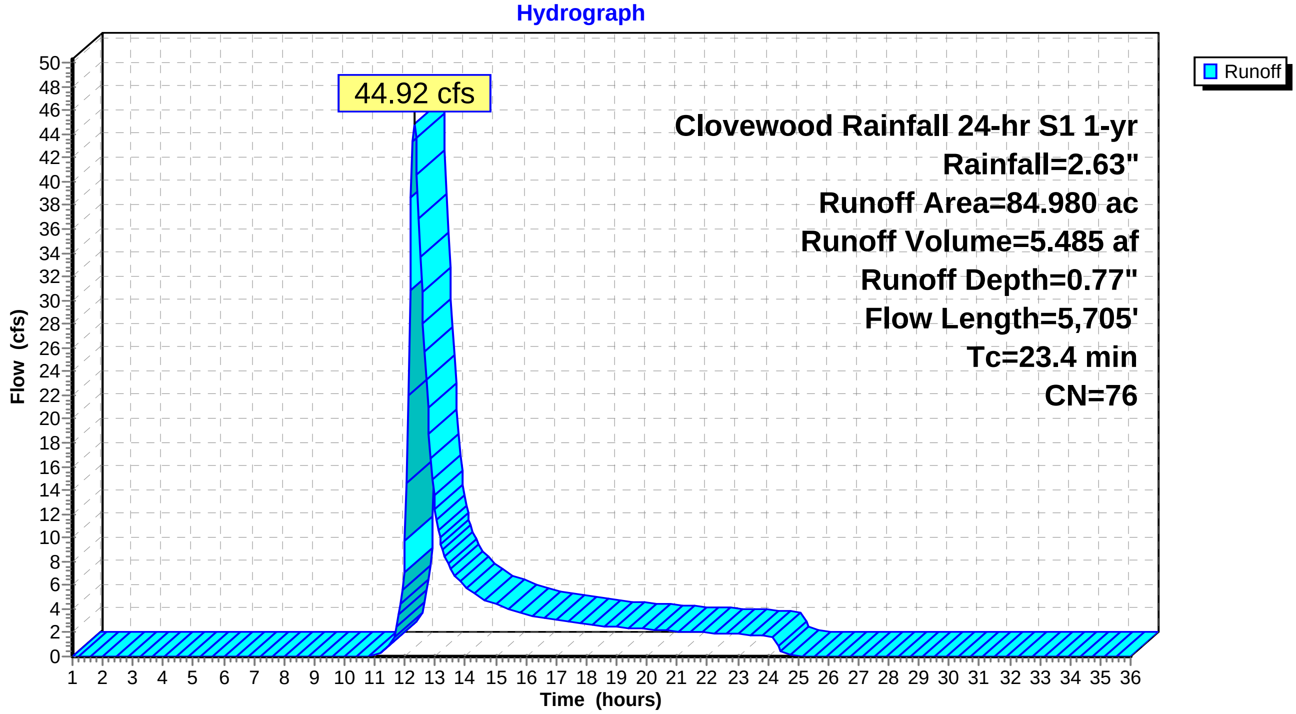
Runoff = 44.92 cfs @ 12.30 hrs, Volume= 5.485 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	0.710	89	Wetlands
*	0.470	98	Impervious Surfaces
	80.150	77	Woods, Good, HSG D
*	0.620	80	Lawn, Good, HSG D
*	1.030	79	Old Golf Course, HSG D
*	1.900	35	Old Golf Course, HSG A
	0.100	78	Meadow, non-grazed, HSG D
	84.980	76	Weighted Average
	84.510		99.45% Pervious Area
	0.470		0.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.5	360	0.5900	12.37		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
10.4	3,630	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.3	310	0.1000	17.54	93.56	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
0.1	175	0.0600	25.04	176.99	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.9	720	0.0600	13.59	72.47	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
0.4	410	0.0450	16.81	268.91	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
23.4	5,705	Total			

Subcatchment C8: BASIN C8



Summary for Subcatchment D: (new Subcat)

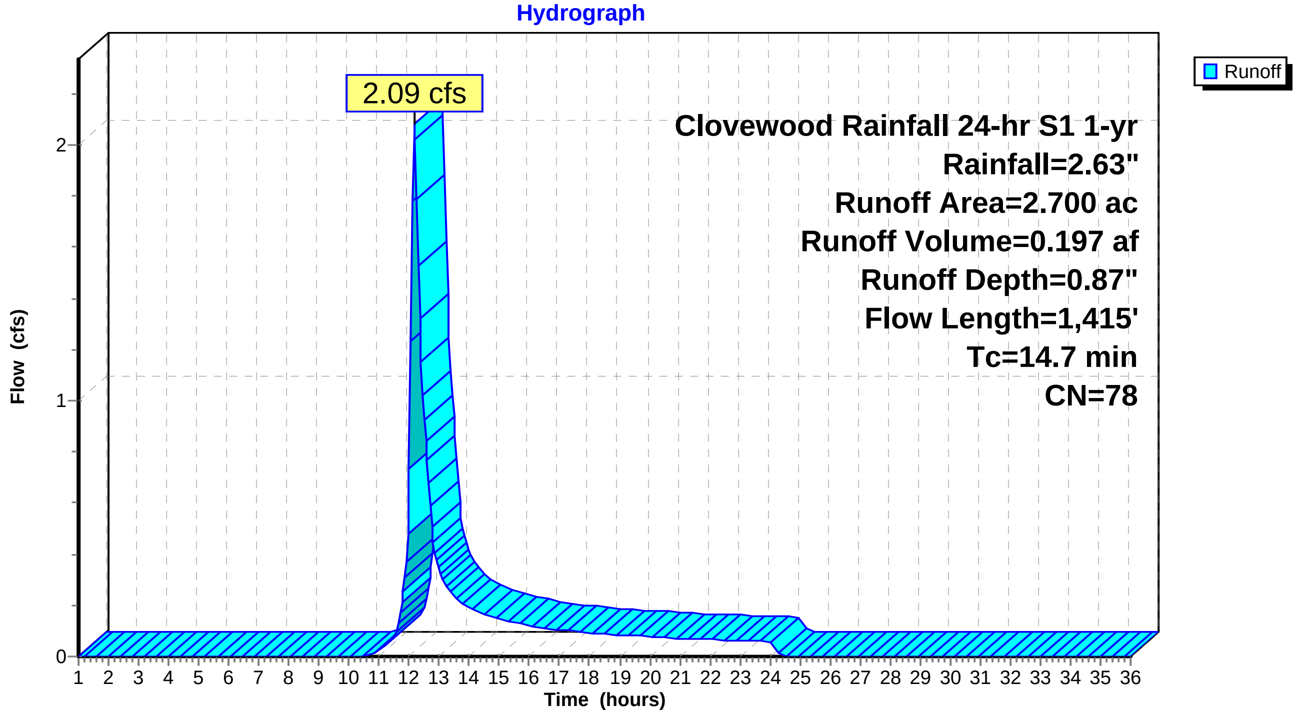
Runoff = 2.09 cfs @ 12.17 hrs, Volume= 0.197 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
	0.800	78	Meadow, non-grazed, HSG D
	1.500	77	Woods, Good, HSG D
*	0.400	85	LOTS, D
	2.700	78	Weighted Average
	2.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	130	0.2500	8.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.2	135	0.1100	13.72	36.60	Parabolic Channel, W=4.00' D=1.00' Area=2.7 sf Perim=4.6' n= 0.025
0.1	110	0.1000	24.67	77.50	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
0.5	610	0.1000	19.67	157.38	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
0.1	90	0.0500	20.24	99.36	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012
0.3	240	0.0600	14.56	97.05	Parabolic Channel, W=5.00' D=2.00' Area=6.7 sf Perim=6.7' n= 0.025
14.7	1,415	Total			

Subcatchment D: (new Subcat)



Summary for Subcatchment E1: BASIN E1

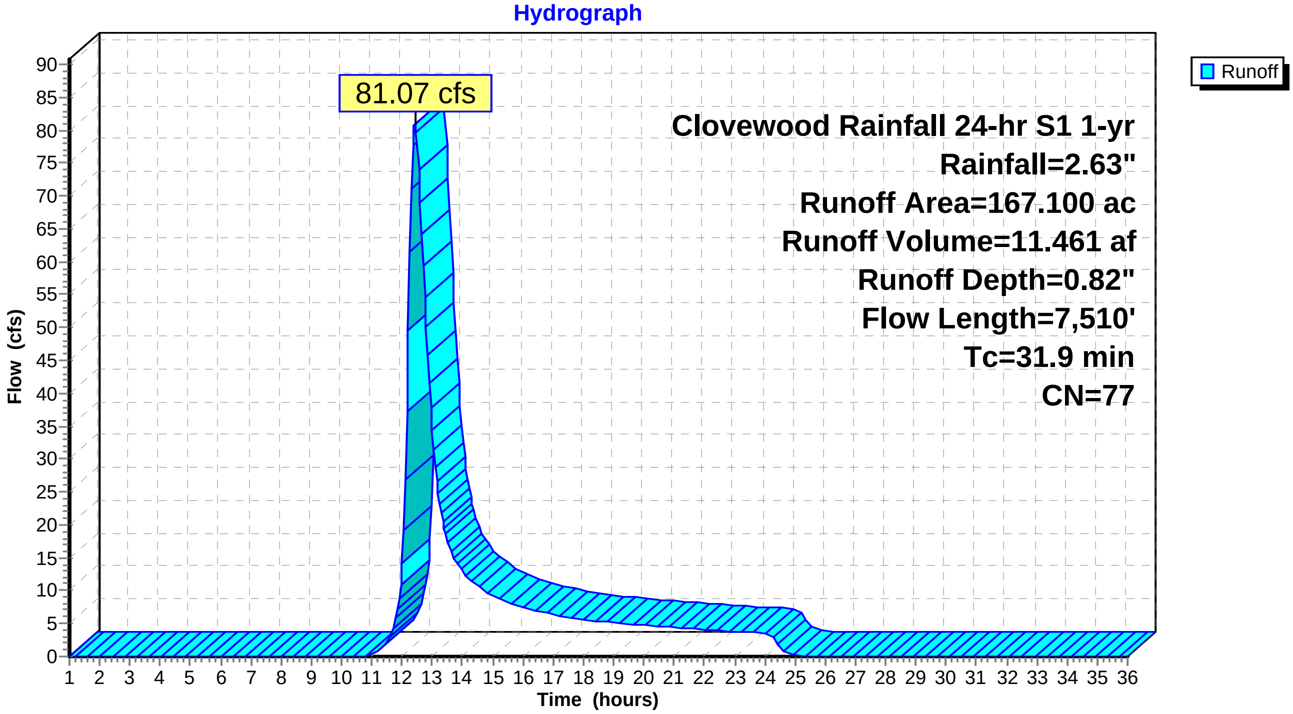
Runoff = 81.07 cfs @ 12.43 hrs, Volume= 11.461 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
	161.200	77	Woods, Good, HSG D
	0.400	30	Meadow, non-grazed, HSG A
*	3.300	89	Wetlands
*	2.200	85	Res Lot, HSG D
	167.100	77	Weighted Average
	167.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	630	0.2800	8.52		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.6	2,300	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	720	0.0700	17.47	279.49	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.030
0.3	460	0.0900	30.67	216.77	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
2.6	3,300	0.0700	20.96	335.39	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
31.9	7,510	Total			

Subcatchment E1: BASIN E1



Summary for Subcatchment E2: BASIN E2

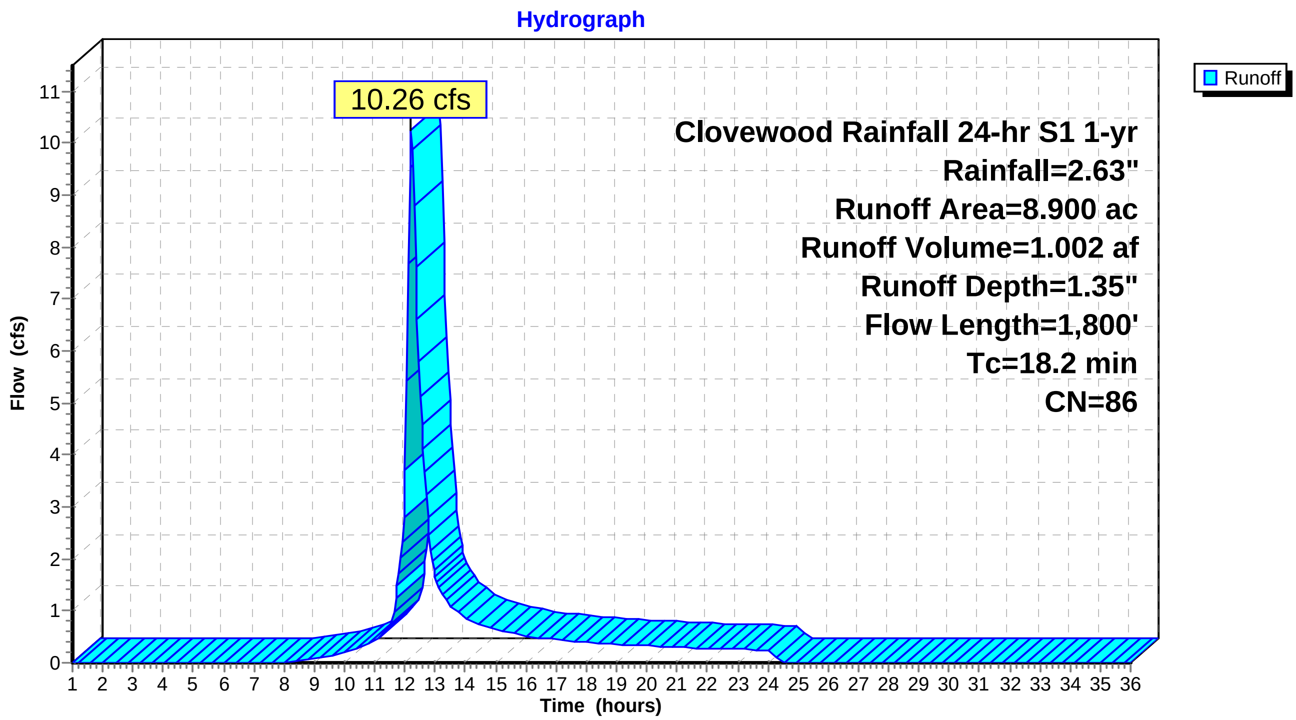
Runoff = 10.26 cfs @ 12.21 hrs, Volume= 1.002 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

	Area (ac)	CN	Description
*	1.540	98	ROAD, WALKS
	2.200	77	Woods, Good, HSG D
*	0.400	98	POND
*	4.760	85	LOTS, D
	8.900	86	Weighted Average
	6.960		78.20% Pervious Area
	1.940		21.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.6	500	0.1000	5.09		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	1,200	0.1000	20.36	35.99	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.2	1,800	Total			

Subcatchment E2: BASIN E2



Summary for Subcatchment F: BASIN F

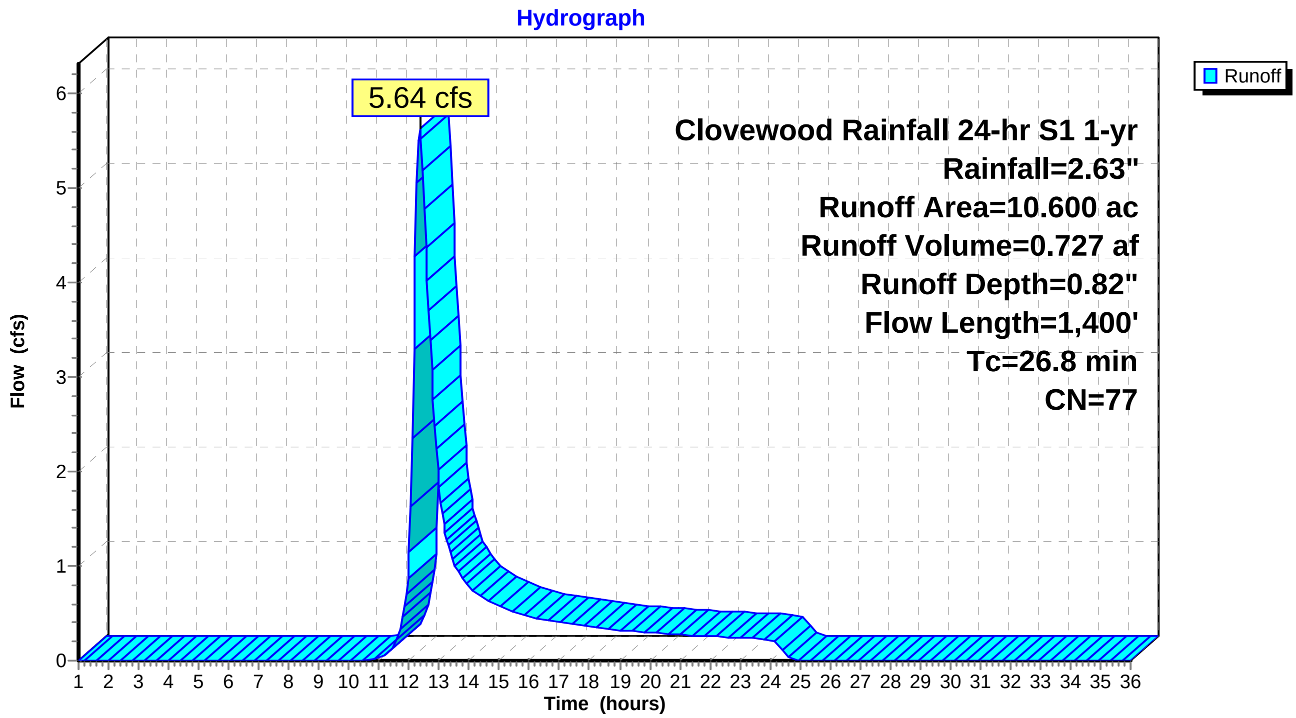
Runoff = 5.64 cfs @ 12.35 hrs, Volume= 0.727 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 1-yr Rainfall=2.63"

Area (ac)	CN	Description
10.600	77	Woods, Good, HSG D
10.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0600	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.50"
3.8	1,300	0.1250	5.69		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
26.8	1,400	Total			

Subcatchment F: BASIN F



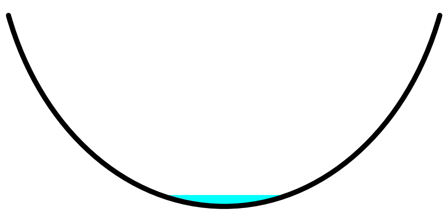
Summary for Reach 11R: (new Reach)

Inflow Area = 7.500 ac, 22.27% Impervious, Inflow Depth > 1.08" for 1-yr event
Inflow = 0.47 cfs @ 15.09 hrs, Volume= 0.674 af
Outflow = 0.47 cfs @ 15.11 hrs, Volume= 0.674 af, Atten= 0%, Lag= 0.8 min

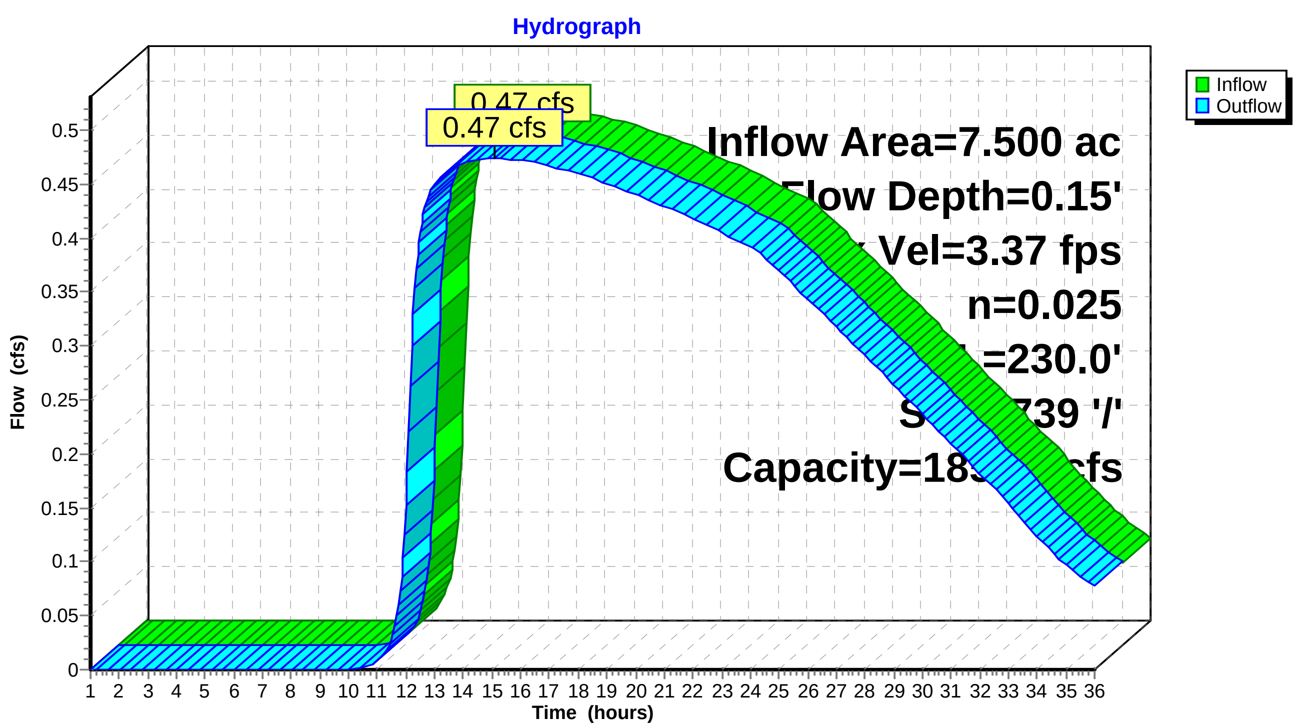
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.37 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.83 fps, Avg. Travel Time= 1.4 min

Peak Storage= 32 cf @ 15.11 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 2.50' Flow Area= 10.0 sf, Capacity= 185.34 cfs

6.00' x 2.50' deep Parabolic Channel, n= 0.025
Length= 230.0' Slope= 0.0739 '/'
Inlet Invert= 517.00', Outlet Invert= 500.00'



Reach 11R: (new Reach)

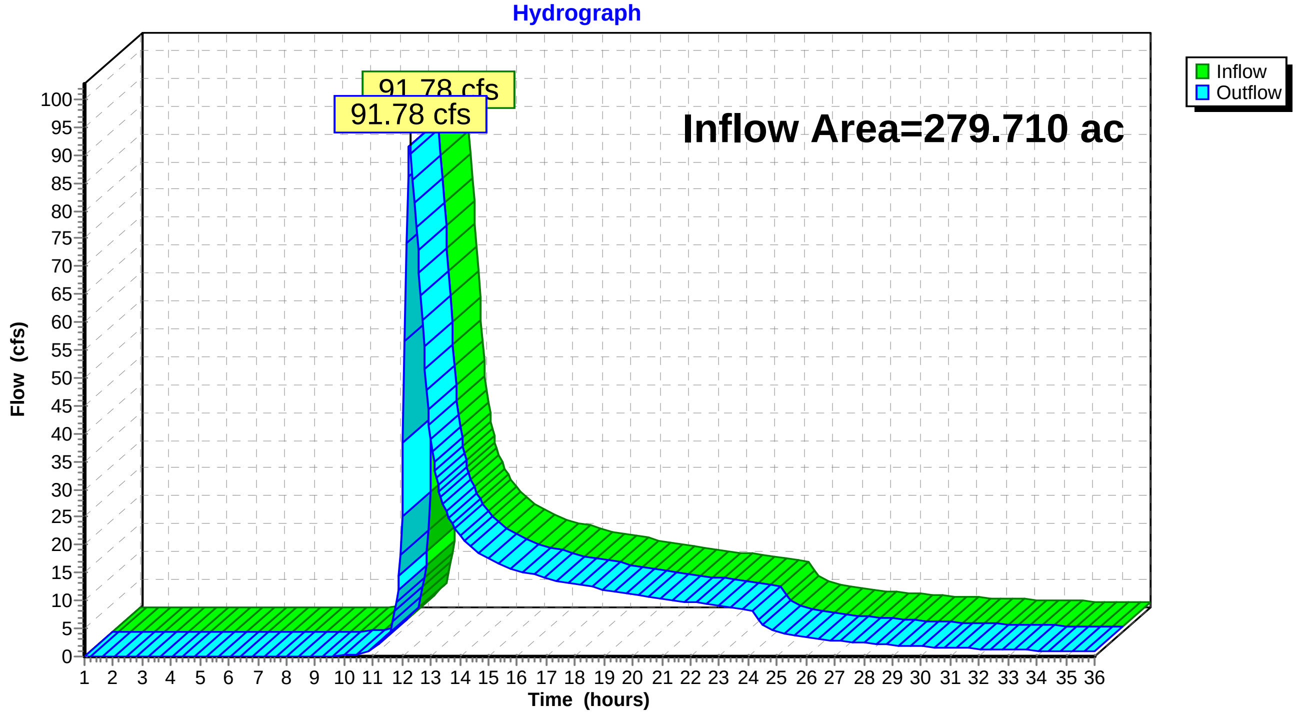


Summary for Reach AP1: ANALYSIS POINT

Inflow Area = 279.710 ac, 13.27% Impervious, Inflow Depth > 0.90" for 1-yr event
Inflow = 91.78 cfs @ 12.28 hrs, Volume= 21.071 af
Outflow = 91.78 cfs @ 12.28 hrs, Volume= 21.071 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP1: ANALYSIS POINT

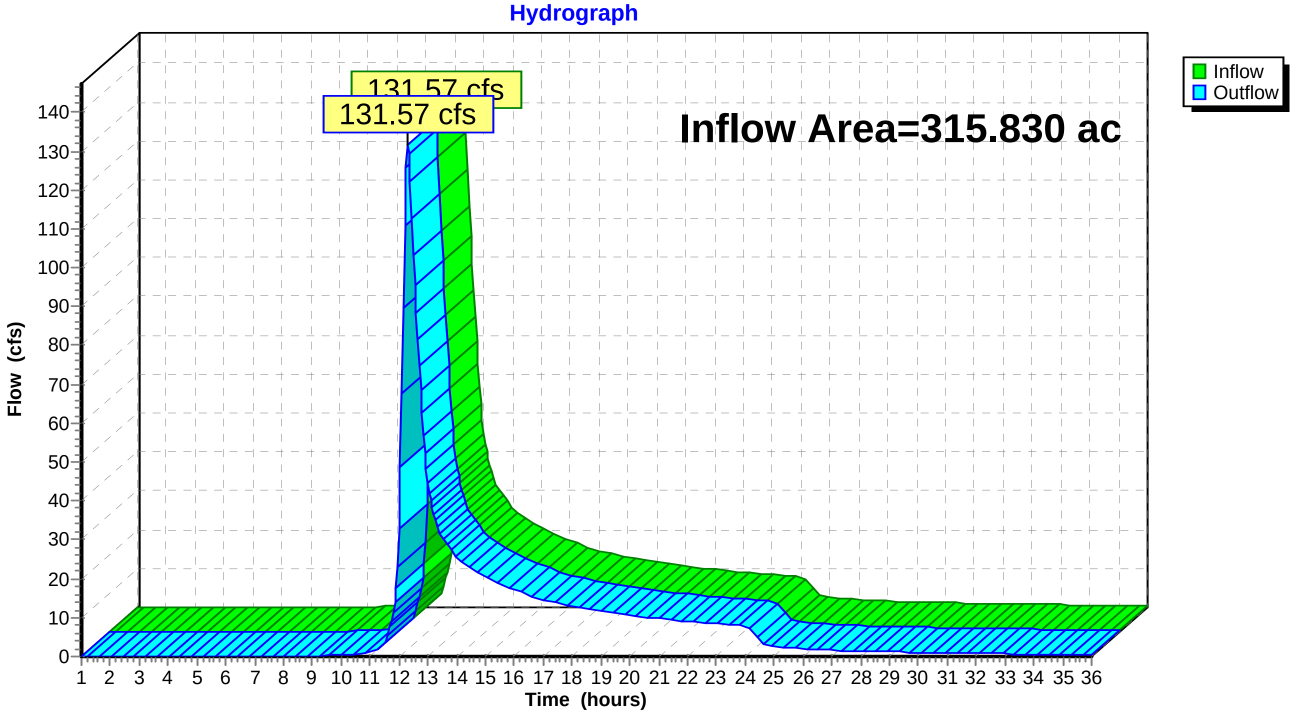


Summary for Reach AP2: ANALYSIS POINT

Inflow Area = 315.830 ac, 5.65% Impervious, Inflow Depth > 0.86" for 1-yr event
Inflow = 131.57 cfs @ 12.31 hrs, Volume= 22.543 af
Outflow = 131.57 cfs @ 12.31 hrs, Volume= 22.543 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP2: ANALYSIS POINT

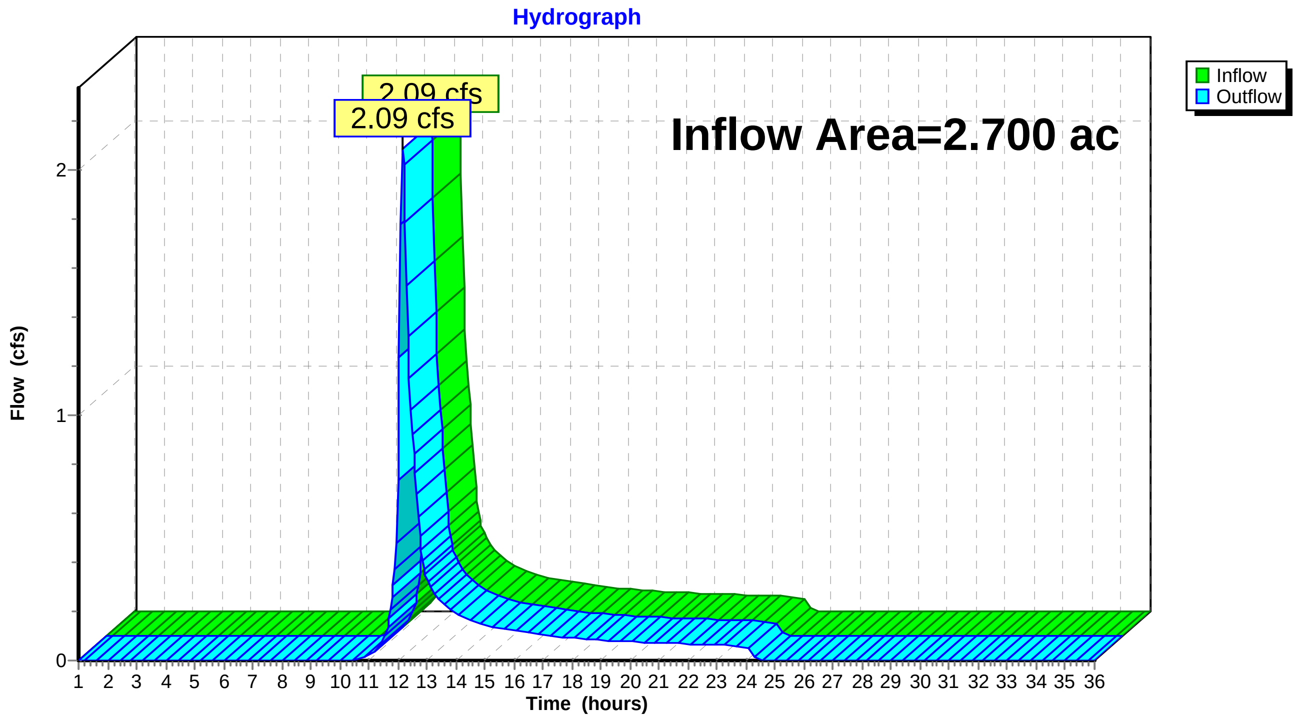


Summary for Reach AP3: (new Reach)

Inflow Area = 2.700 ac, 0.00% Impervious, Inflow Depth = 0.87" for 1-yr event
Inflow = 2.09 cfs @ 12.17 hrs, Volume= 0.197 af
Outflow = 2.09 cfs @ 12.17 hrs, Volume= 0.197 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP3: (new Reach)

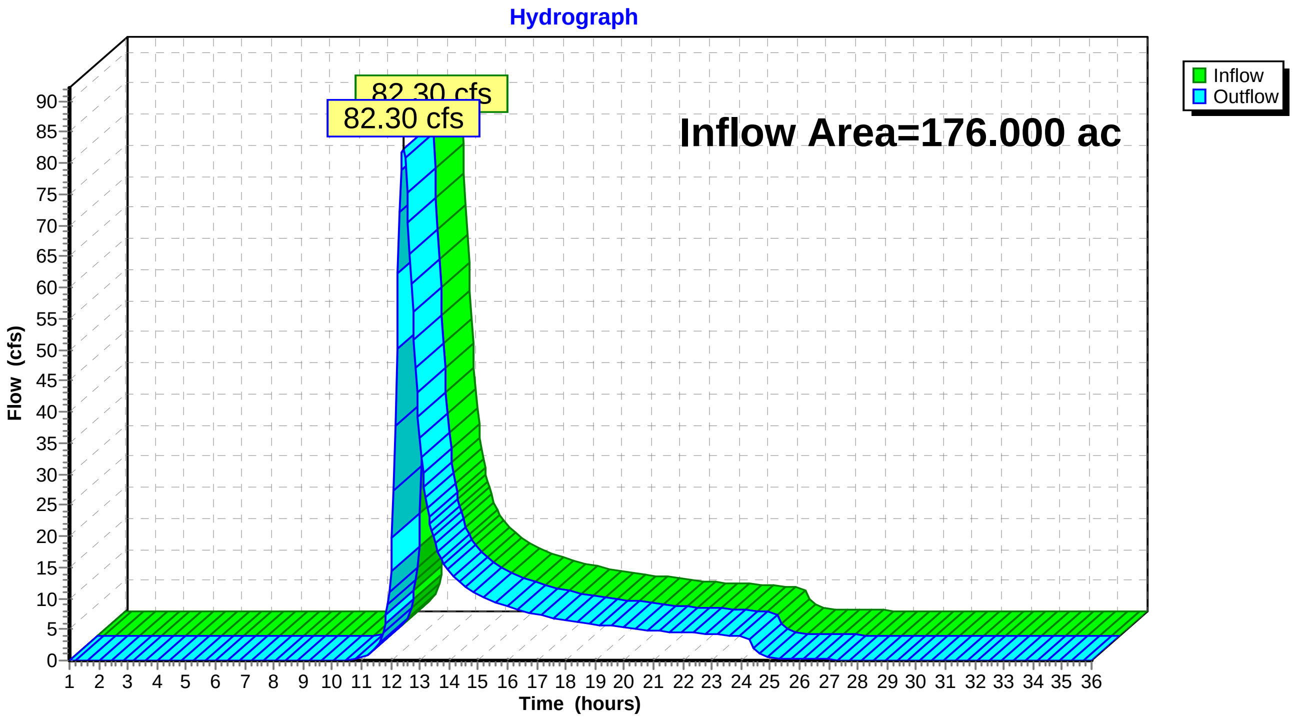


Summary for Reach AP4: ANALYSIS POINT

Inflow Area = 176.000 ac, 1.10% Impervious, Inflow Depth > 0.85" for 1-yr event
Inflow = 82.30 cfs @ 12.43 hrs, Volume= 12.426 af
Outflow = 82.30 cfs @ 12.43 hrs, Volume= 12.426 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP4: ANALYSIS POINT



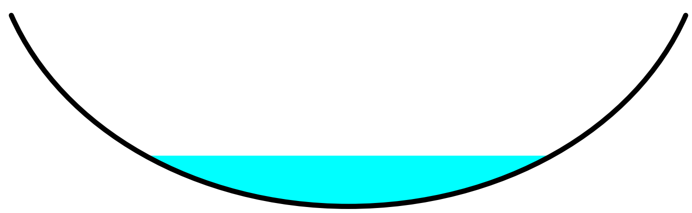
Summary for Reach RB1: (new Reach)

Inflow Area = 176.400 ac, 16.64% Impervious, Inflow Depth > 0.99" for 1-yr event
Inflow = 47.13 cfs @ 12.35 hrs, Volume= 14.516 af
Outflow = 47.03 cfs @ 12.37 hrs, Volume= 14.509 af, Atten= 0%, Lag= 1.5 min

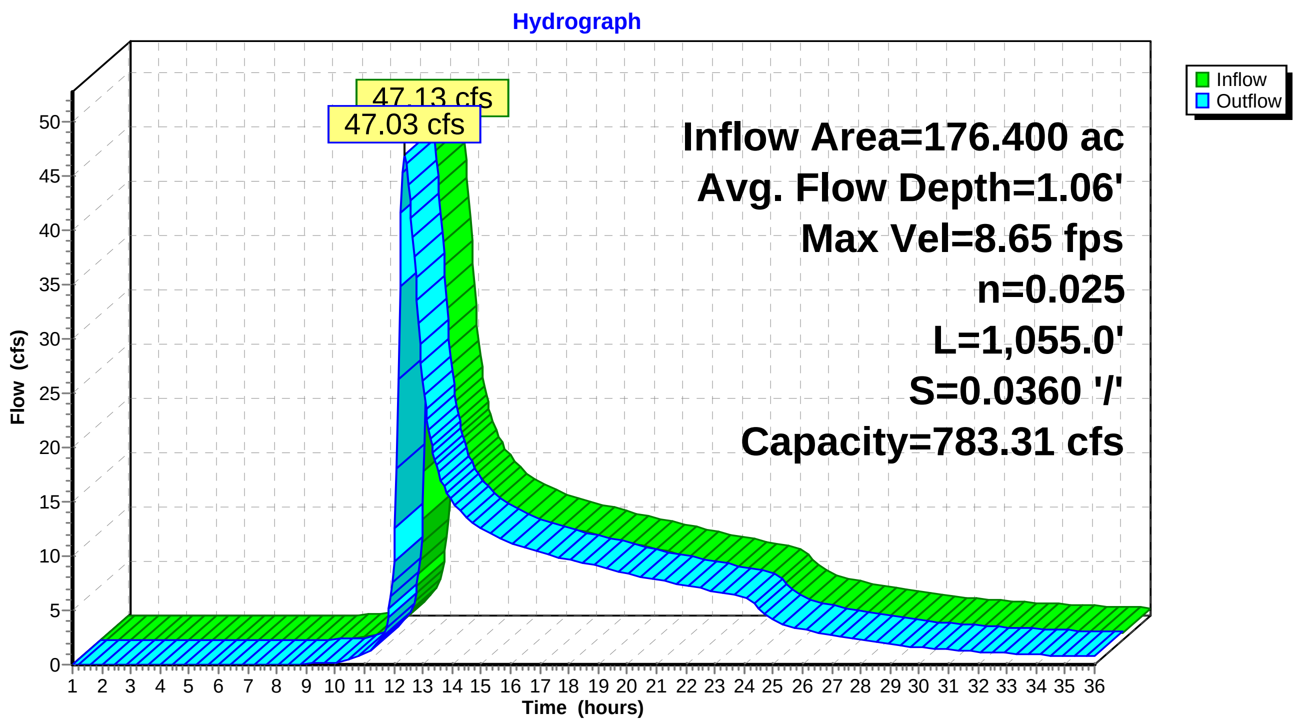
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.65 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 4.03 fps, Avg. Travel Time= 4.4 min

Peak Storage= 5,731 cf @ 12.37 hrs
Average Depth at Peak Storage= 1.06'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 783.31 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 1,055.0' Slope= 0.0360 '/'
Inlet Invert= 504.00', Outlet Invert= 466.00'



Reach RB1: (new Reach)



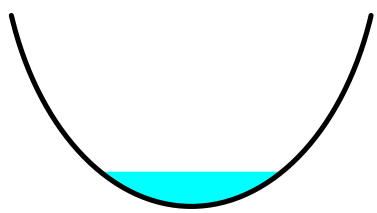
Summary for Reach RB10: (new Reach)

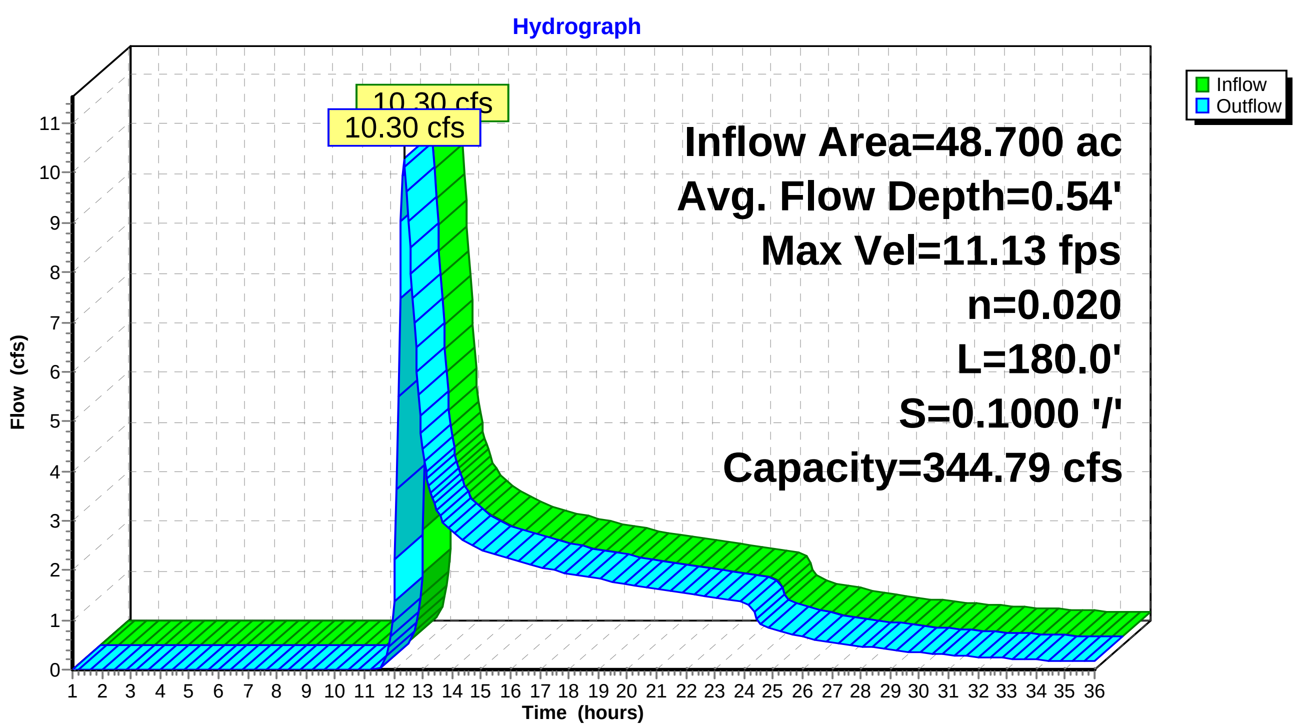
Inflow Area = 48.700 ac, 9.86% Impervious, Inflow Depth > 0.70" for 1-yr event
Inflow = 10.30 cfs @ 12.36 hrs, Volume= 2.846 af
Outflow = 10.30 cfs @ 12.36 hrs, Volume= 2.846 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.13 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 5.55 fps, Avg. Travel Time= 0.5 min

Peak Storage= 166 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 3.00' Flow Area= 12.0 sf, Capacity= 344.79 cfs

6.00' x 3.00' deep Parabolic Channel, n= 0.020
Length= 180.0' Slope= 0.1000 '/'
Inlet Invert= 588.00', Outlet Invert= 570.00'





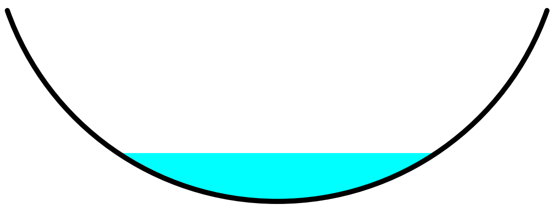
Summary for Reach RB11: (new Reach)

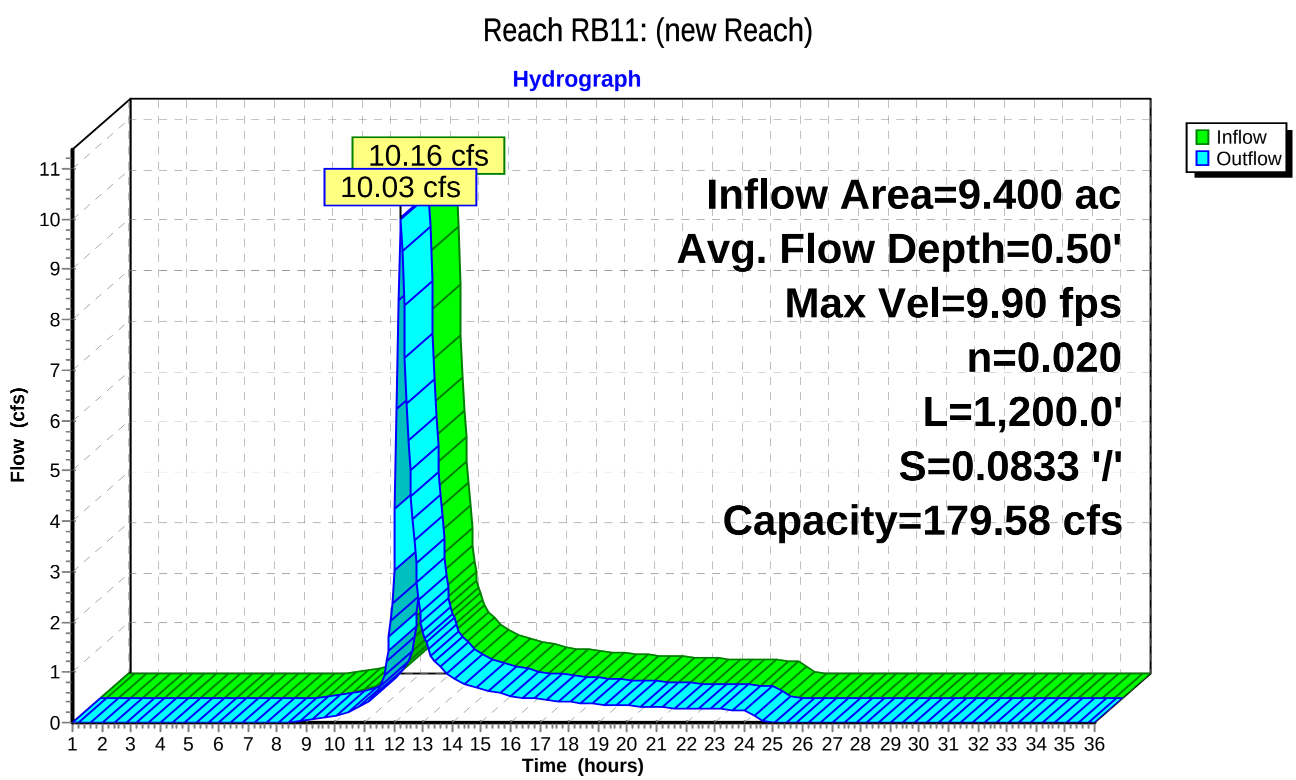
Inflow Area = 9.400 ac, 14.89% Impervious, Inflow Depth = 1.28" for 1-yr event
Inflow = 10.16 cfs @ 12.21 hrs, Volume= 1.005 af
Outflow = 10.03 cfs @ 12.24 hrs, Volume= 1.005 af, Atten= 1%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.90 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 3.68 fps, Avg. Travel Time= 5.4 min

Peak Storage= 1,214 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 179.58 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.020
Length= 1,200.0' Slope= 0.0833 '/'
Inlet Invert= 690.00', Outlet Invert= 590.00'





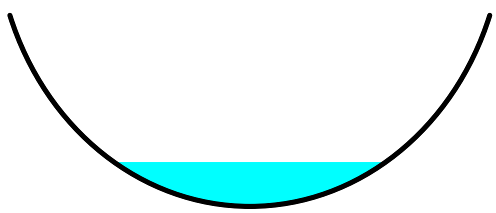
Summary for Reach RB12: (new Reach)

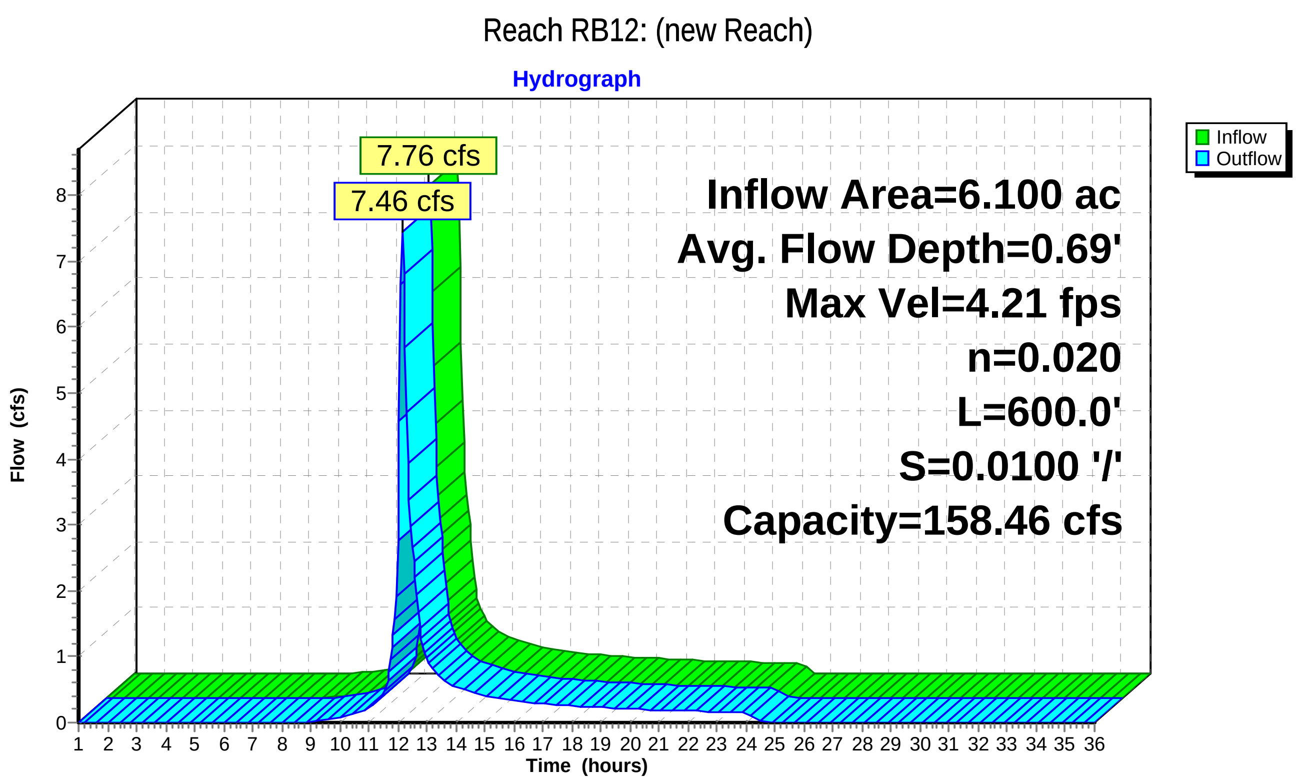
Inflow Area = 6.100 ac, 10.66% Impervious, Inflow Depth = 1.22" for 1-yr event
Inflow = 7.76 cfs @ 12.12 hrs, Volume= 0.619 af
Outflow = 7.46 cfs @ 12.15 hrs, Volume= 0.619 af, Atten= 4%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.21 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.49 fps, Avg. Travel Time= 6.7 min

Peak Storage= 1,062 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 158.46 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.020
Length= 600.0' Slope= 0.0100 '/'
Inlet Invert= 552.00', Outlet Invert= 546.00'





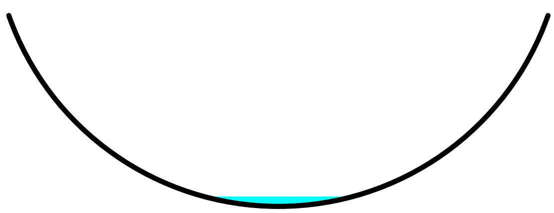
Summary for Reach RB2: (new Reach)

Inflow Area = 5.400 ac, 9.26% Impervious, Inflow Depth > 0.93" for 1-yr event
Inflow = 0.24 cfs @ 17.72 hrs, Volume= 0.417 af
Outflow = 0.24 cfs @ 17.75 hrs, Volume= 0.416 af, Atten= 0%, Lag= 1.9 min

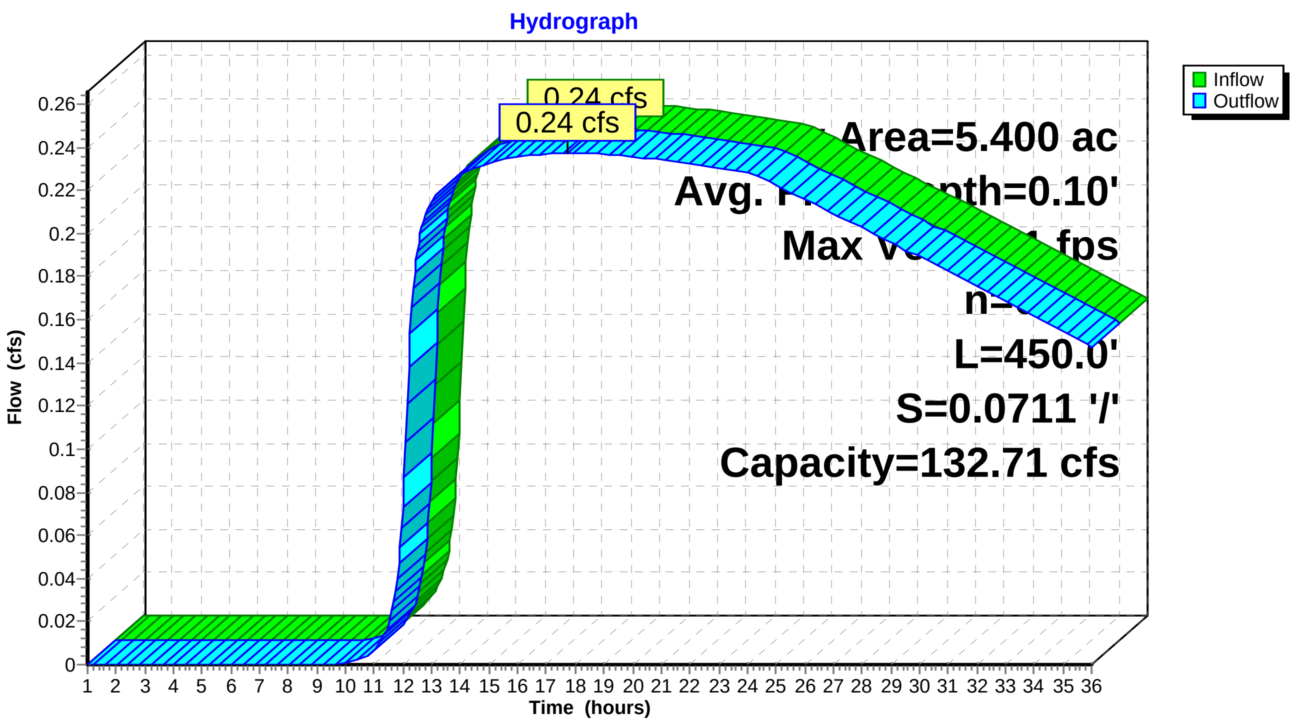
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.61 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 2.36 fps, Avg. Travel Time= 3.2 min

Peak Storage= 41 cf @ 17.75 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 132.71 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.025
Length= 450.0' Slope= 0.0711 '/'
Inlet Invert= 500.00', Outlet Invert= 468.00'



Reach RB2: (new Reach)



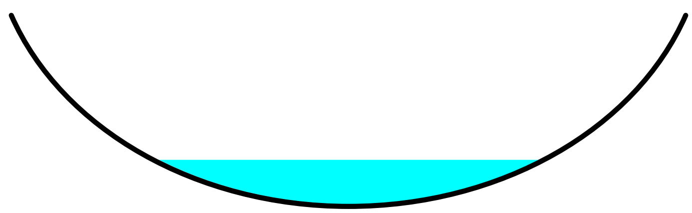
Summary for Reach RB3: (new Reach)

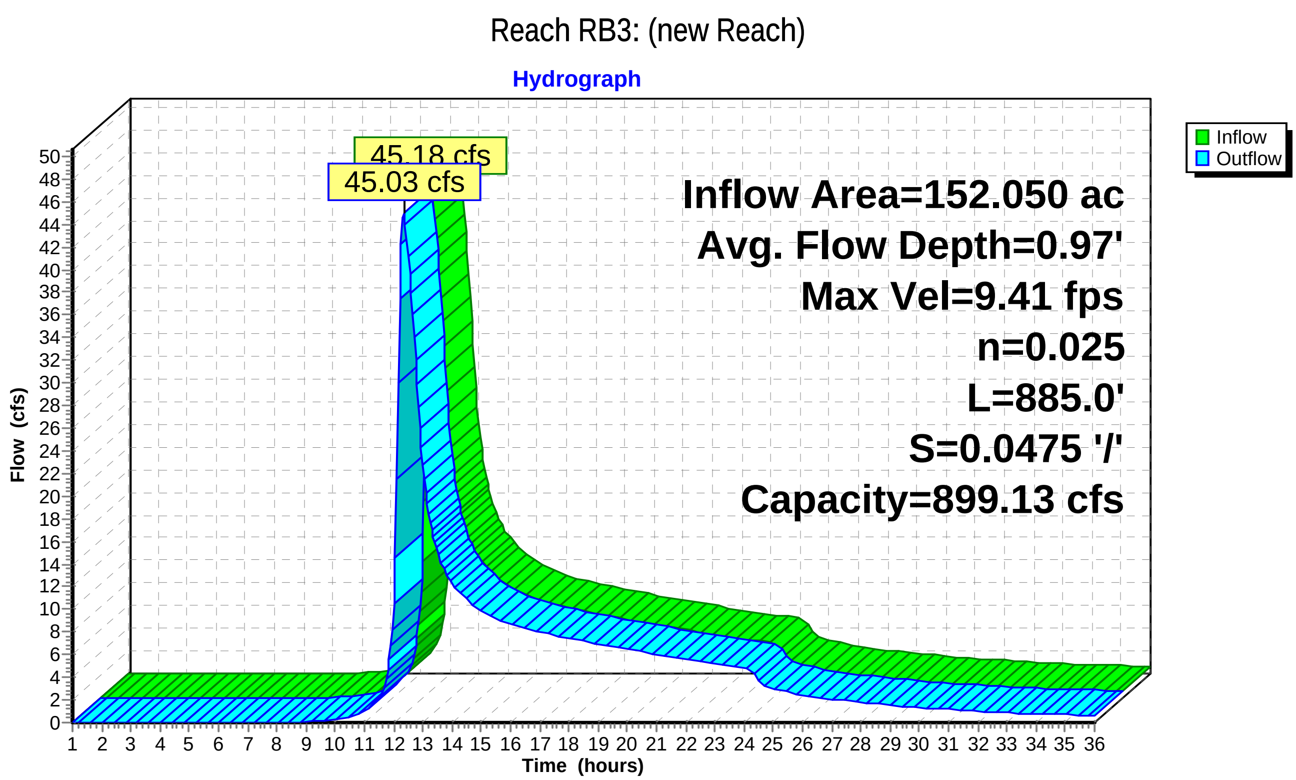
Inflow Area = 152.050 ac, 15.99% Impervious, Inflow Depth > 0.95" for 1-yr event
Inflow = 45.18 cfs @ 12.32 hrs, Volume= 12.010 af
Outflow = 45.03 cfs @ 12.34 hrs, Volume= 12.005 af, Atten= 0%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.41 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 4.17 fps, Avg. Travel Time= 3.5 min

Peak Storage= 4,233 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.97'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 899.13 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 885.0' Slope= 0.0475 '/'
Inlet Invert= 546.00', Outlet Invert= 504.00'





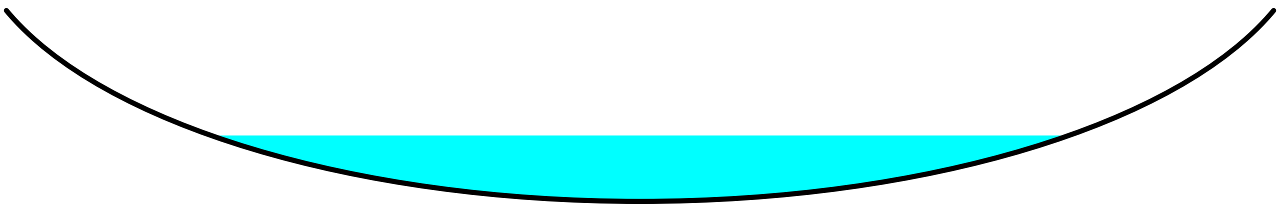
Summary for Reach RB4: (new Reach)

Inflow Area = 17.200 ac, 10.17% Impervious, Inflow Depth = 1.10" for 1-yr event
Inflow = 14.29 cfs @ 12.26 hrs, Volume= 1.570 af
Outflow = 14.17 cfs @ 12.28 hrs, Volume= 1.570 af, Atten= 1%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.50 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 5.4 min

Peak Storage= 1,618 cf @ 12.28 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 139.80 cfs

15.00' x 2.00' deep Parabolic Channel, n= 0.025
Length= 400.0' Slope= 0.0100 '/'
Inlet Invert= 550.00', Outlet Invert= 546.00'



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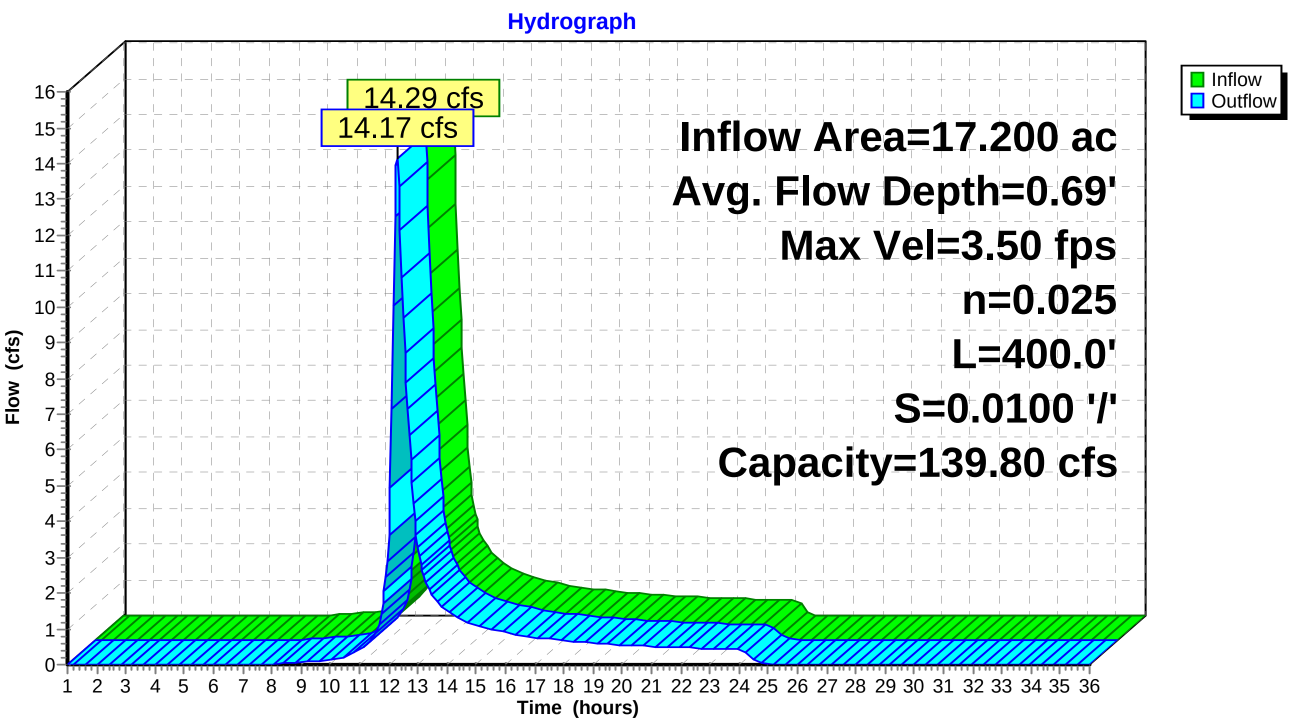
Reach RB4: (new Reach)



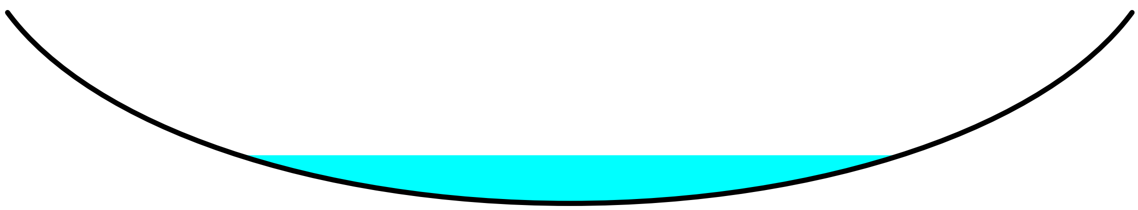
Summary for Reach RB5: (new Reach)

Inflow Area = 114.150 ac, 14.30% Impervious, Inflow Depth > 0.86" for 1-yr event
Inflow = 26.91 cfs @ 12.39 hrs, Volume= 8.142 af
Outflow = 26.73 cfs @ 12.45 hrs, Volume= 8.132 af, Atten= 1%, Lag= 3.3 min

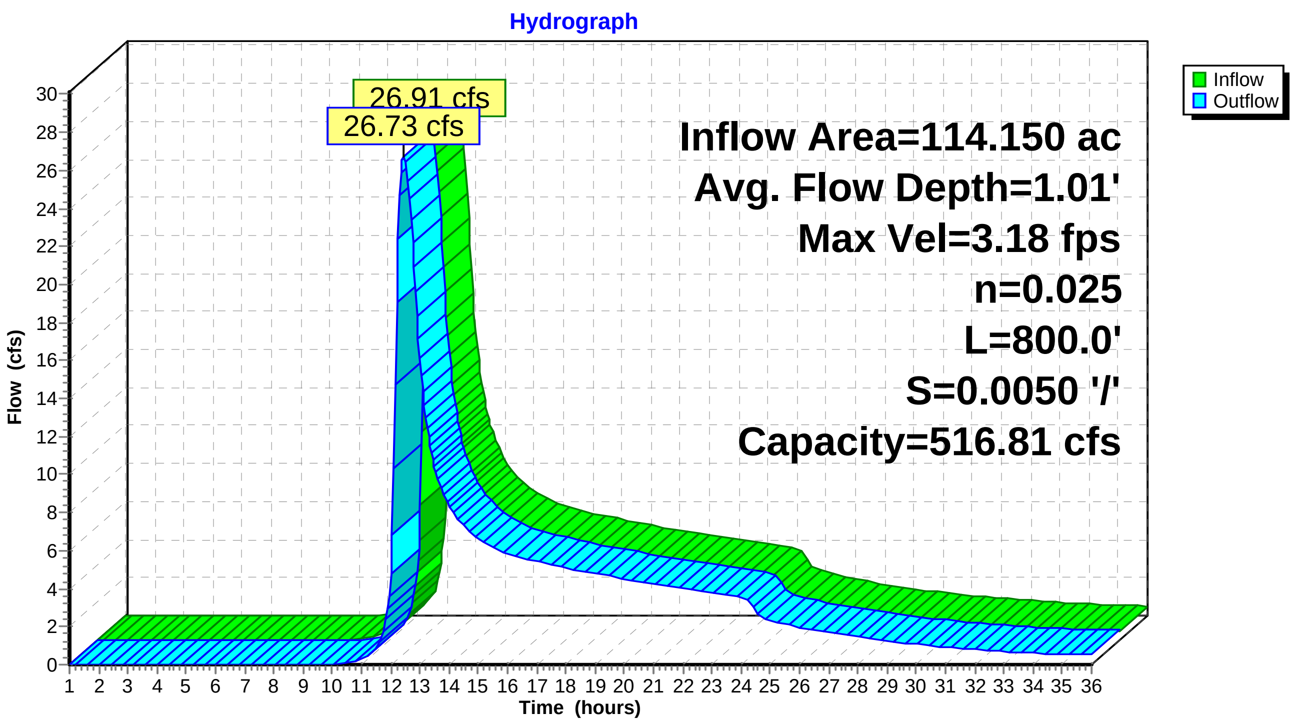
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.18 fps, Min. Travel Time= 4.2 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 9.0 min

Peak Storage= 6,718 cf @ 12.45 hrs
Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 4.00' Flow Area= 66.7 sf, Capacity= 516.81 cfs

25.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 800.0' Slope= 0.0050 '/'
Inlet Invert= 550.00', Outlet Invert= 546.00'



Reach RB5: (new Reach)



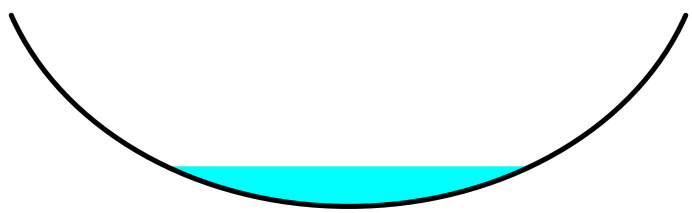
Summary for Reach RB6: (new Reach)

Inflow Area = 88.200 ac, 12.02% Impervious, Inflow Depth > 0.79" for 1-yr event
Inflow = 17.88 cfs @ 12.52 hrs, Volume= 5.775 af
Outflow = 17.87 cfs @ 12.53 hrs, Volume= 5.773 af, Atten= 0%, Lag= 0.7 min

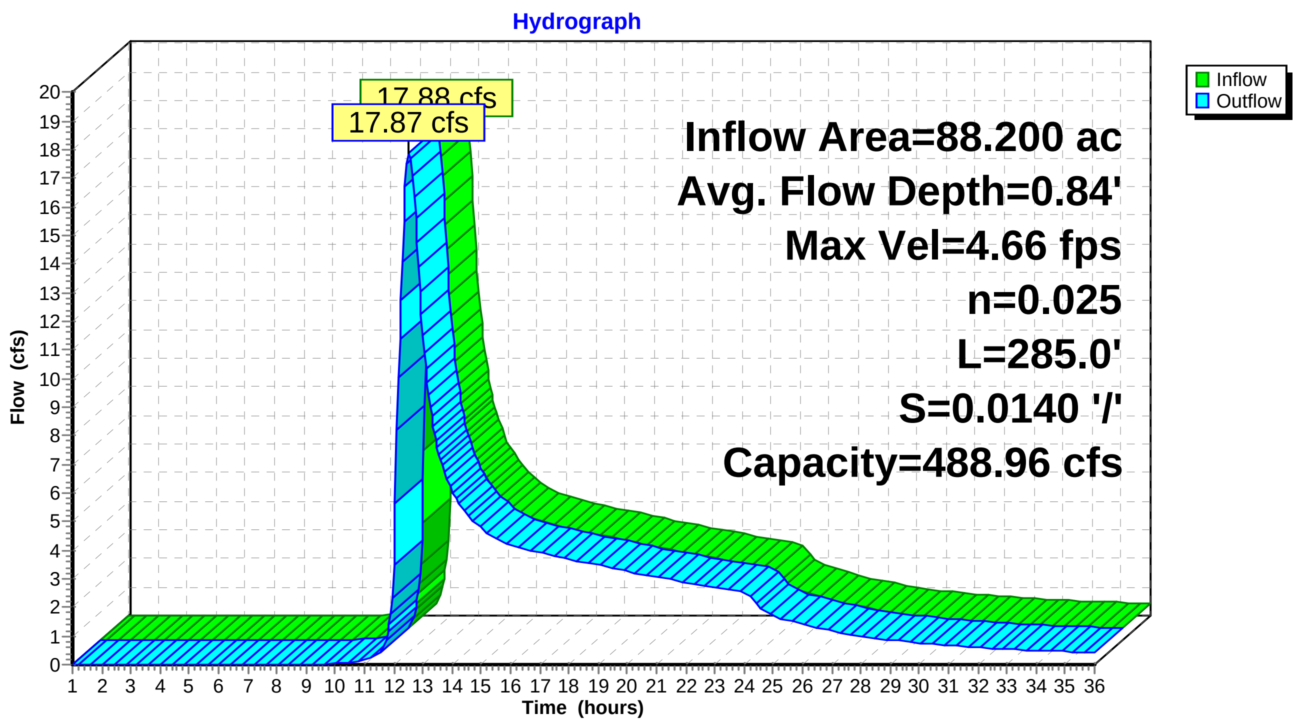
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.66 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 2.1 min

Peak Storage= 1,093 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.84'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 488.96 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 285.0' Slope= 0.0140 '/'
Inlet Invert= 554.00', Outlet Invert= 550.00'



Reach RB6: (new Reach)



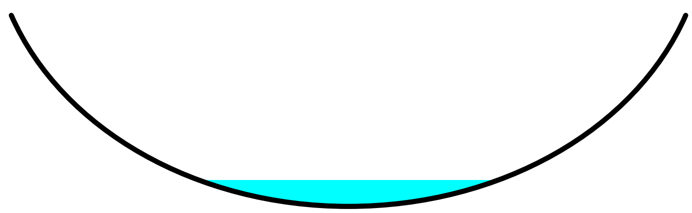
Summary for Reach RB7: (new Reach)

Inflow Area = 22.200 ac, 8.11% Impervious, Inflow Depth > 1.15" for 1-yr event
Inflow = 8.35 cfs @ 12.60 hrs, Volume= 2.133 af
Outflow = 8.27 cfs @ 12.65 hrs, Volume= 2.132 af, Atten= 1%, Lag= 3.1 min

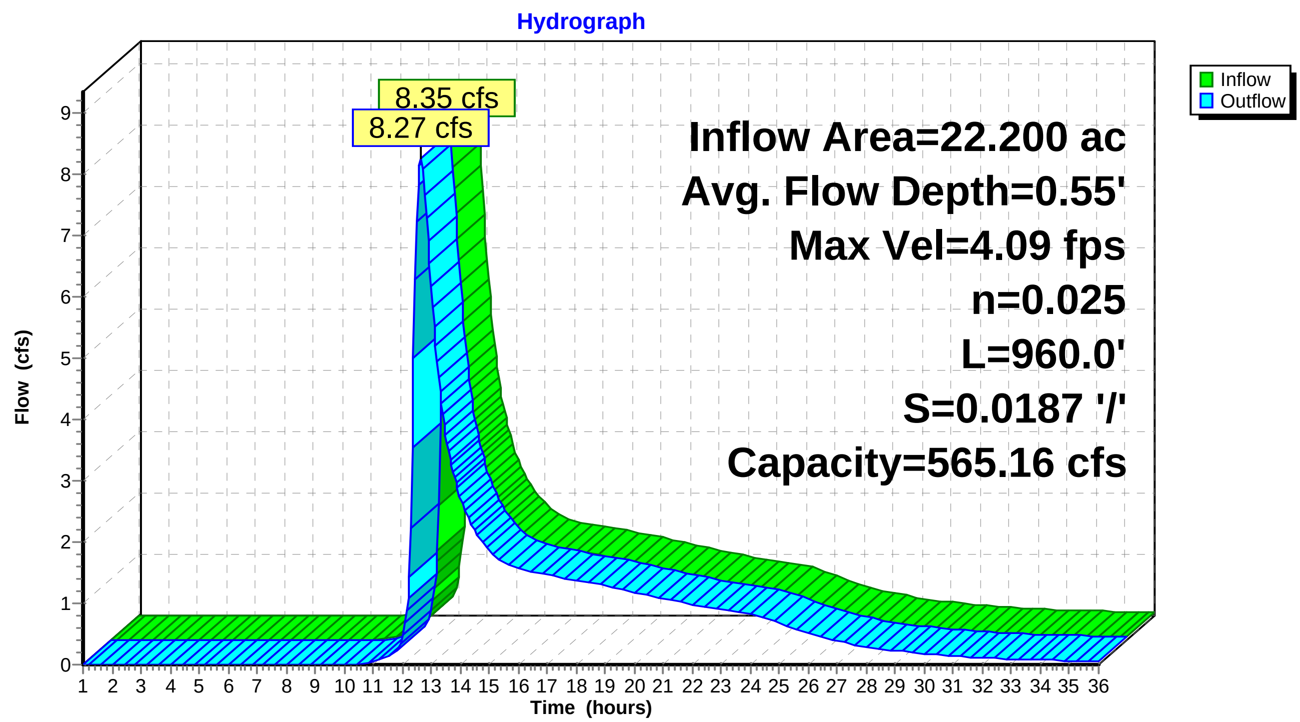
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.09 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 1.81 fps, Avg. Travel Time= 8.8 min

Peak Storage= 1,942 cf @ 12.65 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 565.16 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 960.0' Slope= 0.0187 '/'
Inlet Invert= 572.00', Outlet Invert= 554.00'



Reach RB7: (new Reach)



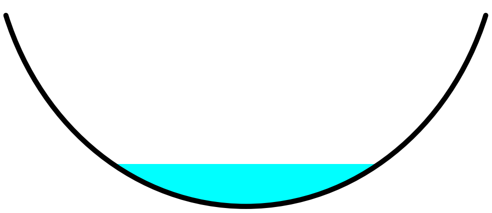
Summary for Reach RB8: (new Reach)

Inflow Area = 52.350 ac, 9.36% Impervious, Inflow Depth > 0.73" for 1-yr event
Inflow = 12.15 cfs @ 12.33 hrs, Volume= 3.197 af
Outflow = 12.15 cfs @ 12.33 hrs, Volume= 3.197 af, Atten= 0%, Lag= 0.3 min

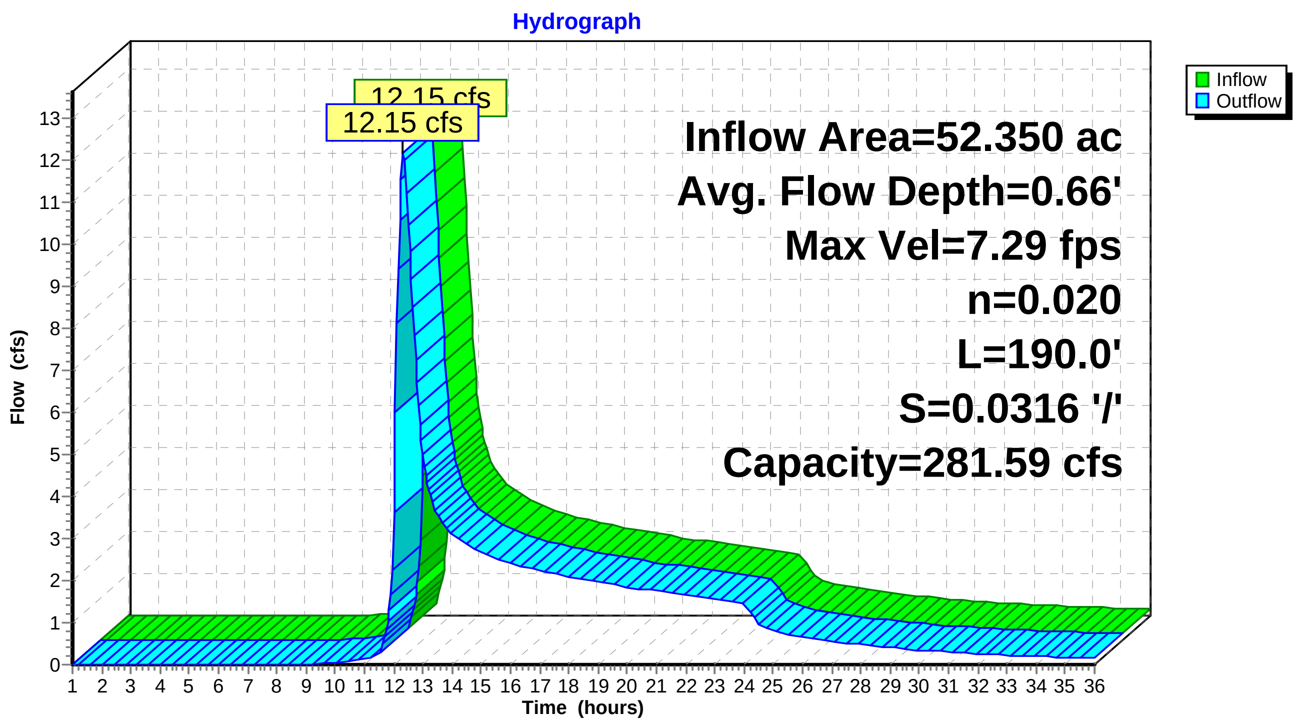
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.29 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.35 fps, Avg. Travel Time= 0.9 min

Peak Storage= 316 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 281.59 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.020
Length= 190.0' Slope= 0.0316 '/'
Inlet Invert= 560.00', Outlet Invert= 554.00'



Reach RB8: (new Reach)



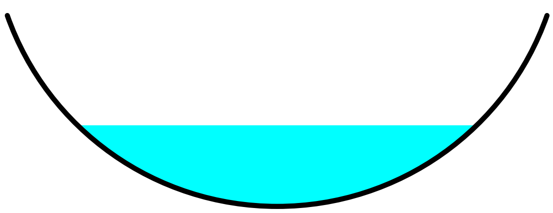
Summary for Reach RC1: (new Reach)

Inflow Area = 306.680 ac, 4.37% Impervious, Inflow Depth > 0.84" for 1-yr event
Inflow = 125.26 cfs @ 12.31 hrs, Volume= 21.348 af
Outflow = 125.26 cfs @ 12.32 hrs, Volume= 21.346 af, Atten= 0%, Lag= 0.3 min

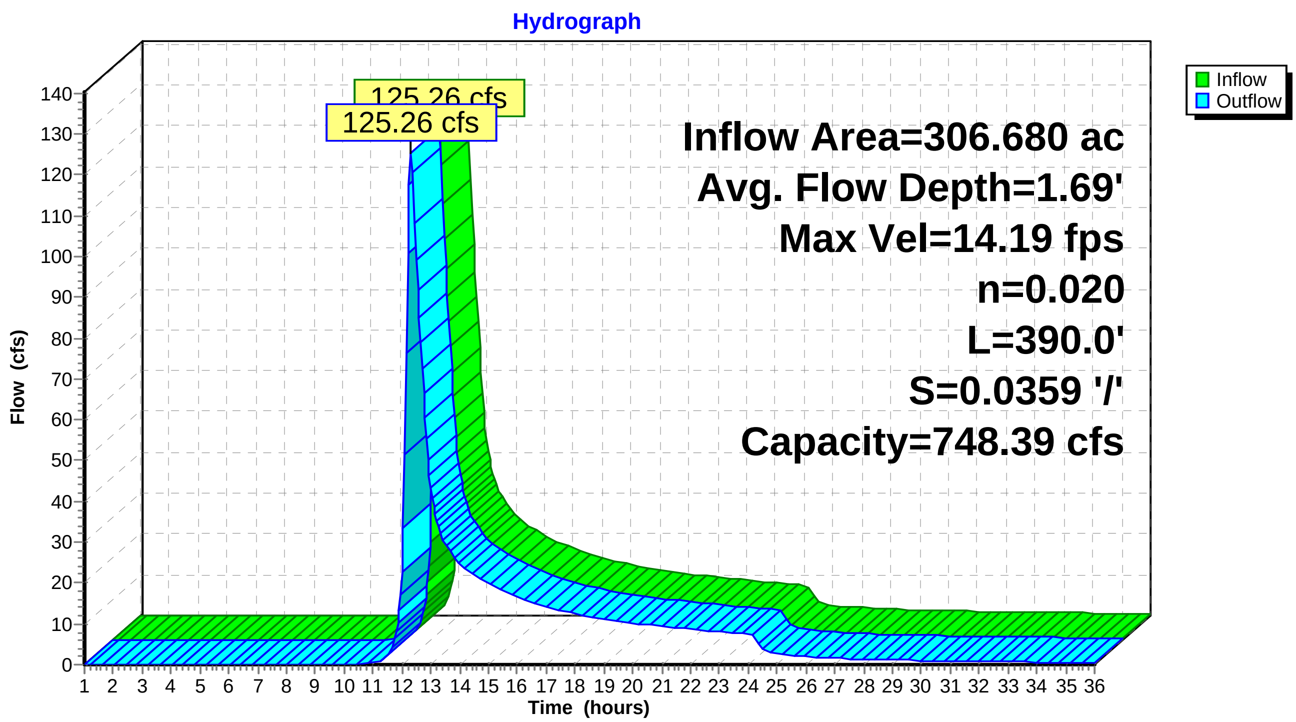
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.19 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.28 fps, Avg. Travel Time= 1.2 min

Peak Storage= 3,439 cf @ 12.32 hrs
Average Depth at Peak Storage= 1.69'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 748.39 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.020
Length= 390.0' Slope= 0.0359 '/'
Inlet Invert= 488.00', Outlet Invert= 474.00'



Reach RC1: (new Reach)



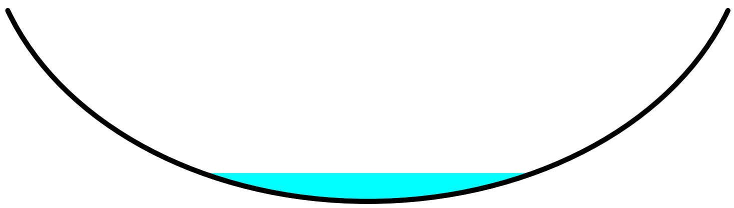
Summary for Reach RC10: (new Reach)

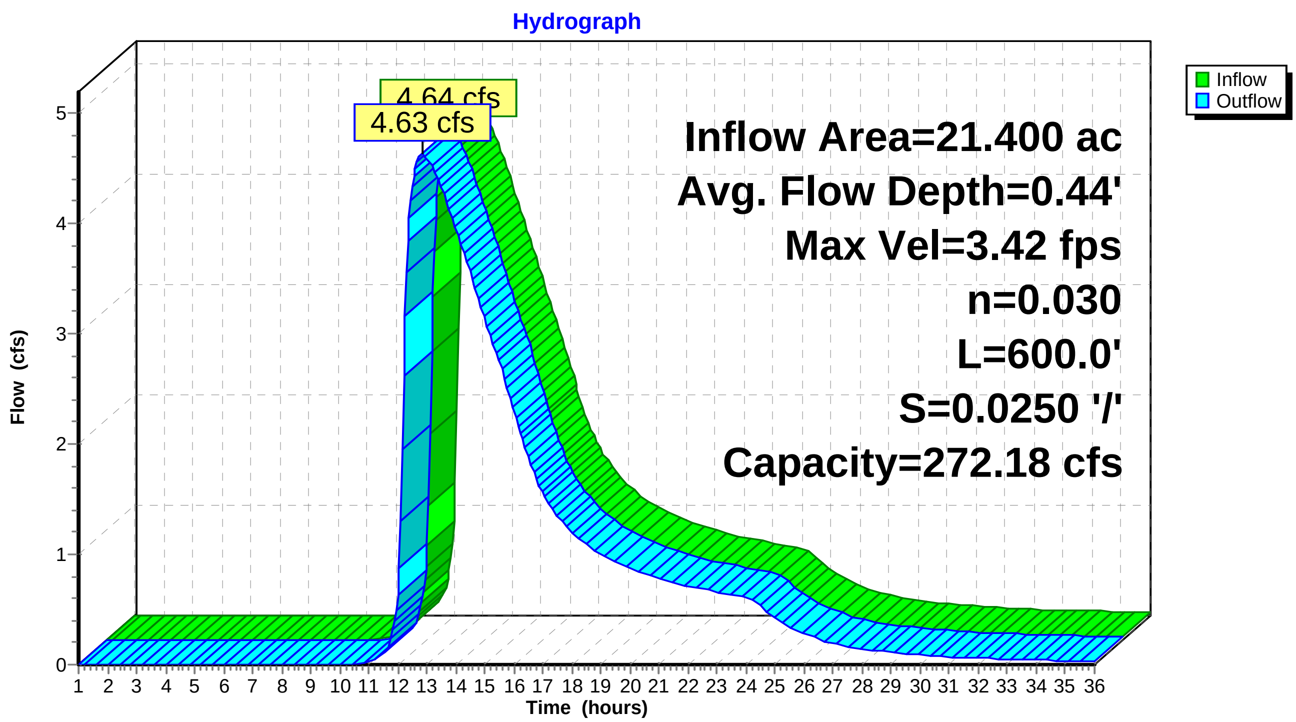
Inflow Area = 21.400 ac, 11.45% Impervious, Inflow Depth > 1.13" for 1-yr event
Inflow = 4.64 cfs @ 12.80 hrs, Volume= 2.021 af
Outflow = 4.63 cfs @ 12.83 hrs, Volume= 2.020 af, Atten= 0%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.42 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 5.9 min

Peak Storage= 814 cf @ 12.83 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 272.18 cfs

12.00' x 3.00' deep Parabolic Channel, n= 0.030
Length= 600.0' Slope= 0.0250 '/'
Inlet Invert= 660.00', Outlet Invert= 645.00'



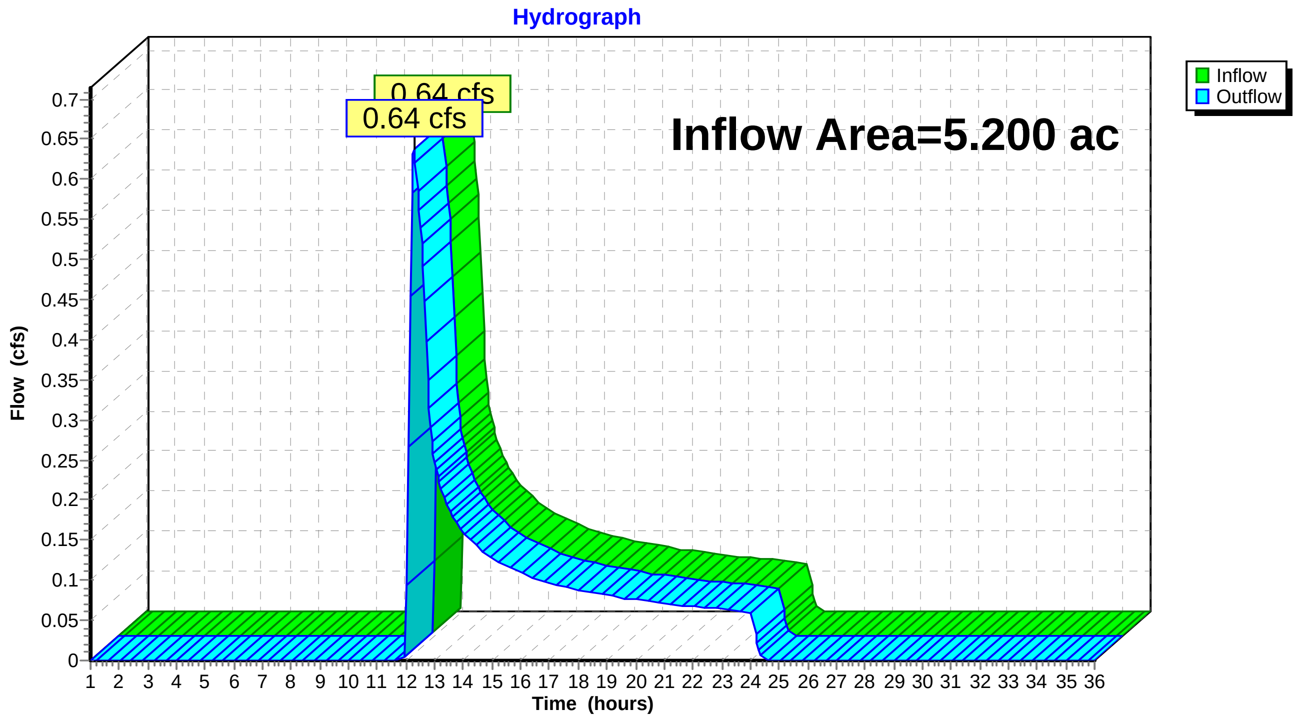


Summary for Reach RC11: (new Reach)

Inflow Area = 5.200 ac, 0.00% Impervious, Inflow Depth = 0.29" for 1-yr event
Inflow = 0.64 cfs @ 12.27 hrs, Volume= 0.125 af
Outflow = 0.64 cfs @ 12.27 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach RC11: (new Reach)



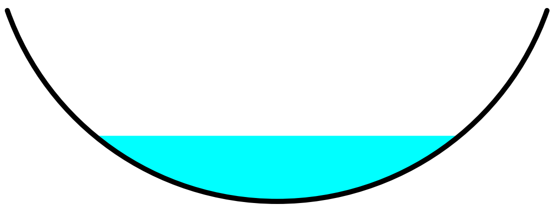
Summary for Reach RC2: (new Reach)

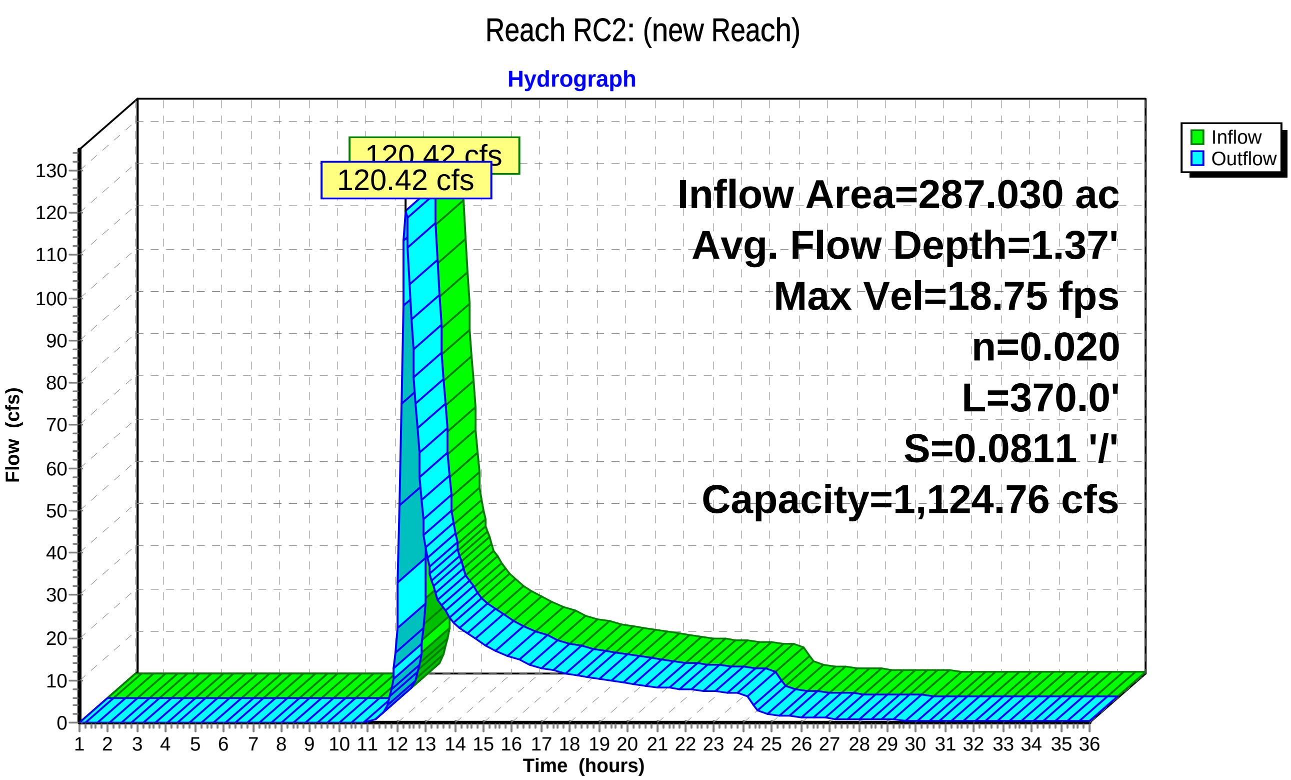
Inflow Area = 287.030 ac, 3.39% Impervious, Inflow Depth > 0.82" for 1-yr event
Inflow = 120.42 cfs @ 12.31 hrs, Volume= 19.584 af
Outflow = 120.42 cfs @ 12.32 hrs, Volume= 19.583 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.75 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 6.77 fps, Avg. Travel Time= 0.9 min

Peak Storage= 2,374 cf @ 12.32 hrs
Average Depth at Peak Storage= 1.37'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 1,124.76 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.020
Length= 370.0' Slope= 0.0811 '/'
Inlet Invert= 504.00', Outlet Invert= 474.00'





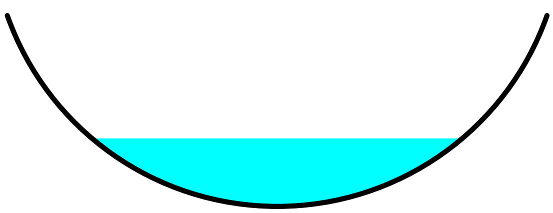
Summary for Reach RC3: (new Reach)

Inflow Area = 275.880 ac, 3.53% Impervious, Inflow Depth > 0.81" for 1-yr event
Inflow = 112.50 cfs @ 12.31 hrs, Volume= 18.674 af
Outflow = 112.49 cfs @ 12.32 hrs, Volume= 18.673 af, Atten= 0%, Lag= 0.3 min

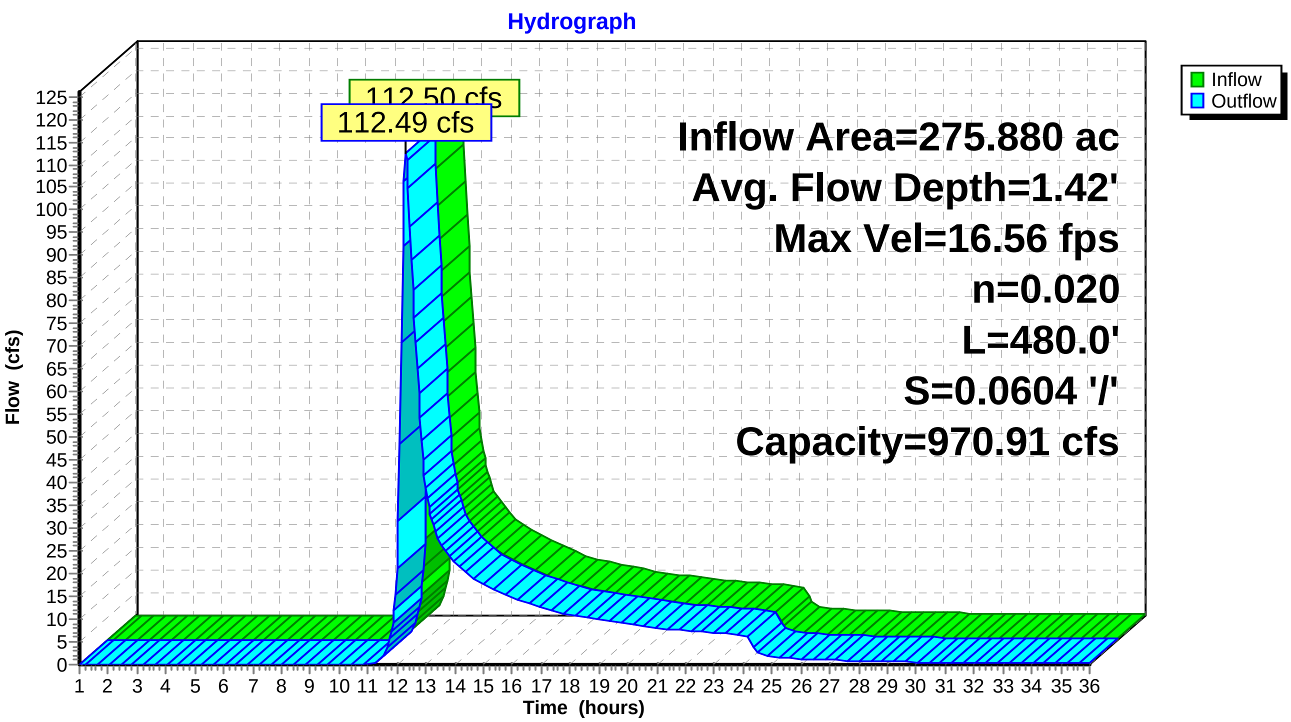
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.56 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 6.02 fps, Avg. Travel Time= 1.3 min

Peak Storage= 3,258 cf @ 12.32 hrs
Average Depth at Peak Storage= 1.42'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 970.91 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.020
Length= 480.0' Slope= 0.0604 '/'
Inlet Invert= 535.00', Outlet Invert= 506.00'



Reach RC3: (new Reach)



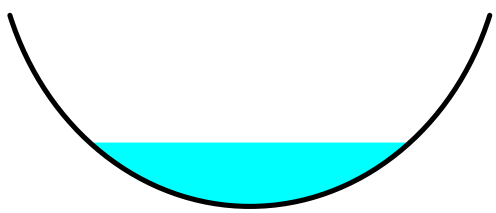
Summary for Reach RC4: (new Reach)

Inflow Area = 106.280 ac, 4.60% Impervious, Inflow Depth > 0.84" for 1-yr event
Inflow = 46.43 cfs @ 12.30 hrs, Volume= 7.455 af
Outflow = 46.43 cfs @ 12.31 hrs, Volume= 7.455 af, Atten= 0%, Lag= 0.4 min

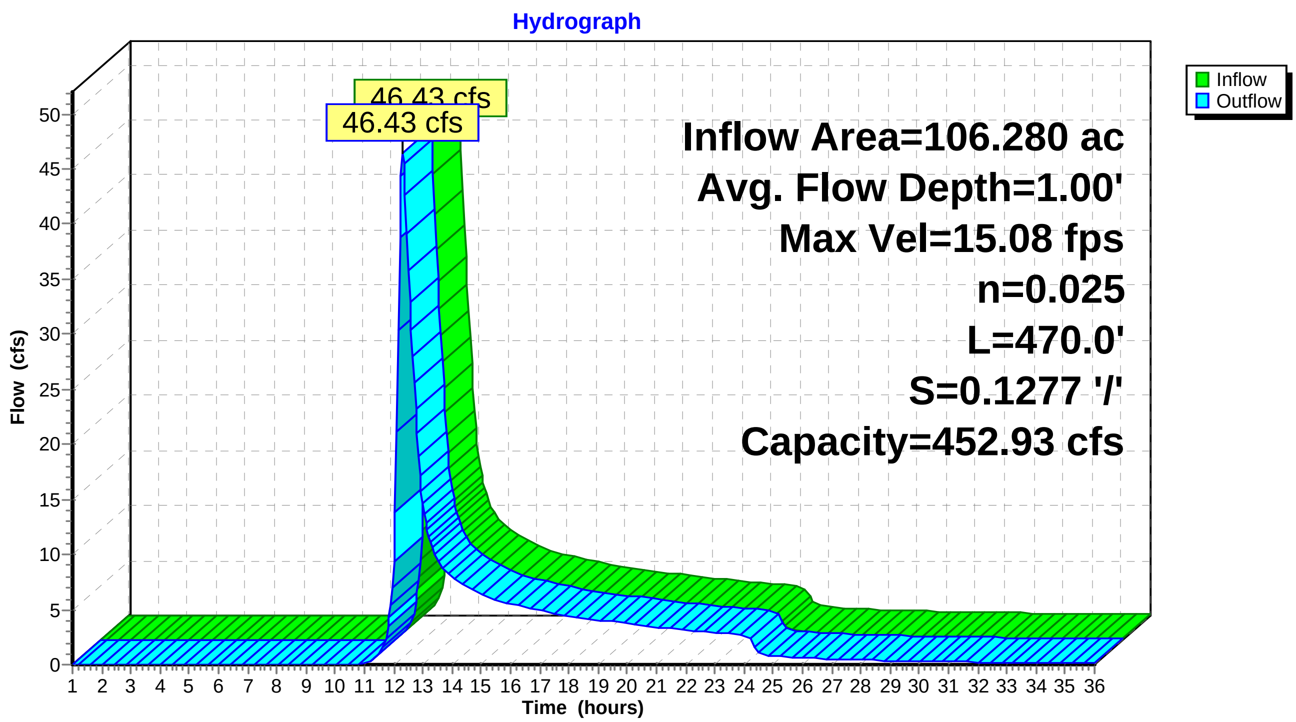
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.08 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.58 fps, Avg. Travel Time= 1.4 min

Peak Storage= 1,447 cf @ 12.31 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 452.93 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.025
Length= 470.0' Slope= 0.1277 '/'
Inlet Invert= 595.00', Outlet Invert= 535.00'



Reach RC4: (new Reach)



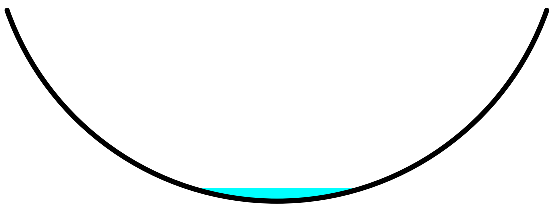
Summary for Reach RC5: (new Reach)

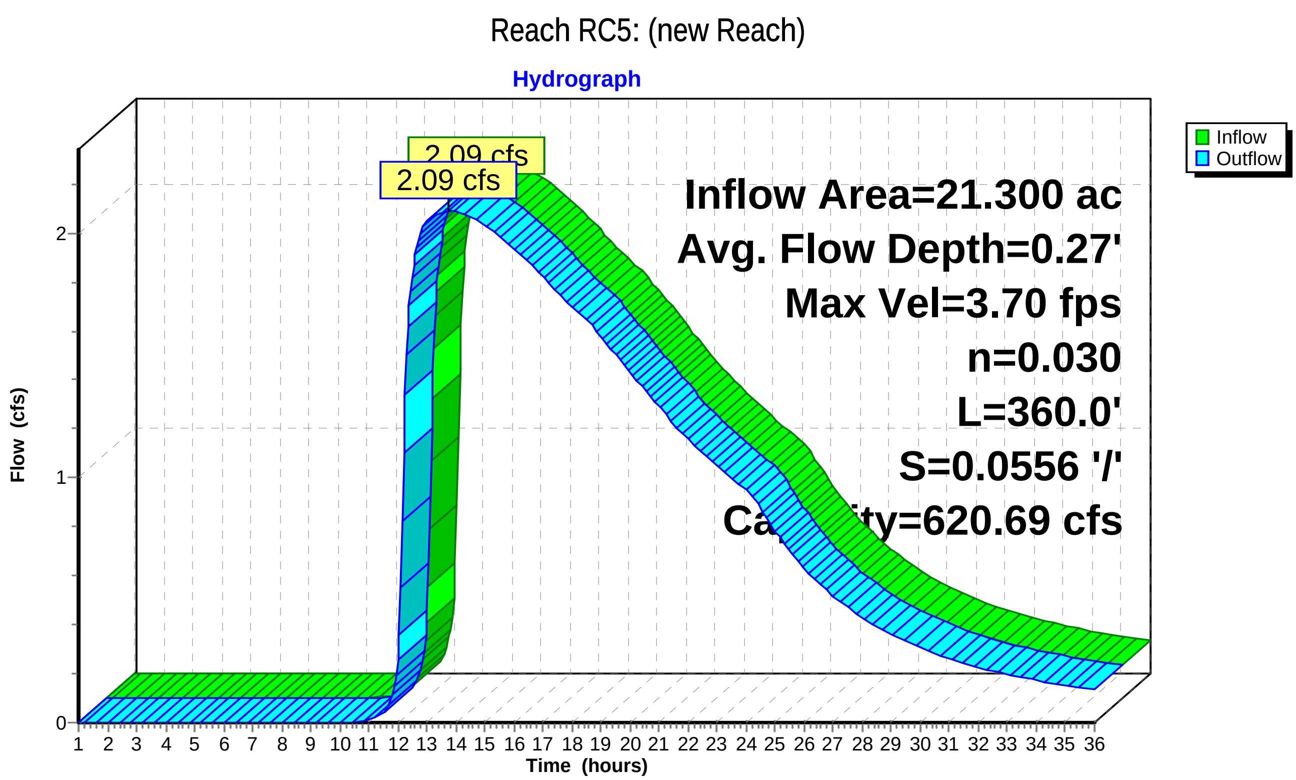
Inflow Area = 21.300 ac, 20.75% Impervious, Inflow Depth > 1.11" for 1-yr event
Inflow = 2.09 cfs @ 13.71 hrs, Volume= 1.971 af
Outflow = 2.09 cfs @ 13.73 hrs, Volume= 1.970 af, Atten= 0%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.70 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 2.60 fps, Avg. Travel Time= 2.3 min

Peak Storage= 204 cf @ 13.73 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 620.69 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.030
Length= 360.0' Slope= 0.0556 '/'
Inlet Invert= 645.00', Outlet Invert= 625.00'





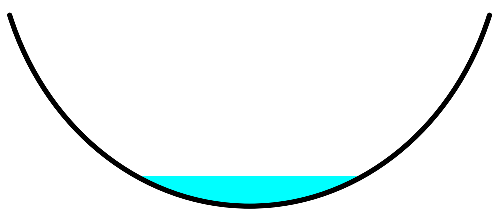
Summary for Reach RC6: (new Reach)

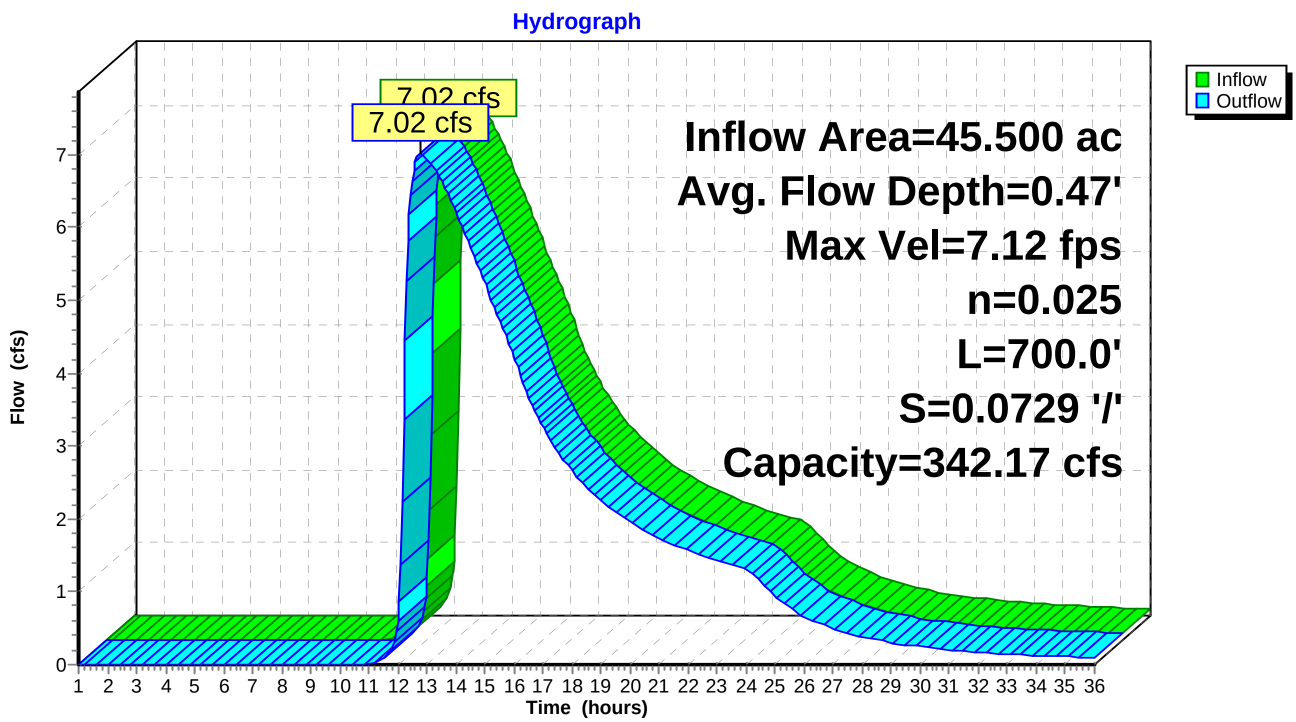
Inflow Area = 45.500 ac, 10.64% Impervious, Inflow Depth > 0.97" for 1-yr event
Inflow = 7.02 cfs @ 12.75 hrs, Volume= 3.694 af
Outflow = 7.02 cfs @ 12.77 hrs, Volume= 3.693 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.12 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 3.93 fps, Avg. Travel Time= 3.0 min

Peak Storage= 690 cf @ 12.77 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 342.17 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.025
Length= 700.0' Slope= 0.0729 '/'
Inlet Invert= 596.00', Outlet Invert= 545.00'





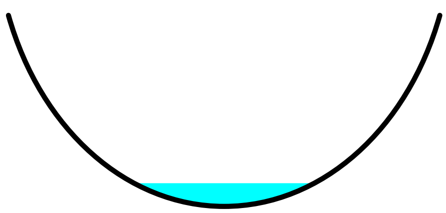
Summary for Reach RC7: (new Reach)

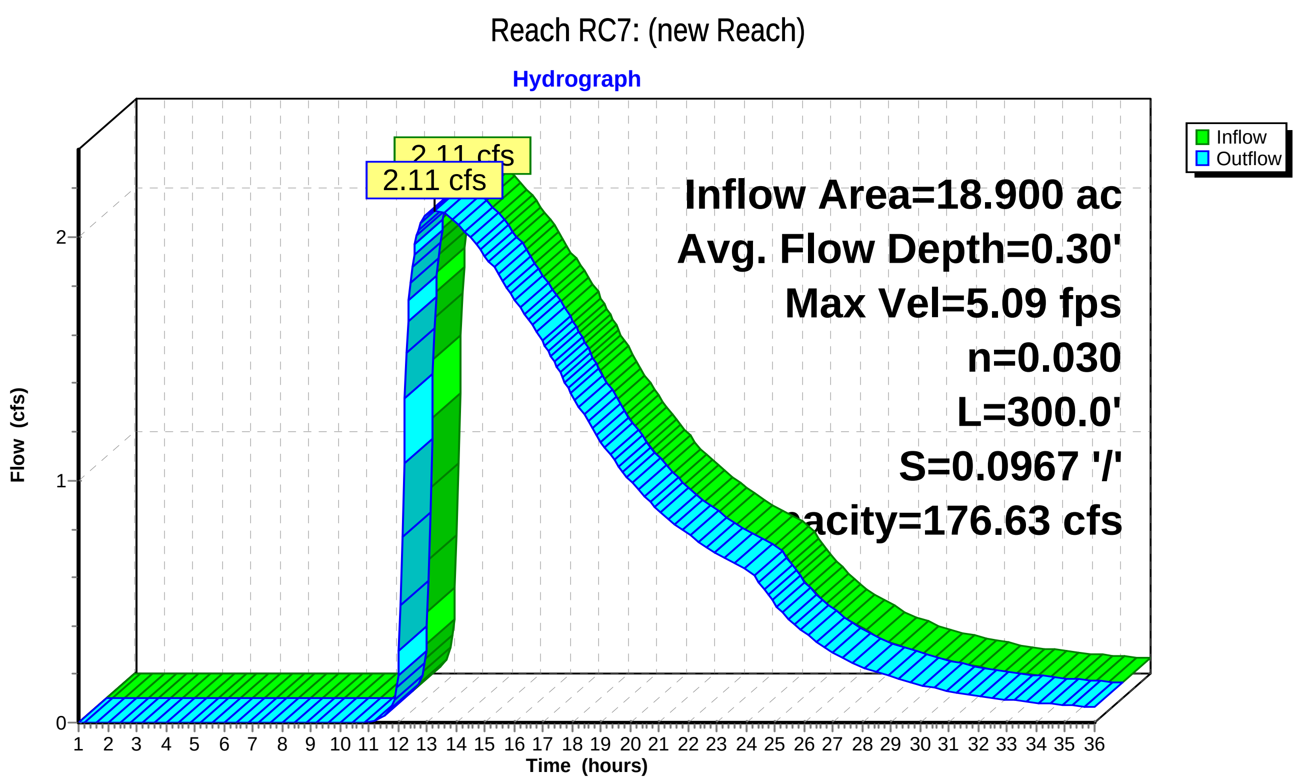
Inflow Area = 18.900 ac, 12.65% Impervious, Inflow Depth > 0.98" for 1-yr event
Inflow = 2.11 cfs @ 13.26 hrs, Volume= 1.549 af
Outflow = 2.11 cfs @ 13.27 hrs, Volume= 1.549 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.09 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 3.26 fps, Avg. Travel Time= 1.5 min

Peak Storage= 124 cf @ 13.27 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 2.50' Flow Area= 10.0 sf, Capacity= 176.63 cfs

6.00' x 2.50' deep Parabolic Channel, n= 0.030
Length= 300.0' Slope= 0.0967 '/'
Inlet Invert= 625.00', Outlet Invert= 596.00'





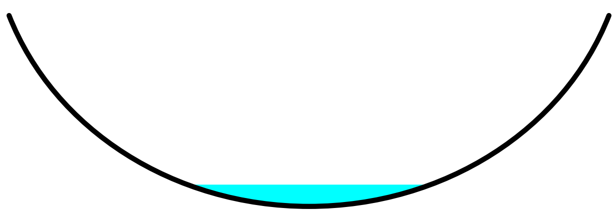
Summary for Reach RC8: (new Reach)

Inflow Area = 21.400 ac, 11.45% Impervious, Inflow Depth > 1.13" for 1-yr event
Inflow = 4.63 cfs @ 12.83 hrs, Volume= 2.020 af
Outflow = 4.63 cfs @ 12.85 hrs, Volume= 2.020 af, Atten= 0%, Lag= 1.3 min

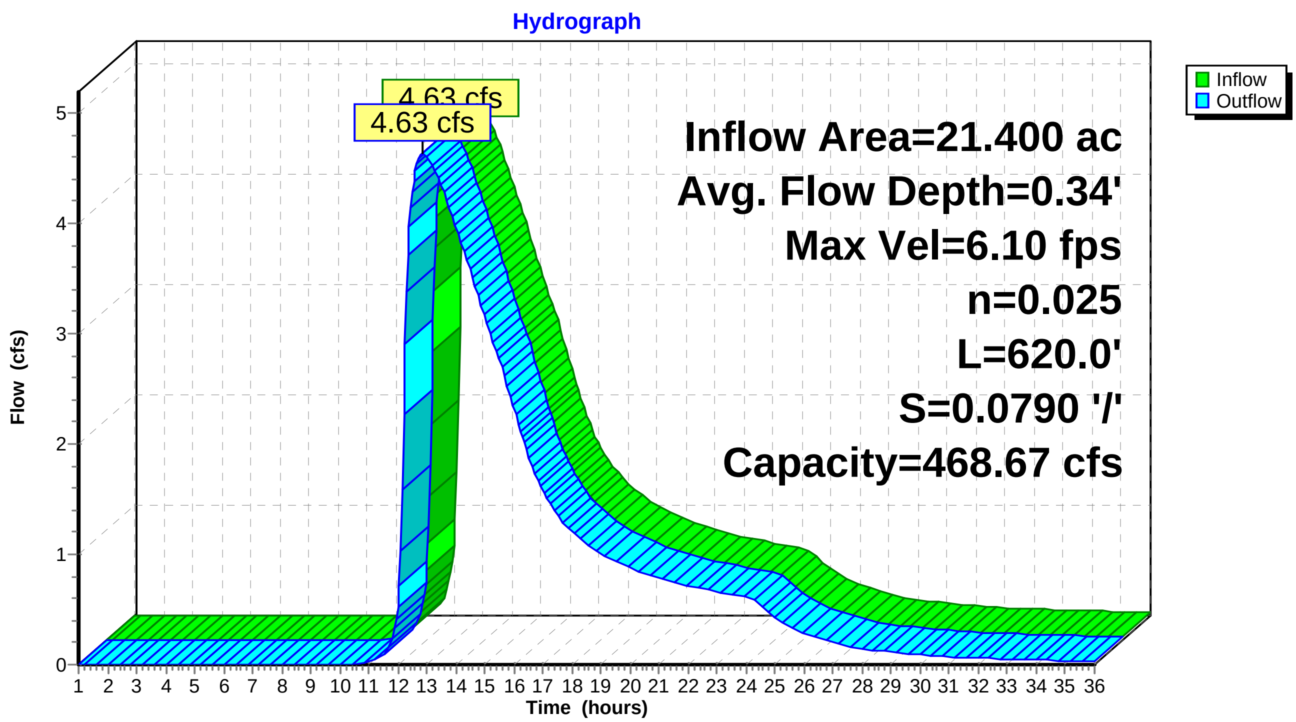
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.10 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 3.07 fps, Avg. Travel Time= 3.4 min

Peak Storage= 471 cf @ 12.85 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 3.00' Flow Area= 20.0 sf, Capacity= 468.67 cfs

10.00' x 3.00' deep Parabolic Channel, n= 0.025
Length= 620.0' Slope= 0.0790 '/'
Inlet Invert= 645.00', Outlet Invert= 596.00'



Reach RC8: (new Reach)



Summary for Pond 1P: PIPE

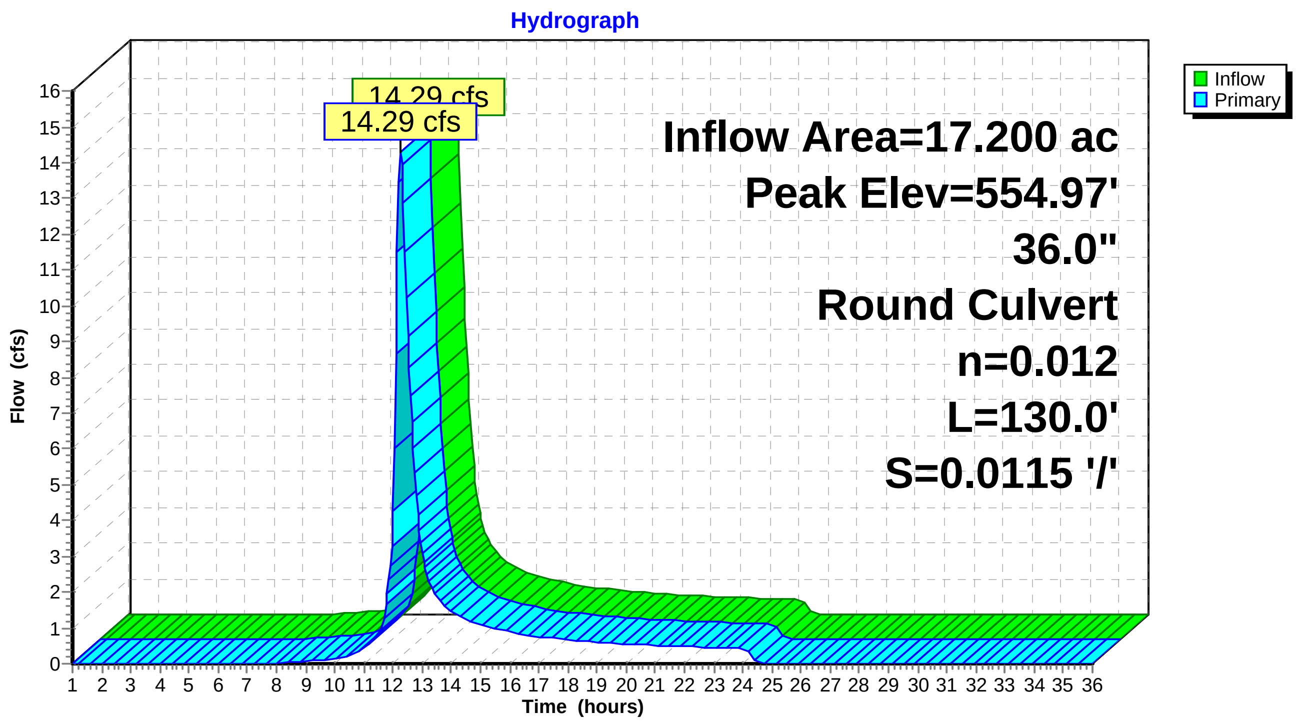
Inflow Area = 17.200 ac, 10.17% Impervious, Inflow Depth = 1.10" for 1-yr event
Inflow = 14.29 cfs @ 12.26 hrs, Volume= 1.570 af
Outflow = 14.29 cfs @ 12.26 hrs, Volume= 1.570 af, Atten= 0%, Lag= 0.0 min
Primary = 14.29 cfs @ 12.26 hrs, Volume= 1.570 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 554.97' @ 12.26 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	553.50'	**36.0" Round Culvert** L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 553.50' / 552.00' S= 0.0115 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=14.20 cfs @ 12.26 hrs HW=554.97' TW=550.68' (Dynamic Tailwater)
└1=Culvert (Inlet Controls 14.20 cfs @ 4.13 fps)

Pond 1P: PIPE



Summary for Pond 2P: (new Pond)

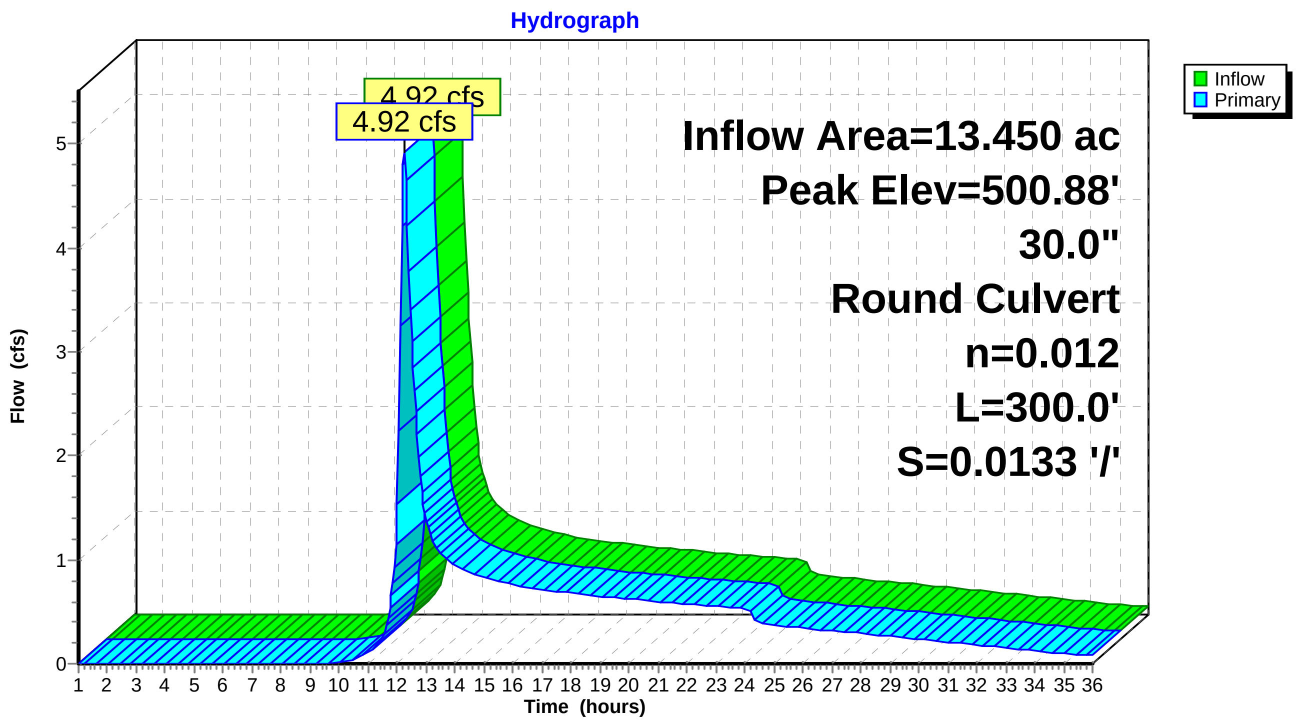
Inflow Area = 13.450 ac, 12.42% Impervious, Inflow Depth > 1.03" for 1-yr event
Inflow = 4.92 cfs @ 12.24 hrs, Volume= 1.160 af
Outflow = 4.92 cfs @ 12.24 hrs, Volume= 1.160 af, Atten= 0%, Lag= 0.0 min
Primary = 4.92 cfs @ 12.24 hrs, Volume= 1.160 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 500.88' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	500.00'	**30.0" Round Culvert** L= 300.0' Ke= 0.500 Inlet / Outlet Invert= 500.00' / 496.00' S= 0.0133 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=4.89 cfs @ 12.24 hrs HW=500.88' TW=489.62' (Dynamic Tailwater)
└─1=Culvert (Inlet Controls 4.89 cfs @ 3.19 fps)

Pond 2P: (new Pond)



Summary for Pond 3P: (new Pond)

Inflow Area = 7.500 ac, 22.27% Impervious, Inflow Depth = 1.15" for 1-yr event
Inflow = 8.24 cfs @ 12.15 hrs, Volume= 0.722 af
Outflow = 0.47 cfs @ 15.09 hrs, Volume= 0.674 af, Atten= 94%, Lag= 176.4 min
Primary = 0.47 cfs @ 15.09 hrs, Volume= 0.674 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 551.44' @ 15.09 hrs Surf.Area= 13,291 sf Storage= 17,267 cf

Plug-Flow detention time= 464.5 min calculated for 0.673 af (93% of inflow)
Center-of-Mass det. time= 429.8 min (1,295.0 - 865.1)

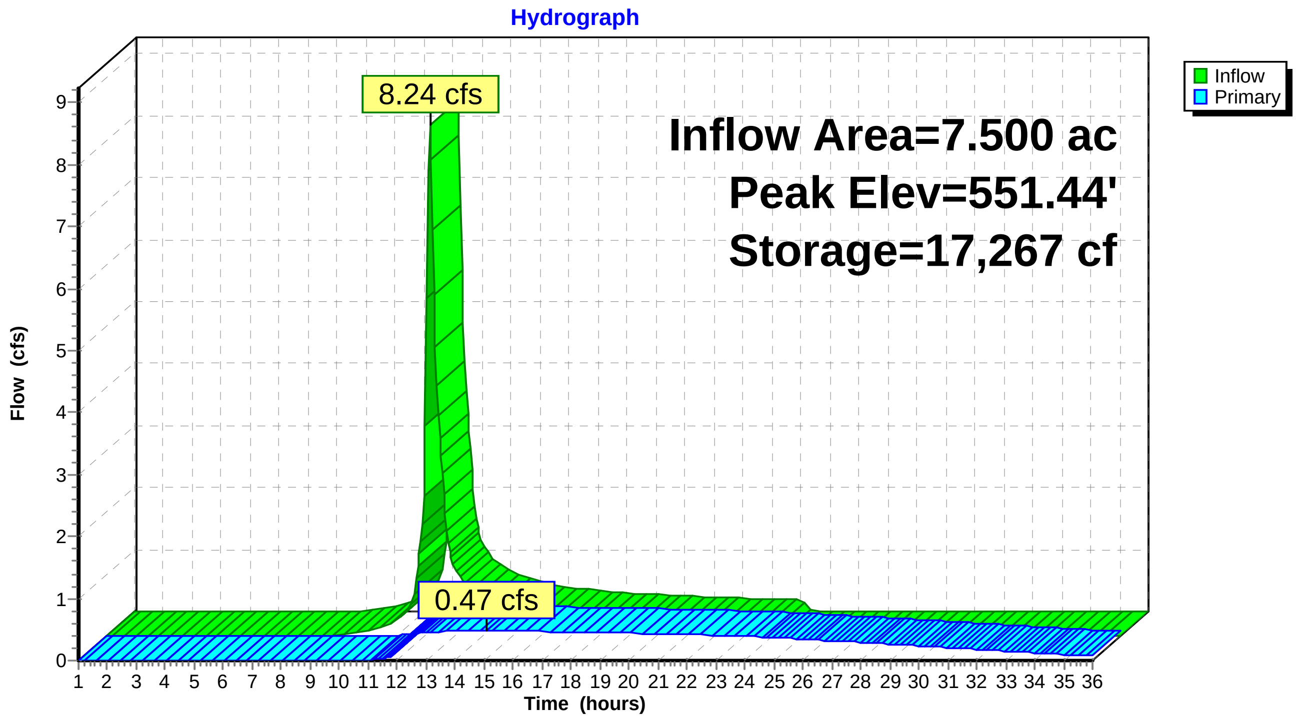
Volume	Invert	Avail.Storage	Storage Description
#1	550.00'	57,700 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
550.00	10,700	0	0
552.00	14,300	25,000	25,000
554.00	18,400	32,700	57,700

Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	30.0" Round Culvert L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 550.00' / 546.00' S= 0.1000 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	550.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	552.00'	3.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.0' Crest Height
#4	Device 1	553.75'	30.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.47 cfs @ 15.09 hrs HW=551.44' TW=517.15' (Dynamic Tailwater)
1=Culvert (Passes 0.47 cfs of 11.95 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.47 cfs @ 5.43 fps)
3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
4=Orifice/Grate (Controls 0.00 cfs)

Pond 3P: (new Pond)



Summary for Pond 7P: PIPE

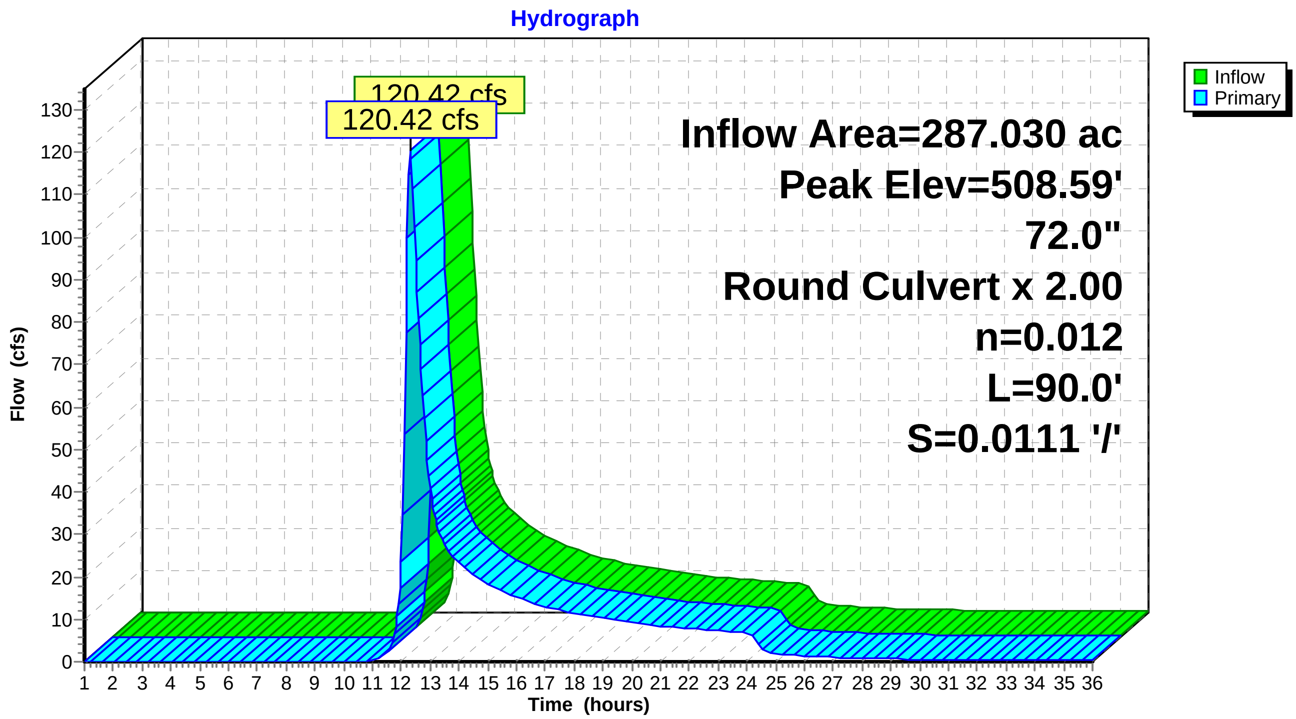
Inflow Area =	287.030 ac,	3.39% Impervious,	Inflow Depth > 0.82"	for 1-yr event
Inflow =	120.42 cfs @	12.31 hrs, Volume=	19.584 af	
Outflow =	120.42 cfs @	12.31 hrs, Volume=	19.584 af, Atten= 0%, Lag= 0.0 min	
Primary =	120.42 cfs @	12.31 hrs, Volume=	19.584 af	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 508.59' @ 12.31 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	506.00'	**72.0" Round Culvert** X 2.00 L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 506.00' / 505.00' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 28.27 sf

Primary OutFlow Max=119.70 cfs @ 12.31 hrs HW=508.58' TW=505.37' (Dynamic Tailwater)
↑1=Culvert (Barrel Controls 119.70 cfs @ 7.59 fps)

Pond 7P: PIPE



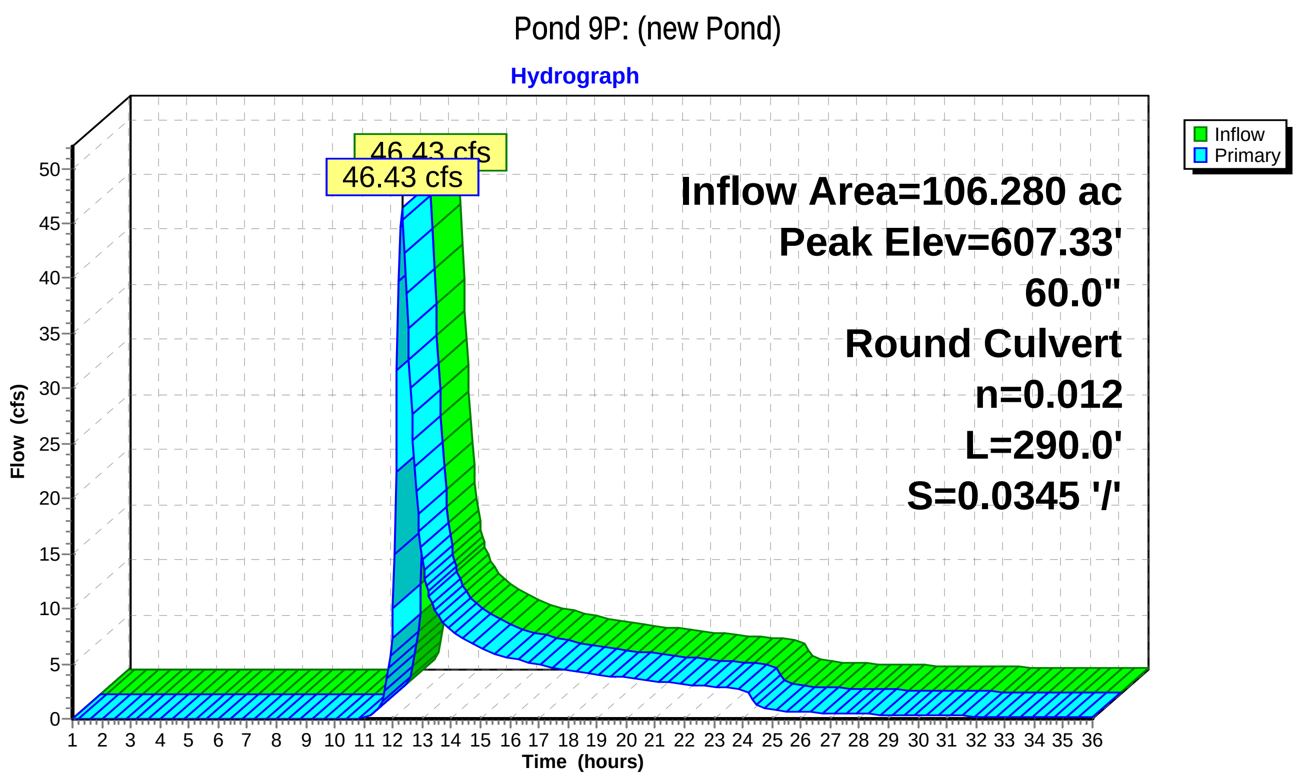
Summary for Pond 9P: (new Pond)

Inflow Area = 106.280 ac, 4.60% Impervious, Inflow Depth > 0.84" for 1-yr event
Inflow = 46.43 cfs @ 12.30 hrs, Volume= 7.455 af
Outflow = 46.43 cfs @ 12.30 hrs, Volume= 7.455 af, Atten= 0%, Lag= 0.0 min
Primary = 46.43 cfs @ 12.30 hrs, Volume= 7.455 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 607.33' @ 12.30 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	605.00'	**60.0" Round Culvert** L= 290.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 605.00' / 595.00' S= 0.0345 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=46.31 cfs @ 12.30 hrs HW=607.32' TW=596.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 46.31 cfs @ 5.19 fps)



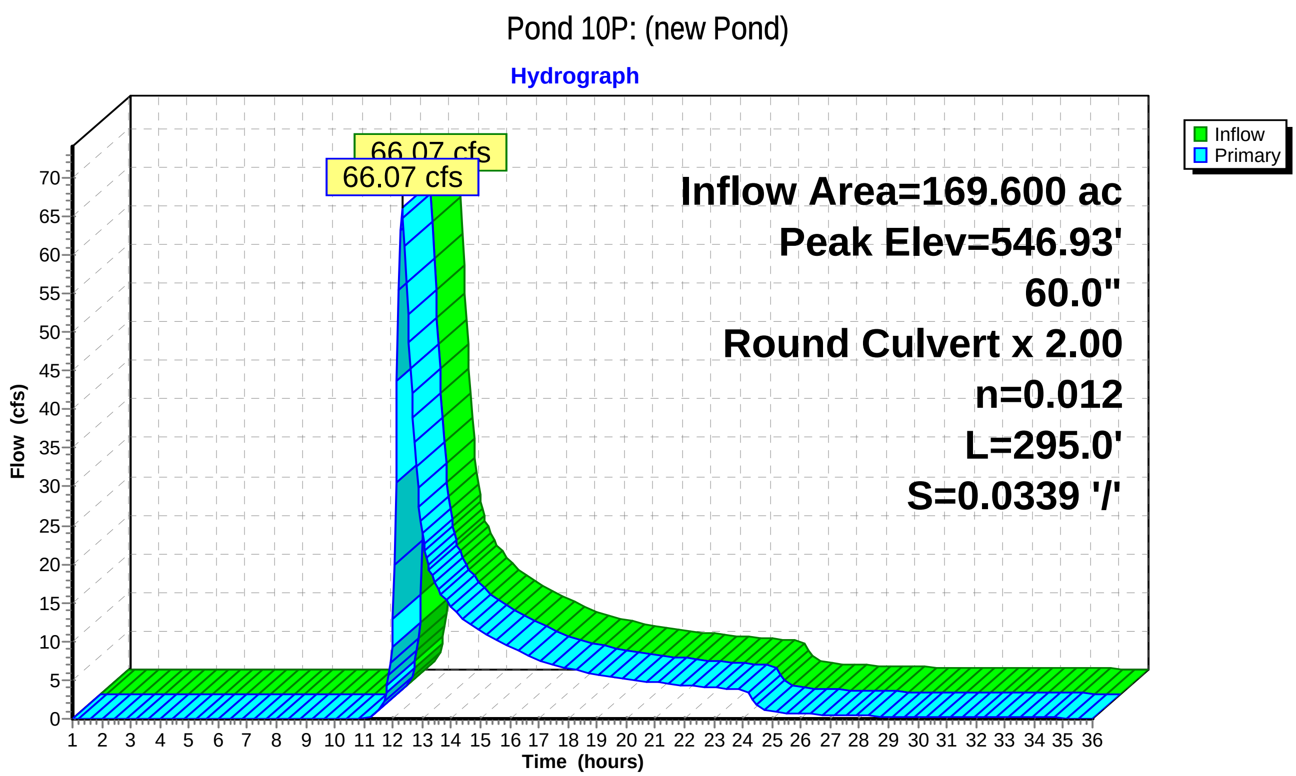
Summary for Pond 10P: (new Pond)

Inflow Area = 169.600 ac, 2.85% Impervious, Inflow Depth > 0.79" for 1-yr event
Inflow = 66.07 cfs @ 12.31 hrs, Volume= 11.219 af
Outflow = 66.07 cfs @ 12.31 hrs, Volume= 11.219 af, Atten= 0%, Lag= 0.0 min
Primary = 66.07 cfs @ 12.31 hrs, Volume= 11.219 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 546.93' @ 12.31 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	545.00'	**60.0" Round Culvert** X 2.00 L= 295.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 545.00' / 535.00' S= 0.0339 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=65.73 cfs @ 12.31 hrs HW=546.92' TW=536.42' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 65.73 cfs @ 4.72 fps)



Summary for Pond 11P: PIPE

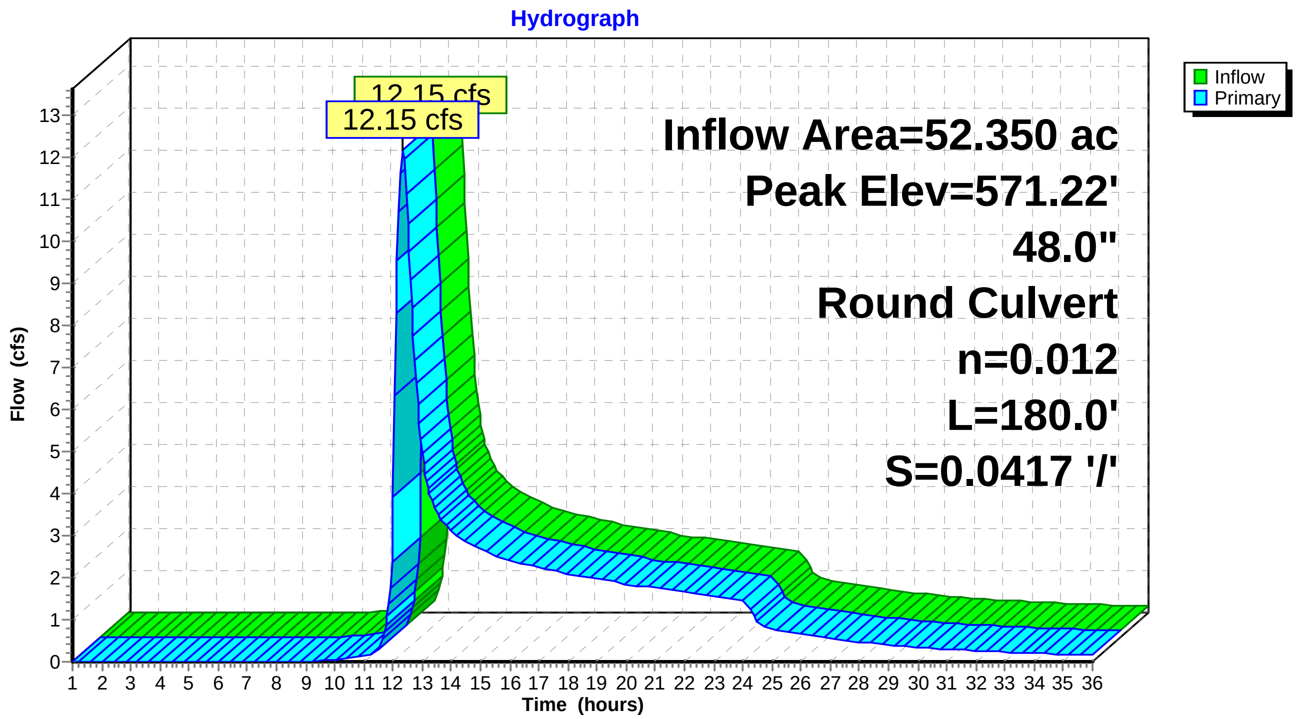
Inflow Area =	52.350 ac,	9.36% Impervious, Inflow Depth > 0.73" for 1-yr event		
Inflow =	12.15 cfs @	12.33 hrs, Volume=	3.197 af	
Outflow =	12.15 cfs @	12.33 hrs, Volume=	3.197 af,	Atten= 0%, Lag= 0.0 min
Primary =	12.15 cfs @	12.33 hrs, Volume=	3.197 af	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 571.22' @ 12.33 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	570.00'	**48.0" Round Culvert** L= 180.0' Ke= 0.500 Inlet / Outlet Invert= 570.00' / 562.50' S= 0.0417 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=12.10 cfs @ 12.33 hrs HW=571.21' TW=560.66' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 12.10 cfs @ 3.75 fps)

Pond 11P: PIPE



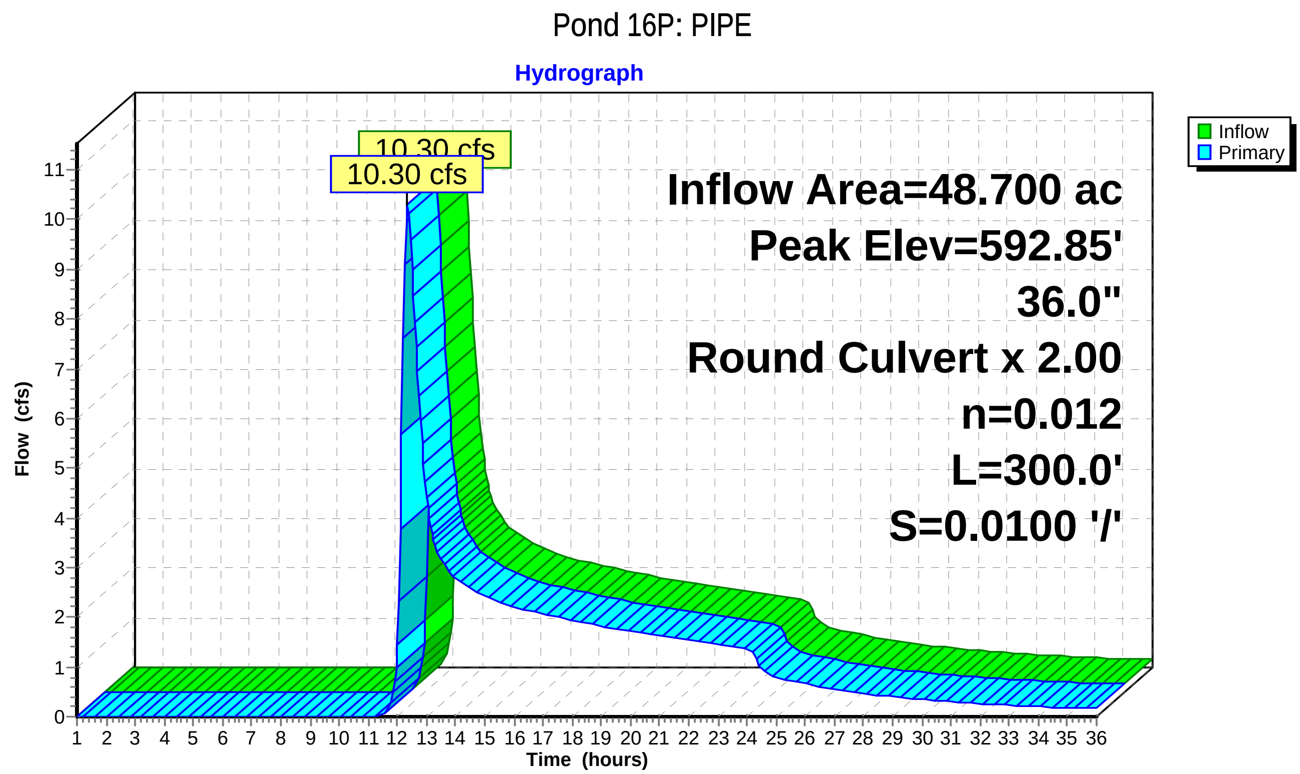
Summary for Pond 16P: PIPE

Inflow Area = 48.700 ac, 9.86% Impervious, Inflow Depth > 0.70" for 1-yr event
Inflow = 10.30 cfs @ 12.36 hrs, Volume= 2.846 af
Outflow = 10.30 cfs @ 12.36 hrs, Volume= 2.846 af, Atten= 0%, Lag= 0.0 min
Primary = 10.30 cfs @ 12.36 hrs, Volume= 2.846 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 592.85' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	592.00'	**36.0" Round Culvert** X 2.00 L= 300.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 592.00' / 589.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

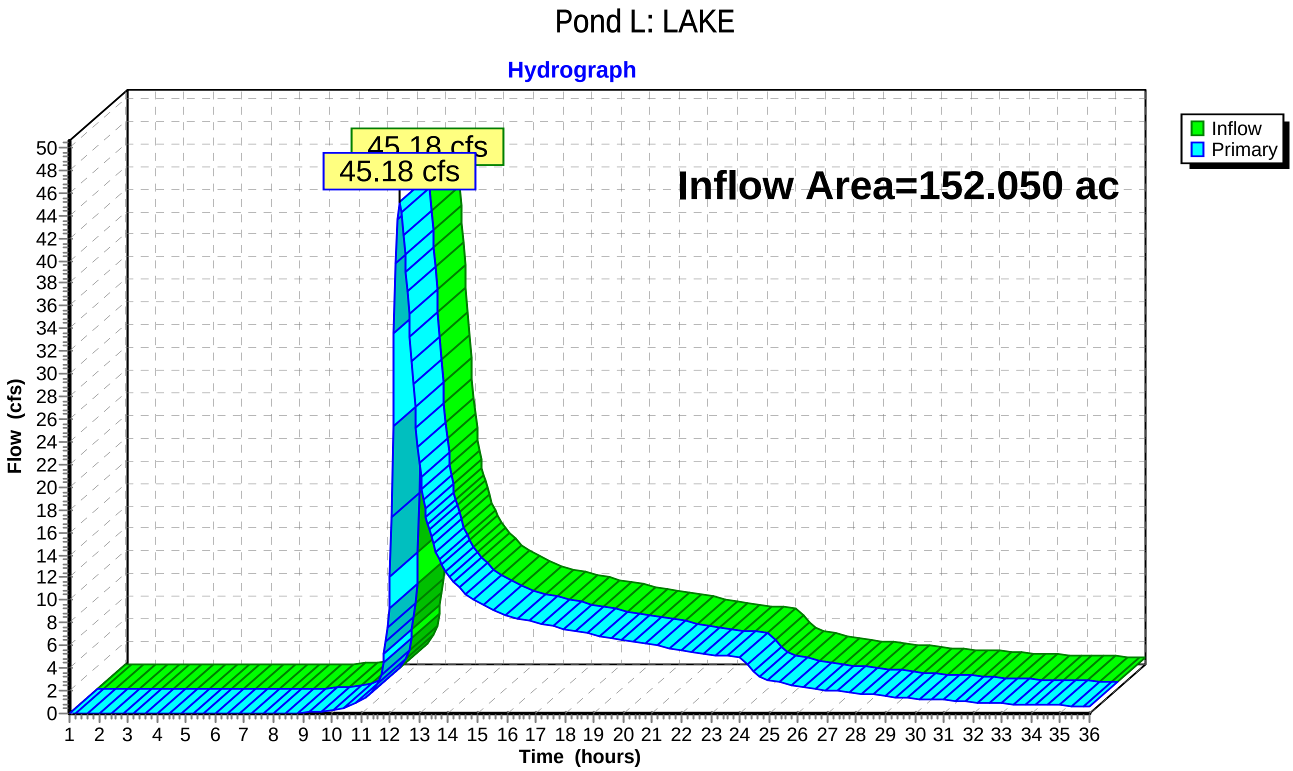
Primary OutFlow Max=10.27 cfs @ 12.36 hrs HW=592.85' TW=588.54' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 10.27 cfs @ 3.13 fps)



Summary for Pond L: LAKE

Inflow Area = 152.050 ac, 15.99% Impervious, Inflow Depth > 0.95" for 1-yr event
Inflow = 45.18 cfs @ 12.32 hrs, Volume= 12.010 af
Primary = 45.18 cfs @ 12.32 hrs, Volume= 12.010 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs



Summary for Pond PB11: (new Pond)

Inflow Area = 22.200 ac, 8.11% Impervious, Inflow Depth = 1.17" for 1-yr event
Inflow = 22.15 cfs @ 12.16 hrs, Volume= 2.172 af
Outflow = 8.35 cfs @ 12.60 hrs, Volume= 2.133 af, Atten= 62%, Lag= 26.7 min
Primary = 8.35 cfs @ 12.60 hrs, Volume= 2.133 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 579.77' @ 12.60 hrs Surf.Area= 22,088 sf Storage= 33,920 cf

Plug-Flow detention time= 187.4 min calculated for 2.133 af (98% of inflow)
Center-of-Mass det. time= 177.1 min (1,042.9 - 865.8)

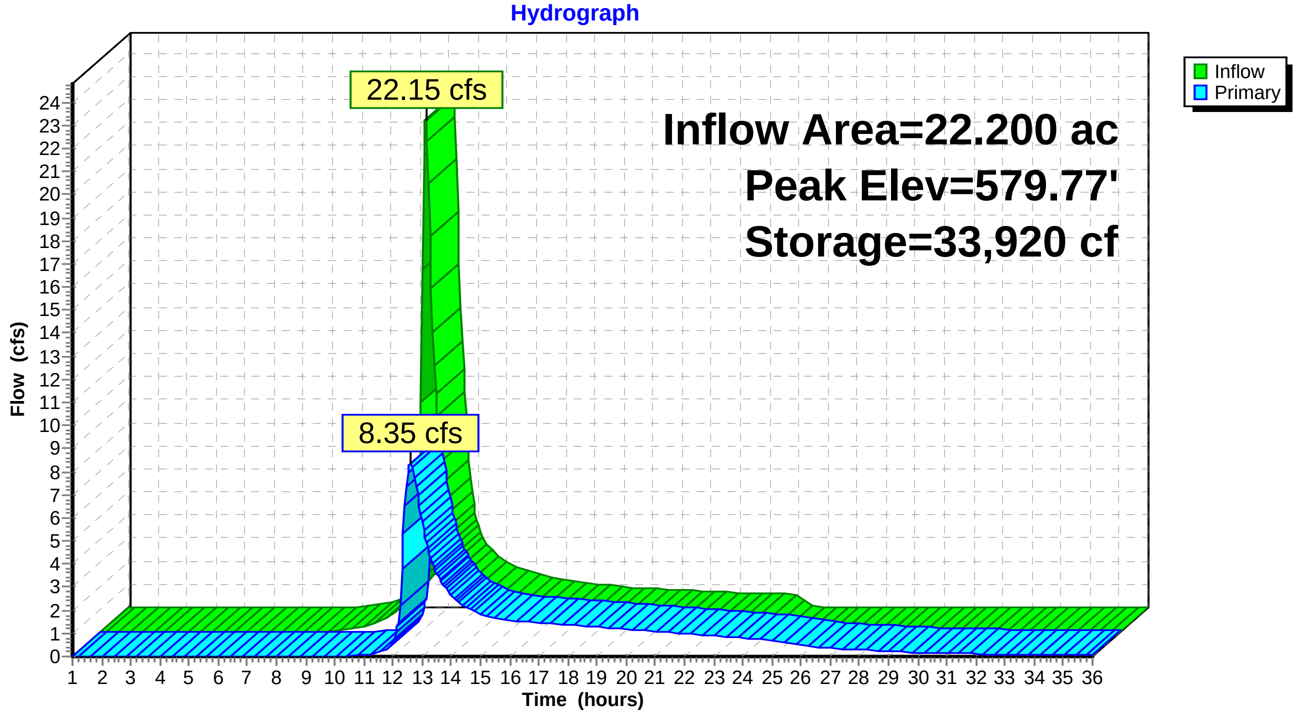
Volume	Invert	Avail.Storage	Storage Description
#1	578.00'	91,990 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.00	16,290	0	0
580.00	22,850	39,140	39,140
582.00	30,000	52,850	91,990

Device	Routing	Invert	Outlet Devices
#1	Primary	576.00'	36.0" Round Culvert X 2.00 L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 576.00' / 572.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	581.75'	30.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	579.30'	4.9' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	578.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=8.35 cfs @ 12.60 hrs HW=579.77' TW=572.54' (Dynamic Tailwater)
└─1=Culvert (Passes 8.35 cfs of 102.50 cfs potential flow)
  ├─2=Orifice/Grate (Controls 0.00 cfs)
  ├─3=Sharp-Crested Rectangular Weir (Weir Controls 5.60 cfs @ 2.49 fps)
  └─4=Sharp-Crested Rectangular Weir (Weir Controls 2.75 cfs @ 6.23 fps)

Pond PB11: (new Pond)



Summary for Pond PB19: (new Pond)

Inflow Area = 24.400 ac, 19.67% Impervious, Inflow Depth = 0.87" for 1-yr event
Inflow = 19.76 cfs @ 12.15 hrs, Volume= 1.776 af
Outflow = 1.32 cfs @ 14.96 hrs, Volume= 1.551 af, Atten= 93%, Lag= 169.0 min
Primary = 1.32 cfs @ 14.96 hrs, Volume= 1.551 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 596.84' @ 14.96 hrs Surf.Area= 48,768 sf Storage= 39,378 cf

Plug-Flow detention time= 412.5 min calculated for 1.551 af (87% of inflow)
Center-of-Mass det. time= 350.7 min (1,235.6 - 884.9)

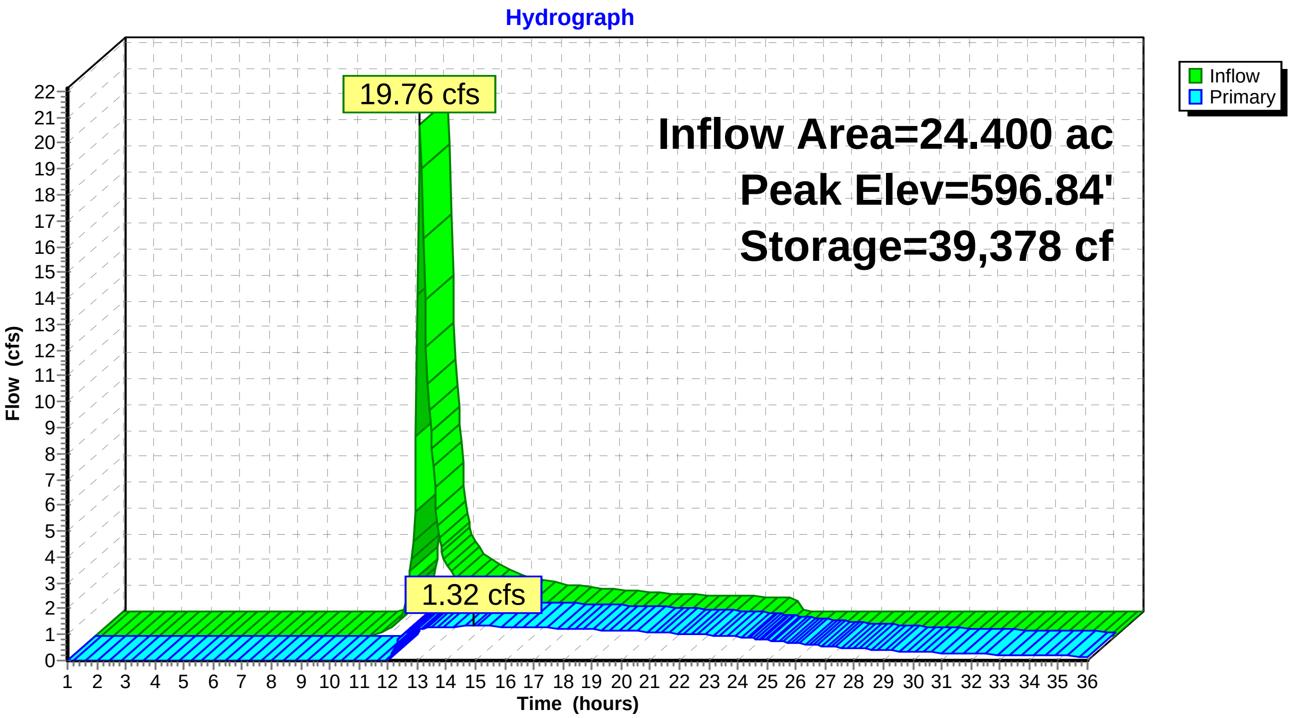
Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	216,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
596.00	44,900	0	0
598.00	54,100	99,000	99,000
600.00	63,500	117,600	216,600

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**36.0" Round Culvert** X 2.00 L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 596.00' / 594.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	596.00'	**8.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	597.60'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.6' Crest Height
#4	Device 1	599.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.32 cfs @ 14.96 hrs HW=596.84' TW=592.40' (Dynamic Tailwater)
└─1=**Culvert** (Passes 1.32 cfs of 10.13 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 1.32 cfs @ 3.36 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB19: (new Pond)



Summary for Pond PB2: (new Pond)

Inflow Area = 5.400 ac, 9.26% Impervious, Inflow Depth = 1.28" for 1-yr event
Inflow = 6.80 cfs @ 12.14 hrs, Volume= 0.577 af
Outflow = 0.24 cfs @ 17.72 hrs, Volume= 0.417 af, Atten= 97%, Lag= 334.8 min
Primary = 0.24 cfs @ 17.72 hrs, Volume= 0.417 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 505.13' @ 17.72 hrs Surf.Area= 15,590 sf Storage= 16,238 cf

Plug-Flow detention time= 644.2 min calculated for 0.416 af (72% of inflow)
Center-of-Mass det. time= 537.4 min (1,393.5 - 856.1)

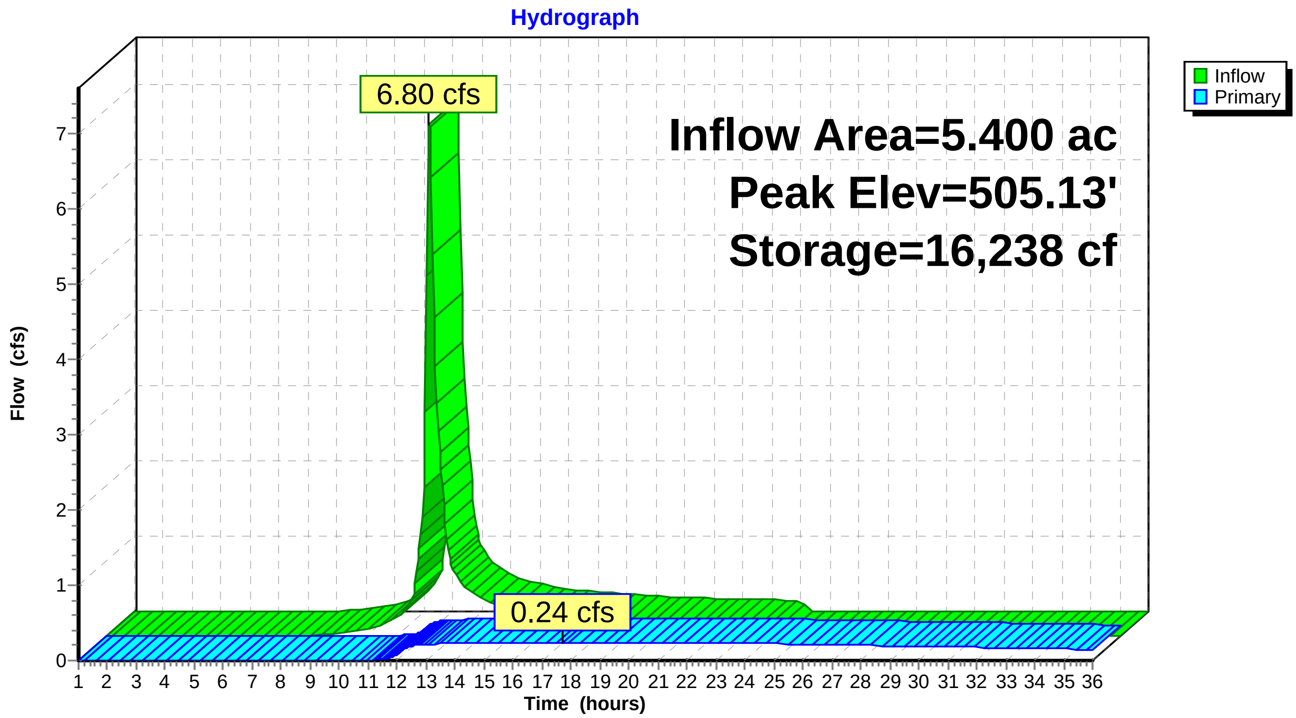
Volume	Invert	Avail.Storage	Storage Description
#1	504.00'	70,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
504.00	13,100	0	0
506.00	17,500	30,600	30,600
508.00	22,500	40,000	70,600

Device	Routing	Invert	Outlet Devices
#1	Primary	502.00'	**30.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 502.00' / 500.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	504.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	505.50'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height
#4	Device 1	507.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.24 cfs @ 17.72 hrs HW=505.13' TW=500.10' (Dynamic Tailwater)
└─1=**Culvert** (Passes 0.24 cfs of 32.42 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.24 cfs @ 4.83 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB2: (new Pond)



Summary for Pond PB3: (new Pond)

Inflow Area = 24.350 ac, 20.74% Impervious, Inflow Depth = 1.28" for 1-yr event
Inflow = 27.26 cfs @ 12.19 hrs, Volume= 2.603 af
Outflow = 2.65 cfs @ 13.65 hrs, Volume= 2.511 af, Atten= 90%, Lag= 87.5 min
Primary = 2.65 cfs @ 13.65 hrs, Volume= 2.511 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 521.93' @ 13.65 hrs Surf.Area= 32,182 sf Storage= 56,393 cf

Plug-Flow detention time= 298.3 min calculated for 2.511 af (96% of inflow)
Center-of-Mass det. time= 278.2 min (1,137.8 - 859.6)

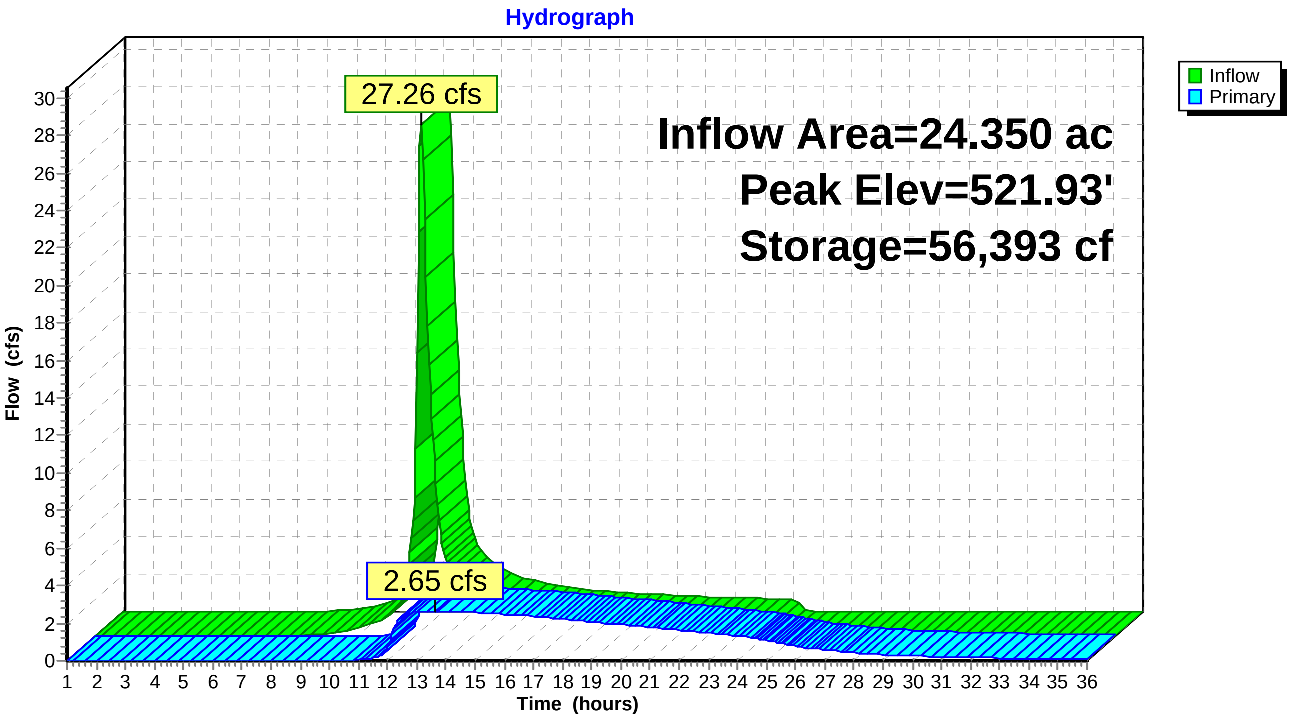
Volume	Invert	Avail.Storage	Storage Description
#1	520.00'	170,600 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
520.00	26,300	0	0
522.00	32,400	58,700	58,700
524.00	38,900	71,300	130,000
525.00	42,300	40,600	170,600

Device	Routing	Invert	Outlet Devices
#1	Primary	518.00'	30.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 518.00' / 514.00' S= 0.0571 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	520.00'	9.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	522.40'	4.9' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	523.75'	30.0" x 48.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads
#5	Device 1	523.25'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=2.65 cfs @ 13.65 hrs HW=521.93' TW=504.65' (Dynamic Tailwater)
└─1=Culvert (Passes 2.65 cfs of 77.36 cfs potential flow)
  ├─2=Orifice/Grate (Orifice Controls 2.65 cfs @ 6.00 fps)
  ├─3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
  ├─4=Orifice/Grate (Controls 0.00 cfs)
  └─5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond PB3: (new Pond)



Summary for Pond PB4: POND

Inflow Area = 10.100 ac, 43.56% Impervious, Inflow Depth = 1.49" for 1-yr event
Inflow = 16.56 cfs @ 12.10 hrs, Volume= 1.257 af
Outflow = 1.51 cfs @ 13.16 hrs, Volume= 1.229 af, Atten= 91%, Lag= 63.1 min
Primary = 1.51 cfs @ 13.16 hrs, Volume= 1.229 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 559.67' @ 13.16 hrs Surf.Area= 18,166 sf Storage= 26,804 cf

Plug-Flow detention time= 247.7 min calculated for 1.227 af (98% of inflow)
Center-of-Mass det. time= 235.4 min (1,075.4 - 840.0)

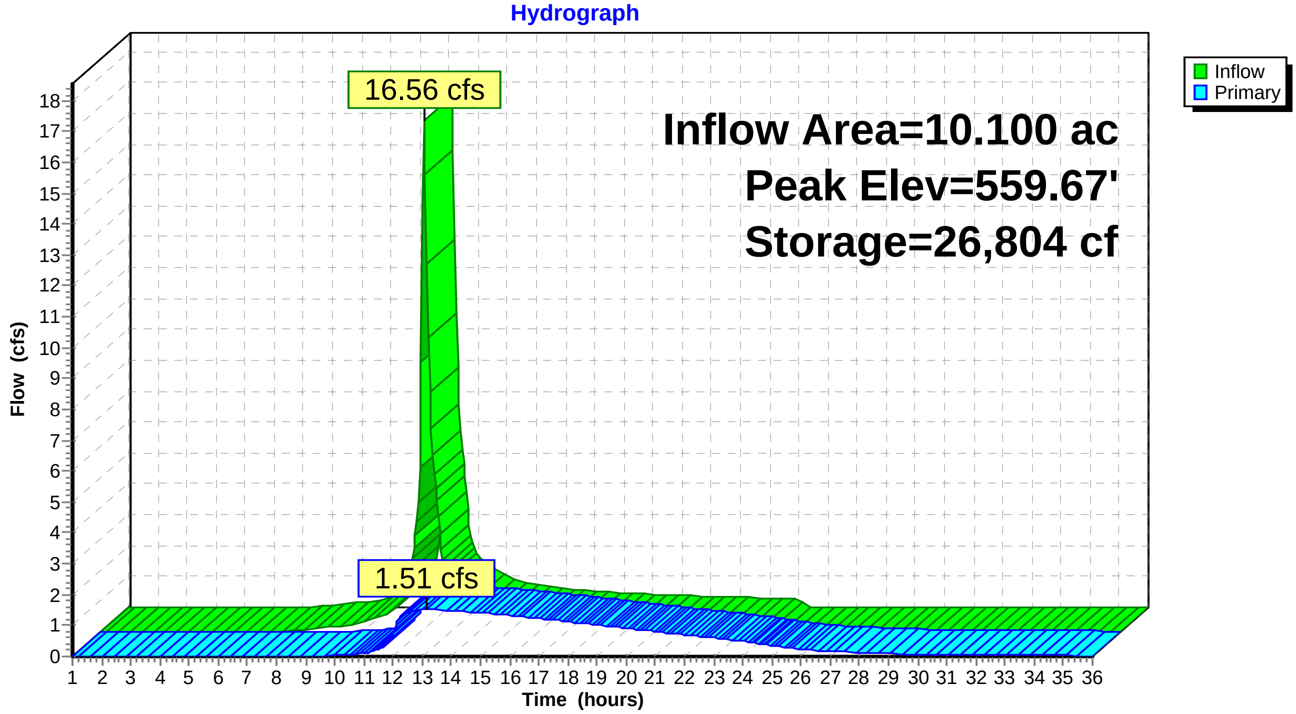
Volume	Invert	Avail.Storage	Storage Description
#1	558.00'	76,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
558.00	14,000	0	0
560.00	19,000	33,000	33,000
562.00	24,000	43,000	76,000

Device	Routing	Invert	Outlet Devices
#1	Primary	558.00'	**36.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 558.00' / 554.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	558.00'	**7.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	560.00'	**2.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	561.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	561.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=1.51 cfs @ 13.16 hrs HW=559.67' TW=0.00' (Dynamic Tailwater)
1=**Culvert** (Passes 1.51 cfs of 17.73 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 1.51 cfs @ 5.65 fps)
3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
4=**Orifice/Grate** (Controls 0.00 cfs)
5=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PB4: POND



Summary for Pond PB5: (new Pond)

Inflow Area = 4.500 ac, 26.44% Impervious, Inflow Depth = 1.35" for 1-yr event
Inflow = 7.04 cfs @ 12.08 hrs, Volume= 0.506 af
Outflow = 0.29 cfs @ 15.34 hrs, Volume= 0.460 af, Atten= 96%, Lag= 196.0 min
Primary = 0.29 cfs @ 15.34 hrs, Volume= 0.460 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 563.63' @ 15.34 hrs Surf.Area= 9,196 sf Storage= 12,823 cf

Plug-Flow detention time= 530.2 min calculated for 0.460 af (91% of inflow)
Center-of-Mass det. time= 483.4 min (1,330.8 - 847.4)

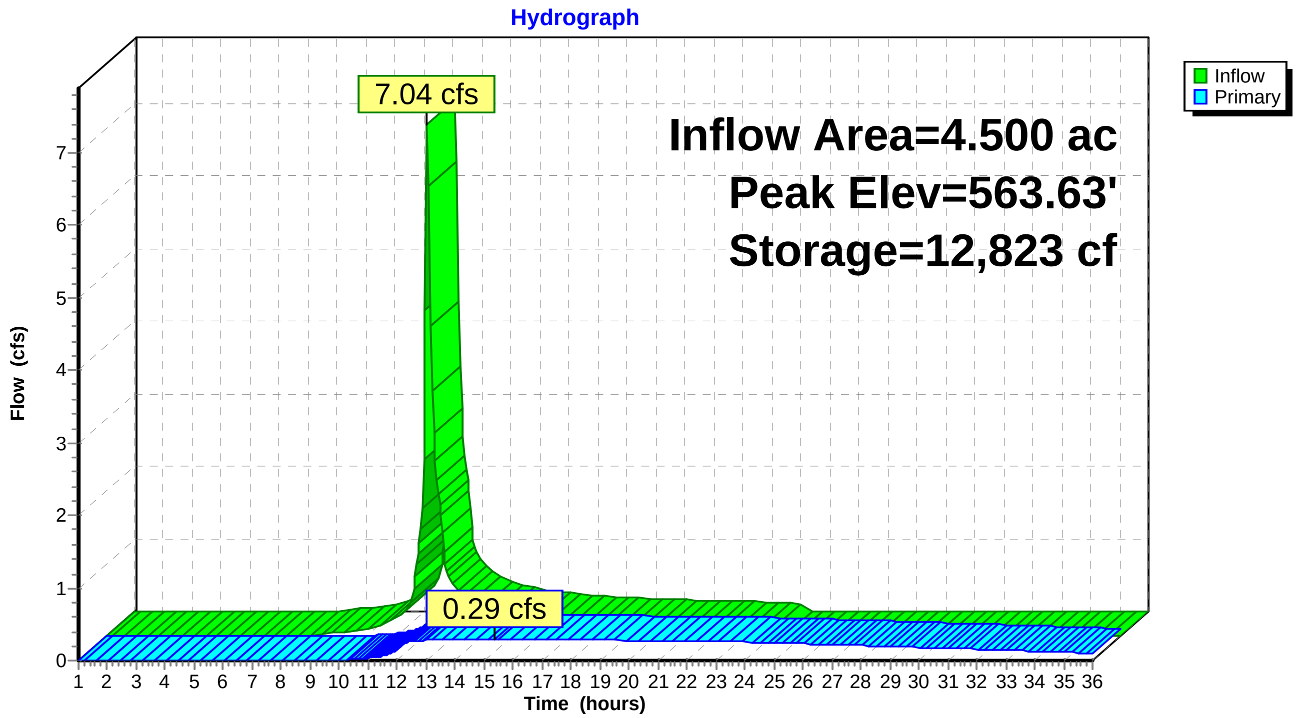
Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	39,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
562.00	6,500	0	0
564.00	9,800	16,300	16,300
566.00	13,500	23,300	39,600

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**30.0" Round Culvert** L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 562.00' / 558.00' S= 0.0533 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	562.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	564.00'	**1.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	565.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 15.34 hrs HW=563.63' TW=0.00' (Dynamic Tailwater)
└─1=**Culvert** (Passes 0.29 cfs of 14.79 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.29 cfs @ 5.91 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB5: (new Pond)



Summary for Pond PB6: PB7

Inflow Area = 8.900 ac, 36.74% Impervious, Inflow Depth = 1.49" for 1-yr event
Inflow = 13.94 cfs @ 12.12 hrs, Volume= 1.108 af
Outflow = 0.81 cfs @ 14.27 hrs, Volume= 1.054 af, Atten= 94%, Lag= 129.4 min
Primary = 0.81 cfs @ 14.27 hrs, Volume= 1.054 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 657.72' @ 14.27 hrs Surf.Area= 17,633 sf Storage= 26,806 cf

Plug-Flow detention time= 428.4 min calculated for 1.054 af (95% of inflow)
Center-of-Mass det. time= 401.1 min (1,242.2 - 841.1)

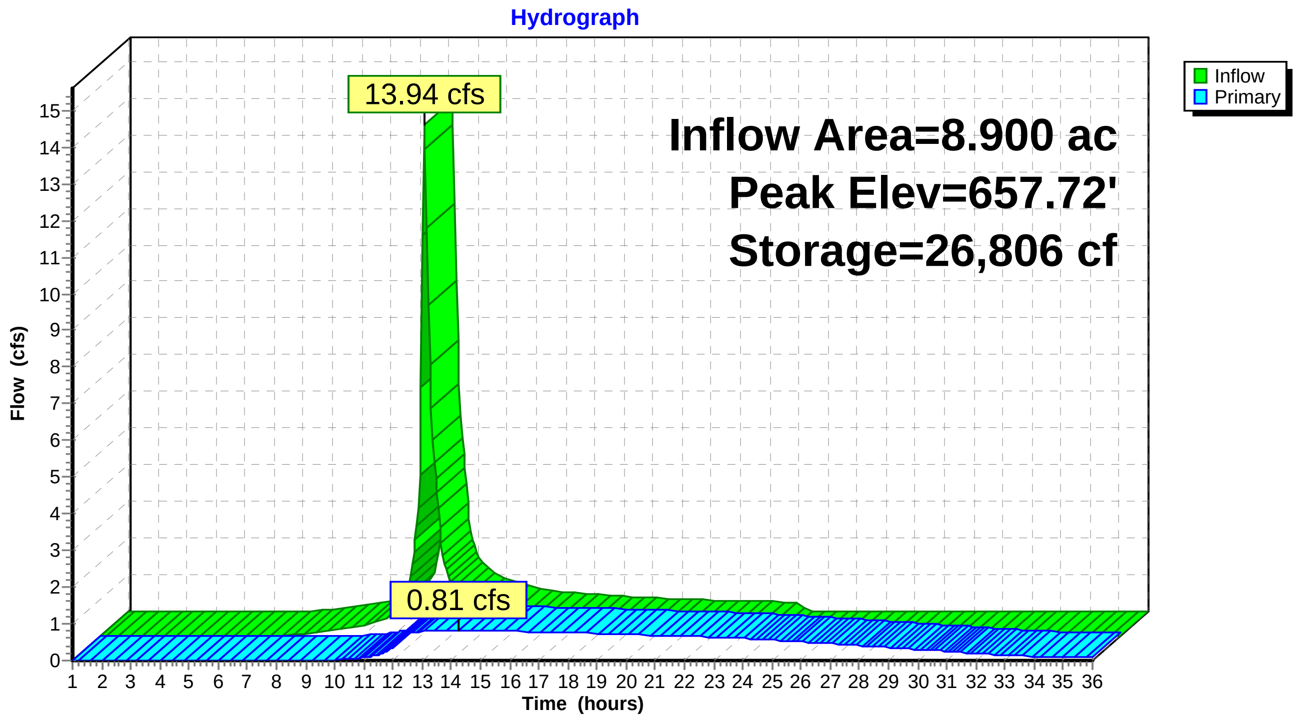
Volume	Invert	Avail.Storage	Storage Description
#1	656.00'	74,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
656.00	13,500	0	0
658.00	18,300	31,800	31,800
660.00	24,500	42,800	74,600

Device	Routing	Invert	Outlet Devices
#1	Primary	656.00'	**30.0" Round Culvert** L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 656.00' / 551.00' S= 0.8077 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	656.00'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	658.10'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	659.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.81 cfs @ 14.27 hrs HW=657.72' TW=550.57' (Dynamic Tailwater)
└1=**Culvert** (Passes 0.81 cfs of 16.11 cfs potential flow)
  ├2=**Orifice/Grate** (Orifice Controls 0.81 cfs @ 5.92 fps)
  ├3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB6: PB7


Hydrograph
13.94 cfs
0.81 cfs
Inflow Area=8.900 ac
Peak Elev=657.72'
Storage=26,806 cf
Inflow
Primary
Flow (cfs)
Time (hours)
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Summary for Pond PB7: (new Pond)

Inflow Area = 13.650 ac, 28.57% Impervious, Inflow Depth = 0.98" for 1-yr event
Inflow = 13.65 cfs @ 12.12 hrs, Volume= 1.115 af
Outflow = 0.24 cfs @ 24.11 hrs, Volume= 0.446 af, Atten= 98%, Lag= 719.4 min
Primary = 0.24 cfs @ 24.11 hrs, Volume= 0.446 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 561.18' @ 24.11 hrs Surf.Area= 34,454 sf Storage= 38,717 cf

Plug-Flow detention time= 723.7 min calculated for 0.446 af (40% of inflow)
Center-of-Mass det. time= 572.1 min (1,447.1 - 875.0)

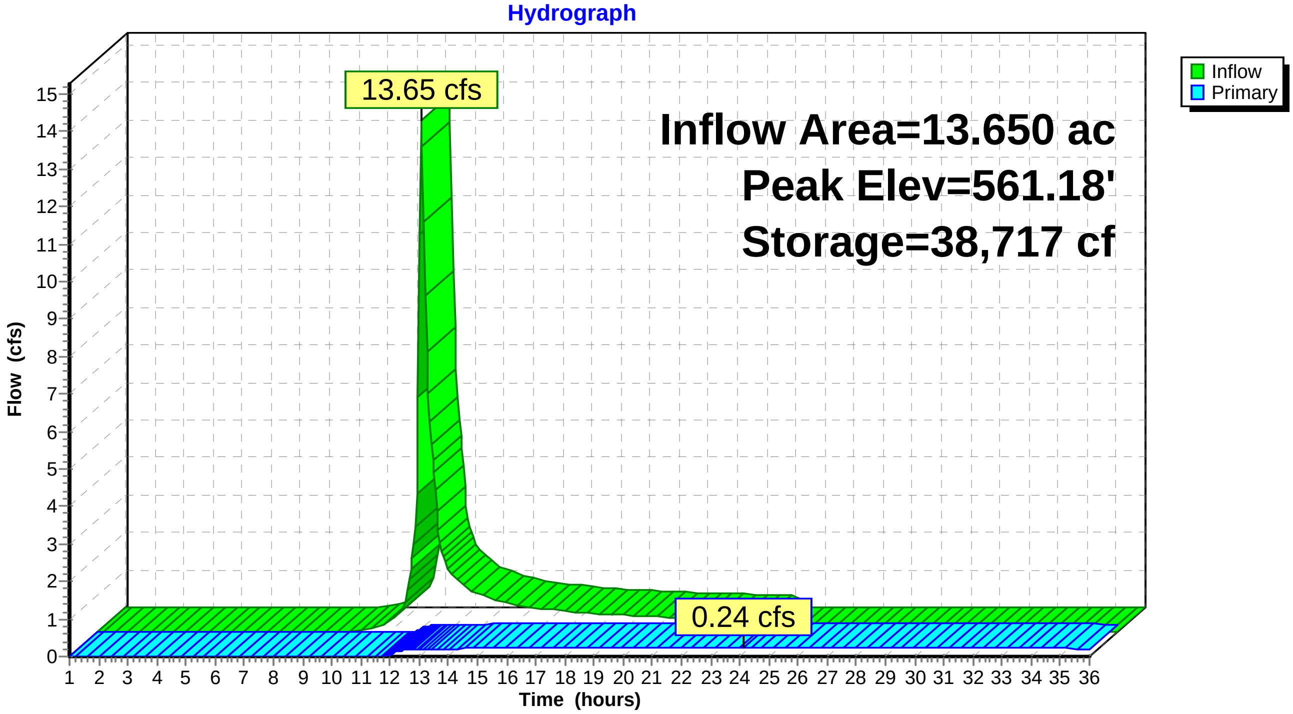
Volume	Invert	Avail.Storage	Storage Description
#1	560.00'	148,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
560.00	30,900	0	0
562.00	36,900	67,800	67,800
564.00	43,500	80,400	148,200

Device	Routing	Invert	Outlet Devices
#1	Primary	560.00'	**36.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 560.00' / 558.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	560.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	561.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	563.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.24 cfs @ 24.11 hrs HW=561.18' TW=554.33' (Dynamic Tailwater)
└─1=**Culvert** (Passes 0.24 cfs of 9.62 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.24 cfs @ 4.96 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB7: (new Pond)



Summary for Pond PC10: POND C10

Inflow Area = 21.400 ac, 11.45% Impervious, Inflow Depth = 1.15" for 1-yr event
Inflow = 22.72 cfs @ 12.17 hrs, Volume= 2.060 af
Outflow = 4.64 cfs @ 12.80 hrs, Volume= 2.021 af, Atten= 80%, Lag= 37.6 min
Primary = 4.64 cfs @ 12.80 hrs, Volume= 2.021 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 672.92' @ 12.80 hrs Surf.Area= 39,627 sf Storage= 34,725 cf

Plug-Flow detention time= 137.5 min calculated for 2.018 af (98% of inflow)
Center-of-Mass det. time= 127.6 min (993.9 - 866.3)

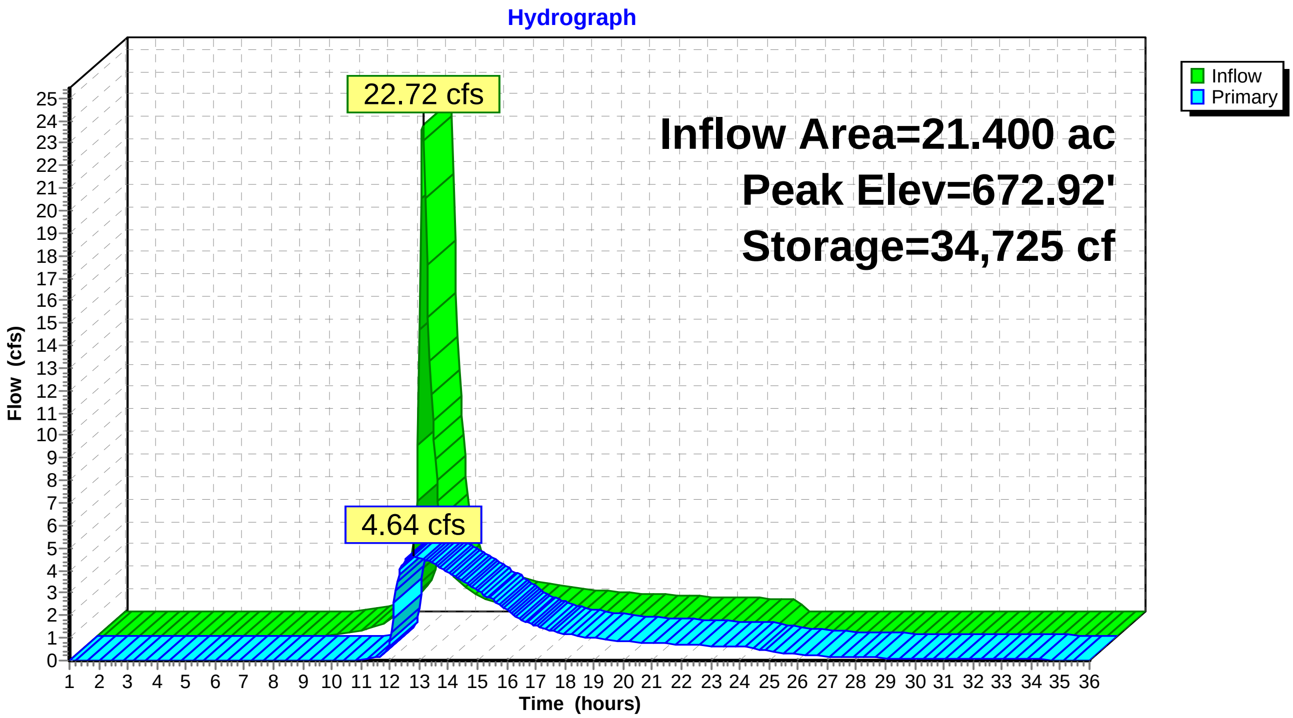
Volume	Invert	Avail.Storage	Storage Description
#1	672.00'	176,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	36,000	0	0
674.00	43,900	79,900	79,900
676.00	52,200	96,100	176,000

Device	Routing	Invert	Outlet Devices
#1	Primary	672.00'	**30.0" Round Culvert** X 2.00 L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 672.00' / 670.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	672.00'	**6.0" Vert. Orifice/Grate** X 6.00 C= 0.600
#3	Device 1	675.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	673.70'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height

Primary OutFlow Max=4.64 cfs @ 12.80 hrs HW=672.92' TW=660.44' (Dynamic Tailwater)
└─1=**Culvert** (Passes 4.64 cfs of 10.67 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 4.64 cfs @ 3.94 fps)
  ├─3=**Orifice/Grate** (Controls 0.00 cfs)
  └─4=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PC10: POND C10



Summary for Pond PC2: POND C2

Inflow Area = 6.200 ac, 32.26% Impervious, Inflow Depth = 1.35" for 1-yr event
Inflow = 8.20 cfs @ 12.14 hrs, Volume= 0.698 af
Outflow = 0.37 cfs @ 15.76 hrs, Volume= 0.605 af, Atten= 95%, Lag= 217.0 min
Primary = 0.37 cfs @ 15.76 hrs, Volume= 0.605 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 499.50' @ 15.76 hrs Surf.Area= 13,597 sf Storage= 18,129 cf

Plug-Flow detention time= 561.6 min calculated for 0.605 af (87% of inflow)
Center-of-Mass det. time= 497.0 min (1,348.8 - 851.9)

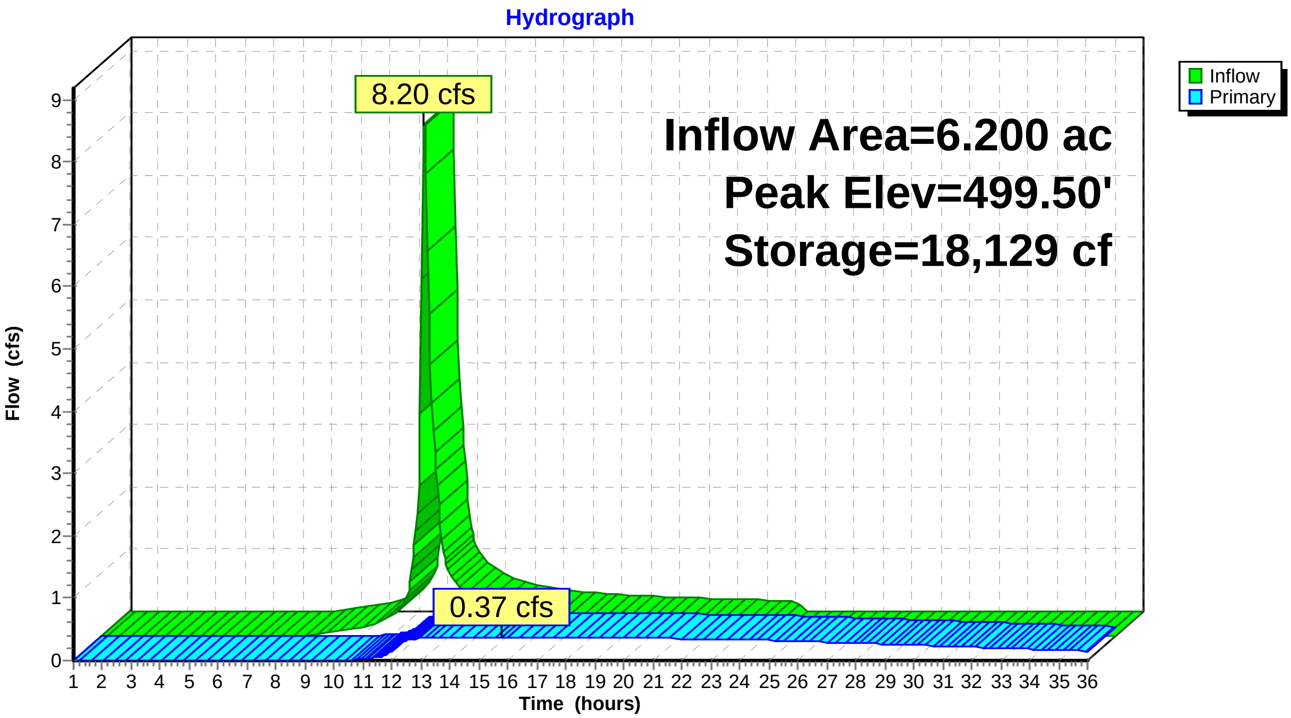
Volume	Invert	Avail.Storage	Storage Description
#1	498.00'	58,900 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
498.00	10,600	0	0
500.00	14,600	25,200	25,200
502.00	19,100	33,700	58,900

Device	Routing	Invert	Outlet Devices
#1	Primary	498.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 498.00' / 496.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	498.00'	**3.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	499.90'	**1.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	501.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 15.76 hrs HW=499.50' TW=488.66' (Dynamic Tailwater)
└─1=**Culvert** (Passes 0.37 cfs of 10.52 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.37 cfs @ 5.60 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PC2: POND C2



Summary for Pond PC6: POND C6

Inflow Area = 18.900 ac, 12.65% Impervious, Inflow Depth = 1.04" for 1-yr event
Inflow = 19.05 cfs @ 12.14 hrs, Volume= 1.632 af
Outflow = 2.11 cfs @ 13.26 hrs, Volume= 1.549 af, Atten= 89%, Lag= 67.3 min
Primary = 2.11 cfs @ 13.26 hrs, Volume= 1.549 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 639.06' @ 13.26 hrs Surf.Area= 31,481 sf Storage= 31,808 cf

Plug-Flow detention time= 253.0 min calculated for 1.547 af (95% of inflow)
Center-of-Mass det. time= 226.3 min (1,098.5 - 872.2)

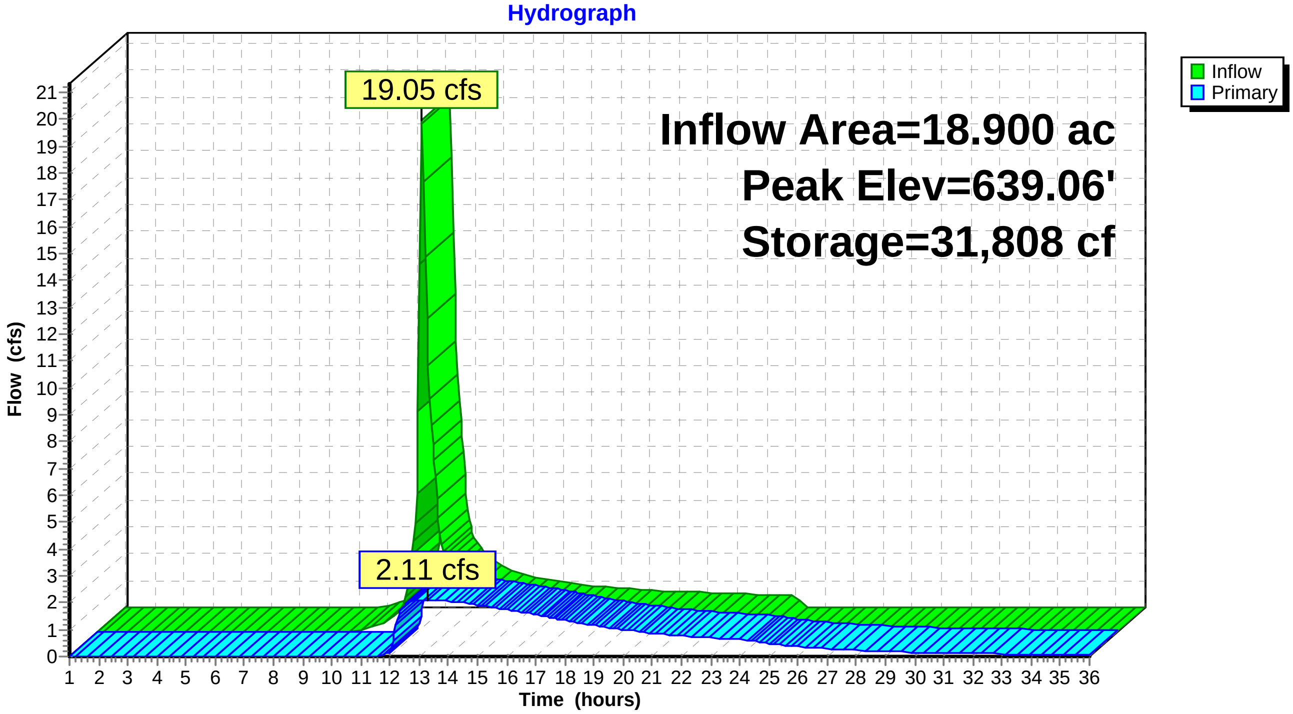
Volume	Invert	Avail.Storage	Storage Description
#1	638.00'	137,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
638.00	28,400	0	0
640.00	34,200	62,600	62,600
642.00	40,500	74,700	137,300

Device	Routing	Invert	Outlet Devices
#1	Primary	638.00'	**36.0" Round Culvert** X 2.00 L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 638.00' / 634.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	638.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	639.35'	**3.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	641.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.11 cfs @ 13.26 hrs HW=639.06' TW=625.30' (Dynamic Tailwater)
└1=**Culvert** (Passes 2.11 cfs of 15.72 cfs potential flow)
  ├2=**Orifice/Grate** (Orifice Controls 2.11 cfs @ 3.87 fps)
  ├3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PC6: POND C6



Summary for Pond PC7: POND C7

Inflow Area = 21.300 ac, 20.75% Impervious, Inflow Depth = 1.22" for 1-yr event
Inflow = 27.22 cfs @ 12.12 hrs, Volume= 2.161 af
Outflow = 2.09 cfs @ 13.71 hrs, Volume= 1.971 af, Atten= 92%, Lag= 95.8 min
Primary = 2.09 cfs @ 13.71 hrs, Volume= 1.971 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 661.05' @ 13.71 hrs Surf.Area= 47,426 sf Storage= 47,945 cf

Plug-Flow detention time= 349.1 min calculated for 1.971 af (91% of inflow)
Center-of-Mass det. time= 303.3 min (1,161.9 - 858.6)

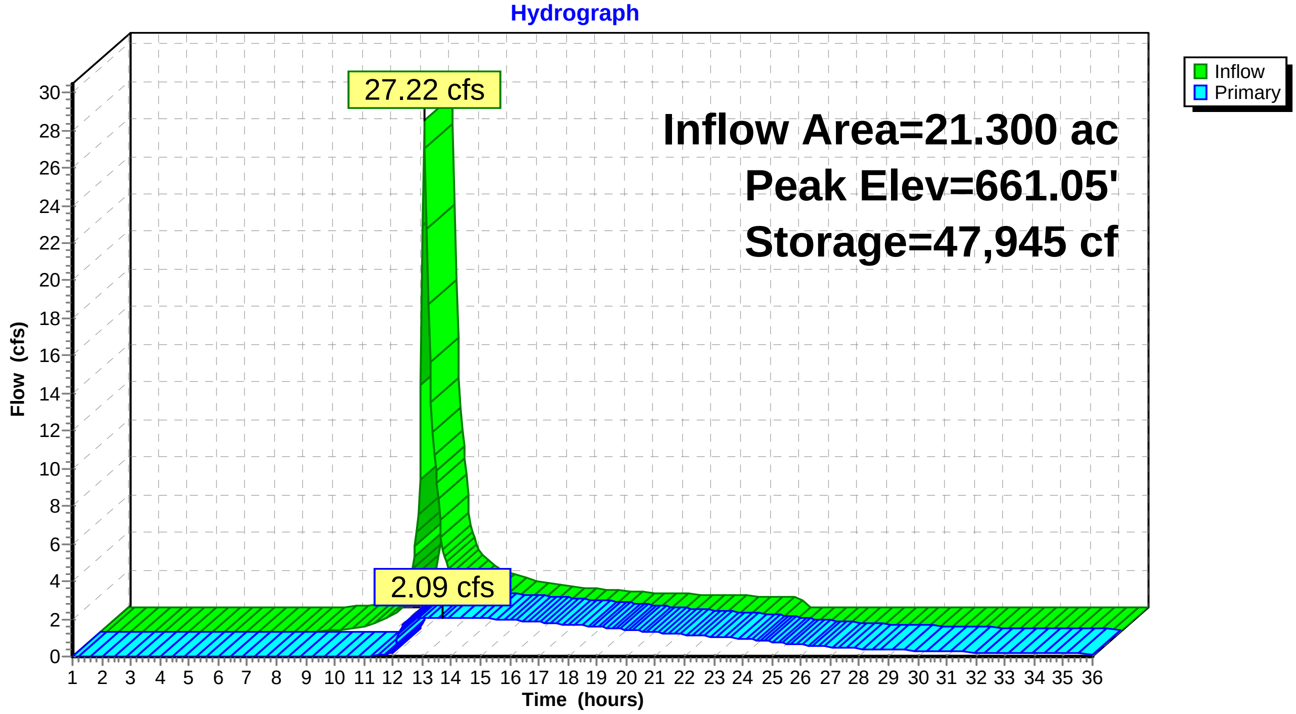
Volume	Invert	Avail.Storage	Storage Description
#1	660.00'	203,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
660.00	43,800	0	0
662.00	50,700	94,500	94,500
664.00	58,000	108,700	203,200

Device	Routing	Invert	Outlet Devices
#1	Primary	660.00'	**36.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 660.00' / 656.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	660.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	661.30'	**6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.6' Crest Height
#4	Device 1	663.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.09 cfs @ 13.71 hrs HW=661.05' TW=645.27' (Dynamic Tailwater)
1=**Culvert** (Passes 2.09 cfs of 7.71 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 2.09 cfs @ 3.84 fps)
3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PC7: POND C7



Summary for Pond PE2: POND E2

Inflow Area = 8.900 ac, 21.80% Impervious, Inflow Depth = 1.35" for 1-yr event
Inflow = 10.26 cfs @ 12.21 hrs, Volume= 1.002 af
Outflow = 1.44 cfs @ 13.12 hrs, Volume= 0.965 af, Atten= 86%, Lag= 54.6 min
Primary = 1.44 cfs @ 13.12 hrs, Volume= 0.965 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 589.07' @ 13.12 hrs Surf.Area= 20,273 sf Storage= 20,357 cf

Plug-Flow detention time= 231.1 min calculated for 0.965 af (96% of inflow)
Center-of-Mass det. time= 210.3 min (1,066.4 - 856.1)

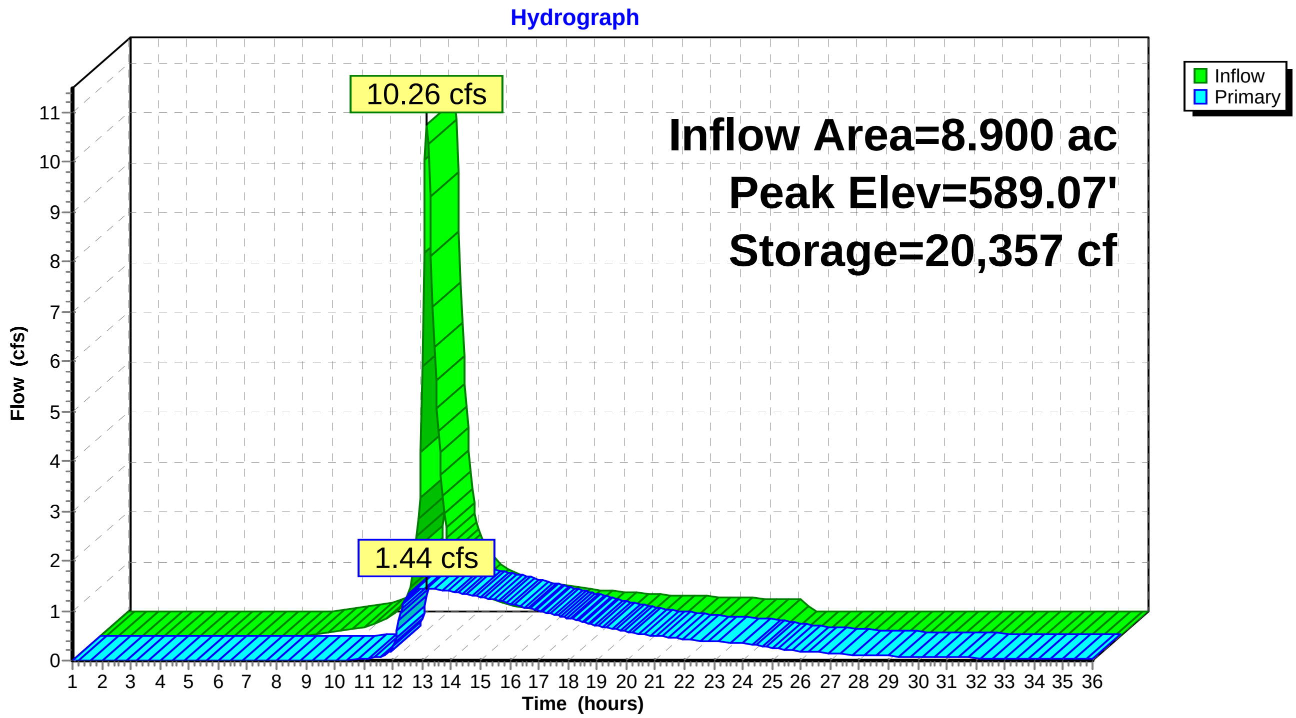
Volume	Invert	Avail.Storage	Storage Description
#1	588.00'	90,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
588.00	17,700	0	0
590.00	22,500	40,200	40,200
592.00	27,900	50,400	90,600

Device	Routing	Invert	Outlet Devices
#1	Primary	588.00'	**30.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 588.00' / 587.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	588.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	589.30'	**1.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	591.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.44 cfs @ 13.12 hrs HW=589.07' TW=0.00' (Dynamic Tailwater)
└─1=**Culvert** (Passes 1.44 cfs of 6.61 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 1.44 cfs @ 4.14 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PE2: POND E2



Time span=1.00-36.00 hrs, dt=0.05 hrs, 701 points
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 A: Basin 1 Runoff Area=37.220 ac 2.79% Impervious Runoff Depth=1.99"
Flow Length=2,020' Tc=29.1 min CN=71 Runoff=44.70 cfs 6.169 af

Subcatchment B1: BAIN 1 Runoff Area=60.690 ac 10.25% Impervious Runoff Depth=2.57"
Flow Length=4,940' Tc=16.1 min CN=78 Runoff=126.79 cfs 12.988 af

Subcatchment B10: BASIN 10 Runoff Area=17.050 ac 14.37% Impervious Runoff Depth=2.66"
Flow Length=1,250' Tc=21.1 min CN=79 Runoff=32.77 cfs 3.774 af

Subcatchment B11: BASIN B11 Runoff Area=12.800 ac 3.13% Impervious Runoff Depth=2.93"
Flow Length=840' Tc=11.4 min CN=82 Runoff=35.65 cfs 3.123 af

Subcatchment B12: BASIN B12 Runoff Area=24.400 ac 19.67% Impervious Runoff Depth=2.57"
Flow Length=2,130' Tc=13.2 min CN=78 Runoff=55.59 cfs 5.222 af

Subcatchment B13: BASIN B13 Runoff Area=24.300 ac 0.00% Impervious Runoff Depth=2.15"
Flow Length=2,880' Tc=25.5 min CN=73 Runoff=33.96 cfs 4.350 af

Subcatchment B14: BASIN 14 Runoff Area=9.400 ac 14.89% Impervious Runoff Depth=3.21"
Flow Length=1,060' Tc=18.5 min CN=85 Runoff=23.14 cfs 2.516 af

Subcatchment B15: BASIN B15 Runoff Area=6.100 ac 10.66% Impervious Runoff Depth=3.12"
Flow Length=615' Tc=11.6 min CN=84 Runoff=17.89 cfs 1.584 af

Subcatchment B16: (new Subcat) Runoff Area=3.650 ac 2.74% Impervious Runoff Depth=3.02"
Flow Length=100' Slope=0.1200 '/' Tc=10.0 min CN=83 Runoff=10.98 cfs 0.919 af

Subcatchment B2: BASIN 2 Runoff Area=5.400 ac 9.26% Impervious Runoff Depth=3.21"
Flow Length=770' Tc=13.4 min CN=85 Runoff=15.29 cfs 1.445 af

Subcatchment B3: BASIN B3 Runoff Area=24.350 ac 20.74% Impervious Runoff Depth=3.21"
Flow Length=970' Tc=17.2 min CN=85 Runoff=61.90 cfs 6.516 af

Subcatchment B4: BASIN 4 Runoff Area=10.100 ac 43.56% Impervious Runoff Depth=3.51"
Flow Length=760' Tc=10.8 min CN=88 Runoff=34.05 cfs 2.952 af

Subcatchment B5: BASIN 5 Runoff Area=4.500 ac 26.44% Impervious Runoff Depth=3.31"
Flow Length=580' Tc=8.8 min CN=86 Runoff=15.45 cfs 1.241 af

Subcatchment B6: BASIN 7 Runoff Area=8.900 ac 36.74% Impervious Runoff Depth=3.51"
Flow Length=560' Tc=12.0 min CN=88 Runoff=28.78 cfs 2.602 af

Subcatchment B7: BASIN 6 Runoff Area=13.650 ac 28.57% Impervious Runoff Depth=2.75"
Flow Length=390' Tc=11.4 min CN=80 Runoff=35.64 cfs 3.123 af

Subcatchment B8: BASIN B8 Runoff Area=11.300 ac 3.10% Impervious Runoff Depth=2.66"
Flow Length=2,065' Tc=22.3 min CN=79 Runoff=21.16 cfs 2.501 af

Subcatchment B9: BASIN 9
Runoff Area=5.900 ac 23.73% Impervious Runoff Depth=3.41"
Flow Length=1,500' Tc=21.0 min CN=87 Runoff=14.48 cfs 1.675 af

Subcatchment C1: C1
Runoff Area=9.150 ac 48.74% Impervious Runoff Depth=3.61"
Flow Length=950' Tc=9.4 min CN=89 Runoff=32.73 cfs 2.752 af

Subcatchment C10: BASIN 10
Runoff Area=21.400 ac 11.45% Impervious Runoff Depth=3.02"
Flow Length=2,180' Tc=15.3 min CN=83 Runoff=54.46 cfs 5.387 af

Subcatchment C11: BASIN C11
Runoff Area=11.150 ac 0.00% Impervious Runoff Depth=2.75"
Flow Length=1,060' Tc=21.6 min CN=80 Runoff=21.97 cfs 2.551 af

Subcatchment C12: (new Subcat)
Runoff Area=5.200 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=990' Tc=14.8 min CN=63 Runoff=5.58 cfs 0.608 af

Subcatchment C2: BASIN C2
Runoff Area=6.200 ac 32.26% Impervious Runoff Depth=3.31"
Flow Length=1,070' Tc=13.6 min CN=86 Runoff=17.95 cfs 1.709 af

Subcatchment C3: BASIN C3
Runoff Area=5.950 ac 0.00% Impervious Runoff Depth=2.75"
Flow Length=910' Tc=19.6 min CN=80 Runoff=12.22 cfs 1.361 af

Subcatchment C4: BASIN C4
Runoff Area=7.500 ac 22.27% Impervious Runoff Depth=3.02"
Flow Length=1,450' Tc=14.0 min CN=83 Runoff=19.69 cfs 1.888 af

Subcatchment C5N9: BASIN C5/9
Runoff Area=124.100 ac 0.00% Impervious Runoff Depth=2.31"
Flow Length=6,080' Tc=23.2 min CN=75 Runoff=196.39 cfs 23.911 af

Subcatchment C6: BASIN C6
Runoff Area=18.900 ac 12.65% Impervious Runoff Depth=2.84"
Flow Length=1,400' Tc=12.7 min CN=81 Runoff=48.28 cfs 4.466 af

Subcatchment C7: BASIN C7
Runoff Area=21.300 ac 20.75% Impervious Runoff Depth=3.12"
Flow Length=1,370' Tc=11.5 min CN=84 Runoff=62.72 cfs 5.530 af

Subcatchment C8: BASIN C8
Runoff Area=84.980 ac 0.55% Impervious Runoff Depth=2.40"
Flow Length=5,705' Tc=23.4 min CN=76 Runoff=139.28 cfs 16.969 af

Subcatchment D: (new Subcat)
Runoff Area=2.700 ac 0.00% Impervious Runoff Depth=2.57"
Flow Length=1,415' Tc=14.7 min CN=78 Runoff=5.90 cfs 0.578 af

Subcatchment E1: BASIN E1
Runoff Area=167.100 ac 0.00% Impervious Runoff Depth=2.48"
Flow Length=7,510' Tc=31.9 min CN=77 Runoff=243.87 cfs 34.554 af

Subcatchment E2: BASIN E2
Runoff Area=8.900 ac 21.80% Impervious Runoff Depth=3.31"
Flow Length=1,800' Tc=18.2 min CN=86 Runoff=22.70 cfs 2.454 af

Subcatchment F: BASIN F
Runoff Area=10.600 ac 0.00% Impervious Runoff Depth=2.48"
Flow Length=1,400' Tc=26.8 min CN=77 Runoff=16.88 cfs 2.192 af

Reach 11R: (new Reach)
Avg. Flow Depth=0.48' Max Vel=7.22 fps Inflow=6.17 cfs 1.742 af
n=0.025 L=230.0' S=0.0739 '/' Capacity=185.34 cfs Outflow=6.17 cfs 1.741 af

Reach AP1: ANALYSIS POINT
Inflow=325.45 cfs 60.501 af
Outflow=325.45 cfs 60.501 af

Reach AP2: ANALYSIS POINT
Inflow=425.50 cfs 66.376 af
Outflow=425.50 cfs 66.376 af

Reach AP3: (new Reach)
Inflow=5.90 cfs 0.578 af
Outflow=5.90 cfs 0.578 af

Reach AP4: ANALYSIS POINT
Inflow=248.40 cfs 36.964 af
Outflow=248.40 cfs 36.964 af

Reach RB1: (new Reach)
Avg. Flow Depth=2.05' Max Vel=13.13 fps Inflow=193.94 cfs 40.210 af
n=0.025 L=1,055.0' S=0.0360 '/' Capacity=783.31 cfs Outflow=193.48 cfs 40.198 af

Reach RB10: (new Reach)
Avg. Flow Depth=1.01' Max Vel=16.05 fps Inflow=37.61 cfs 9.155 af
n=0.020 L=180.0' S=0.1000 '/' Capacity=344.79 cfs Outflow=37.61 cfs 9.155 af

Reach RB11: (new Reach)
Avg. Flow Depth=0.75' Max Vel=12.58 fps Inflow=23.14 cfs 2.516 af
n=0.020 L=1,200.0' S=0.0833 '/' Capacity=179.58 cfs Outflow=23.03 cfs 2.516 af

Reach RB12: (new Reach)
Avg. Flow Depth=1.03' Max Vel=5.38 fps Inflow=17.89 cfs 1.584 af
n=0.020 L=600.0' S=0.0100 '/' Capacity=158.46 cfs Outflow=17.40 cfs 1.584 af

Reach RB2: (new Reach)
Avg. Flow Depth=0.27' Max Vel=4.89 fps Inflow=1.91 cfs 1.147 af
n=0.025 L=450.0' S=0.0711 '/' Capacity=132.71 cfs Outflow=1.91 cfs 1.146 af

Reach RB3: (new Reach)
Avg. Flow Depth=1.84' Max Vel=14.06 fps Inflow=174.91 cfs 33.838 af
n=0.025 L=885.0' S=0.0475 '/' Capacity=899.13 cfs Outflow=174.83 cfs 33.829 af

Reach RB4: (new Reach)
Avg. Flow Depth=1.06' Max Vel=4.62 fps Inflow=35.57 cfs 4.176 af
n=0.025 L=400.0' S=0.0100 '/' Capacity=139.80 cfs Outflow=35.47 cfs 4.176 af

Reach RB5: (new Reach)
Avg. Flow Depth=2.02' Max Vel=5.01 fps Inflow=120.93 cfs 24.059 af
n=0.025 L=800.0' S=0.0050 '/' Capacity=516.81 cfs Outflow=119.98 cfs 24.042 af

Reach RB6: (new Reach)
Avg. Flow Depth=1.72' Max Vel=7.34 fps Inflow=82.61 cfs 17.805 af
n=0.025 L=285.0' S=0.0140 '/' Capacity=488.96 cfs Outflow=82.59 cfs 17.802 af

Reach RB7: (new Reach)
Avg. Flow Depth=1.13' Max Vel=6.53 fps Inflow=39.85 cfs 5.585 af
n=0.025 L=960.0' S=0.0187 '/' Capacity=565.16 cfs Outflow=39.51 cfs 5.583 af

Reach RB8: (new Reach)
Avg. Flow Depth=1.20' Max Vel=10.44 fps Inflow=42.01 cfs 10.074 af
n=0.020 L=190.0' S=0.0316 '/' Capacity=281.59 cfs Outflow=42.00 cfs 10.073 af

Reach RC1: (new Reach)
Avg. Flow Depth=2.99' Max Vel=19.86 fps Inflow=411.66 cfs 63.626 af
n=0.020 L=390.0' S=0.0359 '/' Capacity=748.39 cfs Outflow=411.71 cfs 63.624 af

Reach RC10: (new Reach)
Avg. Flow Depth=0.75' Max Vel=4.81 fps Inflow=14.54 cfs 5.345 af
n=0.030 L=600.0' S=0.0250 '/' Capacity=272.18 cfs Outflow=14.52 cfs 5.344 af

Reach RC11: (new Reach)
Inflow=5.58 cfs 0.608 af
Outflow=5.58 cfs 0.608 af

Reach RC2: (new Reach) Avg. Flow Depth=2.41' Max Vel=26.36 fps Inflow=395.33 cfs 59.026 af
n=0.020 L=370.0' S=0.0811 '/' Capacity=1,124.76 cfs Outflow=395.38 cfs 59.025 af

Reach RC3: (new Reach) Avg. Flow Depth=2.52' Max Vel=23.34 fps Inflow=374.00 cfs 56.477 af
n=0.020 L=480.0' S=0.0604 '/' Capacity=970.91 cfs Outflow=374.04 cfs 56.475 af

Reach RC4: (new Reach) Avg. Flow Depth=1.78' Max Vel=21.15 fps Inflow=154.11 cfs 22.250 af
n=0.025 L=470.0' S=0.1277 '/' Capacity=452.93 cfs Outflow=154.11 cfs 22.250 af

Reach RC5: (new Reach) Avg. Flow Depth=0.76' Max Vel=7.19 fps Inflow=19.16 cfs 5.283 af
n=0.030 L=360.0' S=0.0556 '/' Capacity=620.69 cfs Outflow=19.16 cfs 5.282 af

Reach RC6: (new Reach) Avg. Flow Depth=0.97' Max Vel=11.18 fps Inflow=32.87 cfs 10.317 af
n=0.025 L=700.0' S=0.0729 '/' Capacity=342.17 cfs Outflow=32.86 cfs 10.316 af

Reach RC7: (new Reach) Avg. Flow Depth=0.80' Max Vel=9.31 fps Inflow=16.81 cfs 4.365 af
n=0.030 L=300.0' S=0.0967 '/' Capacity=176.63 cfs Outflow=16.81 cfs 4.365 af

Reach RC8: (new Reach) Avg. Flow Depth=0.58' Max Vel=8.59 fps Inflow=14.52 cfs 5.344 af
n=0.025 L=620.0' S=0.0790 '/' Capacity=468.67 cfs Outflow=14.51 cfs 5.344 af

Pond 1P: PIPE Peak Elev=556.09' Inflow=35.57 cfs 4.176 af
36.0" Round Culvert n=0.012 L=130.0' S=0.0115 '/' Outflow=35.57 cfs 4.176 af

Pond 2P: (new Pond) Peak Elev=501.60' Inflow=14.34 cfs 3.103 af
30.0" Round Culvert n=0.012 L=300.0' S=0.0133 '/' Outflow=14.34 cfs 3.103 af

Pond 3P: (new Pond) Peak Elev=552.67' Storage=34,970 cf Inflow=19.69 cfs 1.888 af
Outflow=6.17 cfs 1.742 af

Pond 7P: PIPE Peak Elev=511.50' Inflow=395.33 cfs 59.026 af
72.0" Round Culvert x 2.00 n=0.012 L=90.0' S=0.0111 '/' Outflow=395.33 cfs 59.026 af

Pond 9P: (new Pond) Peak Elev=610.16' Inflow=154.11 cfs 22.250 af
60.0" Round Culvert n=0.012 L=290.0' S=0.0345 '/' Outflow=154.11 cfs 22.250 af

Pond 10P: (new Pond) Peak Elev=548.89' Inflow=219.97 cfs 34.227 af
60.0" Round Culvert x 2.00 n=0.012 L=295.0' S=0.0339 '/' Outflow=219.97 cfs 34.227 af

Pond 11P: PIPE Peak Elev=572.42' Inflow=42.01 cfs 10.074 af
48.0" Round Culvert n=0.012 L=180.0' S=0.0417 '/' Outflow=42.01 cfs 10.074 af

Pond 16P: PIPE Peak Elev=593.72' Inflow=37.61 cfs 9.155 af
36.0" Round Culvert x 2.00 n=0.012 L=300.0' S=0.0100 '/' Outflow=37.61 cfs 9.155 af

Pond L: LAKE Inflow=174.91 cfs 33.838 af
Primary=174.91 cfs 33.838 af

Pond PB11: (new Pond) Peak Elev=580.71' Storage=56,139 cf Inflow=53.69 cfs 5.638 af
Outflow=39.85 cfs 5.585 af

Pond PB19: (new Pond) Peak Elev=598.13' Storage=105,941 cf Inflow=55.59 cfs 5.222 af
Outflow=10.01 cfs 4.806 af

Pond PB2: (new Pond) Peak Elev=506.16' Storage=33,354 cf Inflow=15.29 cfs 1.445 af
Outflow=1.91 cfs 1.147 af

Pond PB3: (new Pond) Peak Elev=523.45' Storage=109,242 cf Inflow=61.90 cfs 6.516 af
Outflow=26.48 cfs 6.380 af

Pond PB4: POND Peak Elev=560.91' Storage=51,403 cf Inflow=34.05 cfs 2.952 af
Outflow=10.18 cfs 2.915 af

Pond PB5: (new Pond) Peak Elev=564.74' Storage=24,054 cf Inflow=15.45 cfs 1.241 af
Outflow=3.70 cfs 1.121 af

Pond PB6: PB7 Peak Elev=658.80' Storage=47,451 cf Inflow=28.78 cfs 2.602 af
Outflow=9.73 cfs 2.483 af

Pond PB7: (new Pond) Peak Elev=562.12' Storage=72,099 cf Inflow=35.64 cfs 3.123 af
Outflow=3.75 cfs 2.149 af

Pond PC10: POND C10 Peak Elev=674.24' Storage=90,510 cf Inflow=54.46 cfs 5.387 af
Outflow=14.54 cfs 5.345 af

Pond PC2: POND C2 Peak Elev=500.67' Storage=35,461 cf Inflow=17.95 cfs 1.709 af
Outflow=4.03 cfs 1.499 af

Pond PC6: POND C6 Peak Elev=640.29' Storage=72,619 cf Inflow=48.28 cfs 4.466 af
Outflow=16.81 cfs 4.365 af

Pond PC7: POND C7 Peak Elev=662.10' Storage=99,376 cf Inflow=62.72 cfs 5.530 af
Outflow=19.16 cfs 5.283 af

Pond PE2: POND E2 Peak Elev=590.24' Storage=45,658 cf Inflow=22.70 cfs 2.454 af
Outflow=6.02 cfs 2.410 af

Total Runoff Area = 784.840 ac Runoff Volume = 169.606 af Average Runoff Depth = 2.59"
92.75% Pervious = 727.920 ac 7.25% Impervious = 56.920 ac

Summary for Subcatchment A: Basin 1

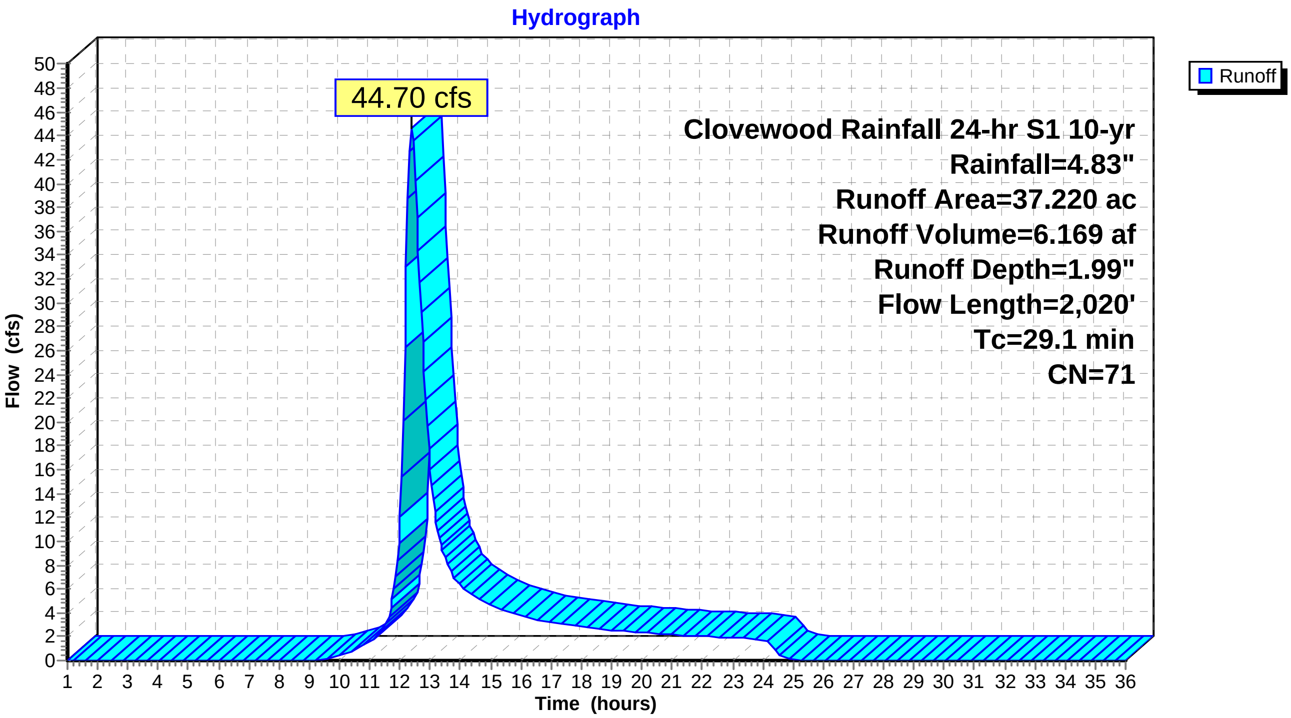
Runoff = 44.70 cfs @ 12.37 hrs, Volume= 6.169 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	7.350	89	Wetlands
*	1.040	98	Impervious Surfaces
	1.000	80	>75% Grass cover, Good, HSG D
	0.310	30	Woods, Good, HSG A
	1.240	55	Woods, Good, HSG B
	0.480	70	Woods, Good, HSG C
	5.970	77	Woods, Good, HSG D
	2.310	30	Brush, Good, HSG A
	3.810	48	Brush, Good, HSG B
	4.810	65	Brush, Good, HSG C
	8.040	73	Brush, Good, HSG D
*	0.040	75	Dirt roads, HSG A
*	0.100	84	Dirt roads, HSG B
*	0.030	88	Dirt roads, HSG C
*	0.690	90	Dirt roads, HSG D
	37.220	71	Weighted Average
	36.180		97.21% Pervious Area
	1.040		2.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	690	0.0200	2.28		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
2.7	690	0.0700	4.26		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
0.8	540	0.0400	10.91	152.70	Parabolic Channel,
					W=7.00' D=3.00' Area=14.0 sf Perim=9.6' n= 0.035
29.1	2,020	Total			

Subcatchment A: Basin 1



Summary for Subcatchment B1: BAIN 1

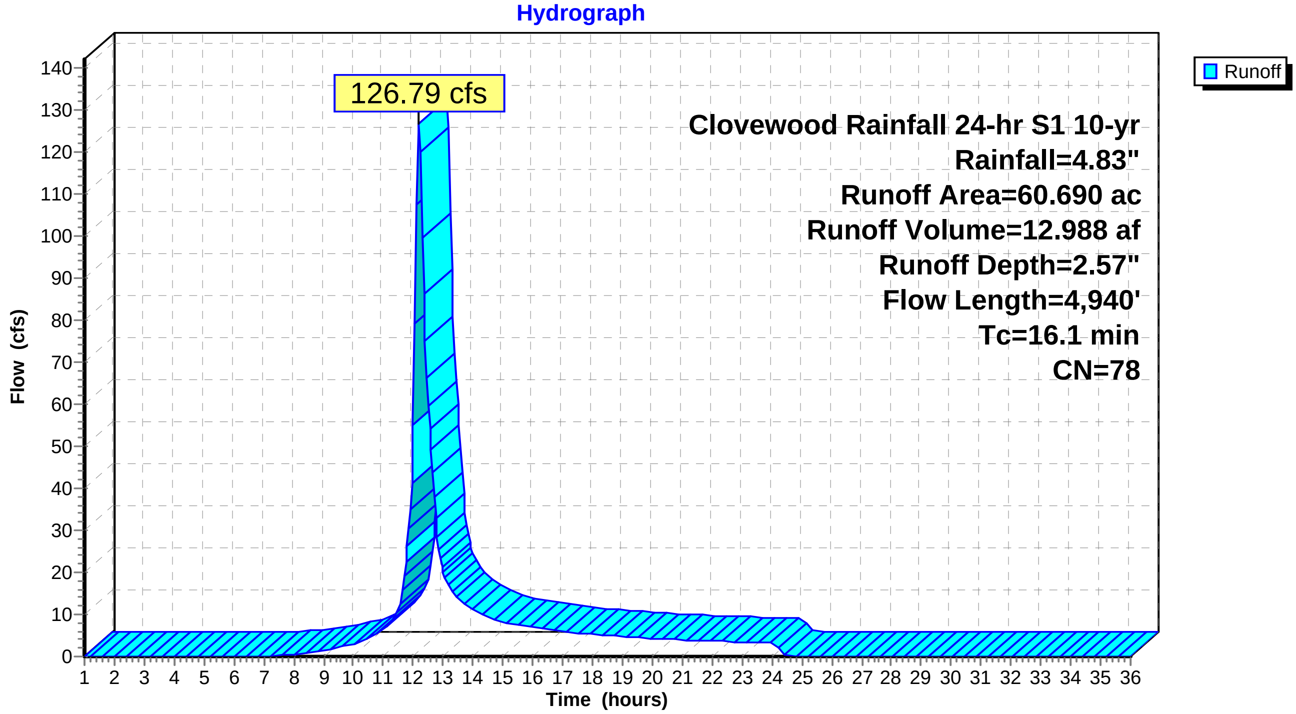
Runoff = 126.79 cfs @ 12.18 hrs, Volume= 12.988 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	3.820	98	WATER SURFACE
*	11.670	89	WETLANDS
*	1.550	35	OLD COURSE, A
*	0.500	90	DIRT ROAD
	20.000	77	Woods, Good, HSG D
*	3.000	85	LOTS, D
*	2.400	98	SHOPPING CENTER
	2.300	80	>75% Grass cover, Good, HSG D
	11.650	78	Meadow, non-grazed, HSG D
	2.000	30	Meadow, non-grazed, HSG A
	1.800	30	Woods, Good, HSG A
	60.690	78	Weighted Average
	54.470		89.75% Pervious Area
	6.220		10.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.7	2,900	0.0300	17.87	714.87	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
1.6	1,940	0.0400	20.64	825.46	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
16.1	4,940	Total			

Subcatchment B1: BAIN 1



Summary for Subcatchment B10: BASIN 10

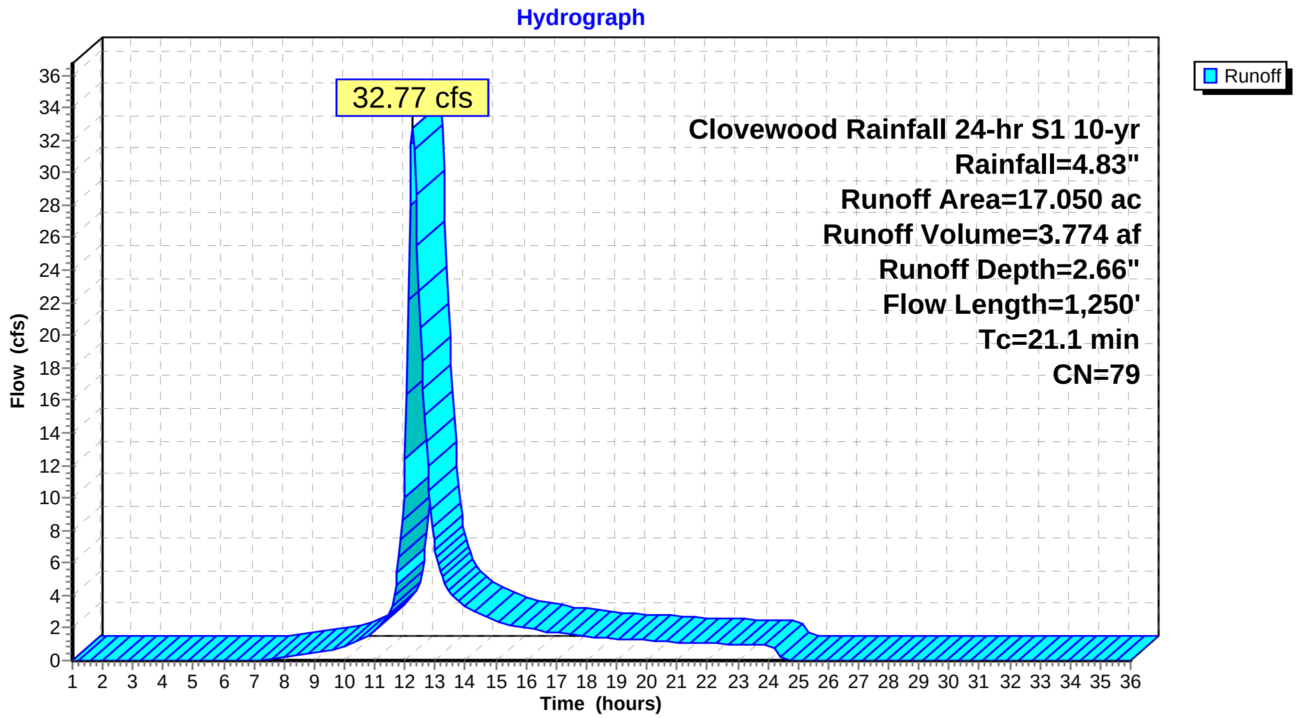
Runoff = 32.77 cfs @ 12.25 hrs, Volume= 3.774 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	5.350	85	LOTS, D
*	1.900	98	ROADS, WALKS
*	0.550	98	BUILDING, PARKING
	2.200	77	Woods, Good, HSG D
	1.300	39	>75% Grass cover, Good, HSG A
	2.500	78	Meadow, non-grazed, HSG D
	2.500	80	>75% Grass cover, Good, HSG D
*	0.450	60	LOTS, A
	0.300	30	Woods, Good, HSG A
	17.050	79	Weighted Average
	14.600		85.63% Pervious Area
	2.450		14.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.8	100	0.0250	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	250	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	700	0.0350	12.05	21.29	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.1	200	0.1000	23.49	156.61	**Parabolic Channel,** W=5.00' D=2.00' Area=6.7 sf Perim=6.7' n= 0.020
21.1	1,250	Total			

Subcatchment B10: BASIN 10



Summary for Subcatchment B11: BASIN B11

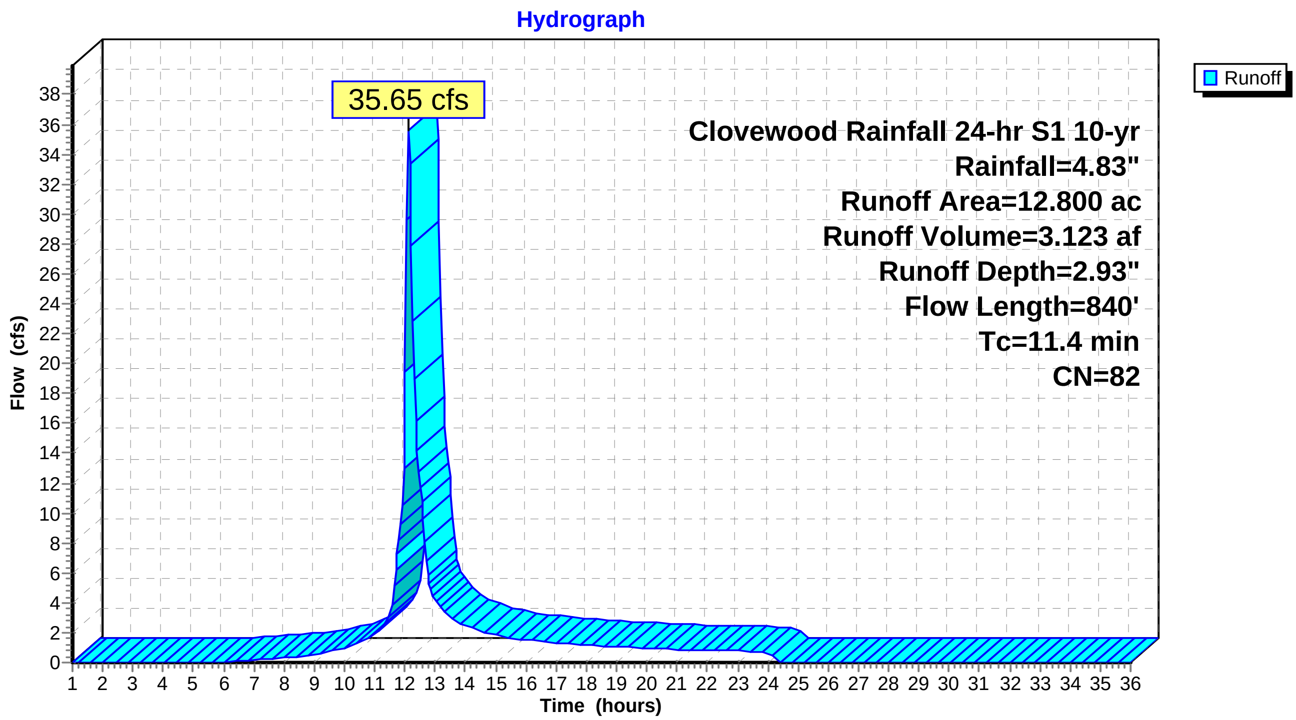
Runoff = 35.65 cfs @ 12.11 hrs, Volume= 3.123 af, Depth= 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.400	98	POND
*	5.600	85	LOTS, D
	2.300	80	>75% Grass cover, Good, HSG D
	4.500	77	Woods, Good, HSG D
	12.800	82	Weighted Average
	12.400		96.88% Pervious Area
	0.400		3.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	120	0.1500	6.24		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
0.3	620	0.1000	40.98	327.87	Parabolic Channel,
					W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.012
11.4	840	Total			

Subcatchment B11: BASIN B11



Summary for Subcatchment B12: BASIN B12

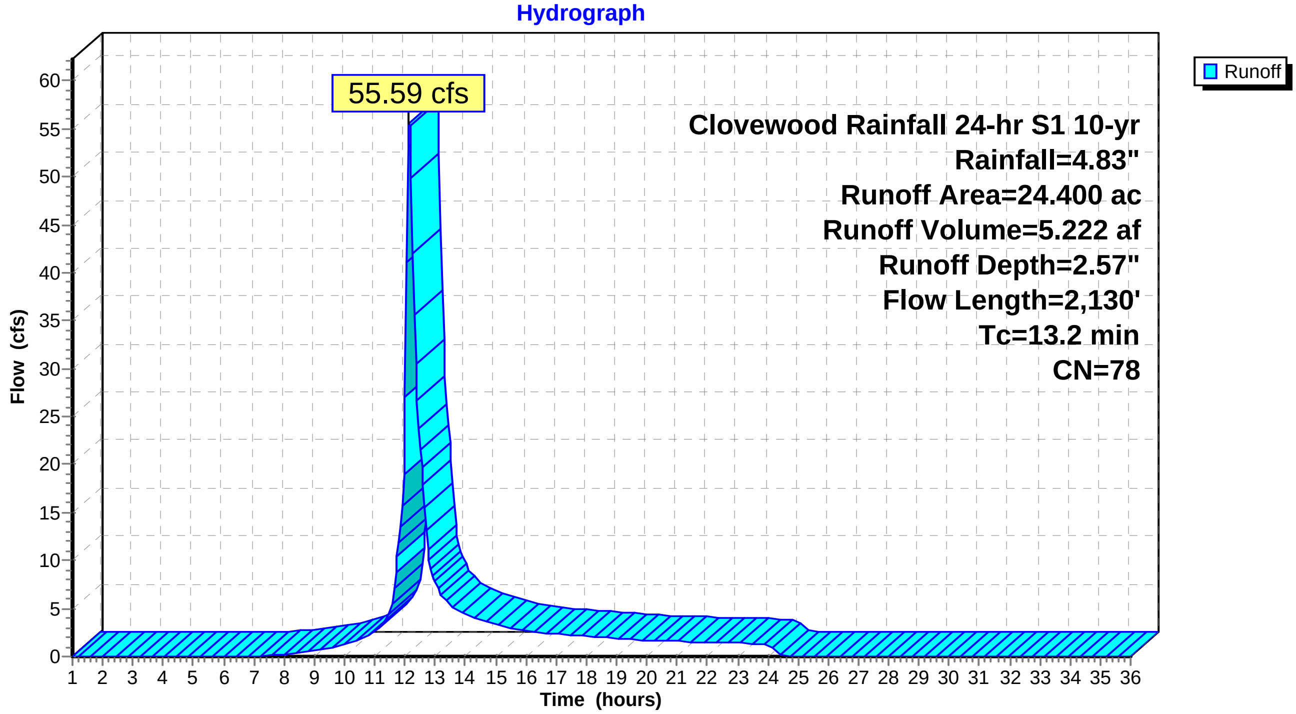
Runoff = 55.59 cfs @ 12.14 hrs, Volume= 5.222 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.750	98	POND
*	3.050	98	ROADS, WALKS
*	4.200	60	LOTS, A
	0.750	30	Woods, Good, HSG A
	0.550	39	>75% Grass cover, Good, HSG A
*	5.600	85	LOTS, D
*	1.000	98	BUILDING, PARKING
	2.000	80	>75% Grass cover, Good, HSG D
	6.500	77	Woods, Good, HSG D
	24.400	78	Weighted Average
	19.600		80.33% Pervious Area
	4.800		19.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	120	0.1500	6.24		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	120	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	930	0.0300	11.15	19.71	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.2	360	0.1600	27.74	147.92	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.020
0.4	200	0.0200	9.29	99.08	Parabolic Channel, W=8.00' D=2.00' Area=10.7 sf Perim=9.2' n= 0.025
0.2	300	0.1000	32.33	228.50	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
13.2	2,130	Total			

Subcatchment B12: BASIN B12



Summary for Subcatchment B13: BASIN B13

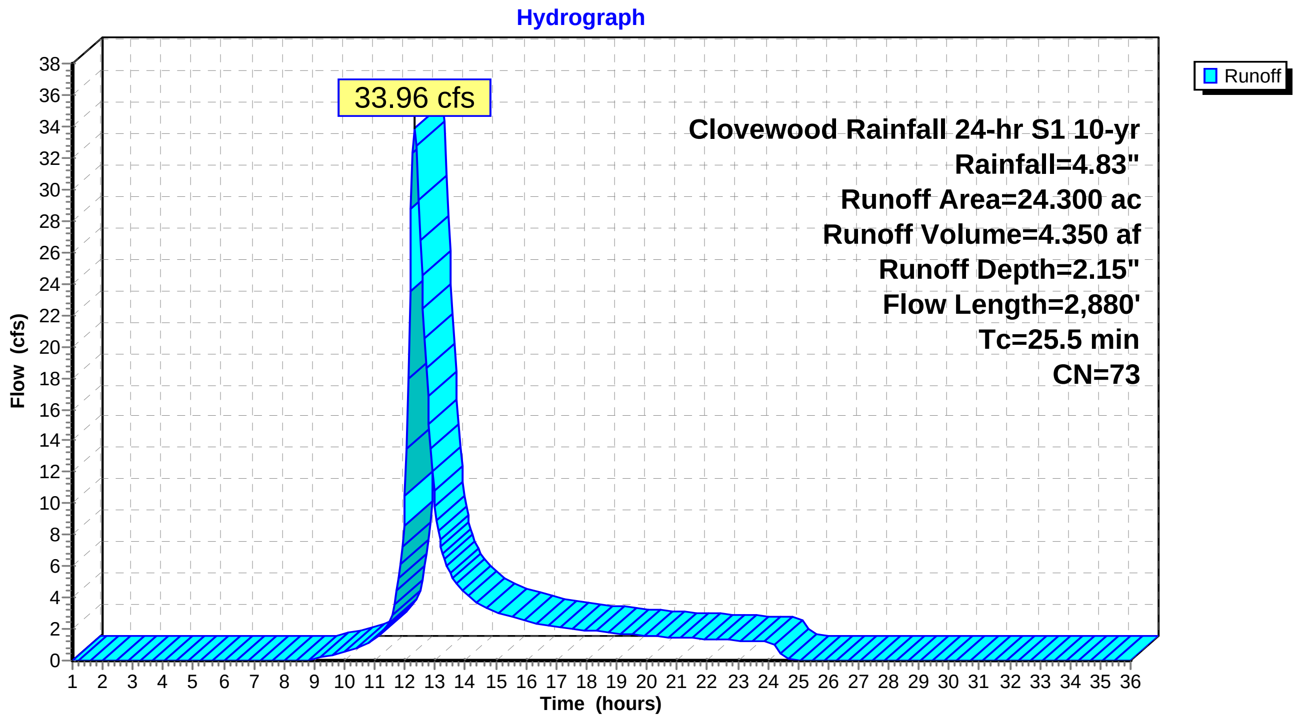
Runoff = 33.96 cfs @ 12.32 hrs, Volume= 4.350 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	2.400	60	LOTS, A
*	6.200	85	LOTS, D
*	1.420	89	WETLANDS
	0.900	39	>75% Grass cover, Good, HSG A
	2.000	30	Woods, Good, HSG A
	2.000	80	>75% Grass cover, Good, HSG D
	9.380	77	Woods, Good, HSG D
	24.300	73	Weighted Average
	24.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0700	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
12.7	2,480	0.0410	3.26		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	300	0.0100	12.38	155.61	**Pipe Channel,** 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.012
25.5	2,880	Total			

Subcatchment B13: BASIN B13



Summary for Subcatchment B14: BASIN 14

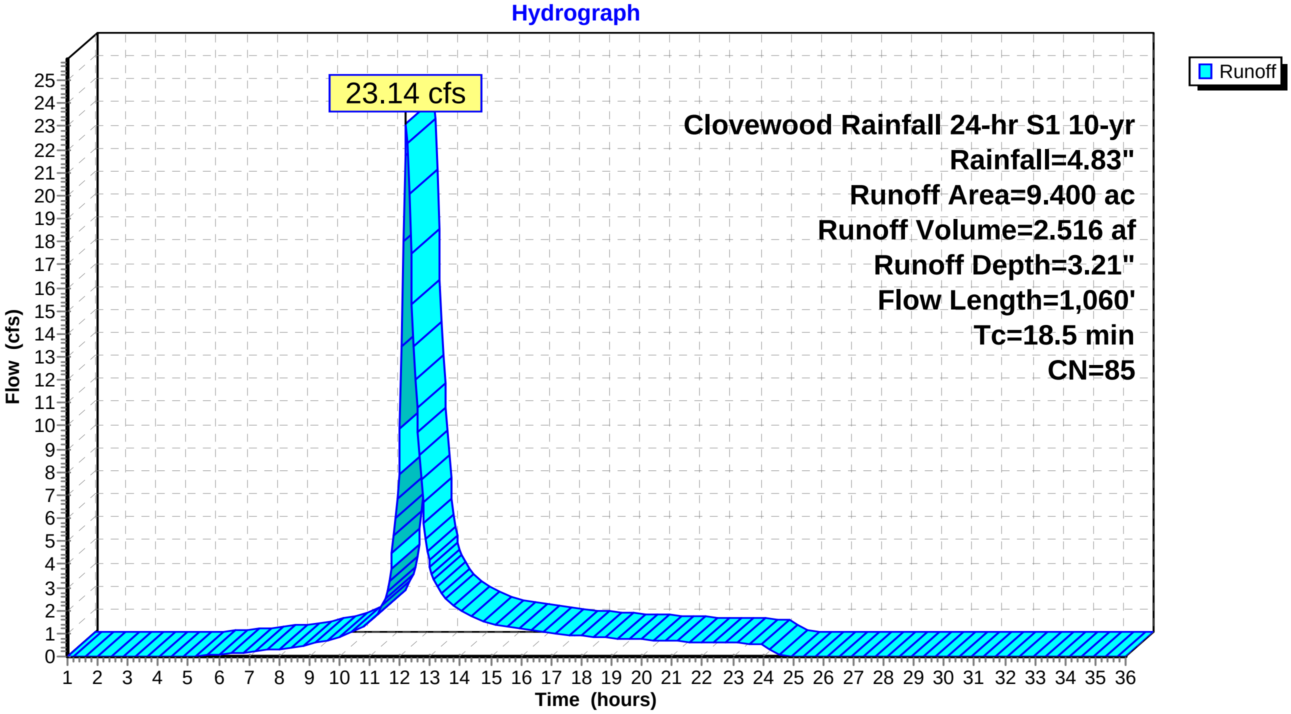
Runoff = 23.14 cfs @ 12.21 hrs, Volume= 2.516 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	5.400	85	LOTS, D
*	1.400	98	ROADS, WALKS
	0.500	80	>75% Grass cover, Good, HSG D
	2.100	77	Woods, Good, HSG D
	9.400	85	Weighted Average
	8.000		85.11% Pervious Area
	1.400		14.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	700	0.0900	4.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	80	0.0300	3.52		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	180	0.1000	24.67	77.50	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
18.5	1,060	Total			

Subcatchment B14: BASIN 14



Summary for Subcatchment B15: BASIN B15

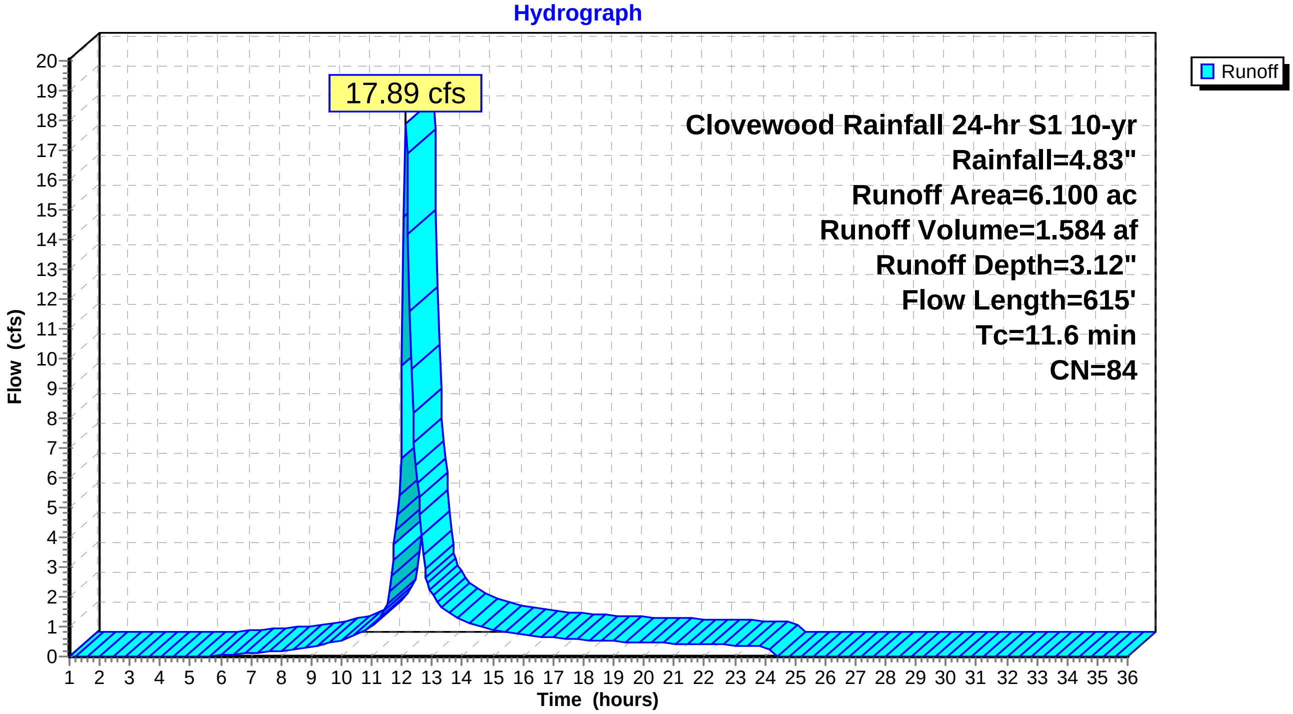
Runoff = 17.89 cfs @ 12.11 hrs, Volume= 1.584 af, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	3.050	85	LOTS, D
*	0.400	98	ROADS, WALKS
*	0.250	98	BUILDING
	1.900	80	>75% Grass cover, Good, HSG D
	0.500	77	Woods, Good, HSG D
	6.100	84	Weighted Average
	5.450		89.34% Pervious Area
	0.650		10.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	215	0.1600	6.44		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.2	300	0.0500	22.86	161.57	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.6	615	Total			

Subcatchment B15: BASIN B15



Summary for Subcatchment B16: (new Subcat)

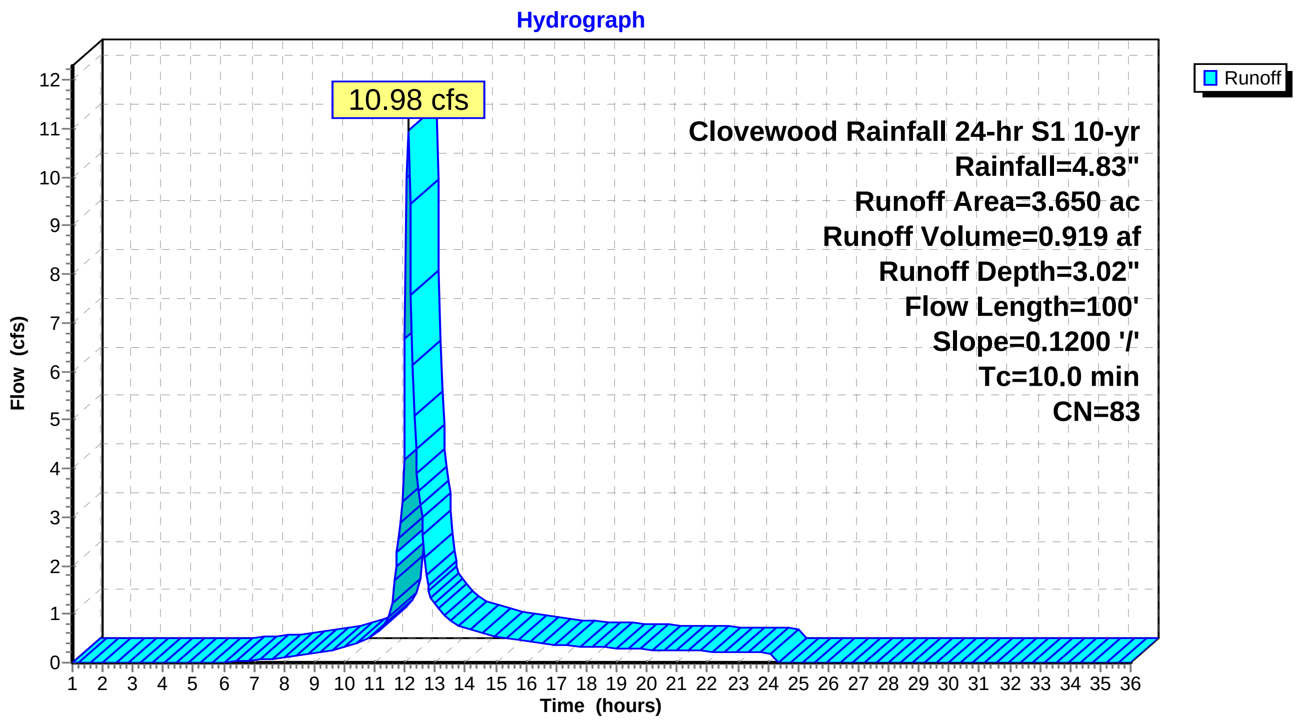
Runoff = 10.98 cfs @ 12.09 hrs, Volume= 0.919 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	2.100	85	LOTS, D
*	0.100	98	PARKING
	0.500	80	>75% Grass cover, Good, HSG D
	0.950	77	Woods, Good, HSG D
	3.650	83	Weighted Average
	3.550		97.26% Pervious Area
	0.100		2.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"

Subcatchment B16: (new Subcat)



Summary for Subcatchment B2: BASIN 2

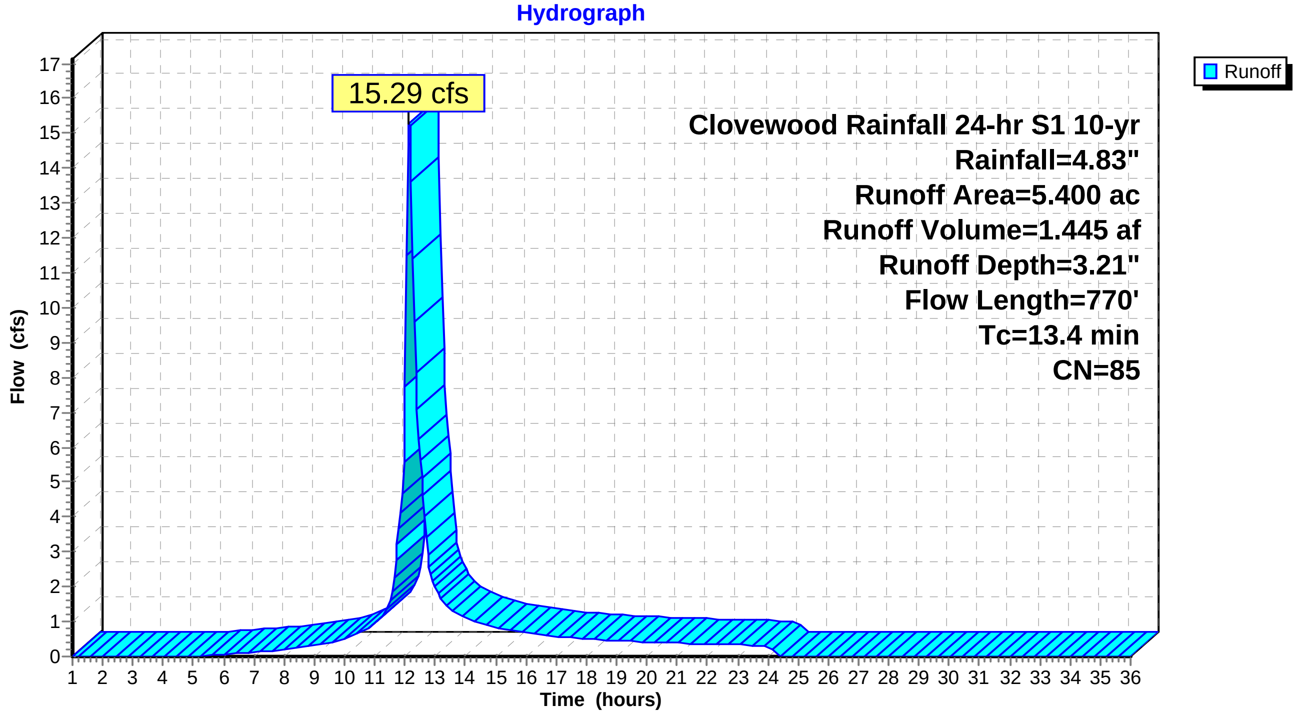
Runoff = 15.29 cfs @ 12.14 hrs, Volume= 1.445 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.500	98	ROADS, WALKS
	0.900	77	Woods, Good, HSG D
	0.400	80	>75% Grass cover, Good, HSG D
*	3.600	85	LOTS, D
	5.400	85	Weighted Average
	4.900		90.74% Pervious Area
	0.500		9.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	350	0.1500	6.24		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.5	150	0.0600	4.97		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	170	0.0600	15.77	27.87	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
13.4	770	Total			

Subcatchment B2: BASIN 2



Summary for Subcatchment B3: BASIN B3

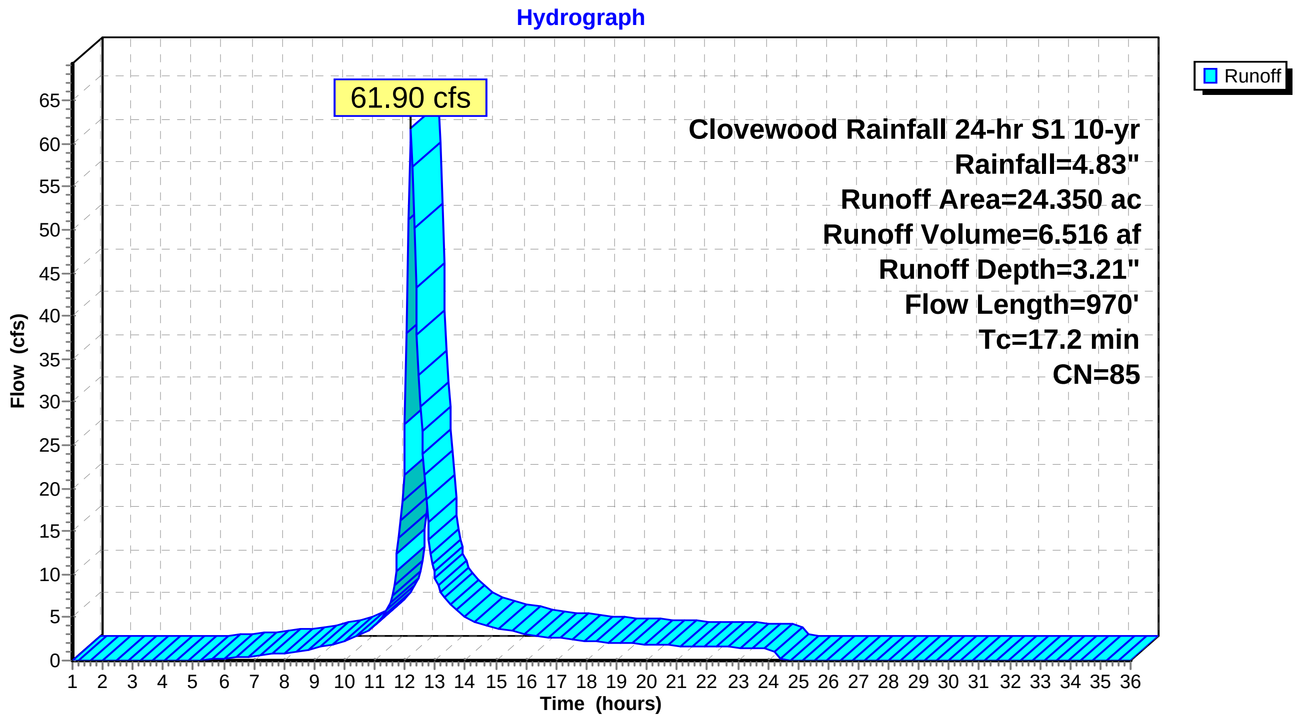
Runoff = 61.90 cfs @ 12.19 hrs, Volume= 6.516 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.600	98	POND
*	0.300	30	Meadow, non-grazed, HSG A
*	4.450	98	ROADS, WALKS
	1.500	80	>75% Grass cover, Good, HSG D
	4.500	77	Woods, Good, HSG D
*	13.000	85	LOTS, D
	24.350	85	Weighted Average
	19.300		79.26% Pervious Area
	5.050		20.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	220	0.0800	4.55		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	650	0.0500	14.40	25.45	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.2	970	Total			

Subcatchment B3: BASIN B3



Summary for Subcatchment B4: BASIN 4

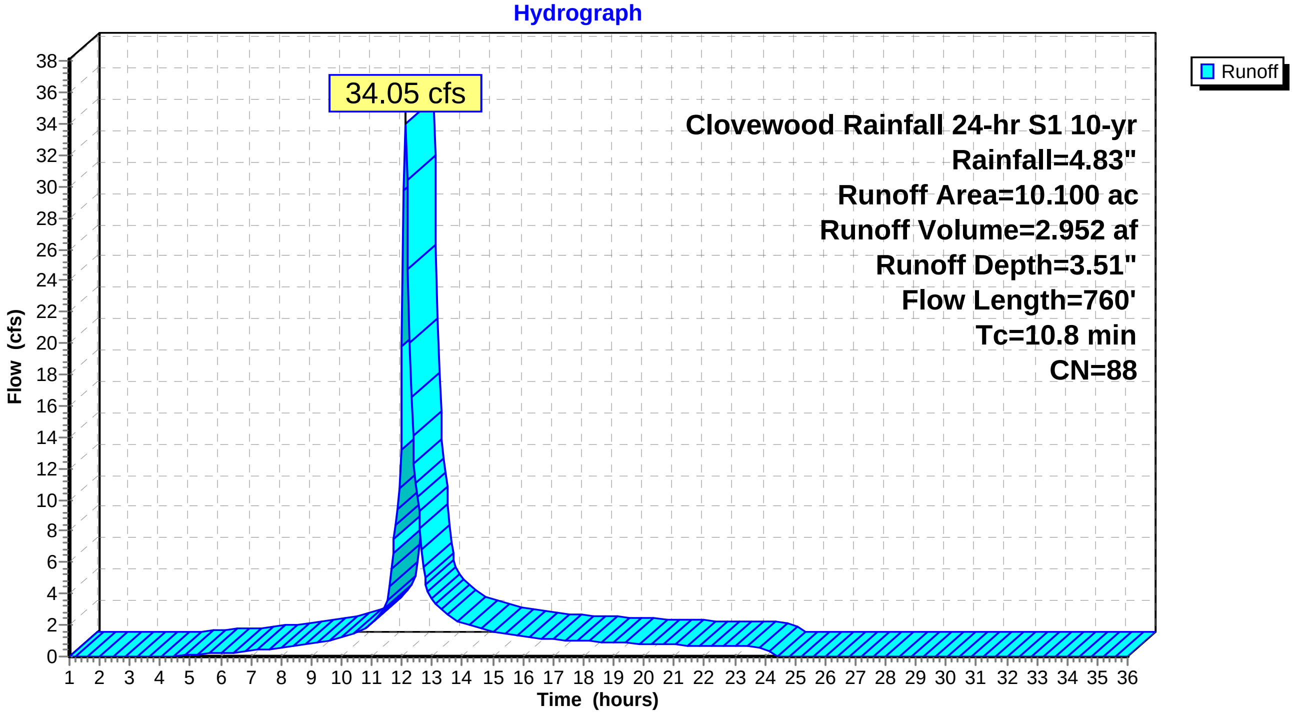
Runoff = 34.05 cfs @ 12.10 hrs, Volume= 2.952 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.350	98	POND
*	0.350	98	ROADS, WALKS
*	2.000	85	LOTS, D
*	0.500	98	BUILDINGS
*	0.200	98	PARKING
*	3.000	98	FUTURE DEV
	1.700	80	>75% Grass cover, Good, HSG D
	2.000	77	Woods, Good, HSG D
	10.100	88	Weighted Average
	5.700		56.44% Pervious Area
	4.400		43.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1300	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	360	0.0150	7.62	60.95	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
0.3	300	0.0700	17.04	30.11	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
10.8	760	Total			

Subcatchment B4: BASIN 4



Summary for Subcatchment B5: BASIN 5

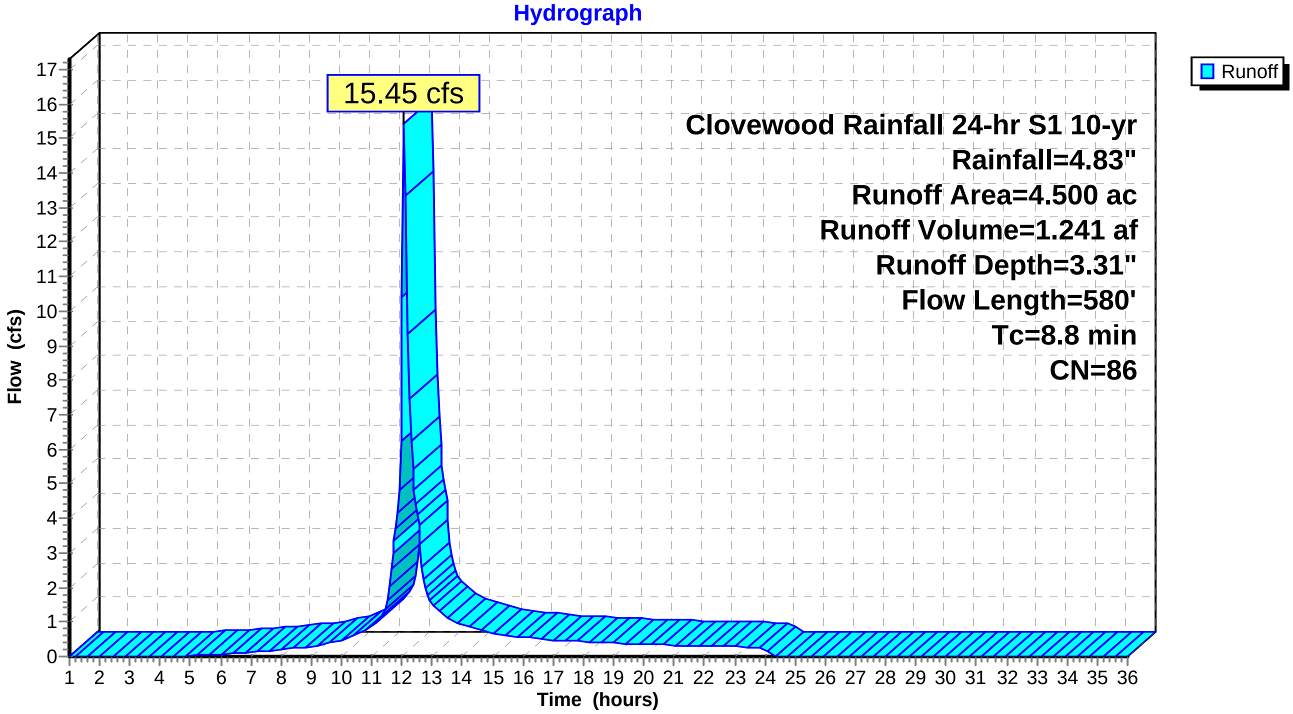
Runoff = 15.45 cfs @ 12.07 hrs, Volume= 1.241 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.340	98	ROADS, WALKS
*	0.150	98	POND
*	0.700	98	PARKING
*	1.800	85	LOTS, D
	0.700	80	>75% Grass cover, Good, HSG D
	0.810	77	Woods, Good, HSG D
	4.500	86	Weighted Average
	3.310		73.56% Pervious Area
	1.190		26.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.2000	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	130	0.1800	6.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.3	350	0.0700	17.04	30.11	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
8.8	580	Total			

Subcatchment B5: BASIN 5



Summary for Subcatchment B6: BASIN 7

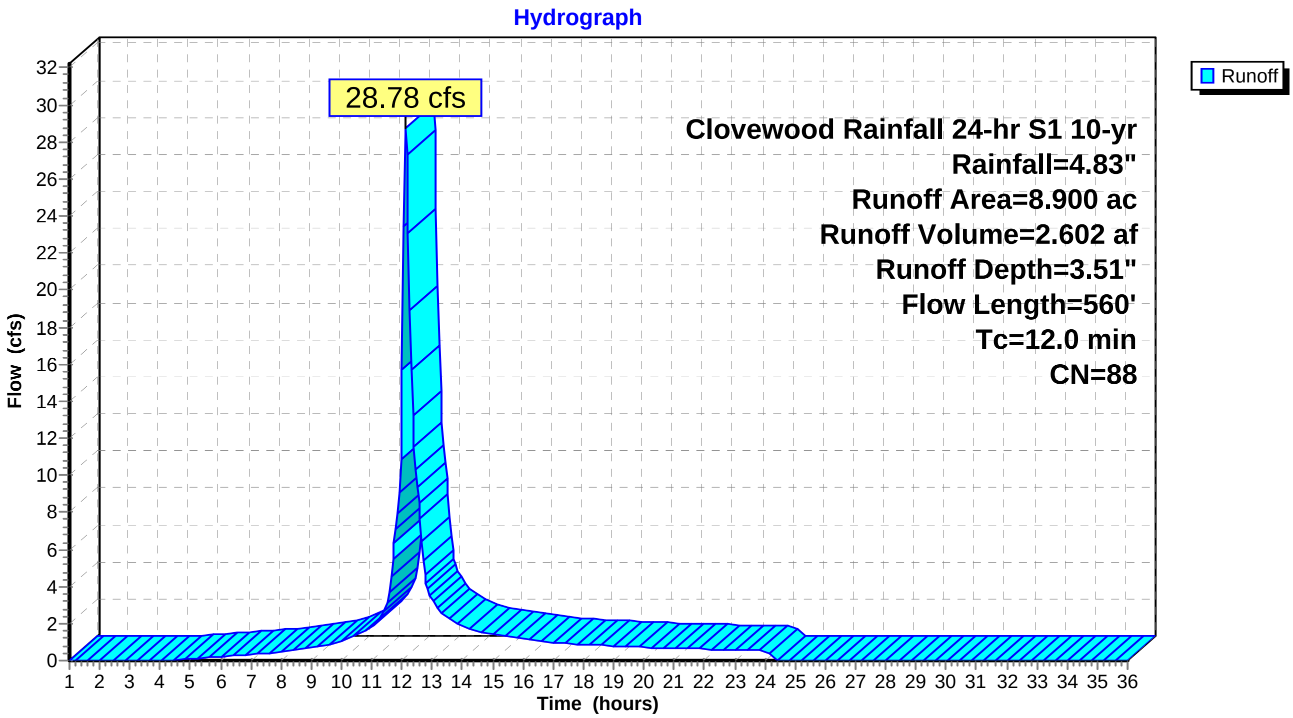
Runoff = 28.78 cfs @ 12.12 hrs, Volume= 2.602 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.850	98	ROADS, WLAKS
*	0.420	98	POND
*	2.800	85	LOTS, D
*	2.000	98	PARKING
	0.800	80	>75% Grass cover, Good, HSG D
	2.030	77	Woods, Good, HSG D
	8.900	88	Weighted Average
	5.630		63.26% Pervious Area
	3.270		36.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.1	290	0.0700	4.26		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	170	0.1000	24.67	77.50	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
12.0	560	Total			

Subcatchment B6: BASIN 7



Summary for Subcatchment B7: BASIN 6

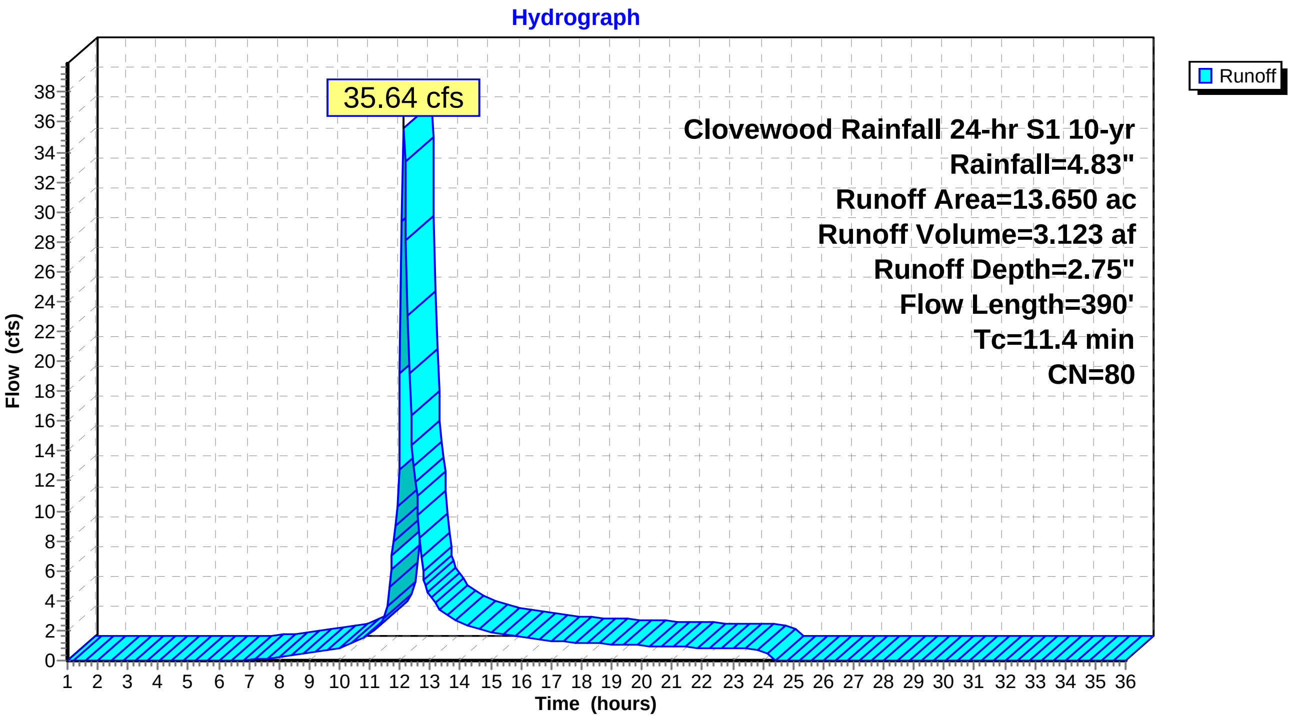
Runoff = 35.64 cfs @ 12.11 hrs, Volume= 3.123 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	3.200	98	ROADS, WALK
*	3.850	85	LOTS, D
*	0.700	98	POND
*	2.150	60	LOTS, A
	1.000	39	>75% Grass cover, Good, HSG A
	1.250	80	>75% Grass cover, Good, HSG D
	1.500	77	Woods, Good, HSG D
	13.650	80	Weighted Average
	9.750		71.43% Pervious Area
	3.900		28.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.0900	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.1	290	0.1000	32.33	228.50	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.4	390	Total			

Subcatchment B7: BASIN 6



Summary for Subcatchment B8: BASIN B8

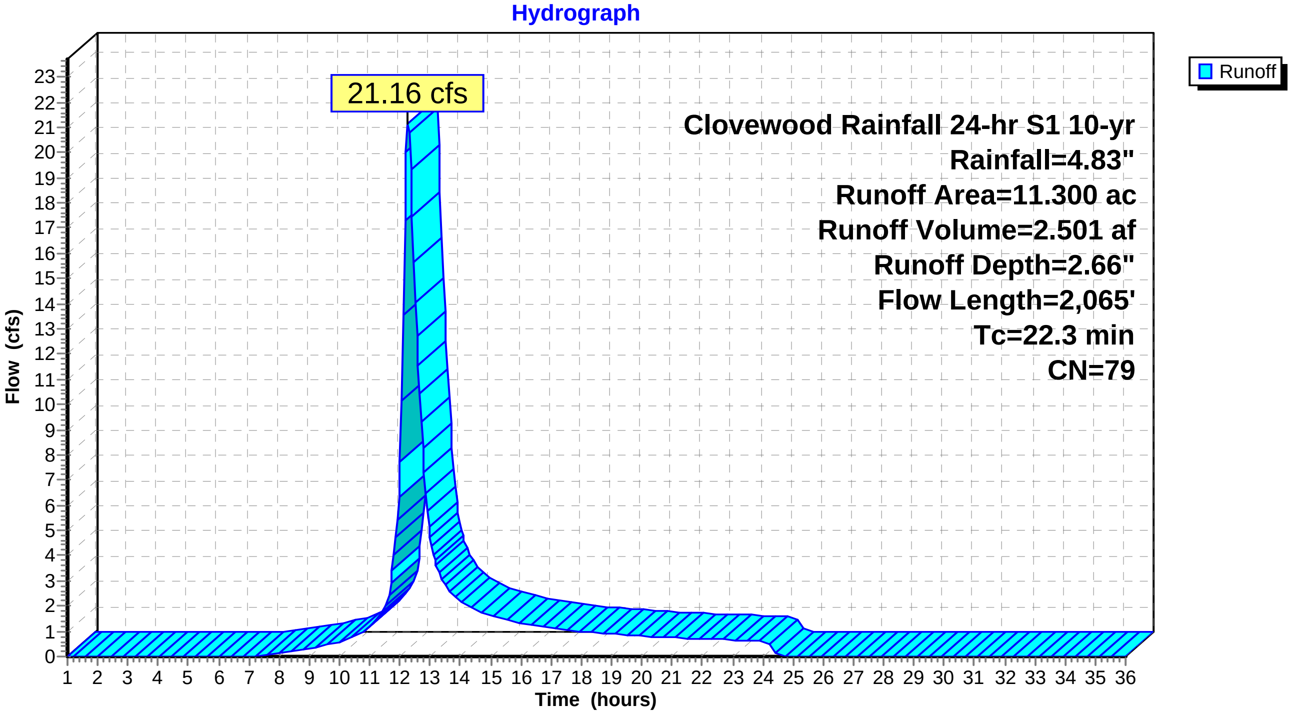
Runoff = 21.16 cfs @ 12.26 hrs, Volume= 2.501 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.200	90	DIRT ROAD, HSG D
*	0.350	98	ROAD
	3.500	77	Woods, Good, HSG D
	2.500	80	>75% Grass cover, Good, HSG D
	4.750	78	Meadow, non-grazed, HSG D
	11.300	79	Weighted Average
	10.950		96.90% Pervious Area
	0.350		3.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	915	0.0350	3.01		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.5	950	0.0300	10.77	86.20	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
0.1	100	0.0300	17.71	125.15	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
22.3	2,065	Total			

Subcatchment B8: BASIN B8



Summary for Subcatchment B9: BASIN 9

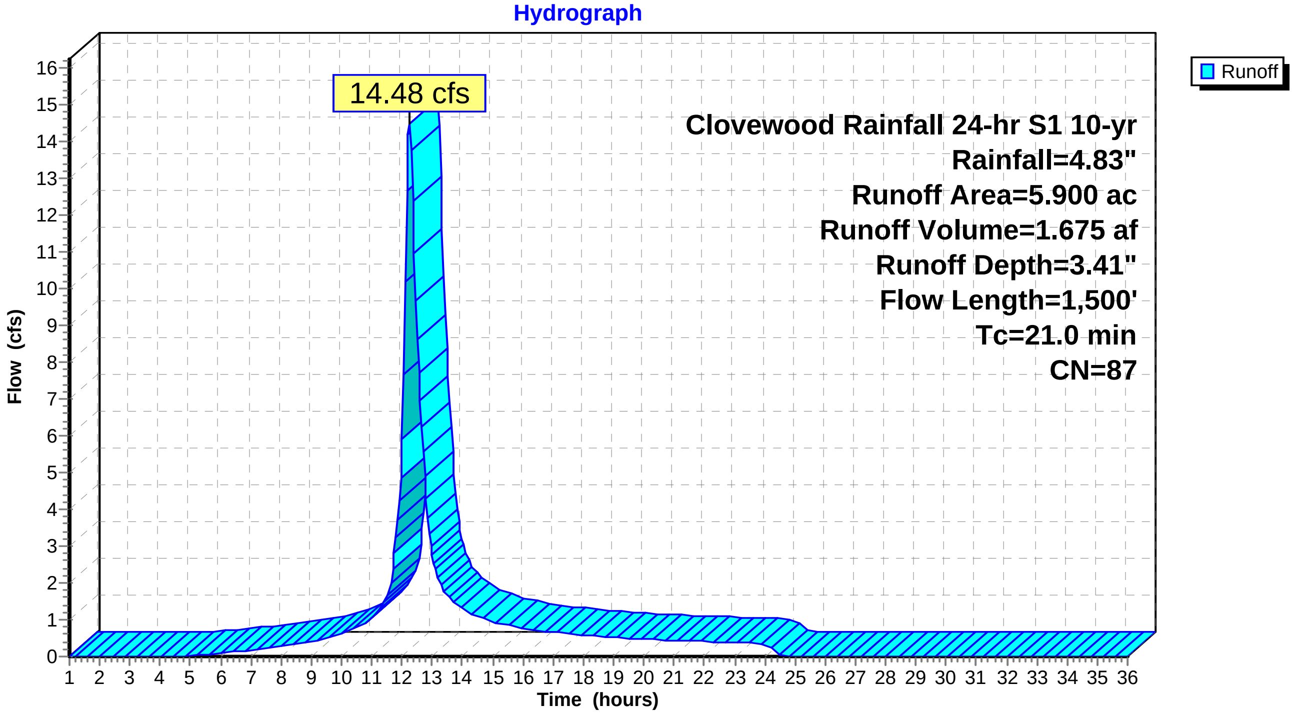
Runoff = 14.48 cfs @ 12.24 hrs, Volume= 1.675 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	3.000	85	LOTS, D
*	1.400	98	ROADS, WALKS
	0.750	80	>75% Grass cover, Good, HSG D
	0.750	79	Woods/grass comb., Good, HSG D
	5.900	87	Weighted Average
	4.500		76.27% Pervious Area
	1.400		23.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
4.5	1,150	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	120	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	130	0.0300	11.15	19.71	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
21.0	1,500	Total			

Subcatchment B9: BASIN 9



Summary for Subcatchment C1: C1

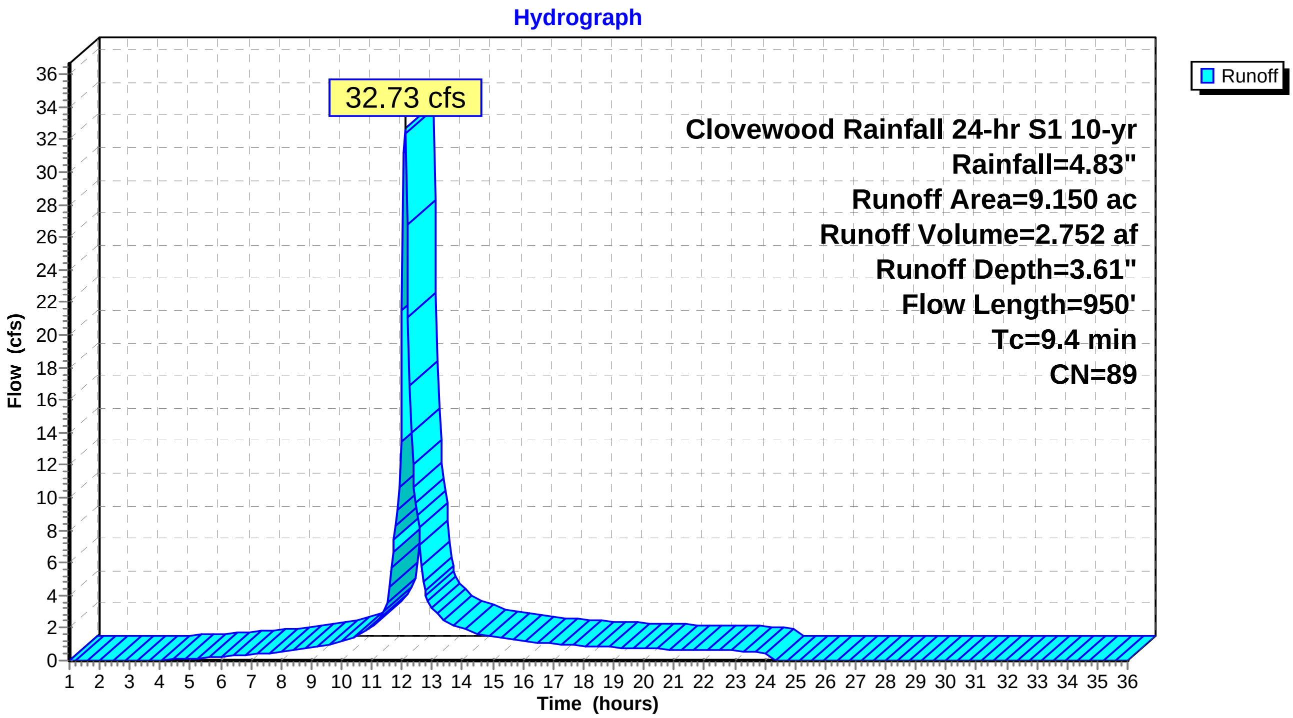
Runoff = 32.73 cfs @ 12.08 hrs, Volume= 2.752 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	4.460	98	ROADS, WALKS, PARKING
	4.090	80	>75% Grass cover, Good, HSG D
	0.600	77	Woods, Good, HSG D
	9.150	89	Weighted Average
	4.690		51.26% Pervious Area
	4.460		48.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0800	0.31		Sheet Flow, Grass: Short n= 0.150 P2= 3.50"
0.7	150	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.2	250	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.8	250	0.0100	2.38	15.86	Parabolic Channel, W=20.00' D=0.50' Area=6.7 sf Perim=20.0' n= 0.030
0.3	200	0.0200	11.03	34.66	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
9.4	950	Total			

Subcatchment C1: C1



Summary for Subcatchment C10: BASIN 10

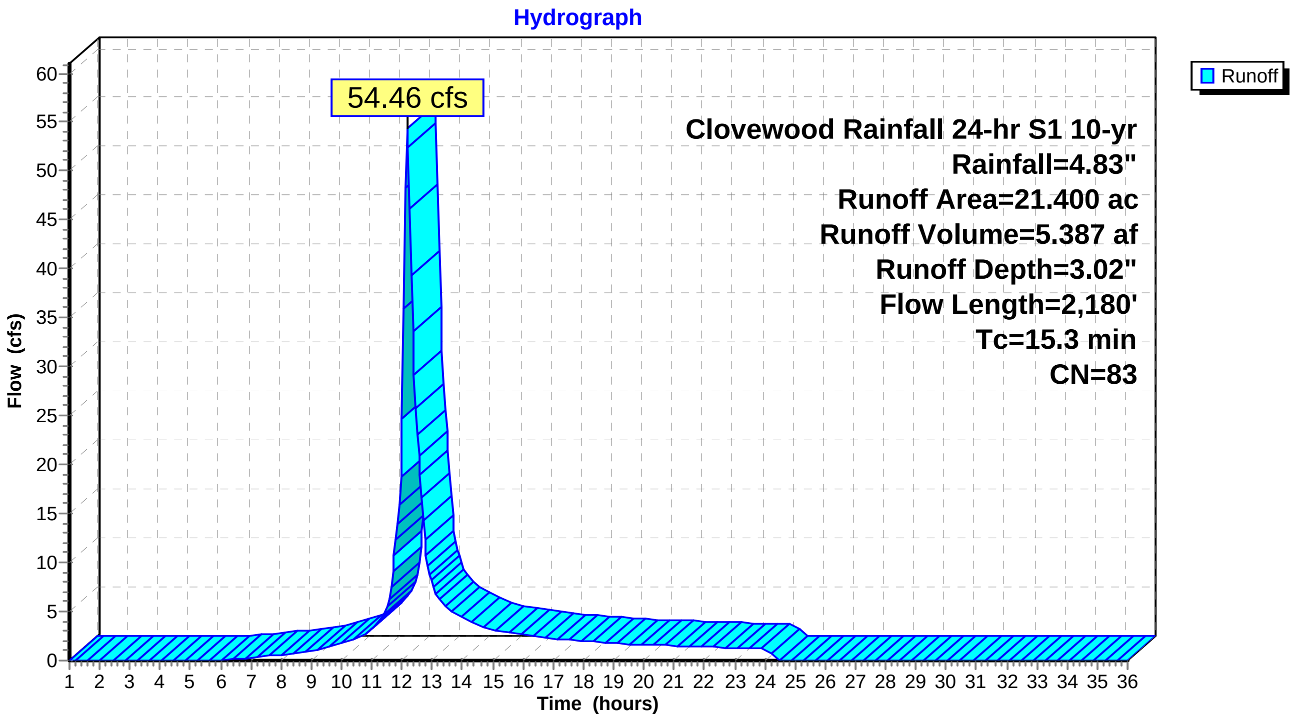
Runoff = 54.46 cfs @ 12.16 hrs, Volume= 5.387 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	10.000	85	LOTS, D
*	1.850	98	ROADS, WALKS
	1.500	80	>75% Grass cover, Good, HSG D
*	0.600	98	POND
	7.450	77	Woods, Good, HSG D
	21.400	83	Weighted Average
	18.950		88.55% Pervious Area
	2.450		11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	880	0.1500	6.24		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.1	1,200	0.0850	18.77	33.18	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
15.3	2,180	Total			

Subcatchment C10: BASIN 10



Summary for Subcatchment C11: BASIN C11

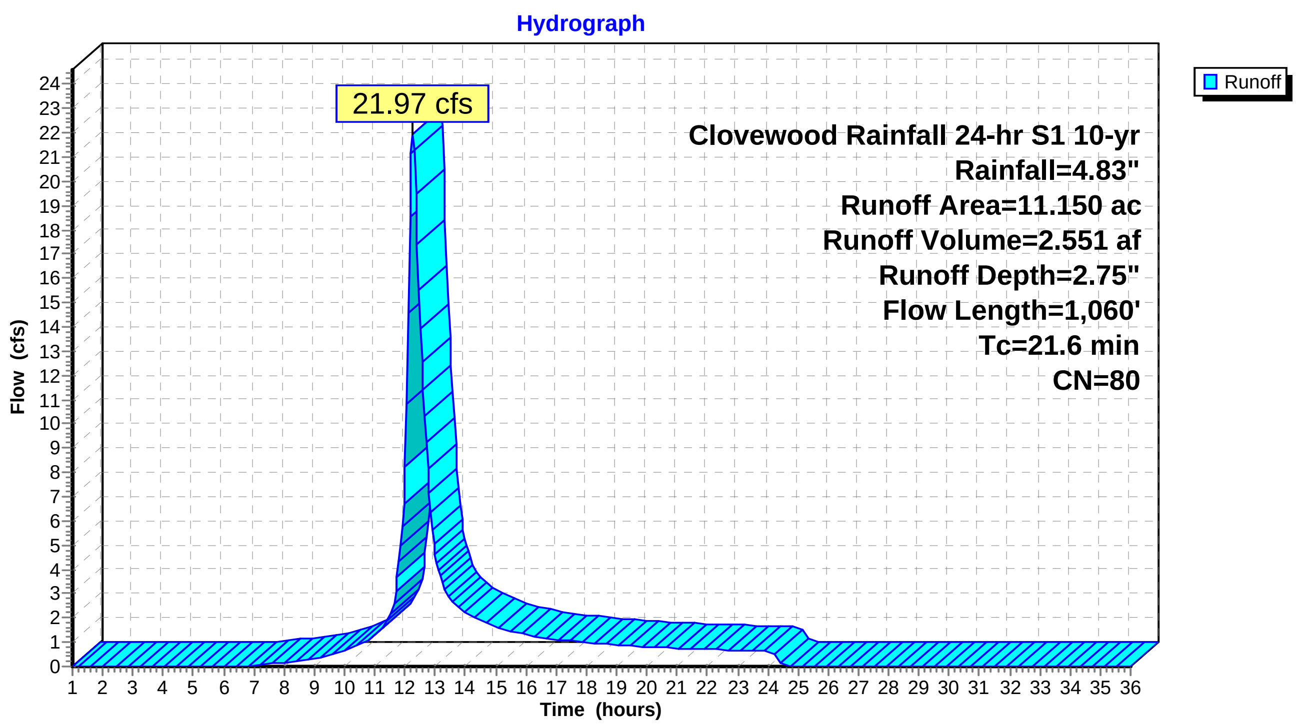
Runoff = 21.97 cfs @ 12.25 hrs, Volume= 2.551 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	4.150	85	LOTS, D
	1.000	80	>75% Grass cover, Good, HSG D
	6.000	77	Woods, Good, HSG D
	11.150	80	Weighted Average
	11.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	300	0.2500	8.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.5	660	0.0800	22.41	358.55	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
21.6	1,060	Total			

Subcatchment C11: BASIN C11



Summary for Subcatchment C12: (new Subcat)

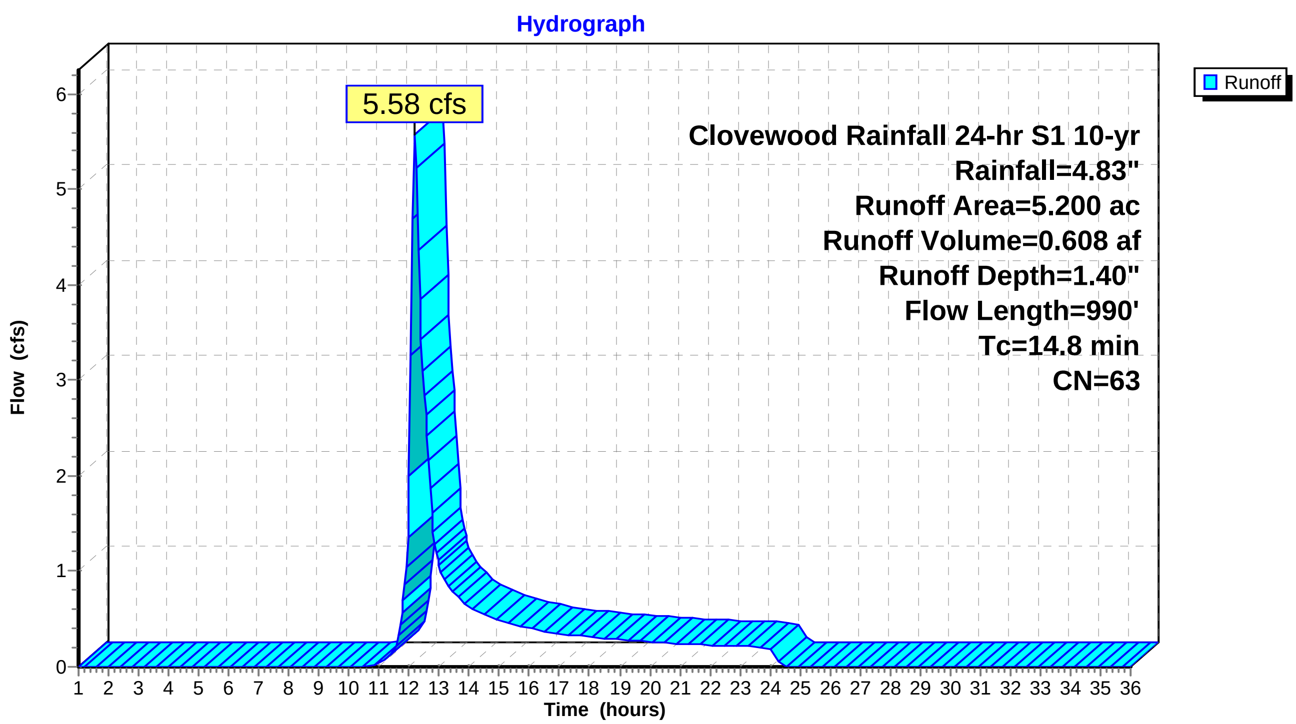
Runoff = 5.58 cfs @ 12.17 hrs, Volume= 0.608 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.860	85	LOTS, D
	1.300	30	Woods, Good, HSG A
*	1.150	60	LOTS, A
	0.500	78	Meadow, non-grazed, HSG D
	1.390	77	Woods, Good, HSG D
	5.200	63	Weighted Average
	5.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0700	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.6	450	0.0900	4.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.8	440	0.0150	9.55	30.02	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.8	990	Total			

Subcatchment C12: (new Subcat)



Summary for Subcatchment C2: BASIN C2

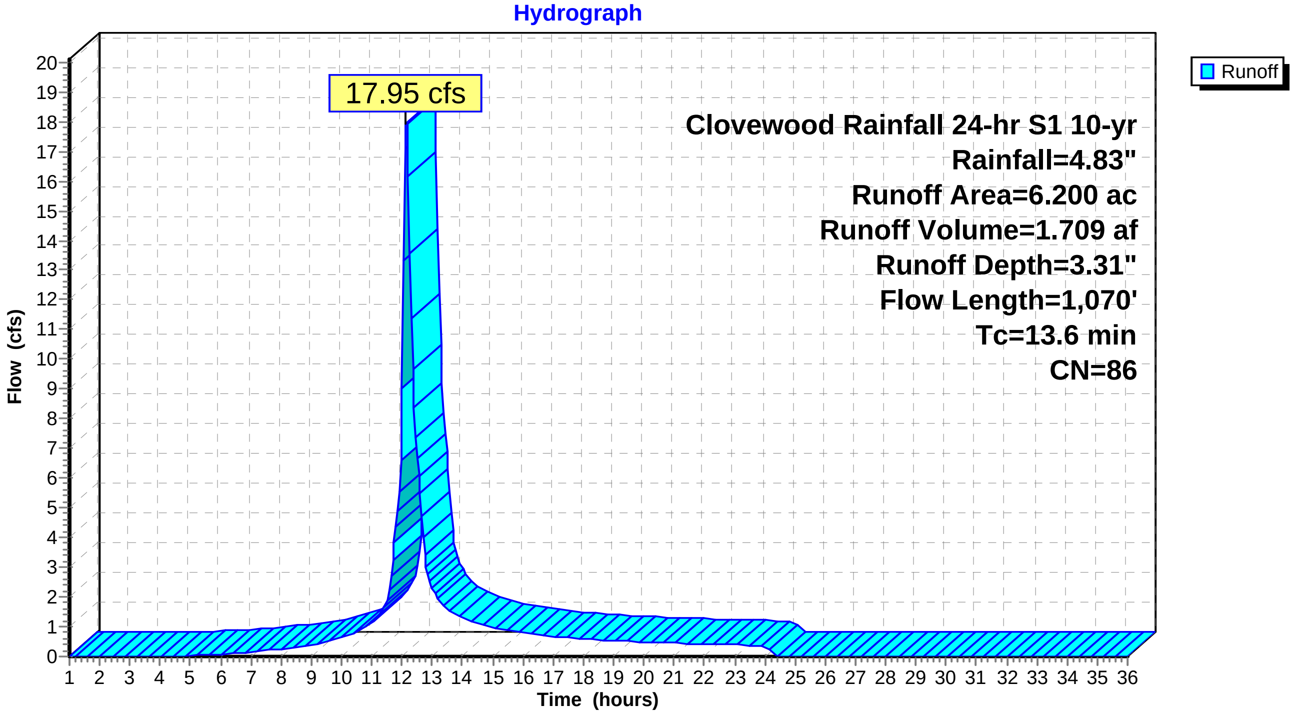
Runoff = 17.95 cfs @ 12.14 hrs, Volume= 1.709 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.250	98	POND
*	1.750	98	ROADS, WALKS
*	1.850	85	LOTS, D
	0.600	80	>75% Grass cover, Good, HSG D
	1.750	77	Woods, Good, HSG D
	6.200	86	Weighted Average
	4.200		67.74% Pervious Area
	2.000		32.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.0	390	0.1800	6.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.8	580	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
13.6	1,070	Total			

Subcatchment C2: BASIN C2



Summary for Subcatchment C3: BASIN C3

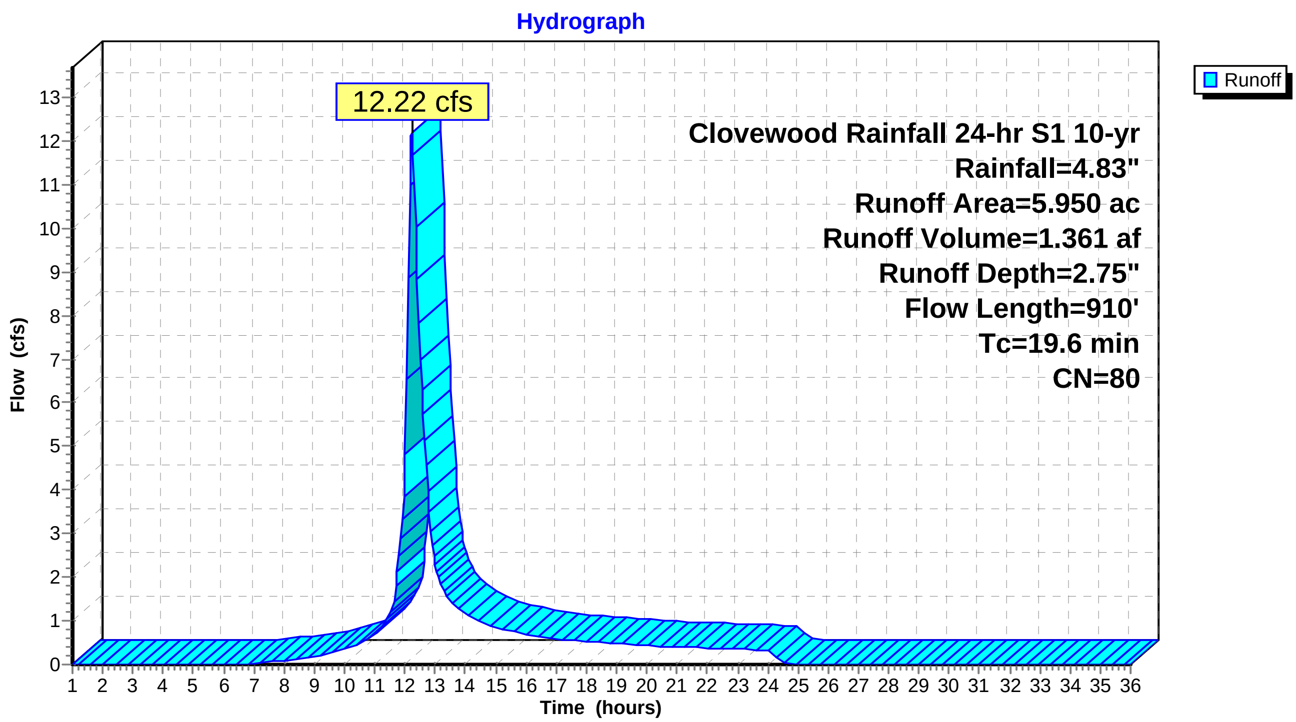
Runoff = 12.22 cfs @ 12.23 hrs, Volume= 1.361 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.380	89	WETLANDS
*	1.400	85	LOTS, D
	0.150	78	Meadow, non-grazed, HSG D
	4.020	77	Woods, Good, HSG D
	5.950	80	Weighted Average
	5.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0300	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.9	660	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.2	150	0.0500	15.24	152.43	Parabolic Channel, W=6.00' D=2.50' Area=10.0 sf Perim=8.1' n= 0.025
19.6	910	Total			

Subcatchment C3: BASIN C3



Summary for Subcatchment C4: BASIN C4

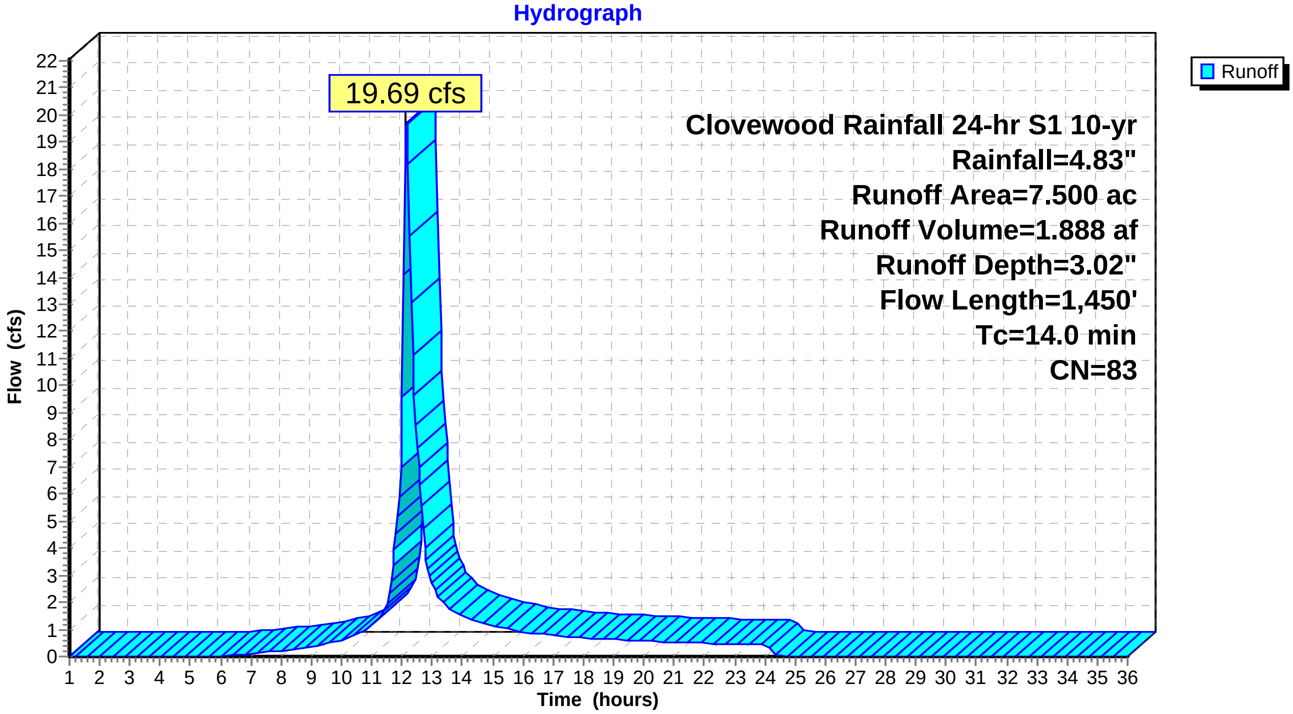
Runoff = 19.69 cfs @ 12.15 hrs, Volume= 1.888 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	1.420	98	ROADS/ WALKS
*	3.300	85	LOTS, D
*	0.250	98	POND
	0.400	78	Meadow, non-grazed, HSG D
*	0.240	60	LOTS, A
	0.230	30	Woods, Good, HSG A
	1.660	77	Woods, Good, HSG D
	7.500	83	Weighted Average
	5.830		77.73% Pervious Area
	1.670		22.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0850	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	370	0.0700	4.26		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	790	0.0400	12.88	22.76	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.1	190	0.2000	24.81	132.31	**Parabolic Channel,** W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
14.0	1,450	Total			

Subcatchment C4: BASIN C4



Summary for Subcatchment C5N9: BASIN C5/9

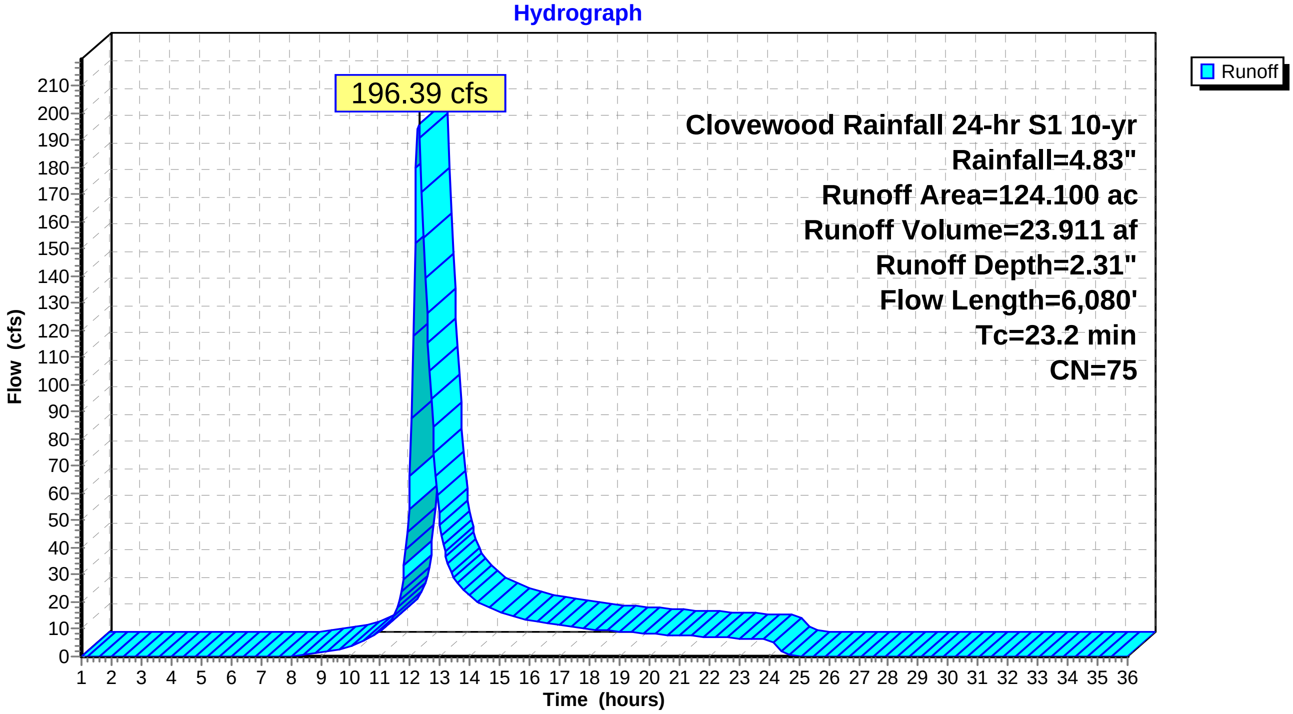
Runoff = 196.39 cfs @ 12.28 hrs, Volume= 23.911 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	4.780	89	WETLANDS
	105.670	77	Woods, Good, HSG D
*	5.100	85	
	1.100	80	>75% Grass cover, Good, HSG D
	0.400	39	>75% Grass cover, Good, HSG A
*	0.850	60	
	6.200	30	Woods, Good, HSG A
	124.100	75	Weighted Average
	124.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0300	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.7	965	0.3500	9.52		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	610	0.0200	9.74	155.77	Parabolic Channel, W=12.00' D=2.00' Area=16.0 sf Perim=12.8' n= 0.025
1.4	2,190	0.1400	25.51	255.07	Parabolic Channel, W=6.00' D=2.50' Area=10.0 sf Perim=8.1' n= 0.025
0.2	350	0.1000	32.33	228.50	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
1.4	1,865	0.0800	22.41	358.55	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
23.2	6,080	Total			

Subcatchment C5N9: BASIN C5/9



Summary for Subcatchment C6: BASIN C6

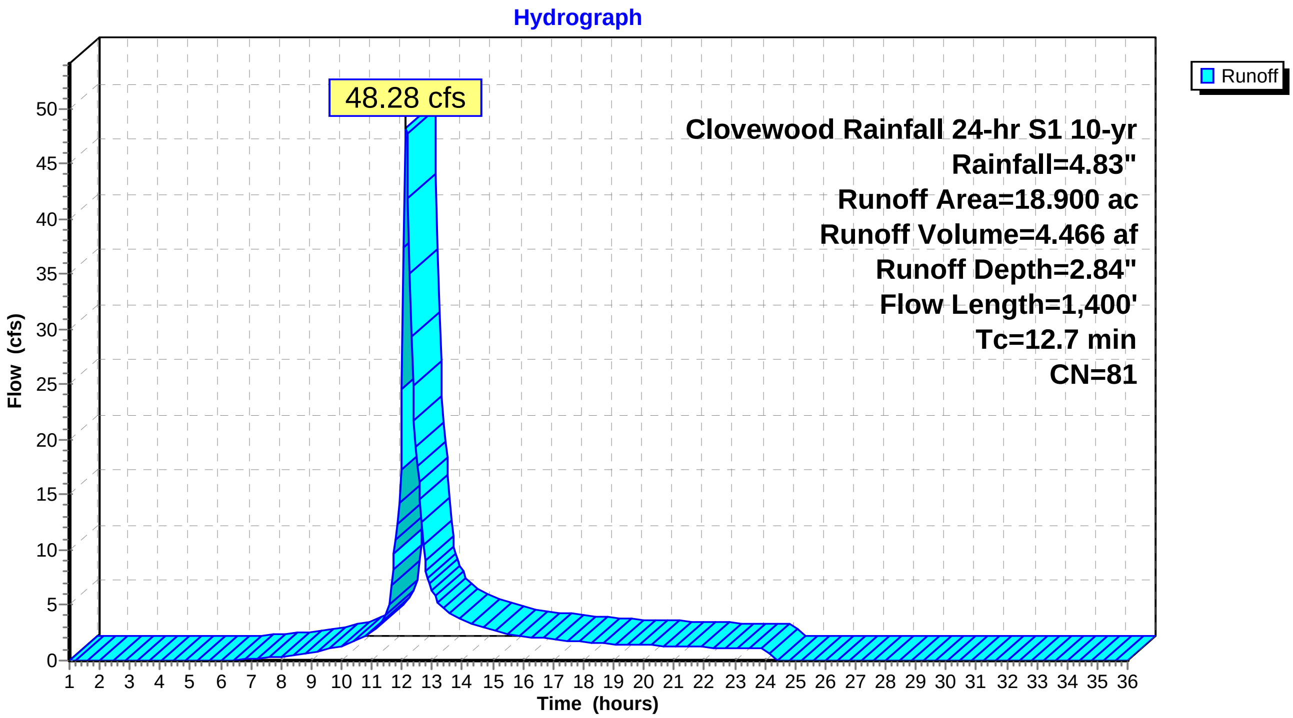
Runoff = 48.28 cfs @ 12.13 hrs, Volume= 4.466 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.600	98	POND
*	1.110	60	LOTS, A
*	1.790	98	ROADS, WALKS
*	10.700	85	LOTS, D
	1.170	39	>75% Grass cover, Good, HSG A
	1.530	80	>75% Grass cover, Good, HSG D
	2.000	77	Woods, Good, HSG D
	18.900	81	Weighted Average
	16.510		87.35% Pervious Area
	2.390		12.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	150	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.1	860	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.2	290	0.1400	23.28	186.21	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
12.7	1,400	Total			

Subcatchment C6: BASIN C6



Summary for Subcatchment C7: BASIN C7

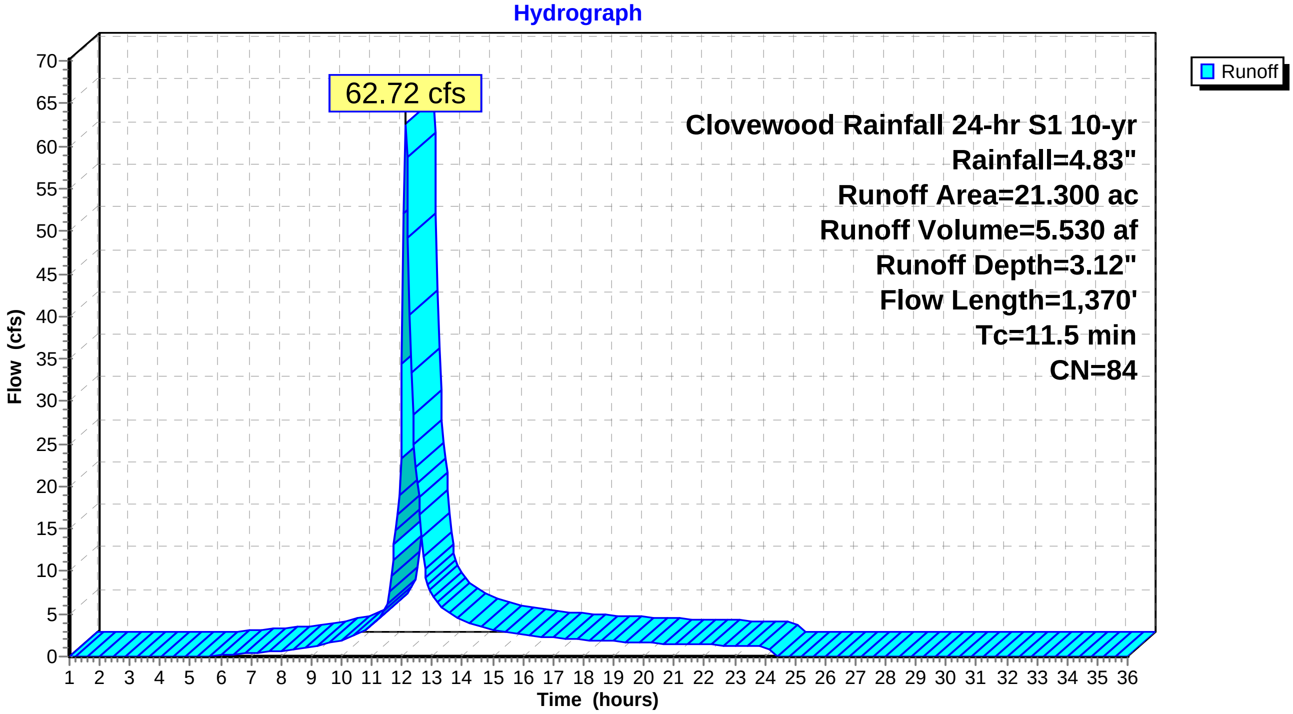
Runoff = 62.72 cfs @ 12.11 hrs, Volume= 5.530 af, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	2.920	98	ROADS / WALKS
*	0.500	98	BLDG
*	9.900	85	LOTS, D
*	1.000	98	POND
	0.480	30	Woods, Good, HSG A
	0.200	39	>75% Grass cover, Good, HSG A
	2.500	80	>75% Grass cover, Good, HSG D
	3.800	77	Woods, Good, HSG D
	21.300	84	Weighted Average
	16.880		79.25% Pervious Area
	4.420		20.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.4	440	0.1200	19.22	102.48	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
1.0	750	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.1	80	0.2000	24.81	132.31	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
11.5	1,370	Total			

Subcatchment C7: BASIN C7



Summary for Subcatchment C8: BASIN C8

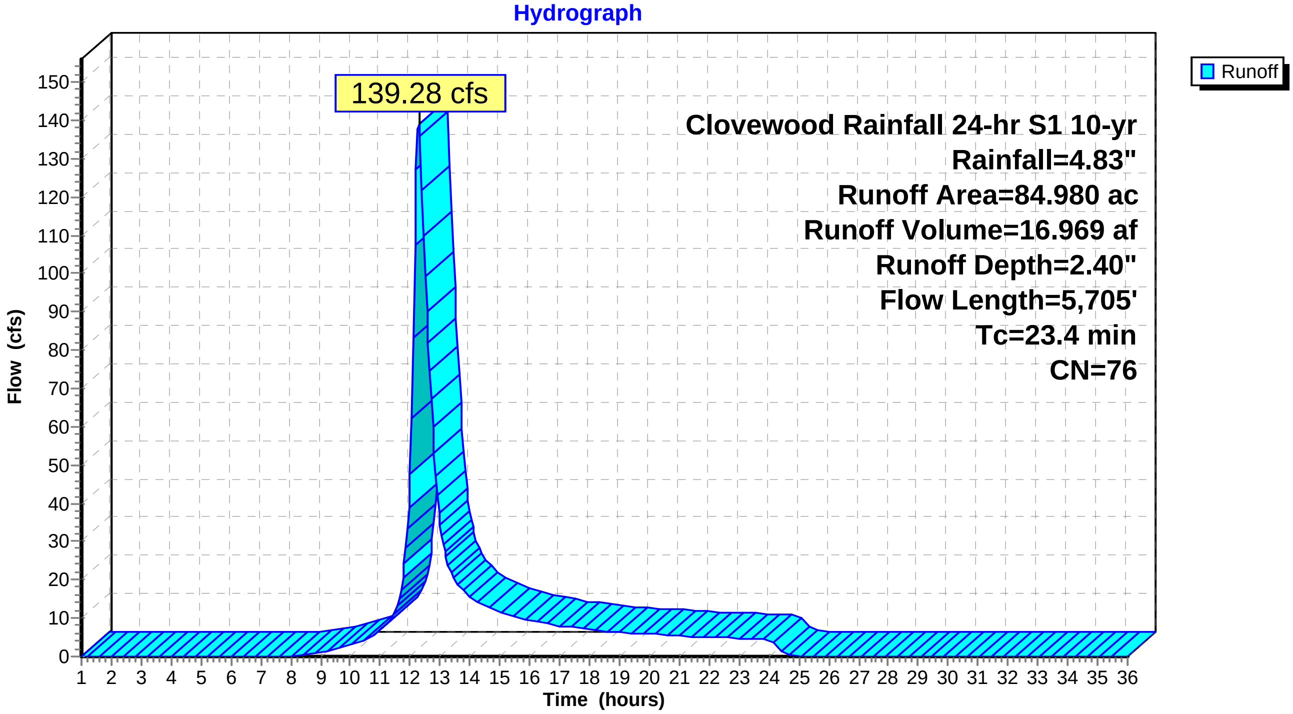
Runoff = 139.28 cfs @ 12.28 hrs, Volume= 16.969 af, Depth= 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	0.710	89	Wetlands
*	0.470	98	Impervious Surfaces
	80.150	77	Woods, Good, HSG D
*	0.620	80	Lawn, Good, HSG D
*	1.030	79	Old Golf Course, HSG D
*	1.900	35	Old Golf Course, HSG A
	0.100	78	Meadow, non-grazed, HSG D
	84.980	76	Weighted Average
	84.510		99.45% Pervious Area
	0.470		0.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.5	360	0.5900	12.37		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
10.4	3,630	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.3	310	0.1000	17.54	93.56	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
0.1	175	0.0600	25.04	176.99	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.9	720	0.0600	13.59	72.47	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
0.4	410	0.0450	16.81	268.91	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
23.4	5,705	Total			

Subcatchment C8: BASIN C8



Summary for Subcatchment D: (new Subcat)

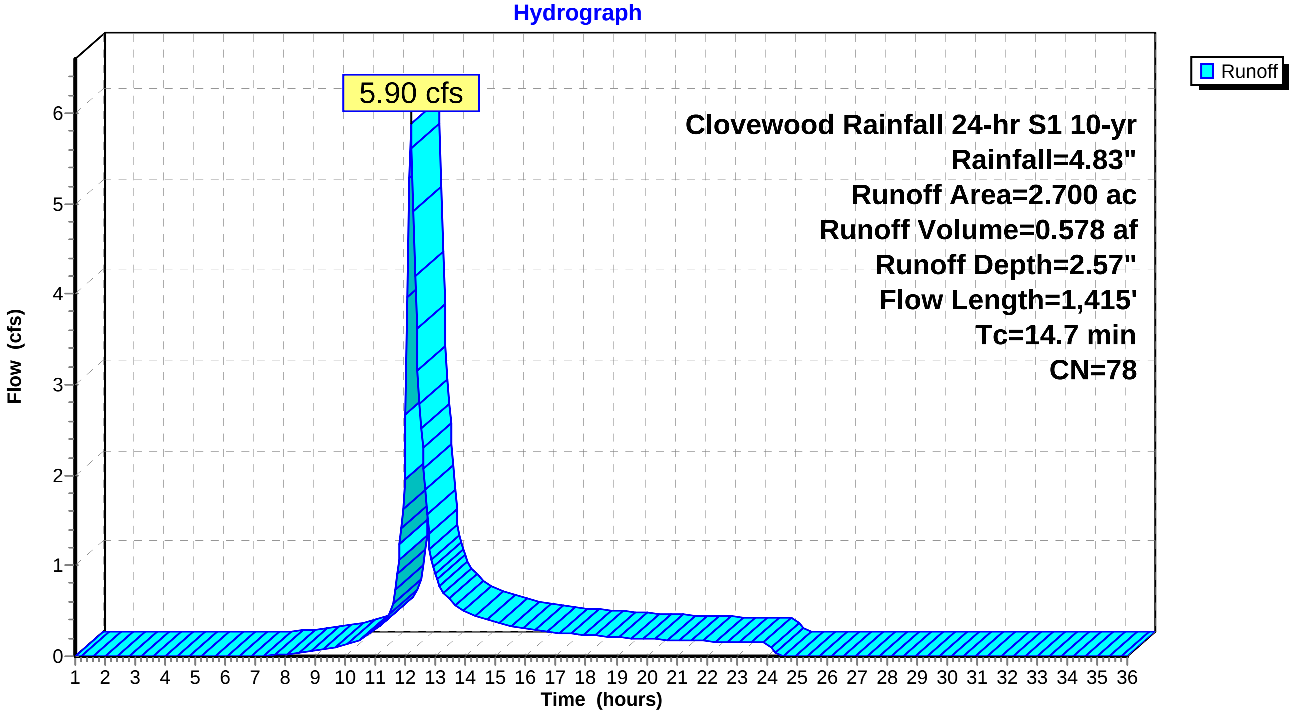
Runoff = 5.90 cfs @ 12.16 hrs, Volume= 0.578 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
	0.800	78	Meadow, non-grazed, HSG D
	1.500	77	Woods, Good, HSG D
*	0.400	85	LOTS, D
	2.700	78	Weighted Average
	2.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	130	0.2500	8.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.2	135	0.1100	13.72	36.60	Parabolic Channel, W=4.00' D=1.00' Area=2.7 sf Perim=4.6' n= 0.025
0.1	110	0.1000	24.67	77.50	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
0.5	610	0.1000	19.67	157.38	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
0.1	90	0.0500	20.24	99.36	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012
0.3	240	0.0600	14.56	97.05	Parabolic Channel, W=5.00' D=2.00' Area=6.7 sf Perim=6.7' n= 0.025
14.7	1,415	Total			

Subcatchment D: (new Subcat)



Summary for Subcatchment E1: BASIN E1

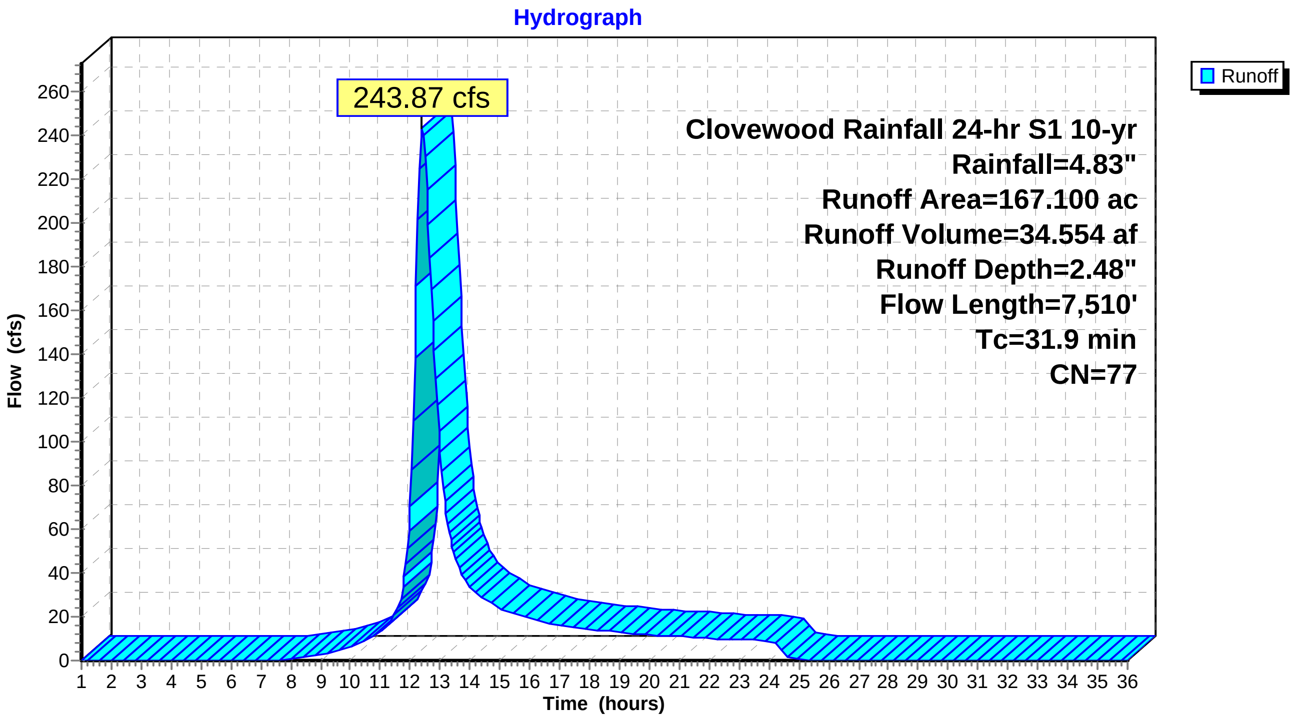
Runoff = 243.87 cfs @ 12.40 hrs, Volume= 34.554 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
	161.200	77	Woods, Good, HSG D
	0.400	30	Meadow, non-grazed, HSG A
*	3.300	89	Wetlands
*	2.200	85	Res Lot, HSG D
	167.100	77	Weighted Average
	167.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	630	0.2800	8.52		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.6	2,300	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	720	0.0700	17.47	279.49	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.030
0.3	460	0.0900	30.67	216.77	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
2.6	3,300	0.0700	20.96	335.39	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
31.9	7,510	Total			

Subcatchment E1: BASIN E1



Summary for Subcatchment E2: BASIN E2

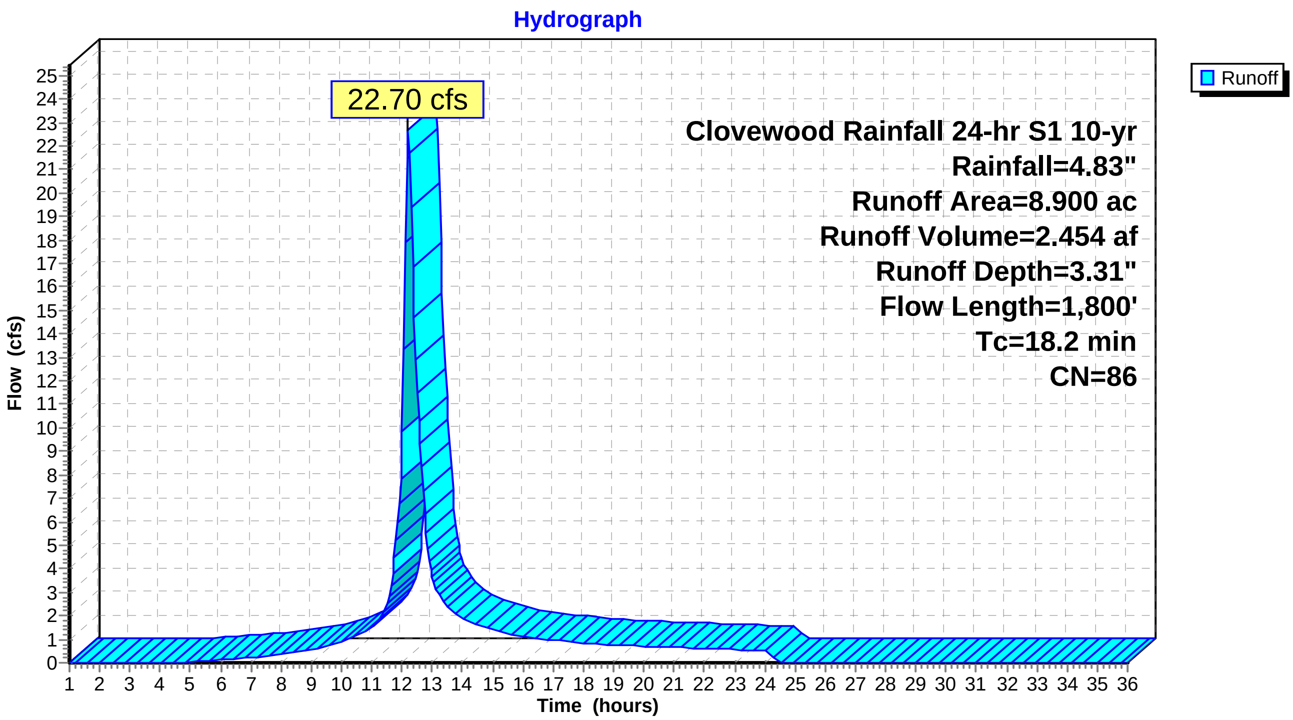
Runoff = 22.70 cfs @ 12.20 hrs, Volume= 2.454 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

	Area (ac)	CN	Description
*	1.540	98	ROAD, WALKS
	2.200	77	Woods, Good, HSG D
*	0.400	98	POND
*	4.760	85	LOTS, D
	8.900	86	Weighted Average
	6.960		78.20% Pervious Area
	1.940		21.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.6	500	0.1000	5.09		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	1,200	0.1000	20.36	35.99	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.2	1,800	Total			

Subcatchment E2: BASIN E2



Summary for Subcatchment F: BASIN F

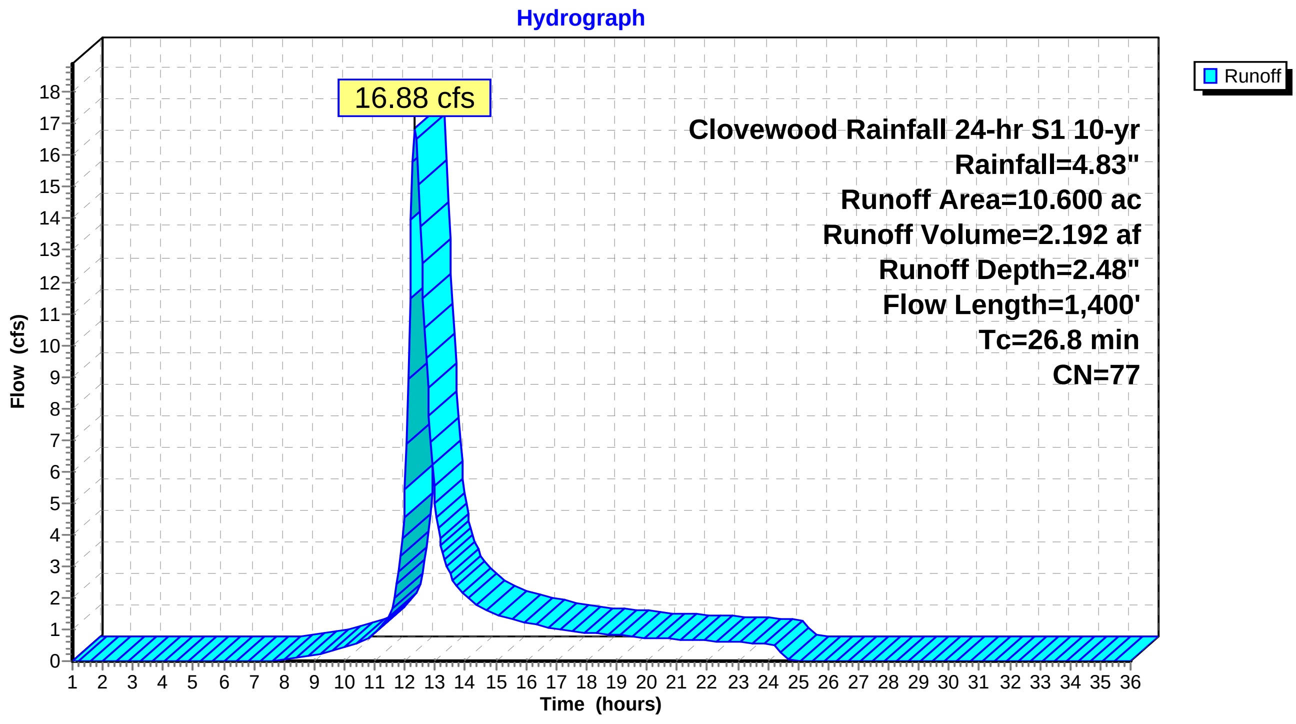
Runoff = 16.88 cfs @ 12.33 hrs, Volume= 2.192 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 10-yr Rainfall=4.83"

Area (ac)	CN	Description
10.600	77	Woods, Good, HSG D
10.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0600	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.50"
3.8	1,300	0.1250	5.69		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
26.8	1,400	Total			

Subcatchment F: BASIN F



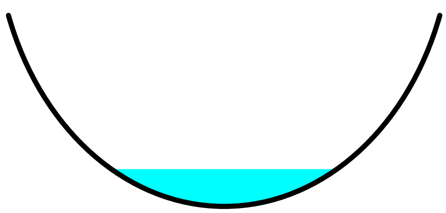
Summary for Reach 11R: (new Reach)

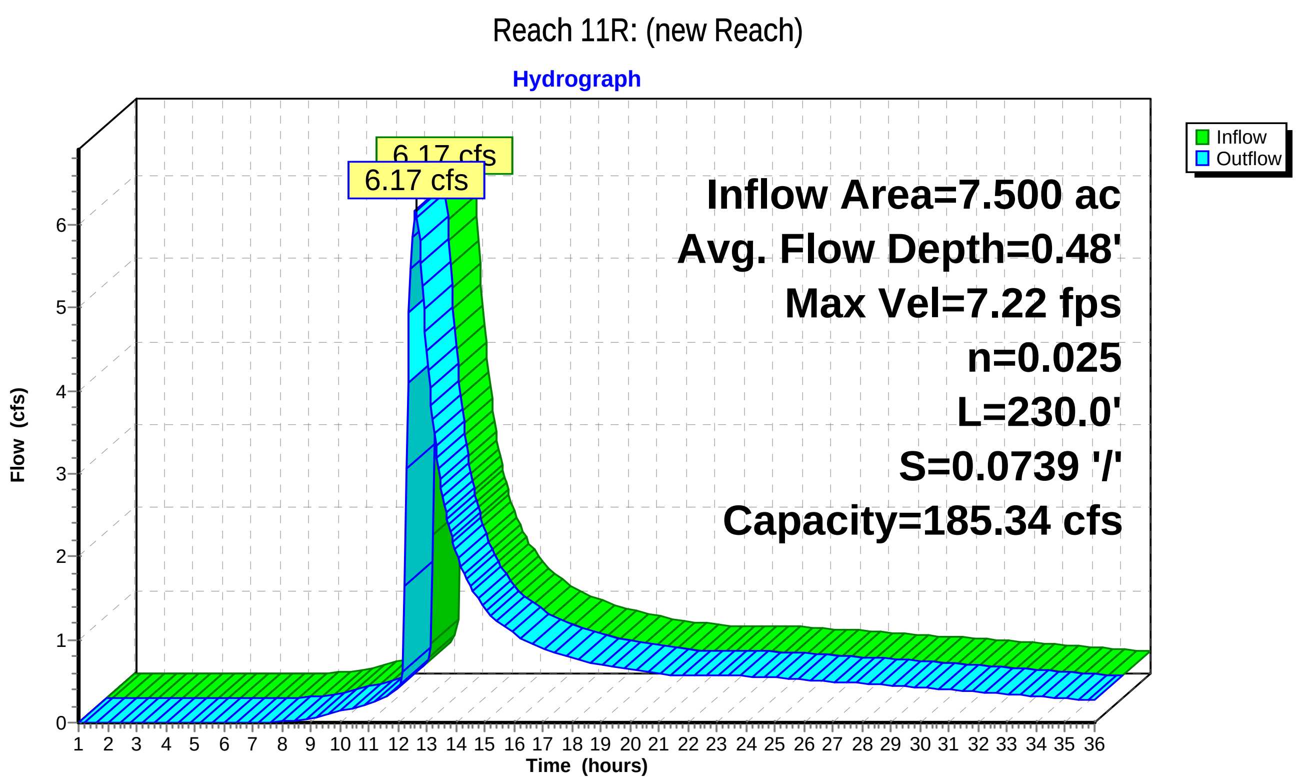
Inflow Area = 7.500 ac, 22.27% Impervious, Inflow Depth > 2.79" for 10-yr event
Inflow = 6.17 cfs @ 12.61 hrs, Volume= 1.742 af
Outflow = 6.17 cfs @ 12.62 hrs, Volume= 1.741 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.22 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 3.40 fps, Avg. Travel Time= 1.1 min

Peak Storage= 197 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 2.50' Flow Area= 10.0 sf, Capacity= 185.34 cfs

6.00' x 2.50' deep Parabolic Channel, n= 0.025
Length= 230.0' Slope= 0.0739 '/'
Inlet Invert= 517.00', Outlet Invert= 500.00'



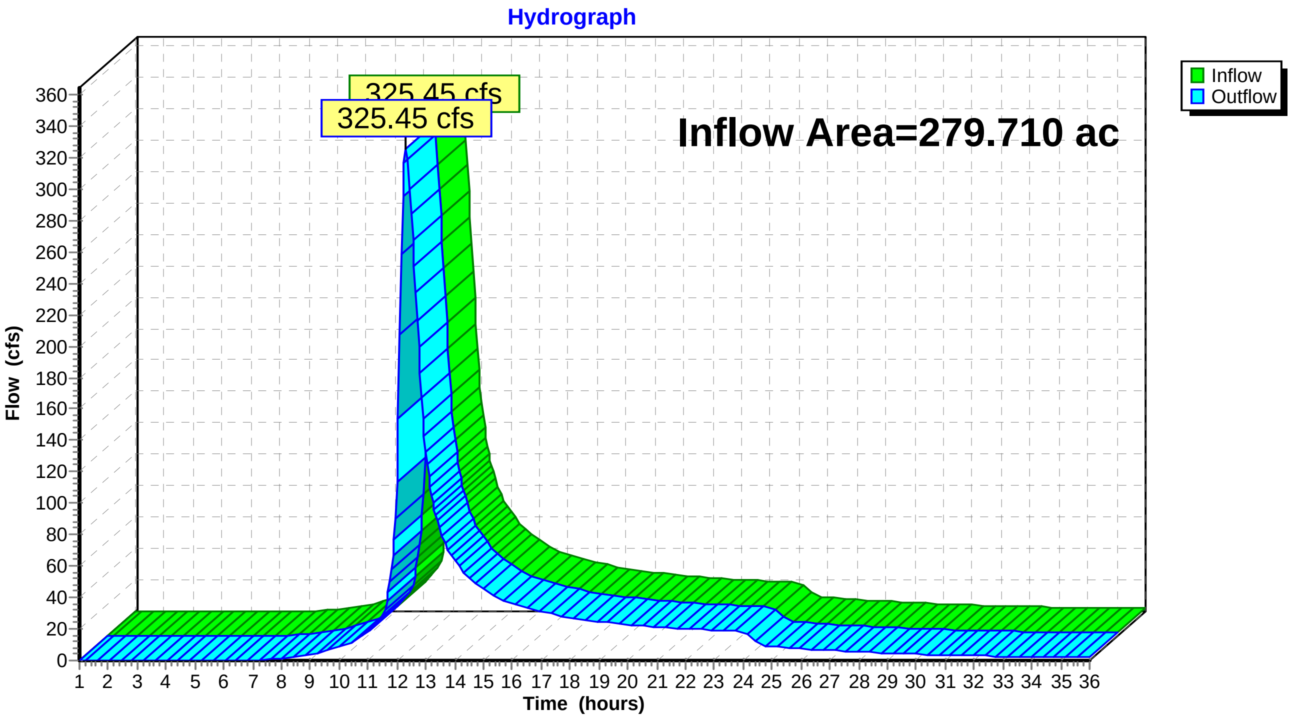


Summary for Reach AP1: ANALYSIS POINT

Inflow Area = 279.710 ac, 13.27% Impervious, Inflow Depth > 2.60" for 10-yr event
Inflow = 325.45 cfs @ 12.32 hrs, Volume= 60.501 af
Outflow = 325.45 cfs @ 12.32 hrs, Volume= 60.501 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP1: ANALYSIS POINT

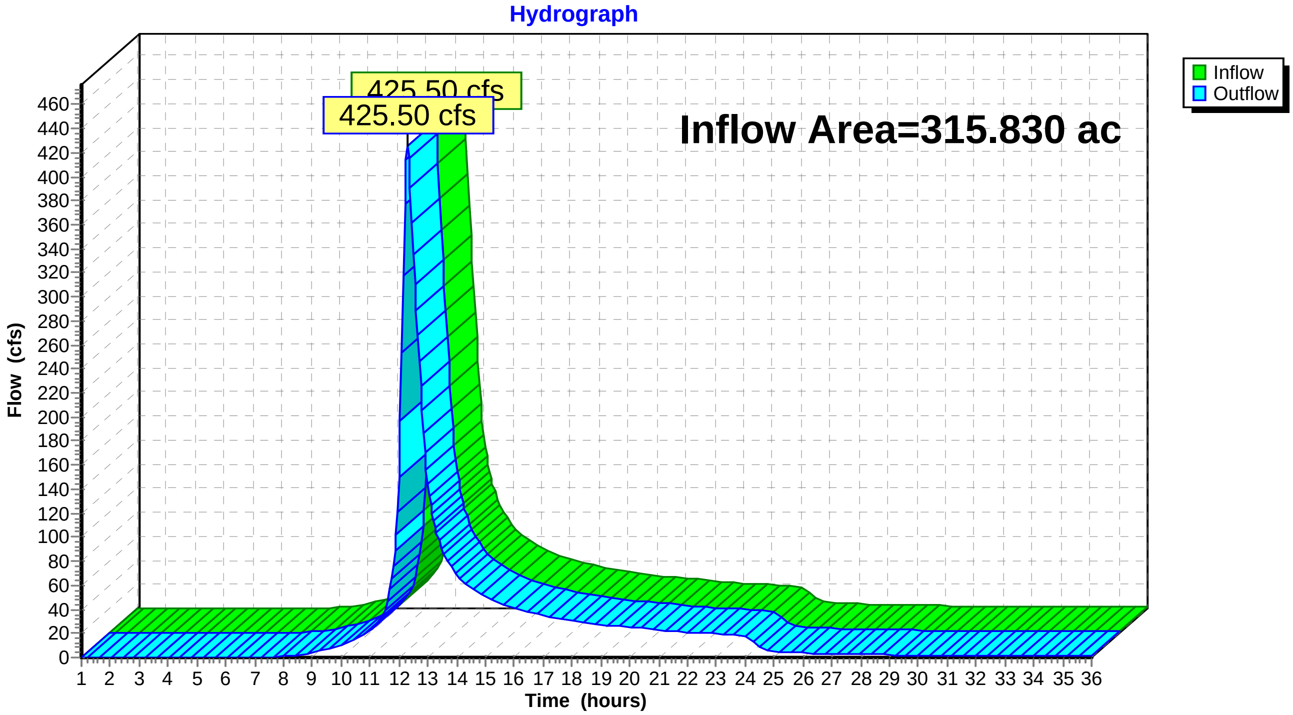


Summary for Reach AP2: ANALYSIS POINT

Inflow Area = 315.830 ac, 5.65% Impervious, Inflow Depth > 2.52" for 10-yr event
Inflow = 425.50 cfs @ 12.30 hrs, Volume= 66.376 af
Outflow = 425.50 cfs @ 12.30 hrs, Volume= 66.376 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP2: ANALYSIS POINT

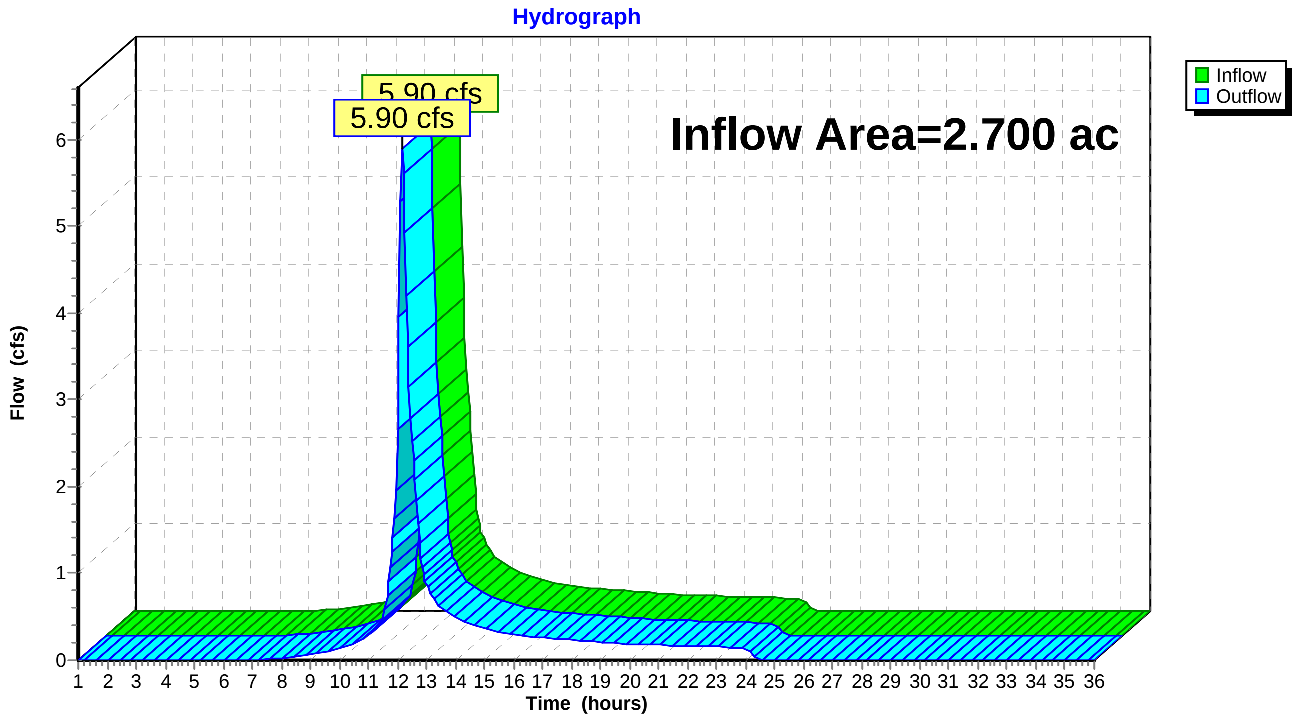


Summary for Reach AP3: (new Reach)

Inflow Area = 2.700 ac, 0.00% Impervious, Inflow Depth = 2.57" for 10-yr event
Inflow = 5.90 cfs @ 12.16 hrs, Volume= 0.578 af
Outflow = 5.90 cfs @ 12.16 hrs, Volume= 0.578 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP3: (new Reach)

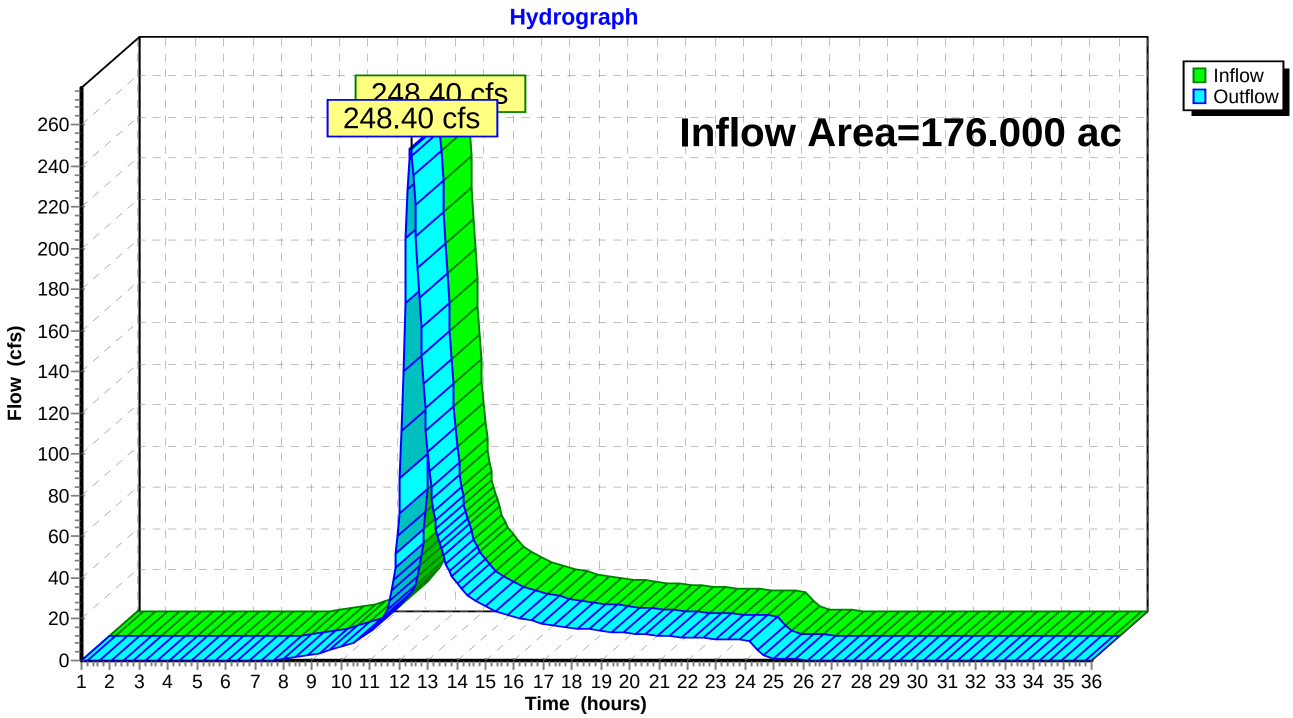


Summary for Reach AP4: ANALYSIS POINT

Inflow Area = 176.000 ac, 1.10% Impervious, Inflow Depth > 2.52" for 10-yr event
Inflow = 248.40 cfs @ 12.41 hrs, Volume= 36.964 af
Outflow = 248.40 cfs @ 12.41 hrs, Volume= 36.964 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP4: ANALYSIS POINT



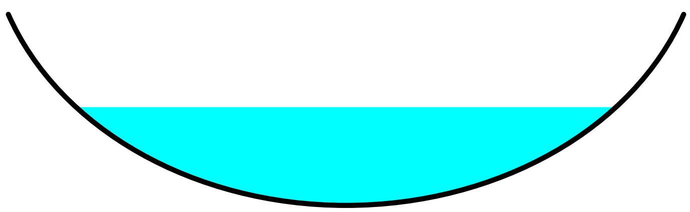
Summary for Reach RB1: (new Reach)

Inflow Area = 176.400 ac, 16.64% Impervious, Inflow Depth > 2.74" for 10-yr event
Inflow = 193.94 cfs @ 12.37 hrs, Volume= 40.210 af
Outflow = 193.48 cfs @ 12.39 hrs, Volume= 40.198 af, Atten= 0%, Lag= 1.1 min

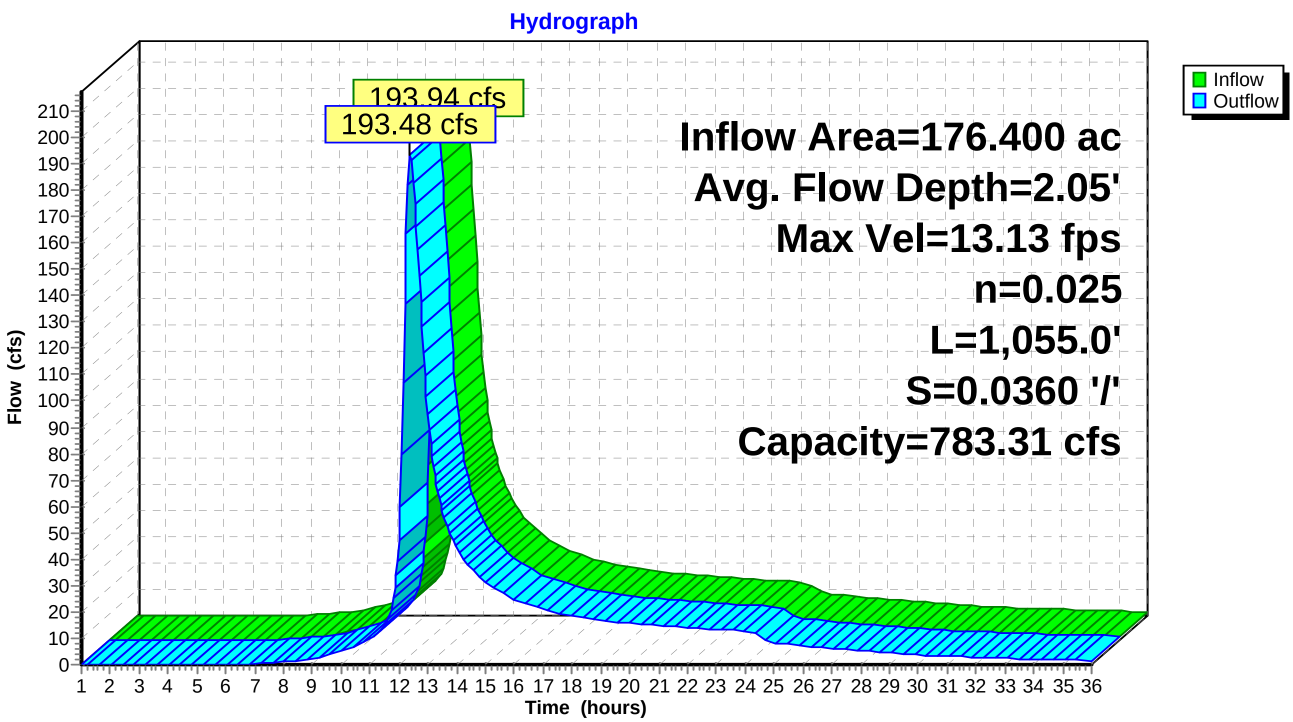
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.13 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 5.12 fps, Avg. Travel Time= 3.4 min

Peak Storage= 15,539 cf @ 12.39 hrs
Average Depth at Peak Storage= 2.05'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 783.31 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 1,055.0' Slope= 0.0360 '/'
Inlet Invert= 504.00', Outlet Invert= 466.00'



Reach RB1: (new Reach)



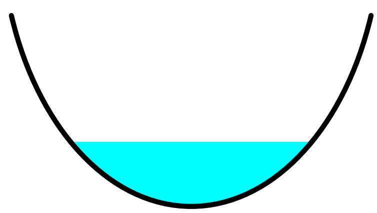
Summary for Reach RB10: (new Reach)

Inflow Area = 48.700 ac, 9.86% Impervious, Inflow Depth > 2.26" for 10-yr event
Inflow = 37.61 cfs @ 12.36 hrs, Volume= 9.155 af
Outflow = 37.61 cfs @ 12.36 hrs, Volume= 9.155 af, Atten= 0%, Lag= 0.1 min

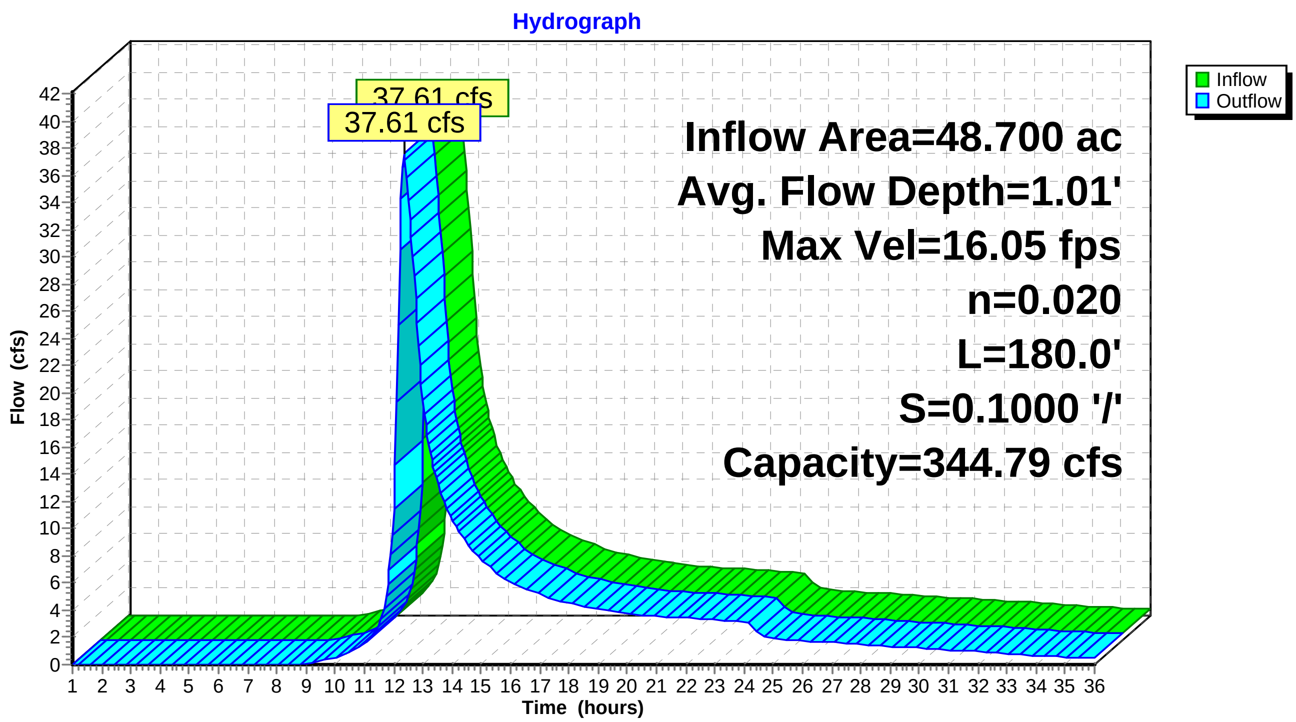
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.05 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 7.32 fps, Avg. Travel Time= 0.4 min

Peak Storage= 422 cf @ 12.36 hrs
Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 3.00' Flow Area= 12.0 sf, Capacity= 344.79 cfs

6.00' x 3.00' deep Parabolic Channel, n= 0.020
Length= 180.0' Slope= 0.1000 '/'
Inlet Invert= 588.00', Outlet Invert= 570.00'



Reach RB10: (new Reach)



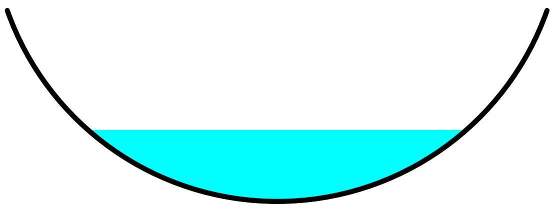
Summary for Reach RB11: (new Reach)

Inflow Area = 9.400 ac, 14.89% Impervious, Inflow Depth = 3.21" for 10-yr event
Inflow = 23.14 cfs @ 12.21 hrs, Volume= 2.516 af
Outflow = 23.03 cfs @ 12.22 hrs, Volume= 2.516 af, Atten= 1%, Lag= 1.1 min

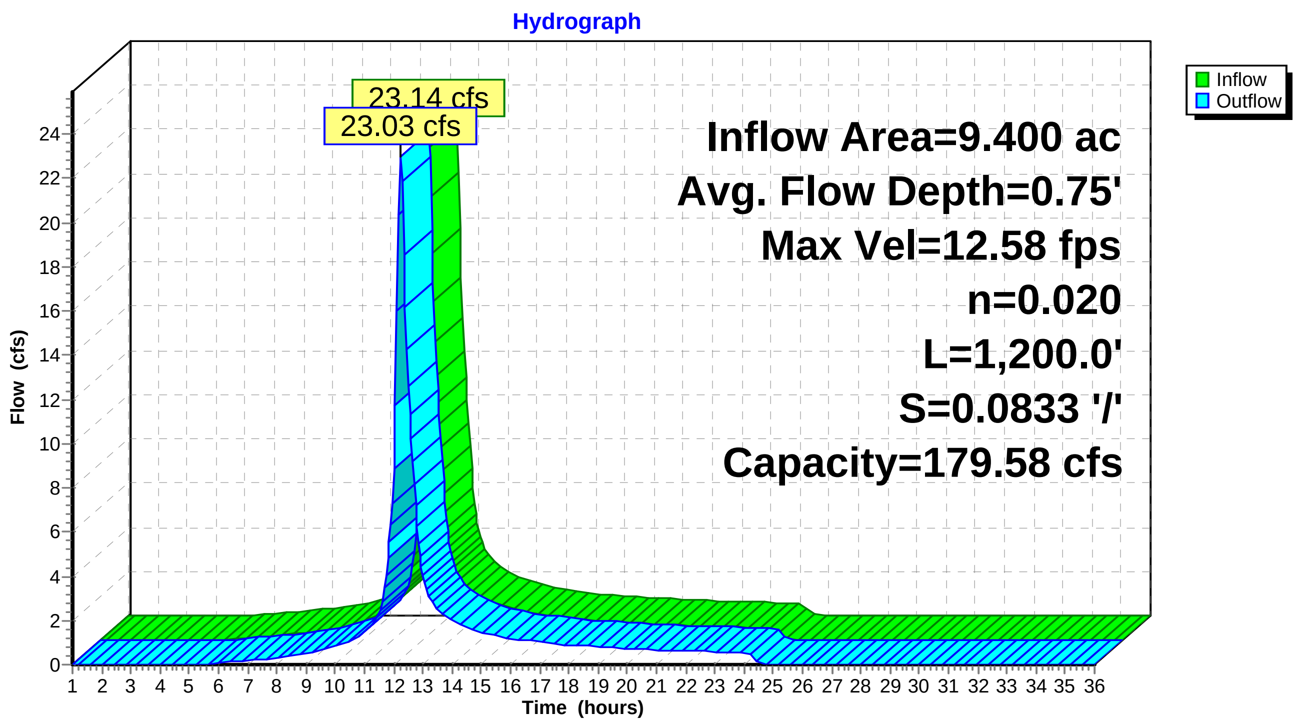
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.58 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 4.57 fps, Avg. Travel Time= 4.4 min

Peak Storage= 2,189 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 179.58 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.020
Length= 1,200.0' Slope= 0.0833 '/'
Inlet Invert= 690.00', Outlet Invert= 590.00'



Reach RB11: (new Reach)



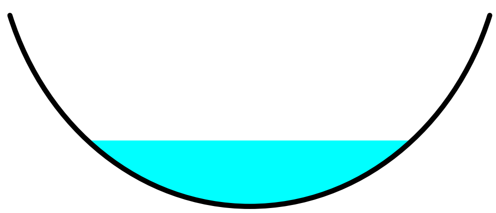
Summary for Reach RB12: (new Reach)

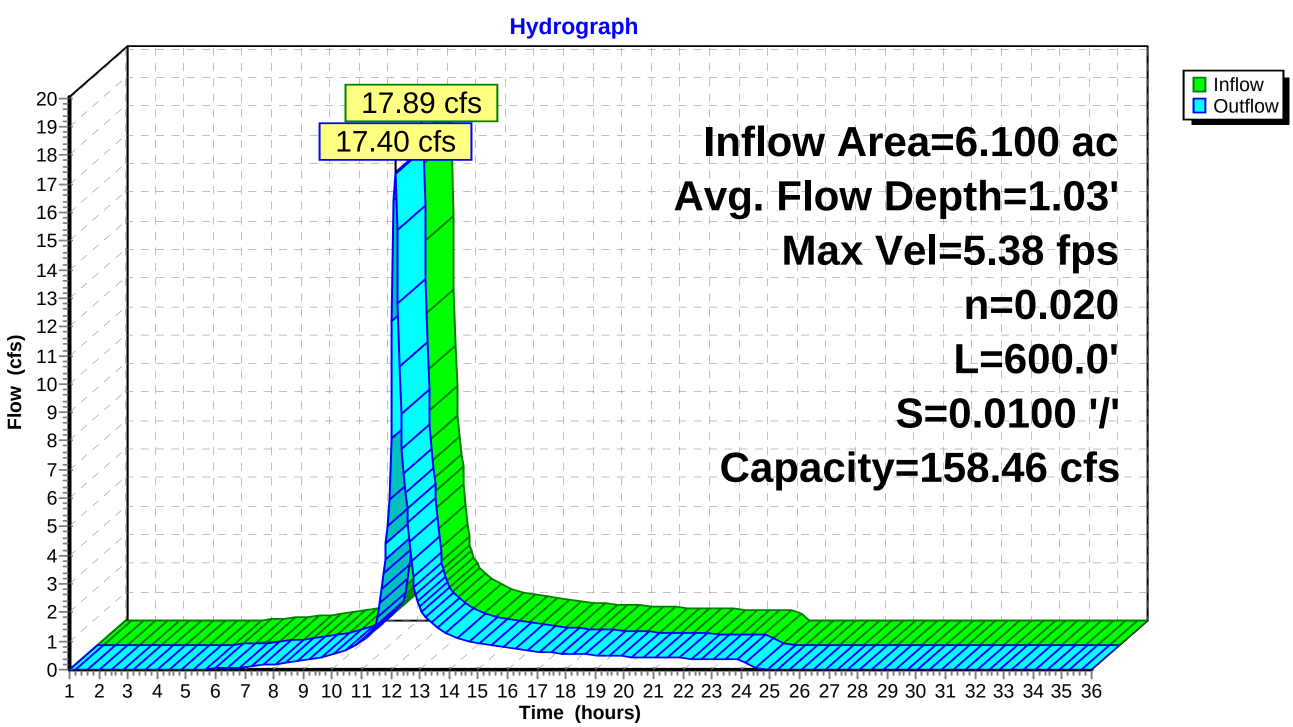
Inflow Area = 6.100 ac, 10.66% Impervious, Inflow Depth = 3.12" for 10-yr event
Inflow = 17.89 cfs @ 12.11 hrs, Volume= 1.584 af
Outflow = 17.40 cfs @ 12.14 hrs, Volume= 1.584 af, Atten= 3%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.38 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 5.4 min

Peak Storage= 1,940 cf @ 12.14 hrs
Average Depth at Peak Storage= 1.03'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 158.46 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.020
Length= 600.0' Slope= 0.0100 '/'
Inlet Invert= 552.00', Outlet Invert= 546.00'





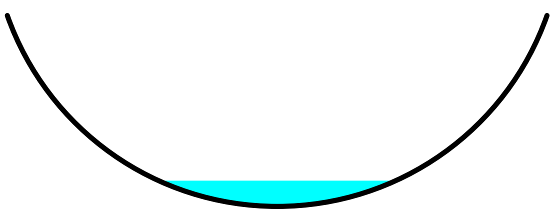
Summary for Reach RB2: (new Reach)

Inflow Area = 5.400 ac, 9.26% Impervious, Inflow Depth > 2.55" for 10-yr event
Inflow = 1.91 cfs @ 13.02 hrs, Volume= 1.147 af
Outflow = 1.91 cfs @ 13.03 hrs, Volume= 1.146 af, Atten= 0%, Lag= 1.1 min

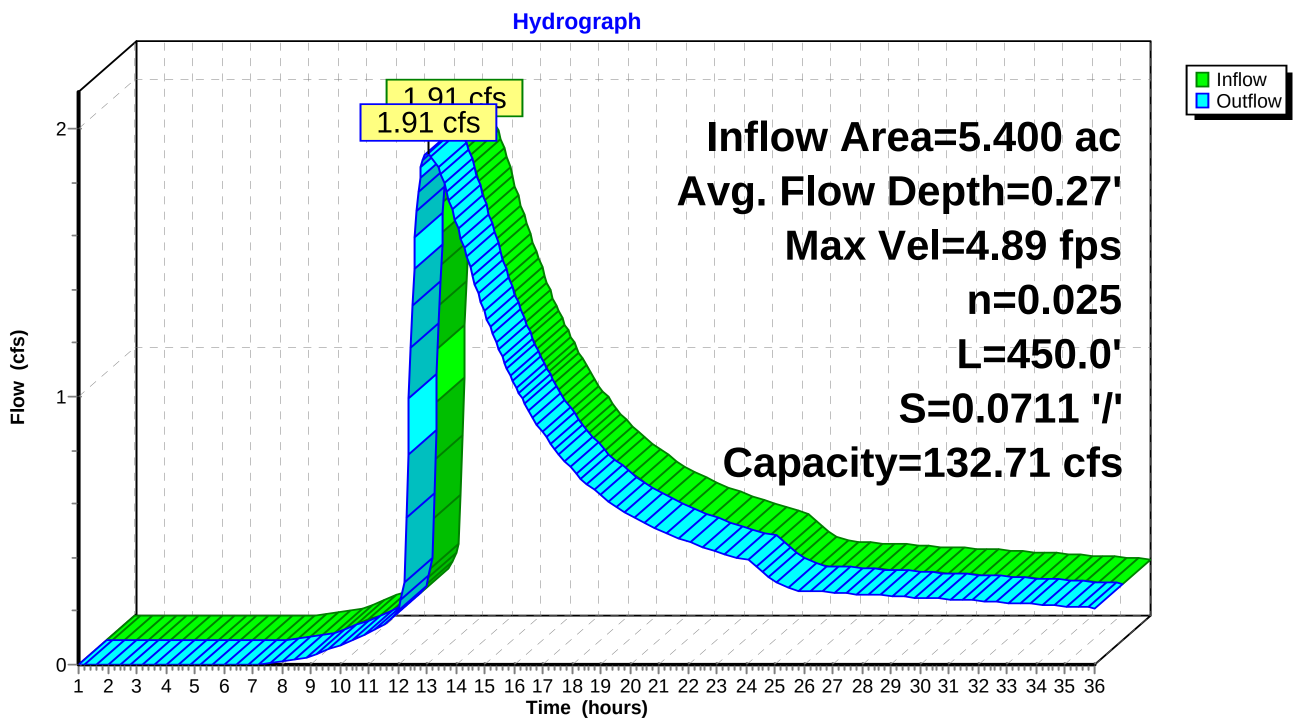
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.89 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.87 fps, Avg. Travel Time= 2.6 min

Peak Storage= 175 cf @ 13.03 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 132.71 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.025
Length= 450.0' Slope= 0.0711 '/'
Inlet Invert= 500.00', Outlet Invert= 468.00'



Reach RB2: (new Reach)



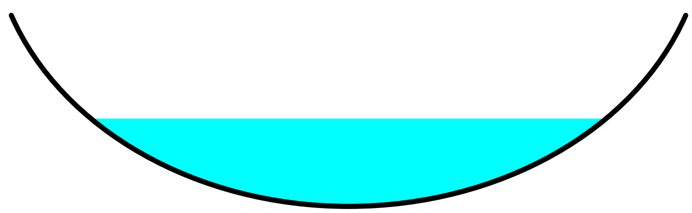
Summary for Reach RB3: (new Reach)

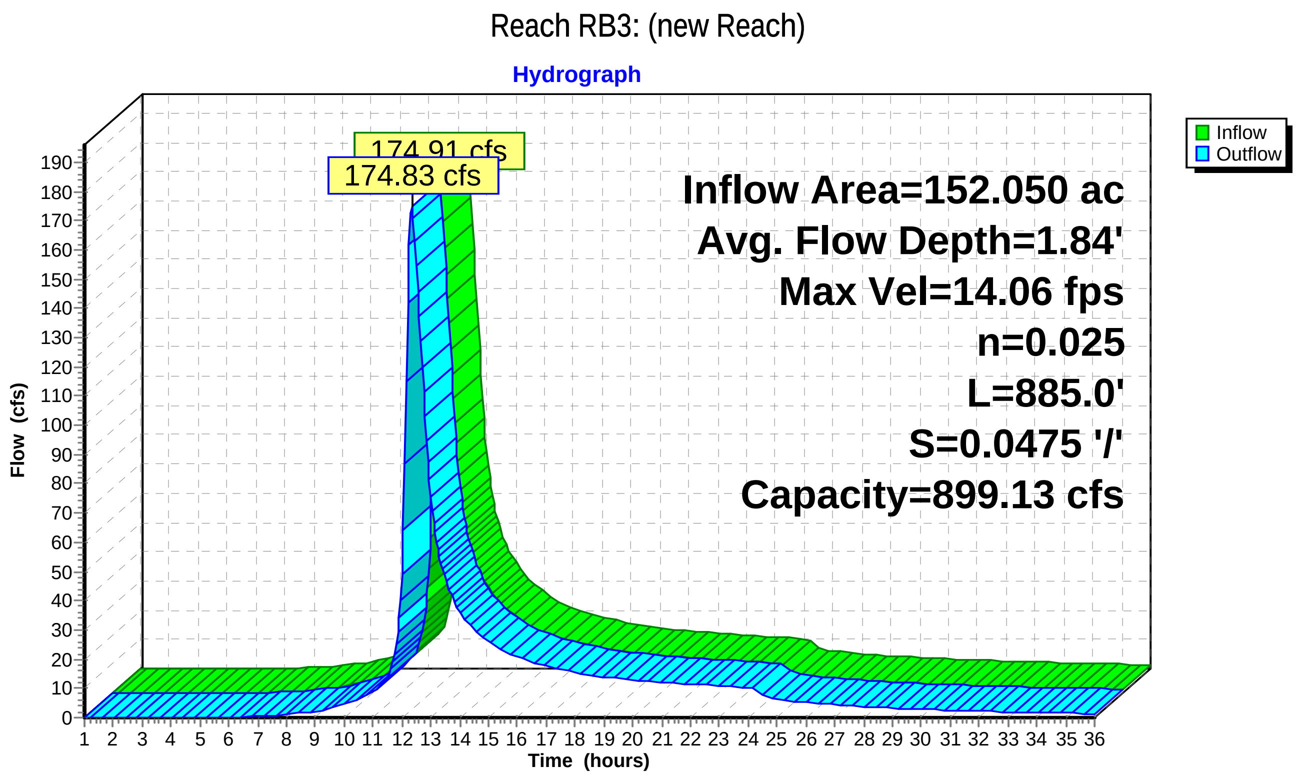
Inflow Area = 152.050 ac, 15.99% Impervious, Inflow Depth > 2.67" for 10-yr event
Inflow = 174.91 cfs @ 12.33 hrs, Volume= 33.838 af
Outflow = 174.83 cfs @ 12.34 hrs, Volume= 33.829 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.06 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 5.32 fps, Avg. Travel Time= 2.8 min

Peak Storage= 11,003 cf @ 12.34 hrs
Average Depth at Peak Storage= 1.84'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 899.13 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 885.0' Slope= 0.0475 '/'
Inlet Invert= 546.00', Outlet Invert= 504.00'





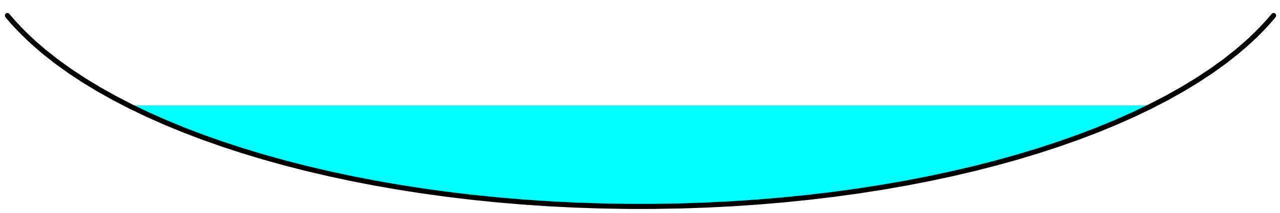
Summary for Reach RB4: (new Reach)

Inflow Area = 17.200 ac, 10.17% Impervious, Inflow Depth = 2.91" for 10-yr event
Inflow = 35.57 cfs @ 12.25 hrs, Volume= 4.176 af
Outflow = 35.47 cfs @ 12.27 hrs, Volume= 4.176 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.62 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 4.2 min

Peak Storage= 3,067 cf @ 12.27 hrs
Average Depth at Peak Storage= 1.06'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 139.80 cfs

15.00' x 2.00' deep Parabolic Channel, n= 0.025
Length= 400.0' Slope= 0.0100 '/'
Inlet Invert= 550.00', Outlet Invert= 546.00'



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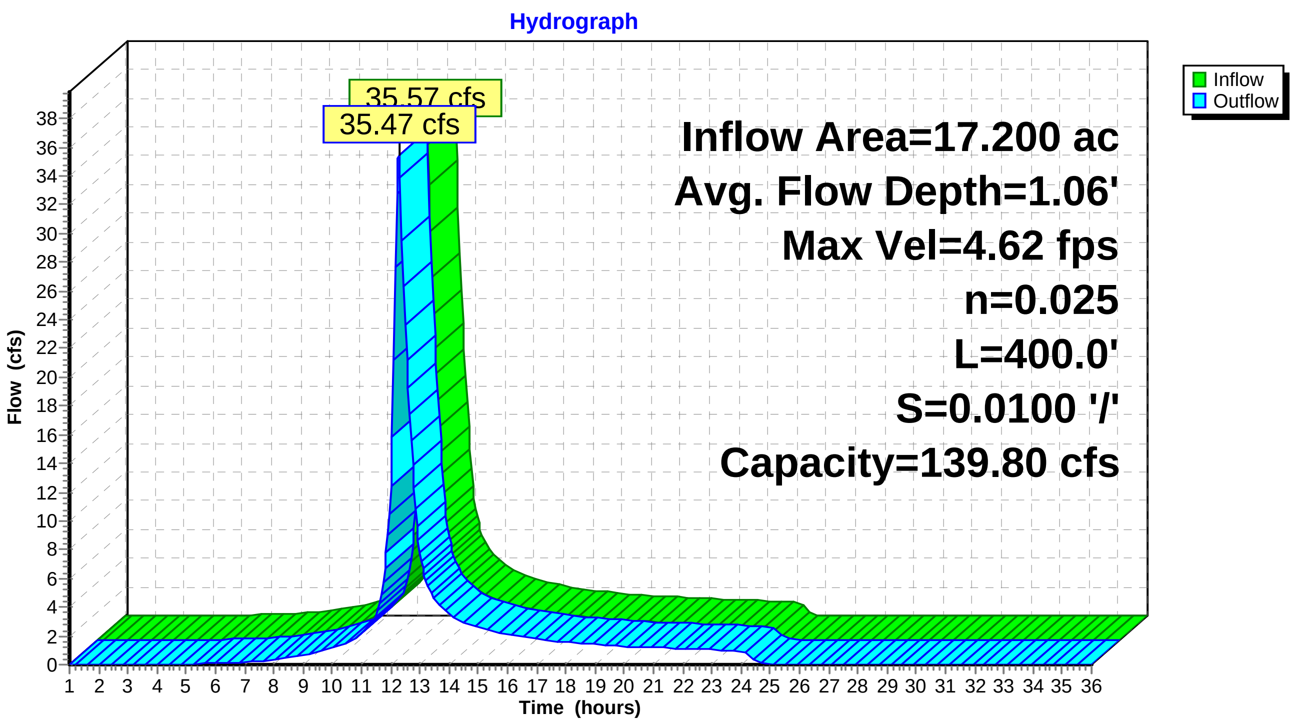
Reach RB4: (new Reach)



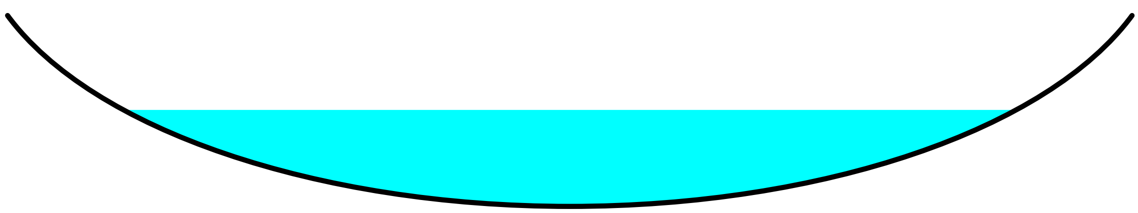
Summary for Reach RB5: (new Reach)

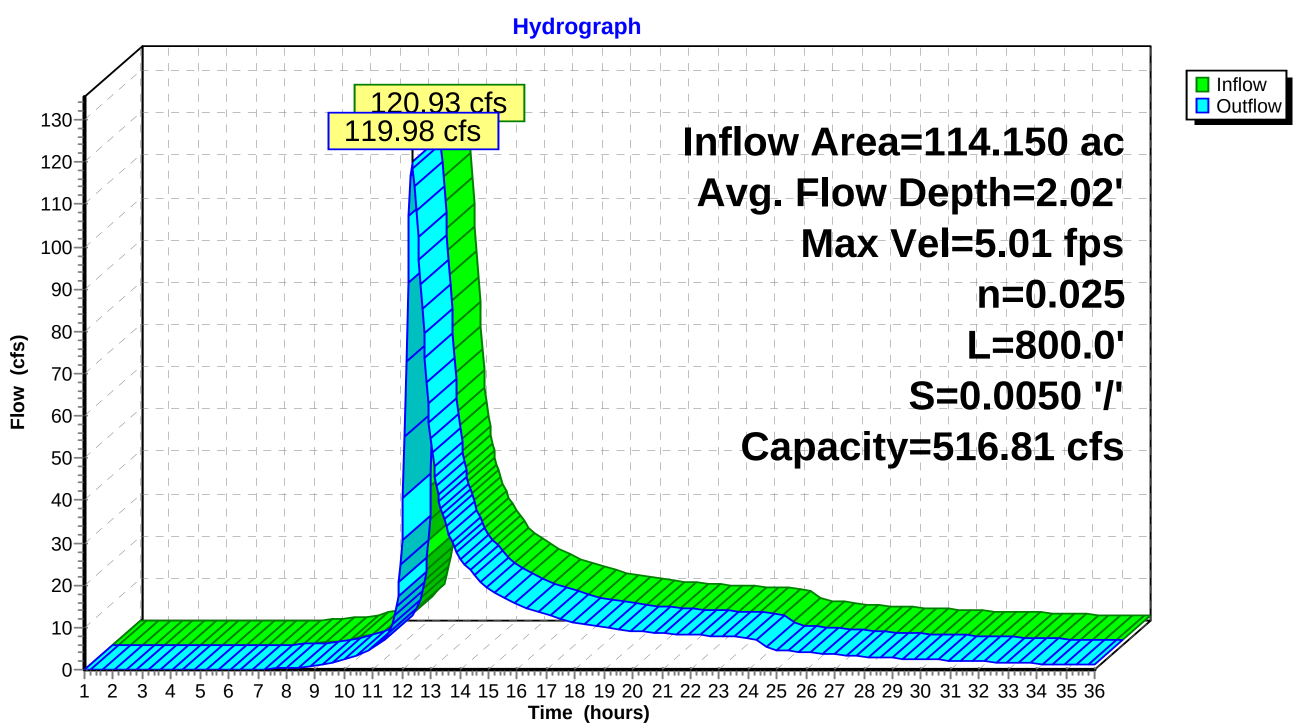
Inflow Area = 114.150 ac, 14.30% Impervious, Inflow Depth > 2.53" for 10-yr event
Inflow = 120.93 cfs @ 12.32 hrs, Volume= 24.059 af
Outflow = 119.98 cfs @ 12.36 hrs, Volume= 24.042 af, Atten= 1%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.01 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 1.90 fps, Avg. Travel Time= 7.0 min

Peak Storage= 19,140 cf @ 12.36 hrs
Average Depth at Peak Storage= 2.02'
Bank-Full Depth= 4.00' Flow Area= 66.7 sf, Capacity= 516.81 cfs

25.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 800.0' Slope= 0.0050 '/'
Inlet Invert= 550.00', Outlet Invert= 546.00'





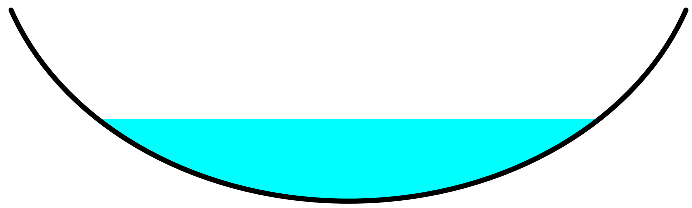
Summary for Reach RB6: (new Reach)

Inflow Area = 88.200 ac, 12.02% Impervious, Inflow Depth > 2.42" for 10-yr event
Inflow = 82.61 cfs @ 12.35 hrs, Volume= 17.805 af
Outflow = 82.59 cfs @ 12.35 hrs, Volume= 17.802 af, Atten= 0%, Lag= 0.5 min

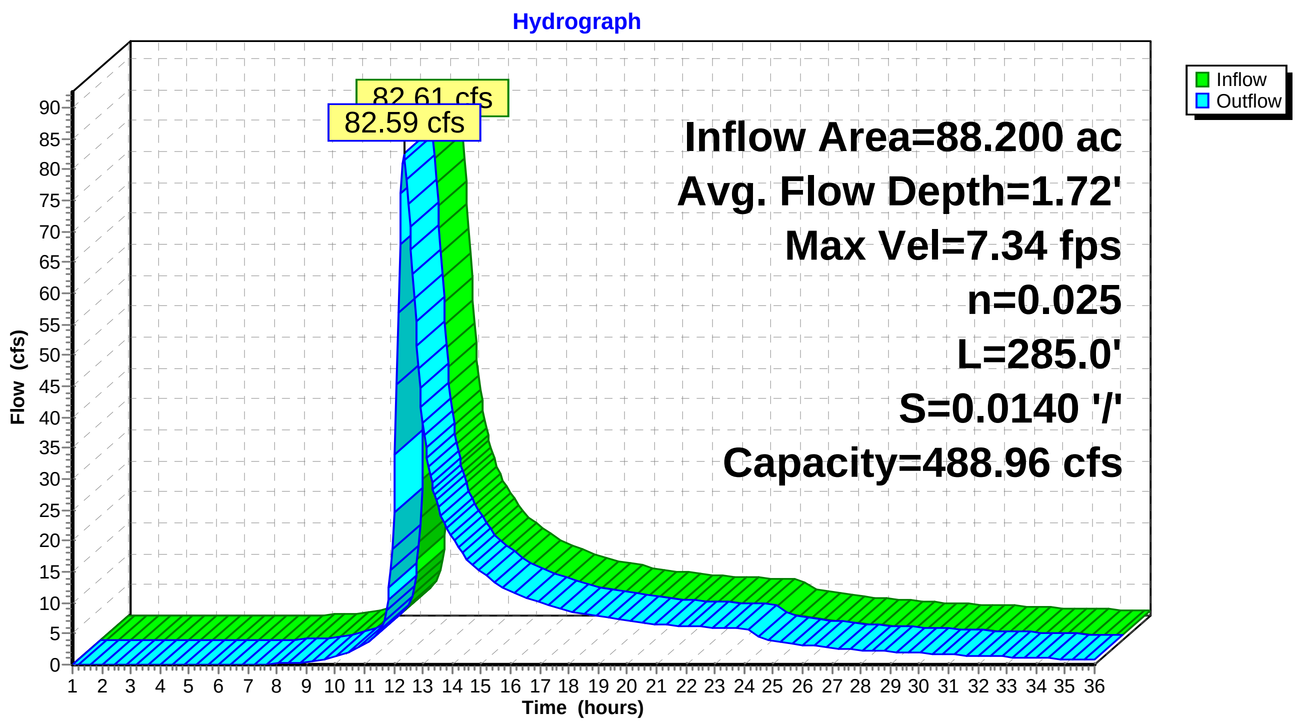
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.34 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.92 fps, Avg. Travel Time= 1.6 min

Peak Storage= 3,207 cf @ 12.35 hrs
Average Depth at Peak Storage= 1.72'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 488.96 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 285.0' Slope= 0.0140 '/'
Inlet Invert= 554.00', Outlet Invert= 550.00'



Reach RB6: (new Reach)



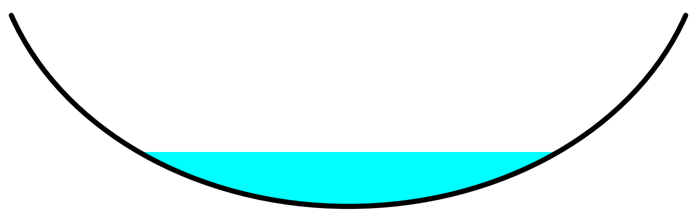
Summary for Reach RB7: (new Reach)

Inflow Area = 22.200 ac, 8.11% Impervious, Inflow Depth > 3.02" for 10-yr event
Inflow = 39.85 cfs @ 12.31 hrs, Volume= 5.585 af
Outflow = 39.51 cfs @ 12.34 hrs, Volume= 5.583 af, Atten= 1%, Lag= 1.9 min

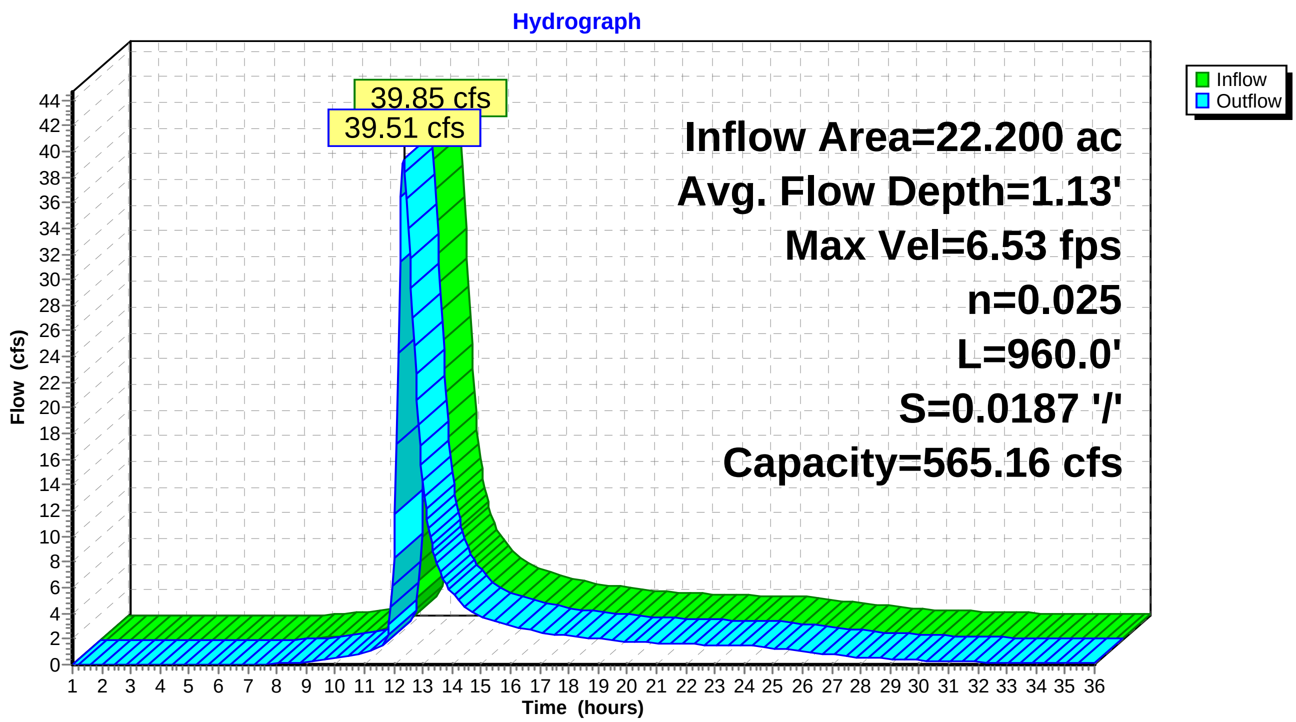
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.53 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 2.17 fps, Avg. Travel Time= 7.4 min

Peak Storage= 5,802 cf @ 12.34 hrs
Average Depth at Peak Storage= 1.13'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 565.16 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 960.0' Slope= 0.0187 '/'
Inlet Invert= 572.00', Outlet Invert= 554.00'



Reach RB7: (new Reach)



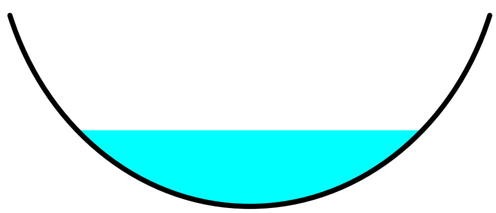
Summary for Reach RB8: (new Reach)

Inflow Area = 52.350 ac, 9.36% Impervious, Inflow Depth > 2.31" for 10-yr event
Inflow = 42.01 cfs @ 12.34 hrs, Volume= 10.074 af
Outflow = 42.00 cfs @ 12.34 hrs, Volume= 10.073 af, Atten= 0%, Lag= 0.2 min

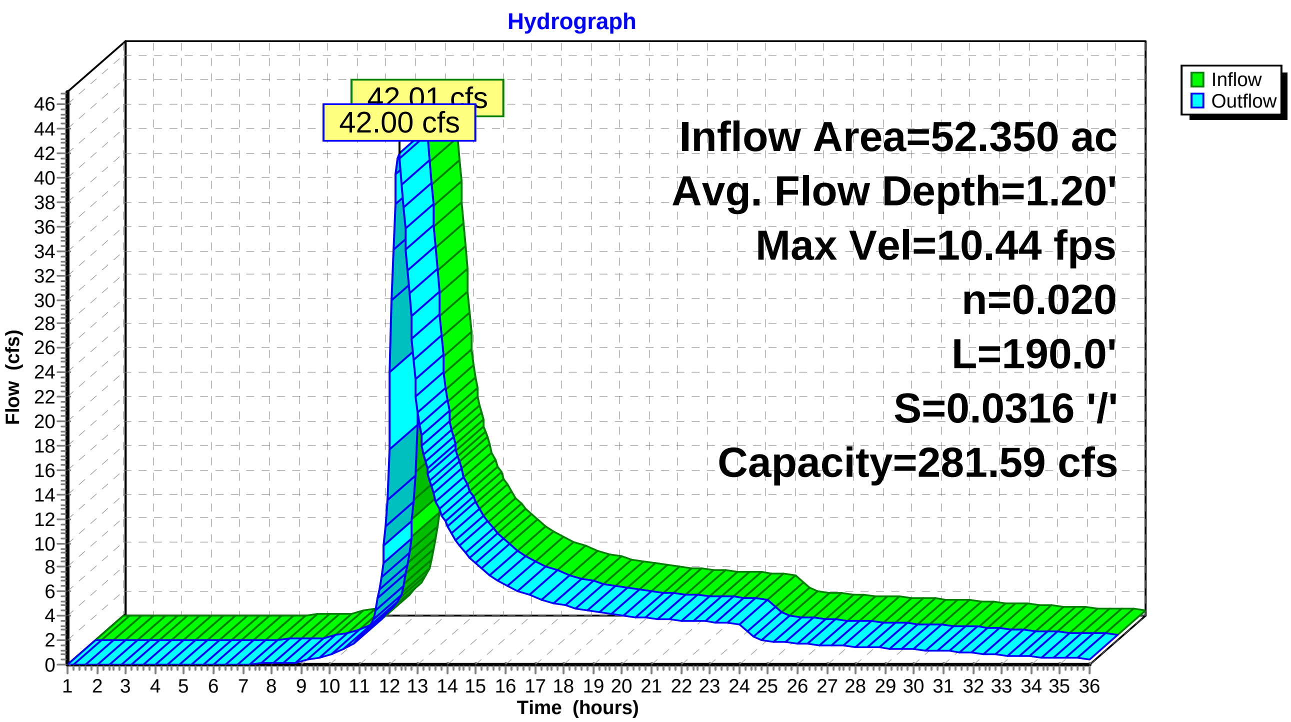
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.44 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.42 fps, Avg. Travel Time= 0.7 min

Peak Storage= 765 cf @ 12.34 hrs
Average Depth at Peak Storage= 1.20'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 281.59 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.020
Length= 190.0' Slope= 0.0316 '/'
Inlet Invert= 560.00', Outlet Invert= 554.00'



Reach RB8: (new Reach)



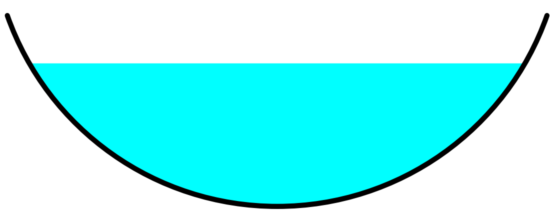
Summary for Reach RC1: (new Reach)

Inflow Area = 306.680 ac, 4.37% Impervious, Inflow Depth > 2.49" for 10-yr event
Inflow = 411.66 cfs @ 12.30 hrs, Volume= 63.626 af
Outflow = 411.71 cfs @ 12.31 hrs, Volume= 63.624 af, Atten= 0%, Lag= 0.2 min

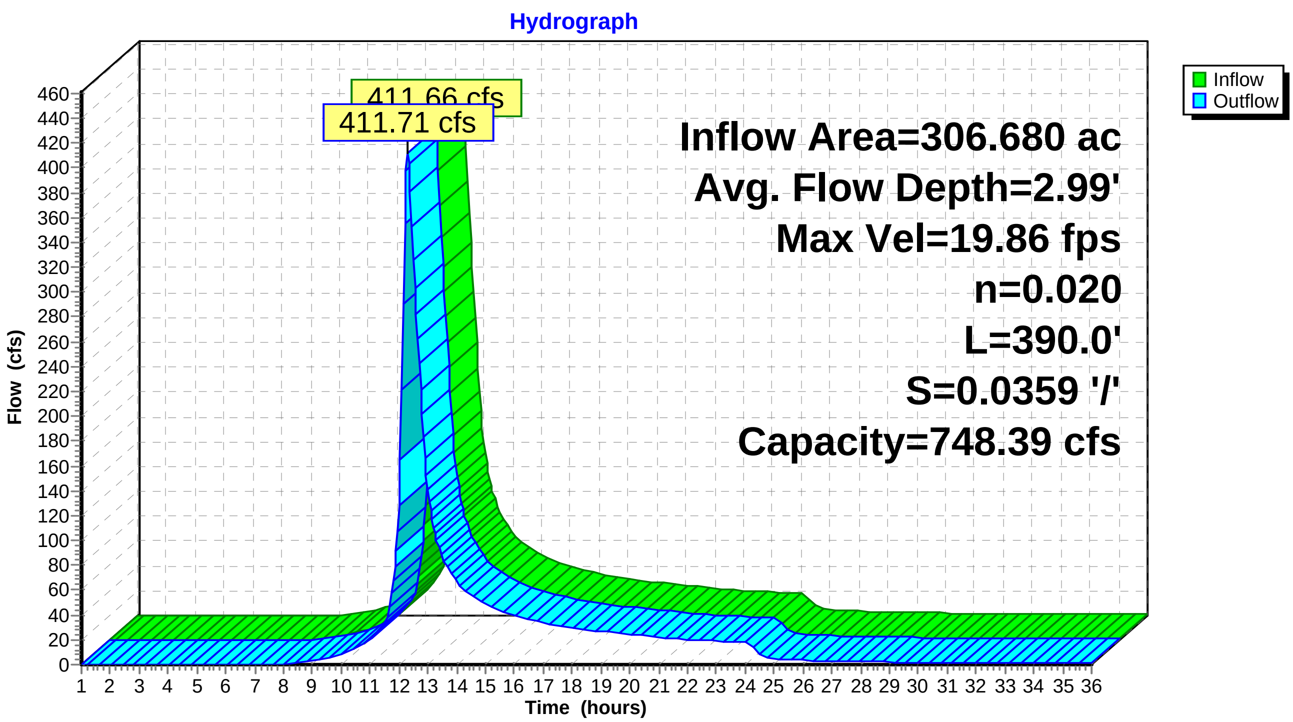
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 19.86 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 6.76 fps, Avg. Travel Time= 1.0 min

Peak Storage= 8,082 cf @ 12.31 hrs
Average Depth at Peak Storage= 2.99'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 748.39 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.020
Length= 390.0' Slope= 0.0359 '/'
Inlet Invert= 488.00', Outlet Invert= 474.00'



Reach RC1: (new Reach)



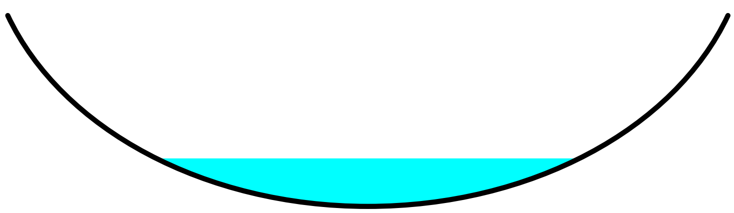
Summary for Reach RC10: (new Reach)

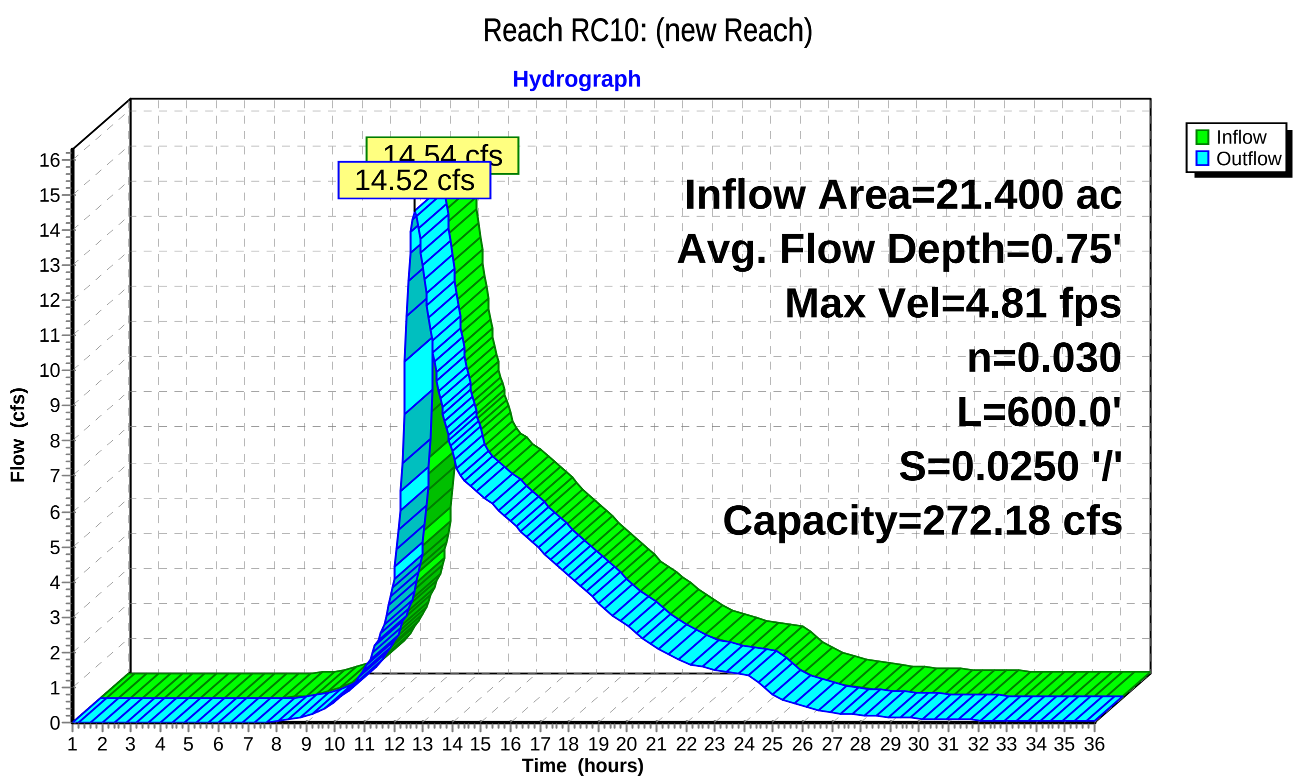
Inflow Area = 21.400 ac, 11.45% Impervious, Inflow Depth > 3.00" for 10-yr event
Inflow = 14.54 cfs @ 12.70 hrs, Volume= 5.345 af
Outflow = 14.52 cfs @ 12.72 hrs, Volume= 5.344 af, Atten= 0%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.81 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 2.13 fps, Avg. Travel Time= 4.7 min

Peak Storage= 1,809 cf @ 12.72 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 272.18 cfs

12.00' x 3.00' deep Parabolic Channel, n= 0.030
Length= 600.0' Slope= 0.0250 '/'
Inlet Invert= 660.00', Outlet Invert= 645.00'



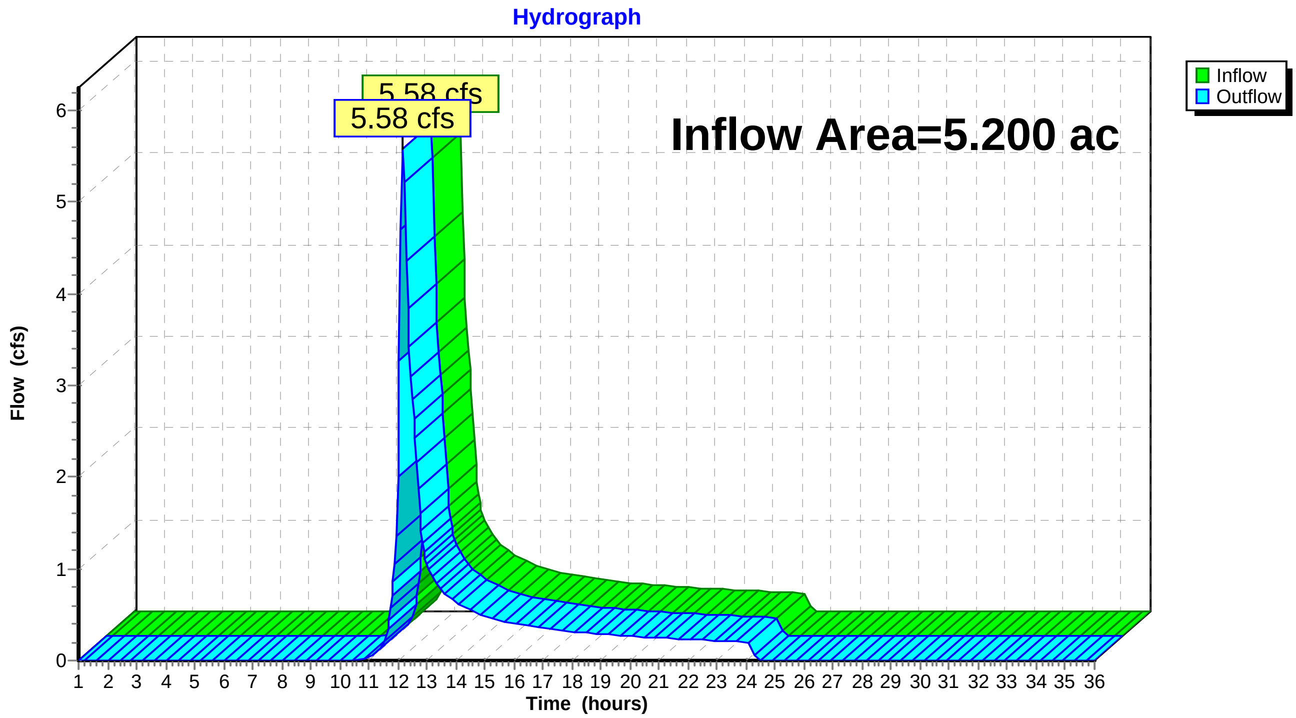


Summary for Reach RC11: (new Reach)

Inflow Area = 5.200 ac, 0.00% Impervious, Inflow Depth = 1.40" for 10-yr event
Inflow = 5.58 cfs @ 12.17 hrs, Volume= 0.608 af
Outflow = 5.58 cfs @ 12.17 hrs, Volume= 0.608 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach RC11: (new Reach)



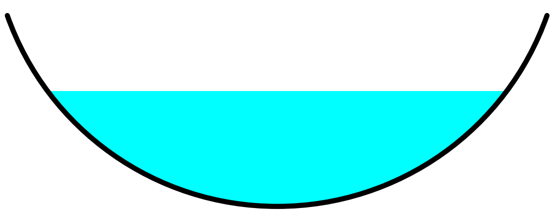
Summary for Reach RC2: (new Reach)

Inflow Area = 287.030 ac, 3.39% Impervious, Inflow Depth > 2.47" for 10-yr event
Inflow = 395.33 cfs @ 12.30 hrs, Volume= 59.026 af
Outflow = 395.38 cfs @ 12.30 hrs, Volume= 59.025 af, Atten= 0%, Lag= 0.2 min

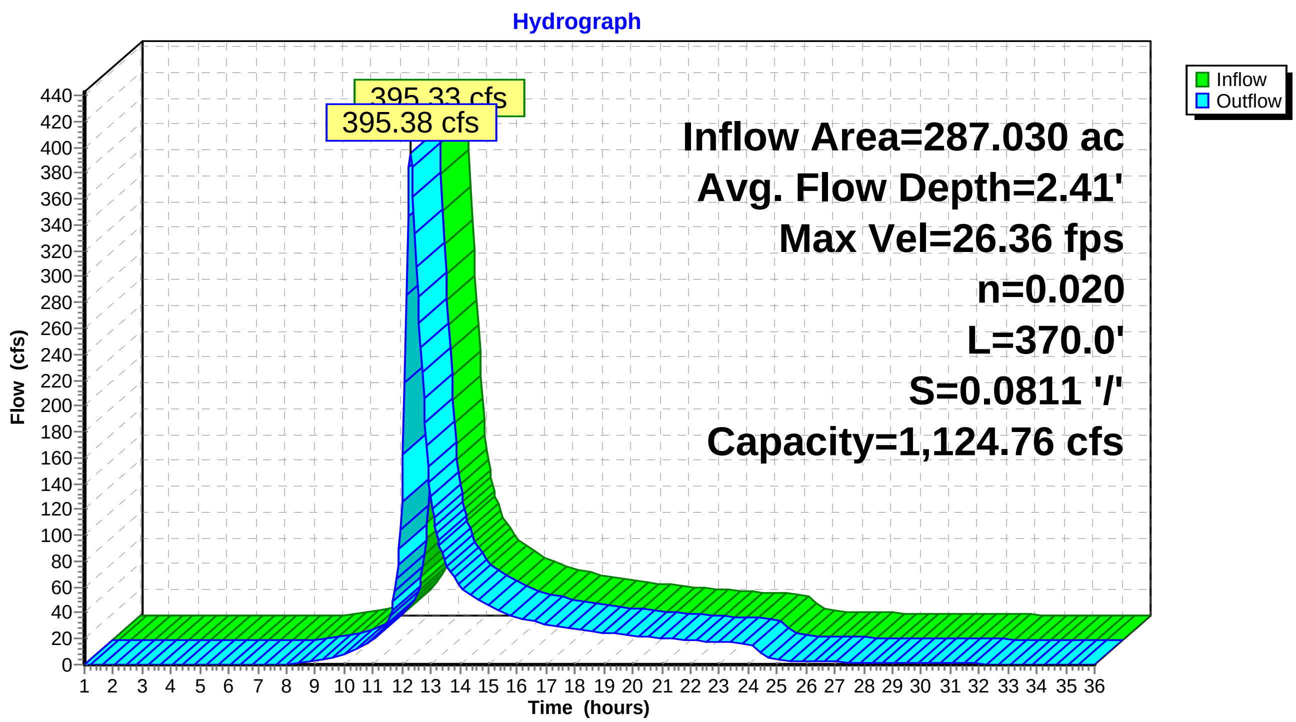
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 26.36 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 8.73 fps, Avg. Travel Time= 0.7 min

Peak Storage= 5,551 cf @ 12.30 hrs
Average Depth at Peak Storage= 2.41'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 1,124.76 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.020
Length= 370.0' Slope= 0.0811 '/'
Inlet Invert= 504.00', Outlet Invert= 474.00'



Reach RC2: (new Reach)



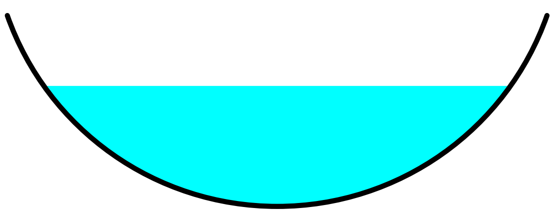
Summary for Reach RC3: (new Reach)

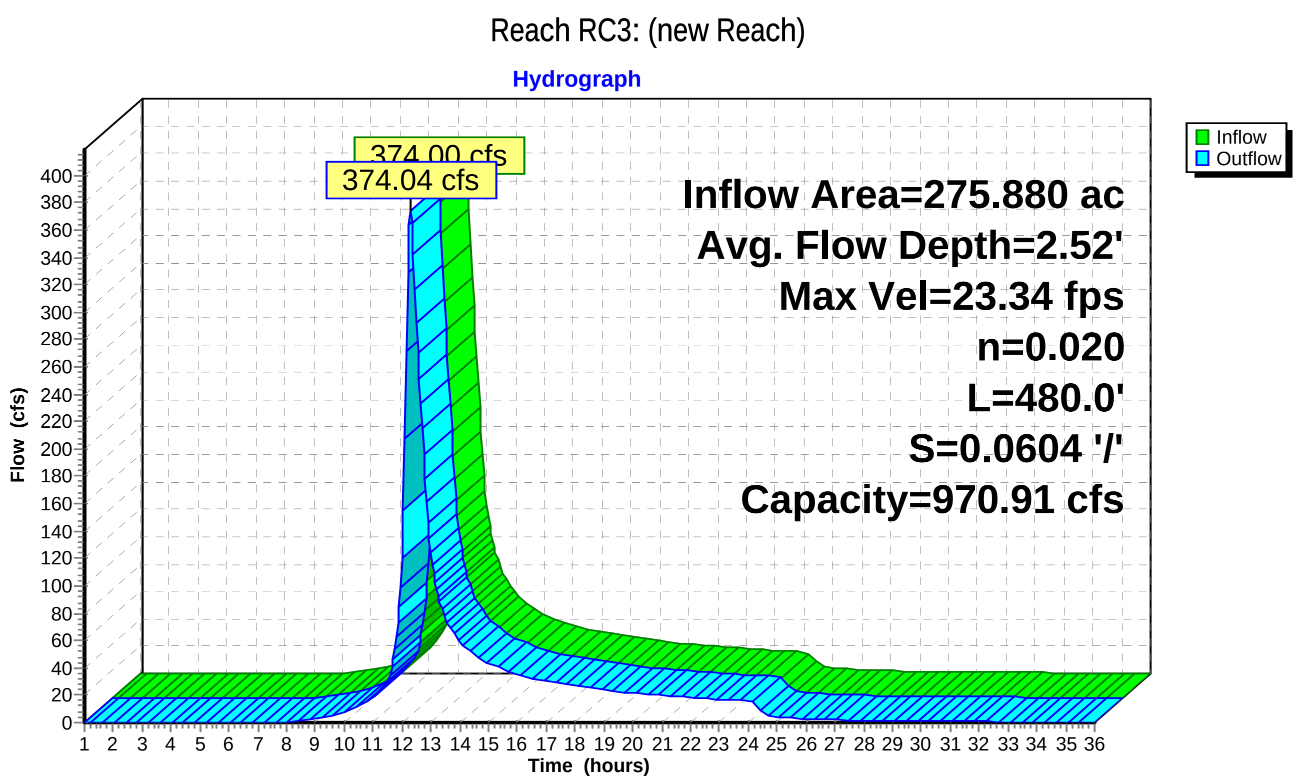
Inflow Area = 275.880 ac, 3.53% Impervious, Inflow Depth > 2.46" for 10-yr event
Inflow = 374.00 cfs @ 12.30 hrs, Volume= 56.477 af
Outflow = 374.04 cfs @ 12.30 hrs, Volume= 56.475 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 23.34 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 7.76 fps, Avg. Travel Time= 1.0 min

Peak Storage= 7,692 cf @ 12.30 hrs
Average Depth at Peak Storage= 2.52'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 970.91 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.020
Length= 480.0' Slope= 0.0604 '/'
Inlet Invert= 535.00', Outlet Invert= 506.00'





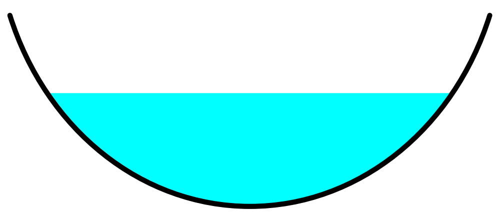
Summary for Reach RC4: (new Reach)

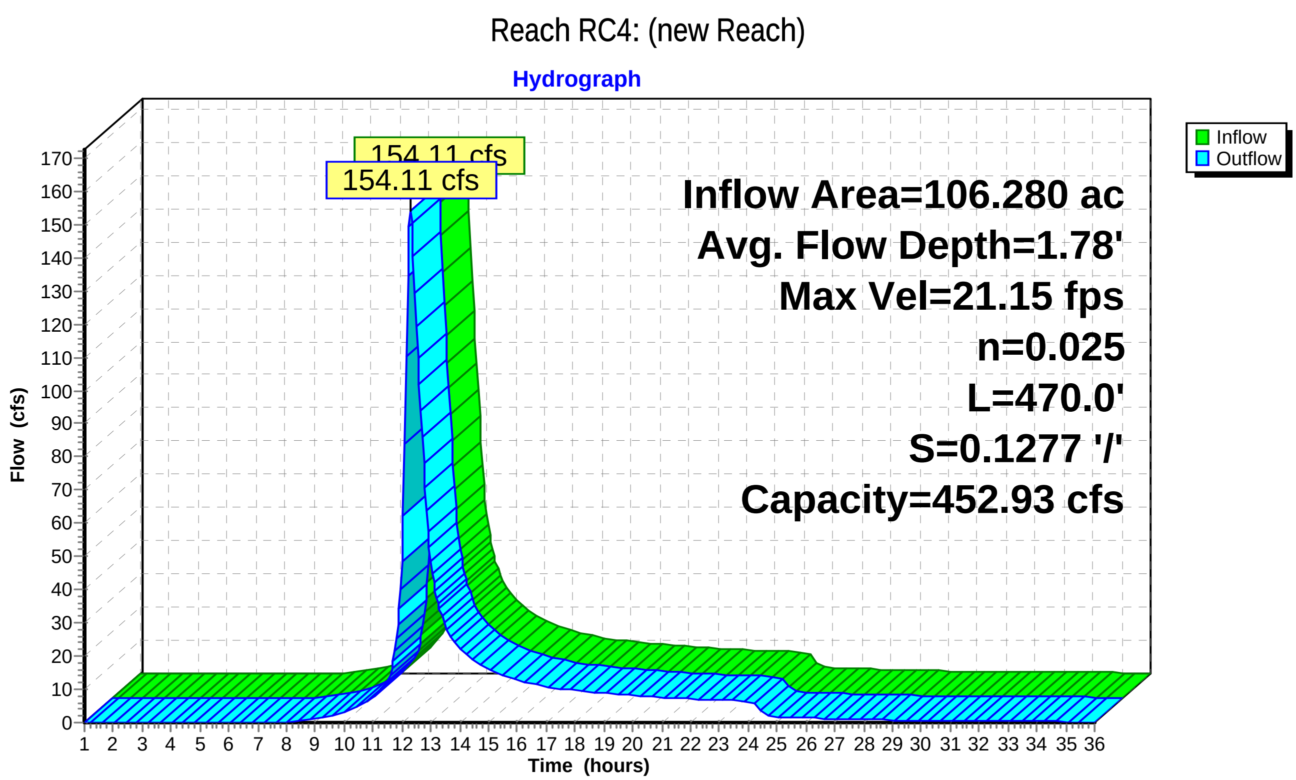
Inflow Area = 106.280 ac, 4.60% Impervious, Inflow Depth > 2.51" for 10-yr event
Inflow = 154.11 cfs @ 12.30 hrs, Volume= 22.250 af
Outflow = 154.11 cfs @ 12.30 hrs, Volume= 22.250 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 21.15 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 7.14 fps, Avg. Travel Time= 1.1 min

Peak Storage= 3,424 cf @ 12.30 hrs
Average Depth at Peak Storage= 1.78'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 452.93 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.025
Length= 470.0' Slope= 0.1277 '/'
Inlet Invert= 595.00', Outlet Invert= 535.00'





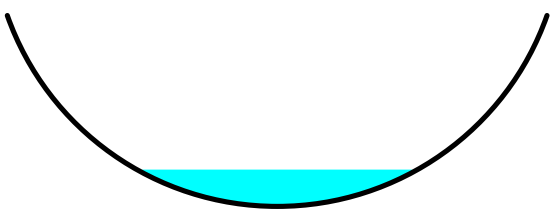
Summary for Reach RC5: (new Reach)

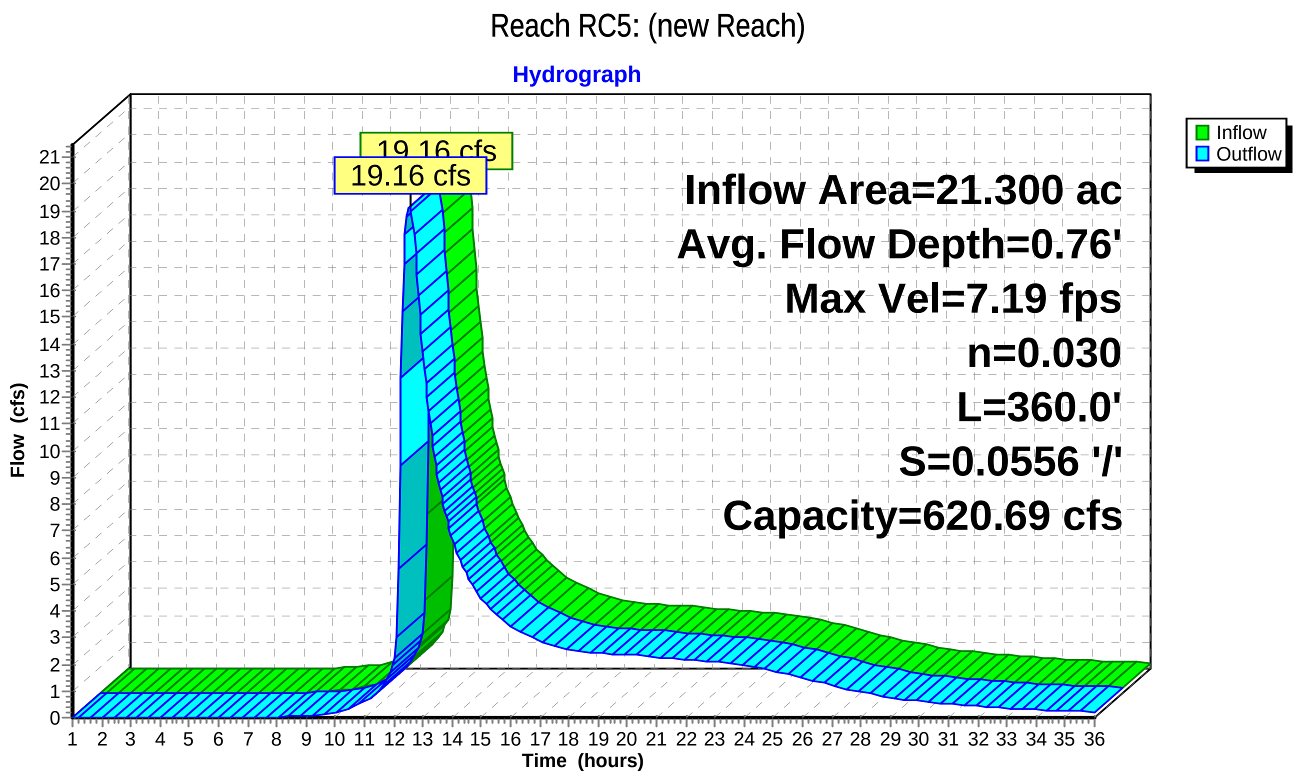
Inflow Area = 21.300 ac, 20.75% Impervious, Inflow Depth > 2.98" for 10-yr event
Inflow = 19.16 cfs @ 12.54 hrs, Volume= 5.283 af
Outflow = 19.16 cfs @ 12.55 hrs, Volume= 5.282 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.19 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.16 fps, Avg. Travel Time= 1.9 min

Peak Storage= 960 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 620.69 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.030
Length= 360.0' Slope= 0.0556 '/'
Inlet Invert= 645.00', Outlet Invert= 625.00'





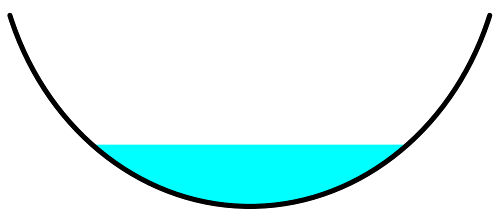
Summary for Reach RC6: (new Reach)

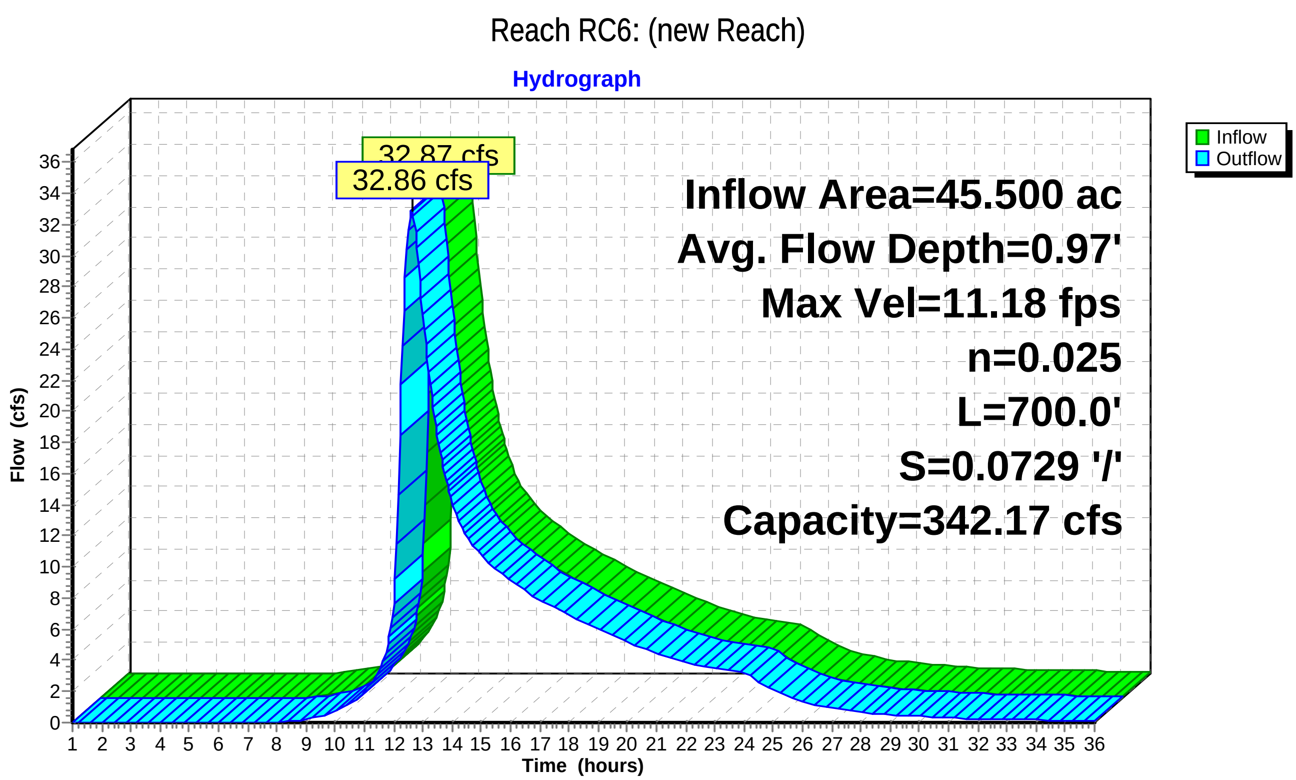
Inflow Area = 45.500 ac, 10.64% Impervious, Inflow Depth > 2.72" for 10-yr event
Inflow = 32.87 cfs @ 12.61 hrs, Volume= 10.317 af
Outflow = 32.86 cfs @ 12.62 hrs, Volume= 10.316 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.18 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 4.92 fps, Avg. Travel Time= 2.4 min

Peak Storage= 2,057 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.97'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 342.17 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.025
Length= 700.0' Slope= 0.0729 '/'
Inlet Invert= 596.00', Outlet Invert= 545.00'





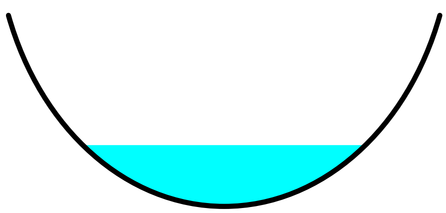
Summary for Reach RC7: (new Reach)

Inflow Area = 18.900 ac, 12.65% Impervious, Inflow Depth > 2.77" for 10-yr event
Inflow = 16.81 cfs @ 12.53 hrs, Volume= 4.365 af
Outflow = 16.81 cfs @ 12.54 hrs, Volume= 4.365 af, Atten= 0%, Lag= 0.4 min

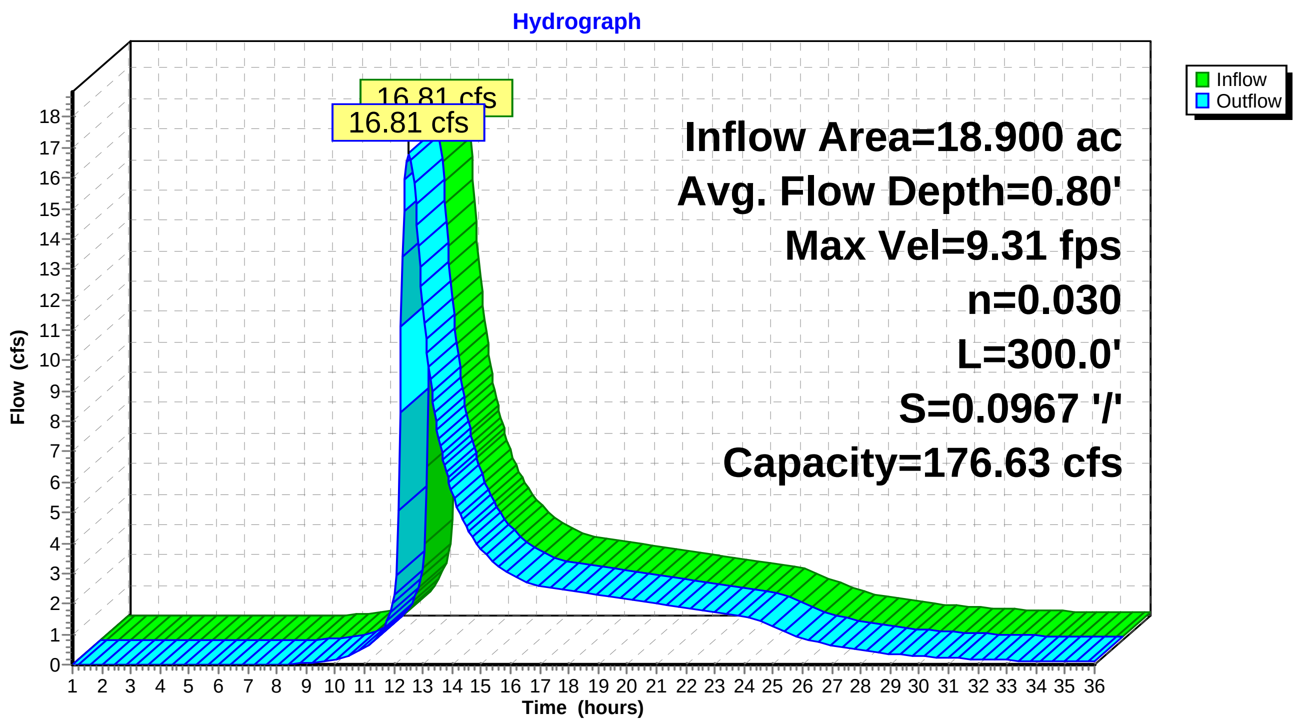
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.31 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 3.99 fps, Avg. Travel Time= 1.3 min

Peak Storage= 542 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.80'
Bank-Full Depth= 2.50' Flow Area= 10.0 sf, Capacity= 176.63 cfs

6.00' x 2.50' deep Parabolic Channel, n= 0.030
Length= 300.0' Slope= 0.0967 '/'
Inlet Invert= 625.00', Outlet Invert= 596.00'



Reach RC7: (new Reach)



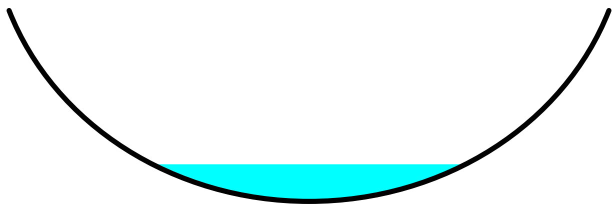
Summary for Reach RC8: (new Reach)

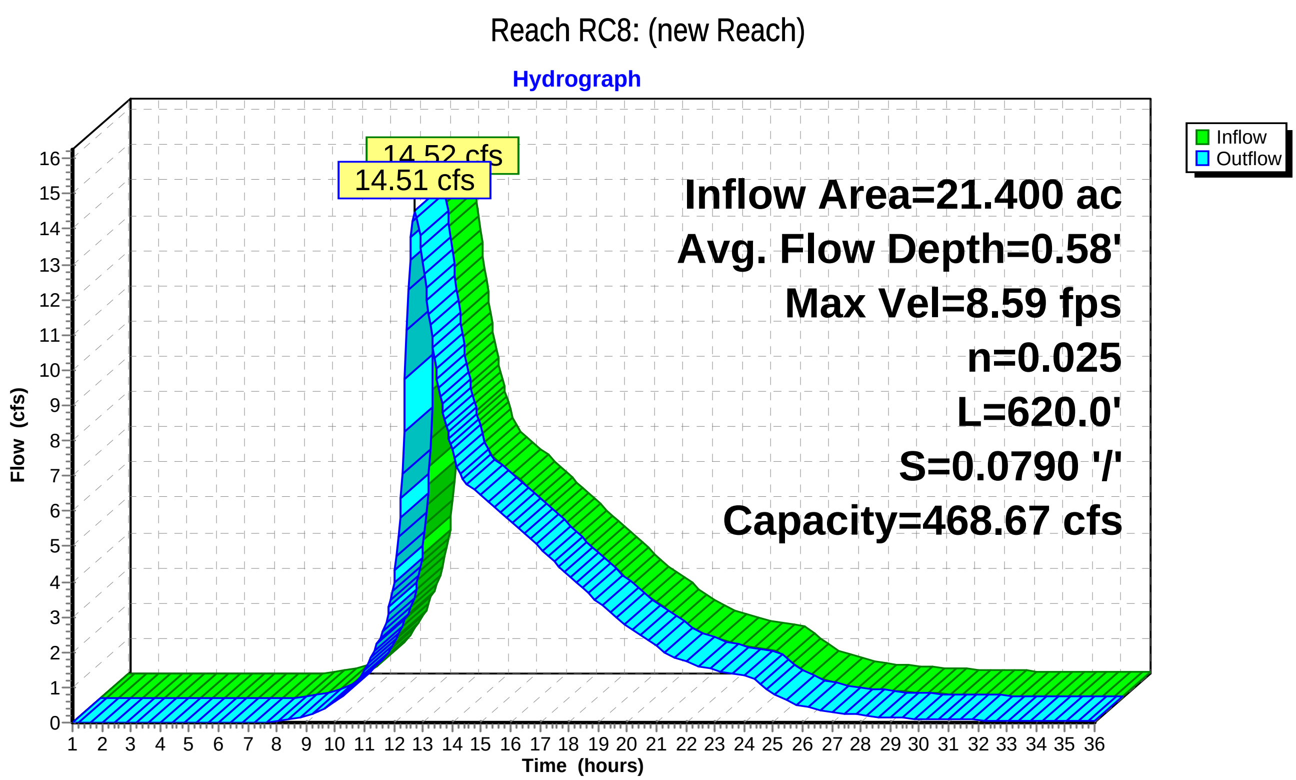
Inflow Area = 21.400 ac, 11.45% Impervious, Inflow Depth > 3.00" for 10-yr event
Inflow = 14.52 cfs @ 12.72 hrs, Volume= 5.344 af
Outflow = 14.51 cfs @ 12.74 hrs, Volume= 5.344 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.59 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 3.84 fps, Avg. Travel Time= 2.7 min

Peak Storage= 1,047 cf @ 12.74 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 3.00' Flow Area= 20.0 sf, Capacity= 468.67 cfs

10.00' x 3.00' deep Parabolic Channel, n= 0.025
Length= 620.0' Slope= 0.0790 '/'
Inlet Invert= 645.00', Outlet Invert= 596.00'





Summary for Pond 1P: PIPE

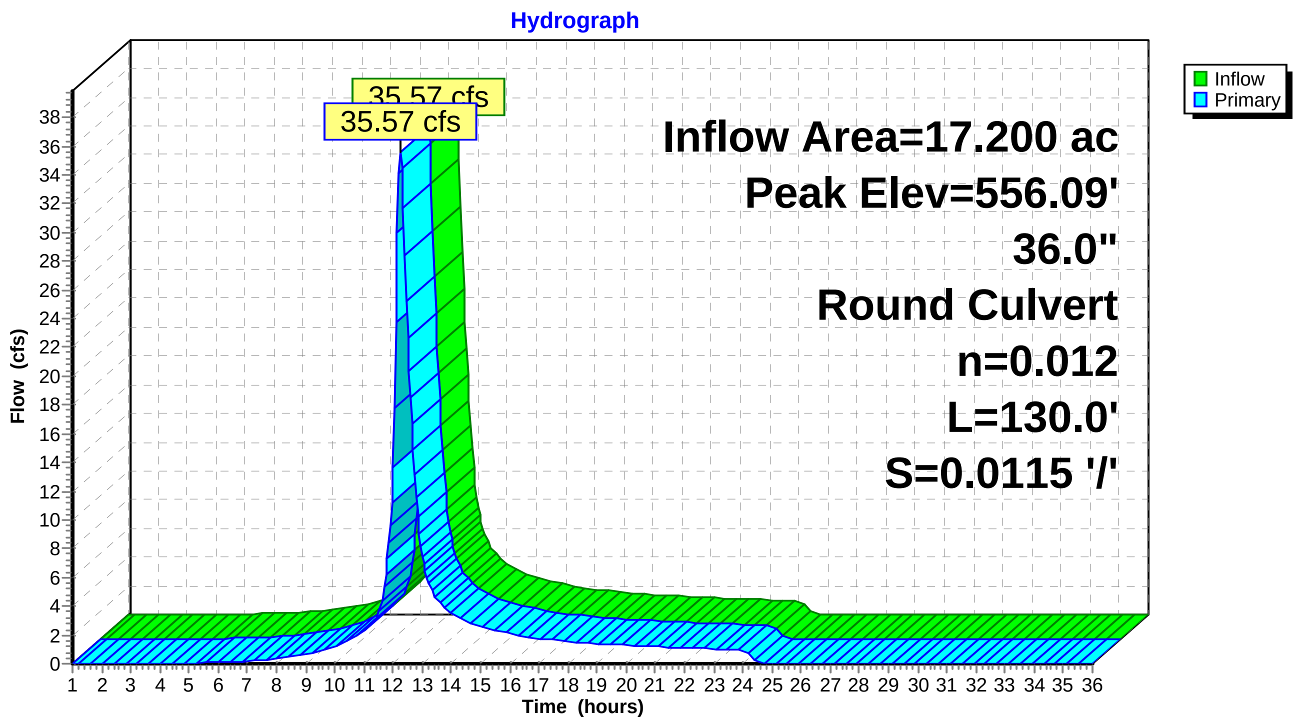
Inflow Area =	17.200 ac, 10.17% Impervious,	Inflow Depth = 2.91"	for 10-yr event
Inflow =	35.57 cfs @ 12.25 hrs, Volume=	4.176 af	
Outflow =	35.57 cfs @ 12.25 hrs, Volume=	4.176 af, Atten= 0%, Lag= 0.0 min	
Primary =	35.57 cfs @ 12.25 hrs, Volume=	4.176 af	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 556.09' @ 12.25 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	553.50'	**36.0" Round Culvert** L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 553.50' / 552.00' S= 0.0115 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=35.49 cfs @ 12.25 hrs HW=556.09' TW=551.05' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 35.49 cfs @ 5.48 fps)

Pond 1P: PIPE



Summary for Pond 2P: (new Pond)

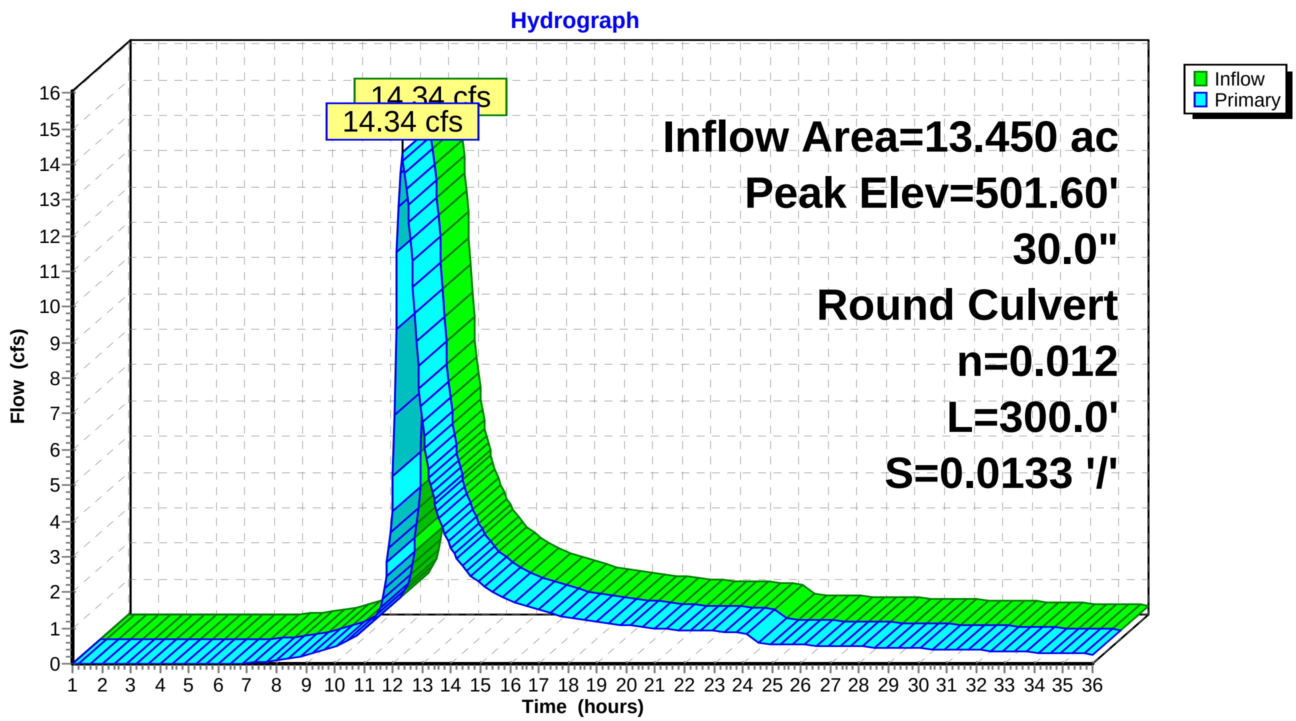
Inflow Area = 13.450 ac, 12.42% Impervious, Inflow Depth > 2.77" for 10-yr event
Inflow = 14.34 cfs @ 12.31 hrs, Volume= 3.103 af
Outflow = 14.34 cfs @ 12.31 hrs, Volume= 3.103 af, Atten= 0%, Lag= 0.0 min
Primary = 14.34 cfs @ 12.31 hrs, Volume= 3.103 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 501.60' @ 12.31 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	500.00'	**30.0" Round Culvert** L= 300.0' Ke= 0.500 Inlet / Outlet Invert= 500.00' / 496.00' S= 0.0133 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=14.27 cfs @ 12.31 hrs HW=501.60' TW=490.99' (Dynamic Tailwater)
└─1=Culvert (Inlet Controls 14.27 cfs @ 4.30 fps)

Pond 2P: (new Pond)



Summary for Pond 3P: (new Pond)

Inflow Area = 7.500 ac, 22.27% Impervious, Inflow Depth = 3.02" for 10-yr event
Inflow = 19.69 cfs @ 12.15 hrs, Volume= 1.888 af
Outflow = 6.17 cfs @ 12.61 hrs, Volume= 1.742 af, Atten= 69%, Lag= 27.7 min
Primary = 6.17 cfs @ 12.61 hrs, Volume= 1.742 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 552.67' @ 12.61 hrs Surf.Area= 15,664 sf Storage= 34,970 cf

Plug-Flow detention time= 334.0 min calculated for 1.742 af (92% of inflow)
Center-of-Mass det. time= 292.1 min (1,128.4 - 836.2)

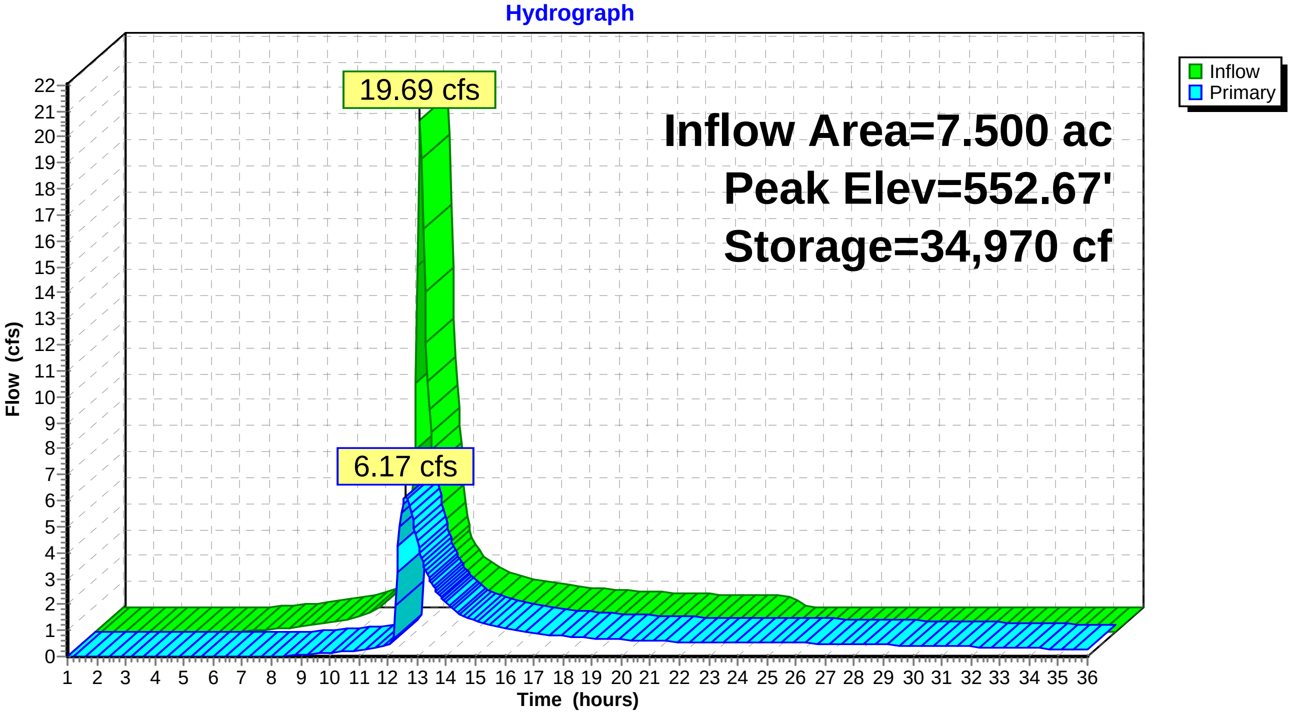
Volume	Invert	Avail.Storage	Storage Description
#1	550.00'	57,700 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
550.00	10,700	0	0
552.00	14,300	25,000	25,000
554.00	18,400	32,700	57,700

Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	**30.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 550.00' / 546.00' S= 0.1000 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	550.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	552.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height
#4	Device 1	553.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.16 cfs @ 12.61 hrs HW=552.66' TW=517.48' (Dynamic Tailwater)
└─1=**Culvert** (Passes 6.16 cfs of 28.11 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.61 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 5.49 cfs @ 2.88 fps)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond 3P: (new Pond)



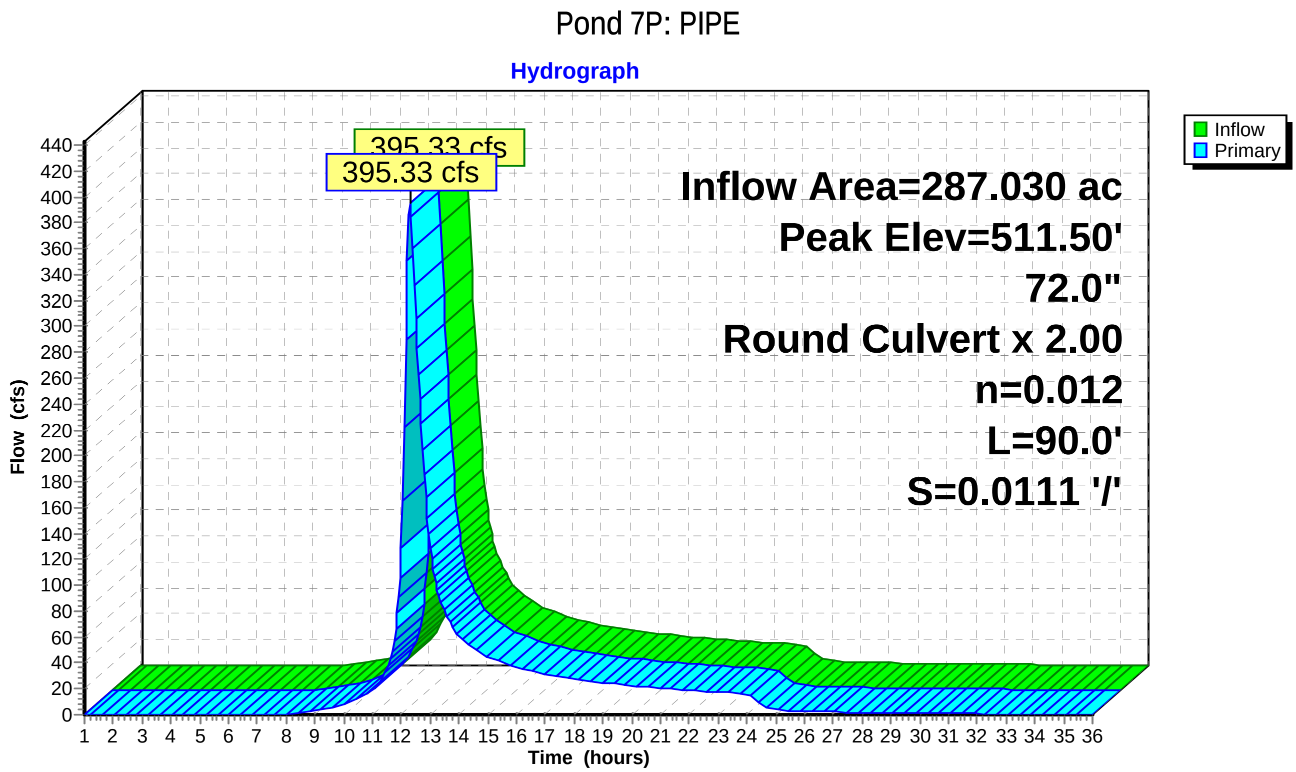
Summary for Pond 7P: PIPE

Inflow Area = 287.030 ac, 3.39% Impervious, Inflow Depth > 2.47" for 10-yr event
Inflow = 395.33 cfs @ 12.30 hrs, Volume= 59.026 af
Outflow = 395.33 cfs @ 12.30 hrs, Volume= 59.026 af, Atten= 0%, Lag= 0.0 min
Primary = 395.33 cfs @ 12.30 hrs, Volume= 59.026 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 511.50' @ 12.30 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	506.00'	**72.0" Round Culvert** X 2.00 L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 506.00' / 505.00' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 28.27 sf

Primary OutFlow Max=394.90 cfs @ 12.30 hrs HW=511.49' TW=506.41' (Dynamic Tailwater)
└1=Culvert (Barrel Controls 394.90 cfs @ 9.54 fps)



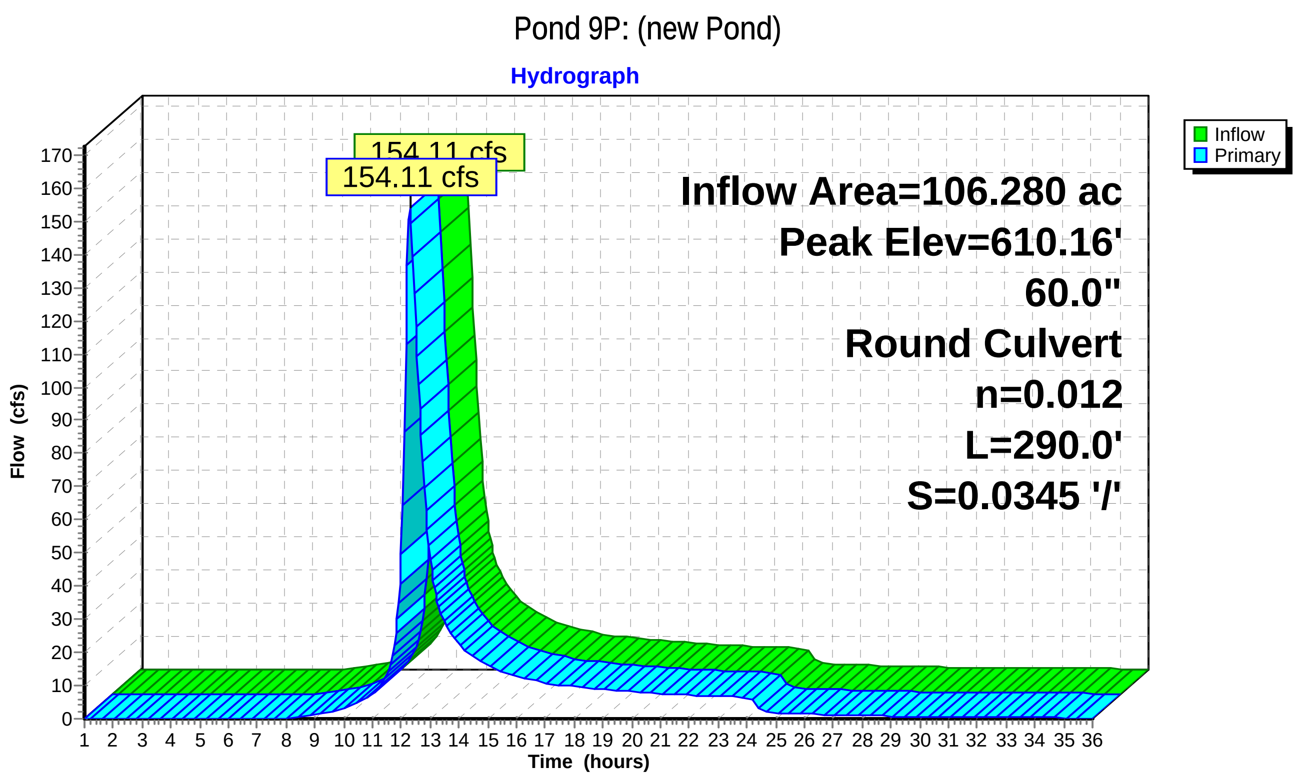
Summary for Pond 9P: (new Pond)

Inflow Area = 106.280 ac, 4.60% Impervious, Inflow Depth > 2.51" for 10-yr event
Inflow = 154.11 cfs @ 12.30 hrs, Volume= 22.250 af
Outflow = 154.11 cfs @ 12.30 hrs, Volume= 22.250 af, Atten= 0%, Lag= 0.0 min
Primary = 154.11 cfs @ 12.30 hrs, Volume= 22.250 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 610.16' @ 12.30 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	605.00'	**60.0" Round Culvert** L= 290.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 605.00' / 595.00' S= 0.0345 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=153.90 cfs @ 12.30 hrs HW=610.15' TW=596.77' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 153.90 cfs @ 7.84 fps)



Summary for Pond 10P: (new Pond)

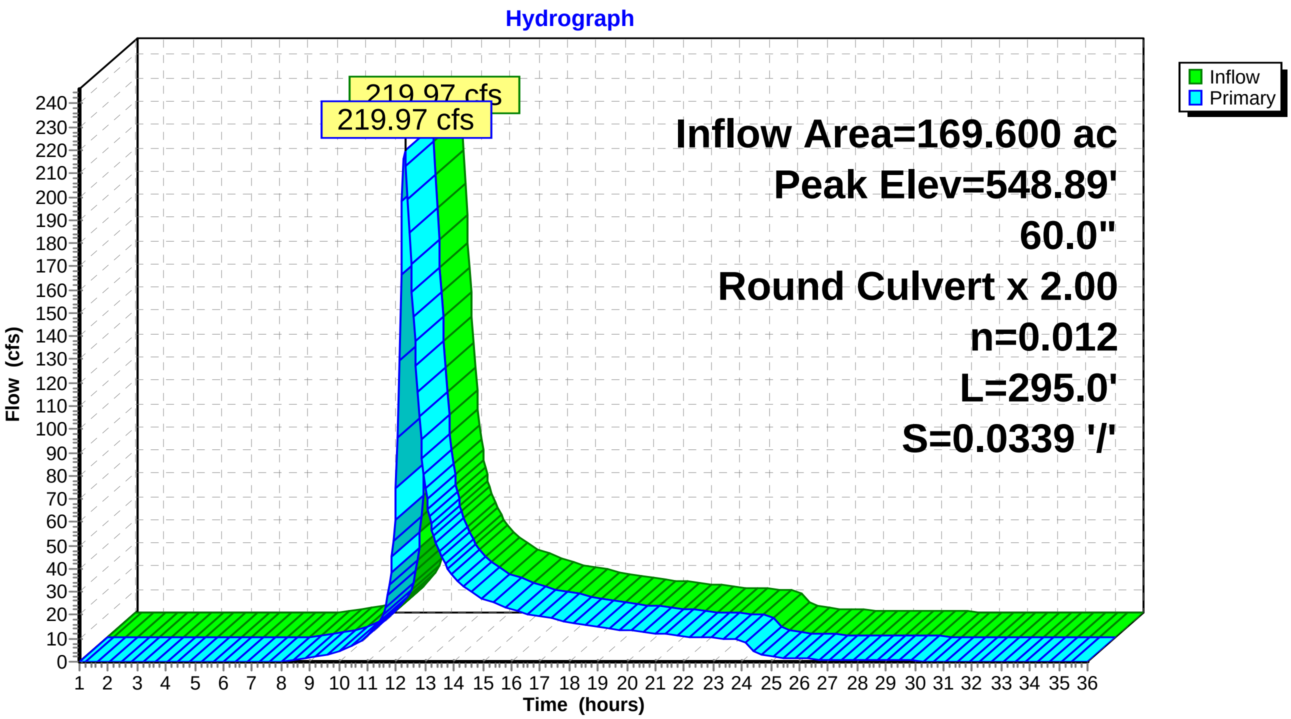
Inflow Area = 169.600 ac, 2.85% Impervious, Inflow Depth > 2.42" for 10-yr event
Inflow = 219.97 cfs @ 12.29 hrs, Volume= 34.227 af
Outflow = 219.97 cfs @ 12.29 hrs, Volume= 34.227 af, Atten= 0%, Lag= 0.0 min
Primary = 219.97 cfs @ 12.29 hrs, Volume= 34.227 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 548.89' @ 12.29 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	545.00'	**60.0" Round Culvert** X 2.00 L= 295.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 545.00' / 535.00' S= 0.0339 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=219.28 cfs @ 12.29 hrs HW=548.88' TW=537.52' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 219.28 cfs @ 6.71 fps)

Pond 10P: (new Pond)



Summary for Pond 11P: PIPE

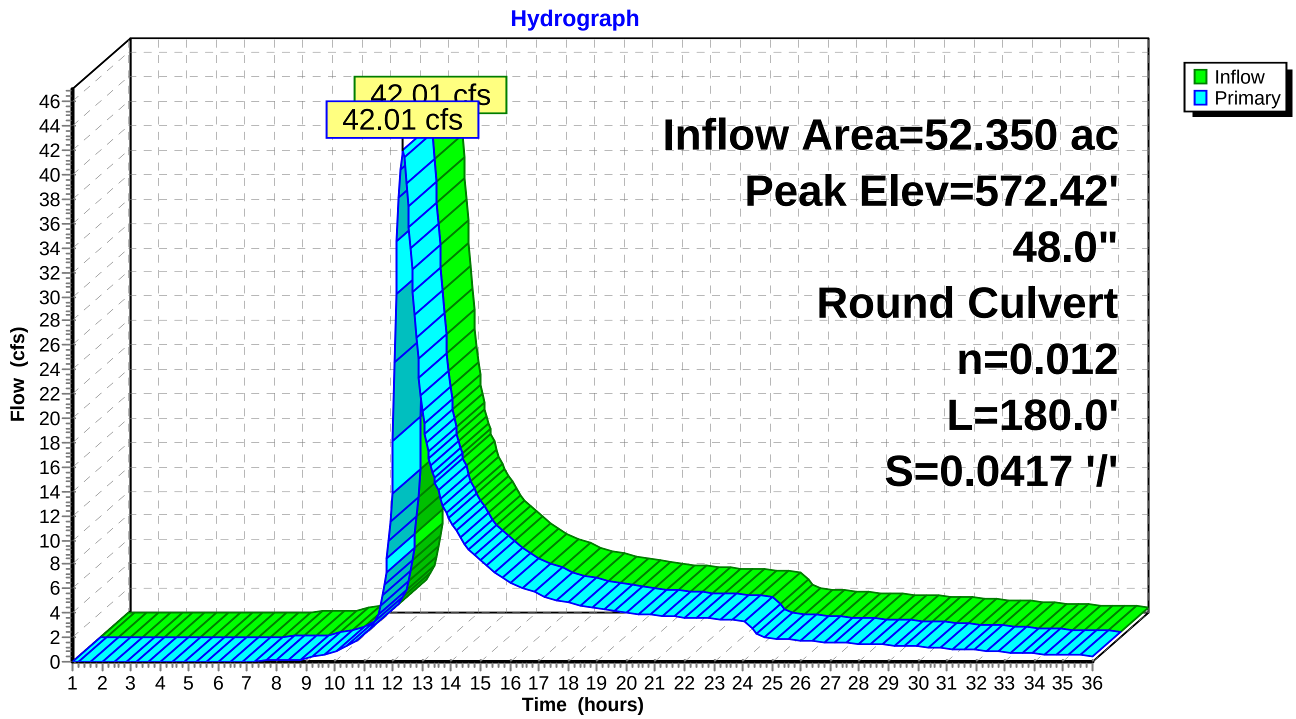
Inflow Area = 52.350 ac, 9.36% Impervious, Inflow Depth > 2.31" for 10-yr event
Inflow = 42.01 cfs @ 12.34 hrs, Volume= 10.074 af
Outflow = 42.01 cfs @ 12.34 hrs, Volume= 10.074 af, Atten= 0%, Lag= 0.0 min
Primary = 42.01 cfs @ 12.34 hrs, Volume= 10.074 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 572.42' @ 12.34 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	570.00'	**48.0" Round Culvert** L= 180.0' Ke= 0.500 Inlet / Outlet Invert= 570.00' / 562.50' S= 0.0417 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=41.89 cfs @ 12.34 hrs HW=572.41' TW=561.19' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 41.89 cfs @ 5.29 fps)

Pond 11P: PIPE



Summary for Pond 16P: PIPE

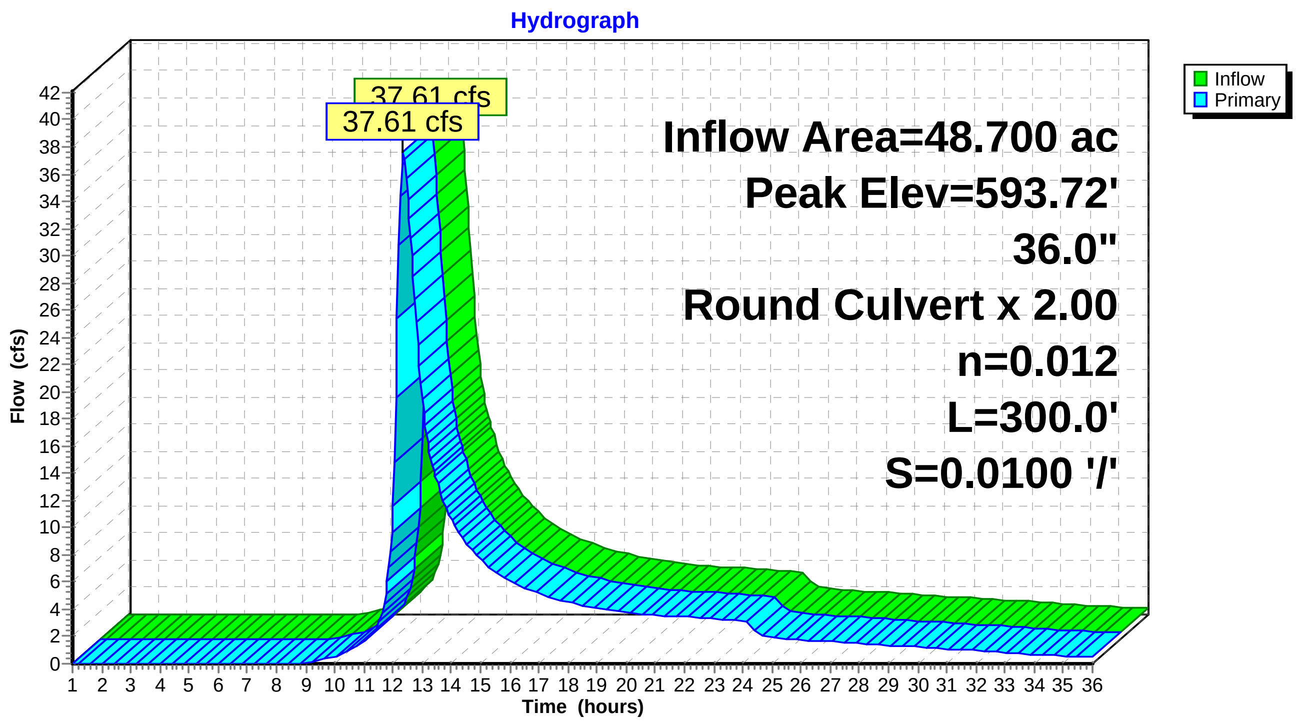
Inflow Area =	48.700 ac,	9.86% Impervious, Inflow Depth > 2.26"	for 10-yr event	
Inflow =	37.61 cfs @	12.36 hrs, Volume=	9.155 af	
Outflow =	37.61 cfs @	12.36 hrs, Volume=	9.155 af,	Atten= 0%, Lag= 0.0 min
Primary =	37.61 cfs @	12.36 hrs, Volume=	9.155 af	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 593.72' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	592.00'	**36.0" Round Culvert** X 2.00 L= 300.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 592.00' / 589.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=37.52 cfs @ 12.36 hrs HW=593.72' TW=589.01' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 37.52 cfs @ 4.47 fps)

Pond 16P: PIPE

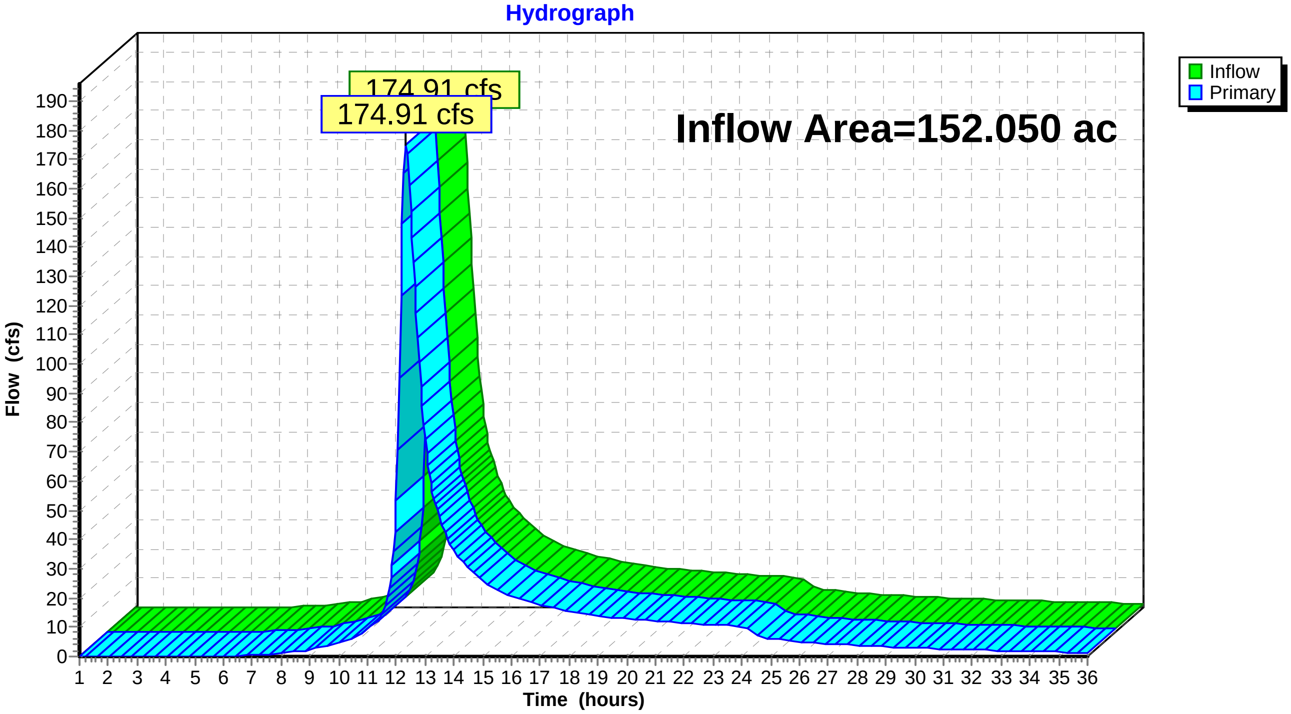


Summary for Pond L: LAKE

Inflow Area =		152.050 ac, 15.99% Impervious, Inflow Depth > 2.67" for 10-yr event
Inflow	=	174.91 cfs @ 12.33 hrs, Volume= 33.838 af
Primary	=	174.91 cfs @ 12.33 hrs, Volume= 33.838 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Pond L: LAKE



Summary for Pond PB11: (new Pond)

Inflow Area = 22.200 ac, 8.11% Impervious, Inflow Depth = 3.05" for 10-yr event
Inflow = 53.69 cfs @ 12.15 hrs, Volume= 5.638 af
Outflow = 39.85 cfs @ 12.31 hrs, Volume= 5.585 af, Atten= 26%, Lag= 9.6 min
Primary = 39.85 cfs @ 12.31 hrs, Volume= 5.585 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 580.71' @ 12.31 hrs Surf.Area= 25,370 sf Storage= 56,139 cf

Plug-Flow detention time= 110.9 min calculated for 5.577 af (99% of inflow)
Center-of-Mass det. time= 106.0 min (942.8 - 836.8)

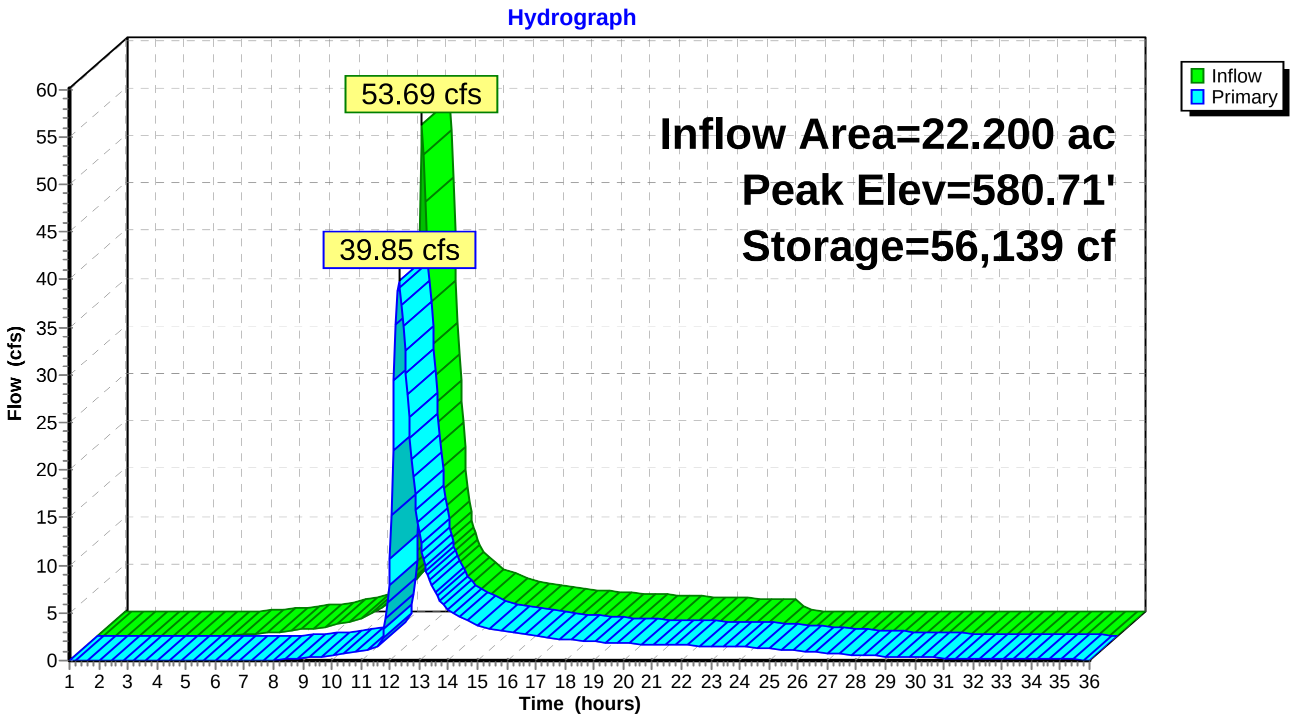
Volume	Invert	Avail.Storage	Storage Description
#1	578.00'	91,990 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.00	16,290	0	0
580.00	22,850	39,140	39,140
582.00	30,000	52,850	91,990

Device	Routing	Invert	Outlet Devices
#1	Primary	576.00'	36.0" Round Culvert X 2.00 L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 576.00' / 572.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	581.75'	30.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	579.30'	4.9' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	578.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=39.75 cfs @ 12.31 hrs HW=580.70' TW=573.13' (Dynamic Tailwater)
└1=Culvert (Passes 39.75 cfs of 121.82 cfs potential flow)
 ├2=Orifice/Grate (Controls 0.00 cfs)
 ├3=Sharp-Crested Rectangular Weir (Weir Controls 33.72 cfs @ 5.20 fps)
 └4=Sharp-Crested Rectangular Weir (Weir Controls 6.04 cfs @ 8.93 fps)

Pond PB11: (new Pond)



Summary for Pond PB19: (new Pond)

Inflow Area = 24.400 ac, 19.67% Impervious, Inflow Depth = 2.57" for 10-yr event
Inflow = 55.59 cfs @ 12.14 hrs, Volume= 5.222 af
Outflow = 10.01 cfs @ 12.80 hrs, Volume= 4.806 af, Atten= 82%, Lag= 39.8 min
Primary = 10.01 cfs @ 12.80 hrs, Volume= 4.806 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 598.13' @ 12.80 hrs Surf.Area= 54,700 sf Storage= 105,941 cf

Plug-Flow detention time= 357.5 min calculated for 4.799 af (92% of inflow)
Center-of-Mass det. time= 315.9 min (1,168.2 - 852.3)

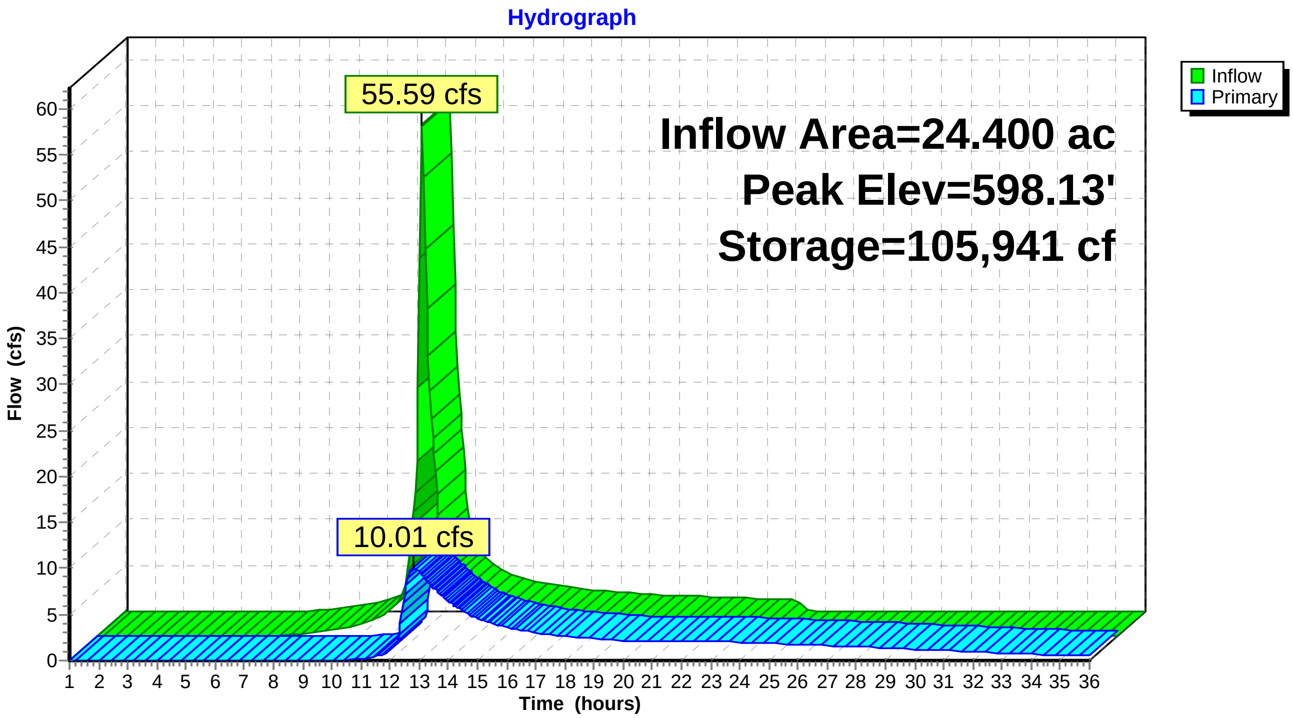
Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	216,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
596.00	44,900	0	0
598.00	54,100	99,000	99,000
600.00	63,500	117,600	216,600

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**36.0" Round Culvert** X 2.00 L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 596.00' / 594.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	596.00'	**8.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	597.60'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.6' Crest Height
#4	Device 1	599.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.01 cfs @ 12.80 hrs HW=598.13' TW=593.37' (Dynamic Tailwater)
└─1=**Culvert** (Passes 10.01 cfs of 53.24 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 2.53 cfs @ 6.41 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 7.48 cfs @ 2.63 fps)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB19: (new Pond)



Summary for Pond PB2: (new Pond)

Inflow Area = 5.400 ac, 9.26% Impervious, Inflow Depth = 3.21" for 10-yr event
Inflow = 15.29 cfs @ 12.14 hrs, Volume= 1.445 af
Outflow = 1.91 cfs @ 13.02 hrs, Volume= 1.147 af, Atten= 88%, Lag= 52.7 min
Primary = 1.91 cfs @ 13.02 hrs, Volume= 1.147 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 506.16' @ 13.02 hrs Surf.Area= 17,889 sf Storage= 33,354 cf

Plug-Flow detention time= 414.1 min calculated for 1.146 af (79% of inflow)
Center-of-Mass det. time= 325.4 min (1,153.8 - 828.4)

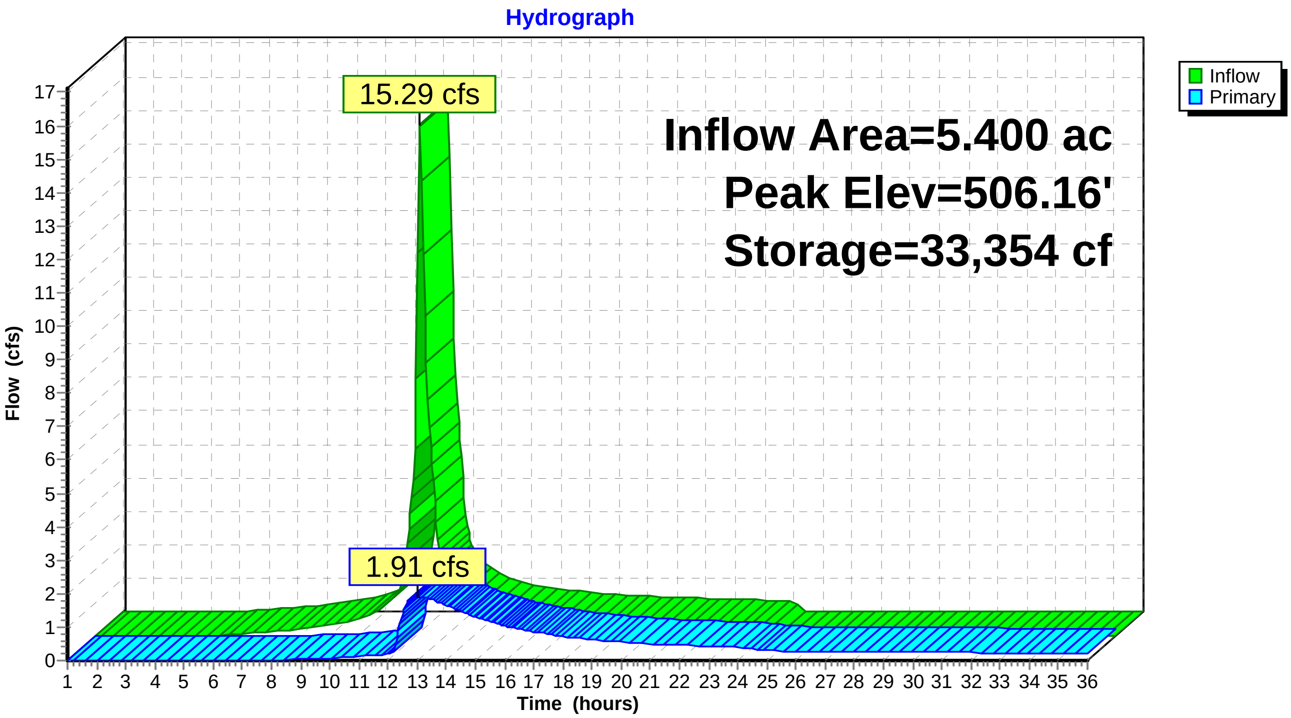
Volume	Invert	Avail.Storage	Storage Description
#1	504.00'	70,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
504.00	13,100	0	0
506.00	17,500	30,600	30,600
508.00	22,500	40,000	70,600

Device	Routing	Invert	Outlet Devices
#1	Primary	502.00'	**30.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 502.00' / 500.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	504.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	505.50'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height
#4	Device 1	507.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.91 cfs @ 13.02 hrs HW=506.16' TW=500.27' (Dynamic Tailwater)
└─1=**Culvert** (Passes 1.91 cfs of 40.29 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.34 cfs @ 6.86 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 1.57 cfs @ 2.75 fps)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB2: (new Pond)



Summary for Pond PB3: (new Pond)

Inflow Area = 24.350 ac, 20.74% Impervious, Inflow Depth = 3.21" for 10-yr event
Inflow = 61.90 cfs @ 12.19 hrs, Volume= 6.516 af
Outflow = 26.48 cfs @ 12.56 hrs, Volume= 6.380 af, Atten= 57%, Lag= 22.2 min
Primary = 26.48 cfs @ 12.56 hrs, Volume= 6.380 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 523.45' @ 12.56 hrs Surf.Area= 37,125 sf Storage= 109,242 cf

Plug-Flow detention time= 233.4 min calculated for 6.371 af (98% of inflow)
Center-of-Mass det. time= 221.6 min (1,053.5 - 831.9)

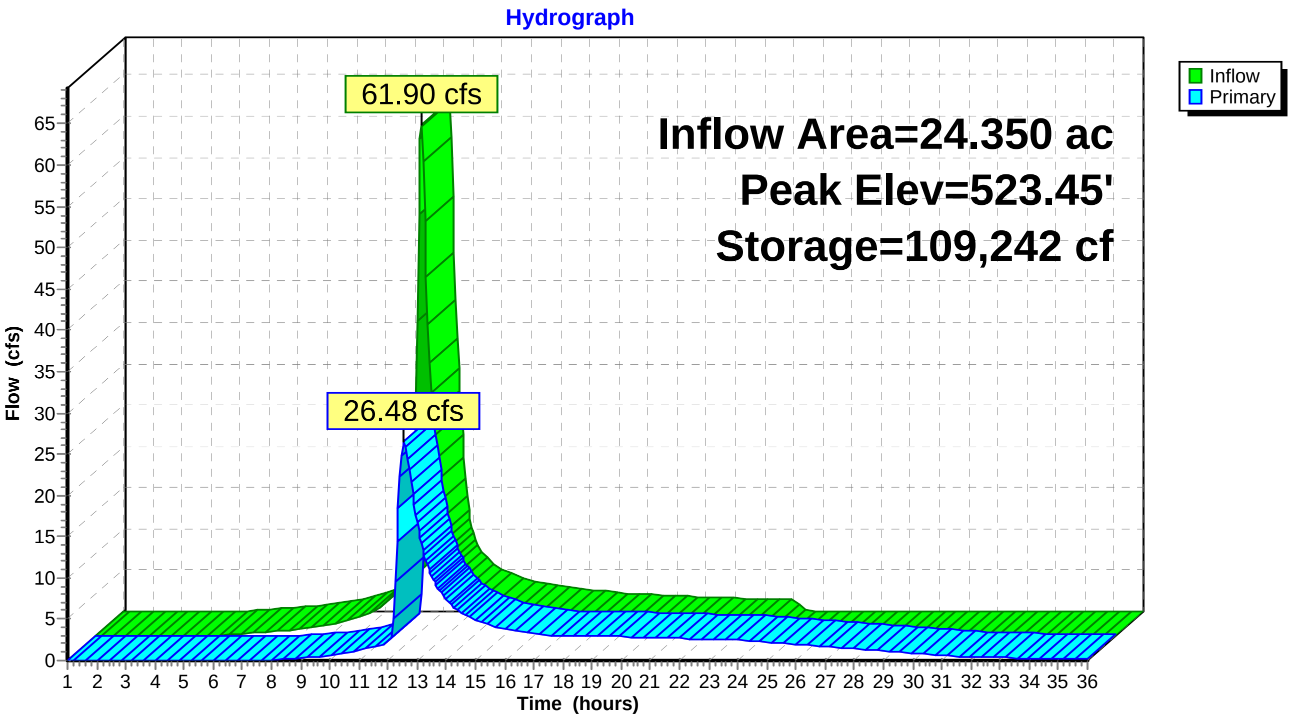
Volume	Invert	Avail.Storage	Storage Description
#1	520.00'	170,600 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
520.00	26,300	0	0
522.00	32,400	58,700	58,700
524.00	38,900	71,300	130,000
525.00	42,300	40,600	170,600

Device	Routing	Invert	Outlet Devices
#1	Primary	518.00'	30.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 518.00' / 514.00' S= 0.0571 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	520.00'	9.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	522.40'	4.9' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	523.75'	30.0" x 48.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads
#5	Device 1	523.25'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=26.44 cfs @ 12.56 hrs HW=523.45' TW=505.95' (Dynamic Tailwater)
1=Culvert (Passes 26.44 cfs of 96.91 cfs potential flow)
2=Orifice/Grate (Orifice Controls 3.73 cfs @ 8.45 fps)
3=Sharp-Crested Rectangular Weir (Weir Controls 20.84 cfs @ 4.22 fps)
4=Orifice/Grate (Controls 0.00 cfs)
5=Sharp-Crested Rectangular Weir (Weir Controls 1.87 cfs @ 1.55 fps)

Pond PB3: (new Pond)



Summary for Pond PB4: POND

Inflow Area = 10.100 ac, 43.56% Impervious, Inflow Depth = 3.51" for 10-yr event
Inflow = 34.05 cfs @ 12.10 hrs, Volume= 2.952 af
Outflow = 10.18 cfs @ 12.50 hrs, Volume= 2.915 af, Atten= 70%, Lag= 23.9 min
Primary = 10.18 cfs @ 12.50 hrs, Volume= 2.915 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 560.91' @ 12.50 hrs Surf.Area= 21,284 sf Storage= 51,403 cf

Plug-Flow detention time= 209.6 min calculated for 2.915 af (99% of inflow)
Center-of-Mass det. time= 201.9 min (1,015.9 - 814.0)

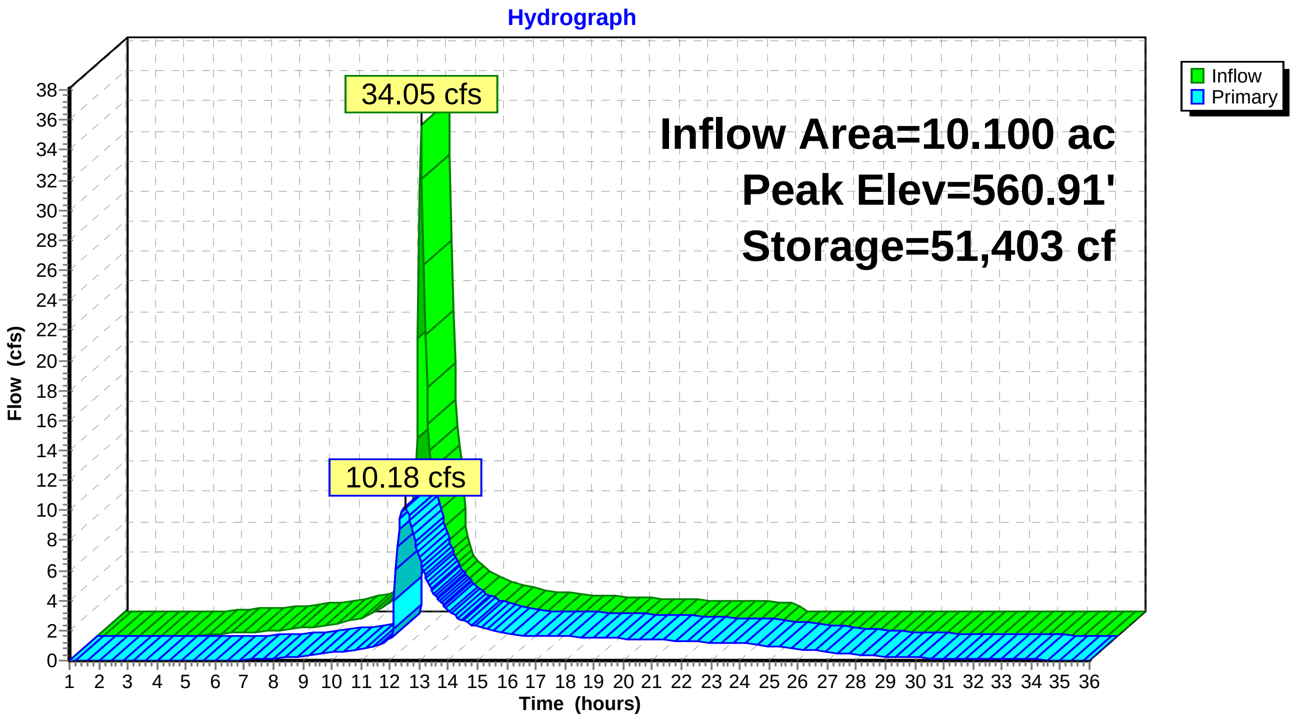
Volume	Invert	Avail.Storage	Storage Description
#1	558.00'	76,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
558.00	14,000	0	0
560.00	19,000	33,000	33,000
562.00	24,000	43,000	76,000

Device	Routing	Invert	Outlet Devices
#1	Primary	558.00'	**36.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 558.00' / 554.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	558.00'	**7.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	560.00'	**2.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	561.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	561.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=10.18 cfs @ 12.50 hrs HW=560.91' TW=0.00' (Dynamic Tailwater)
1=**Culvert** (Passes 10.18 cfs of 40.74 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 2.08 cfs @ 7.80 fps)
3=**Sharp-Crested Rectangular Weir** (Weir Controls 8.10 cfs @ 3.82 fps)
4=**Orifice/Grate** (Controls 0.00 cfs)
5=**Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PB4: POND



Summary for Pond PB5: (new Pond)

Inflow Area = 4.500 ac, 26.44% Impervious, Inflow Depth = 3.31" for 10-yr event
Inflow = 15.45 cfs @ 12.07 hrs, Volume= 1.241 af
Outflow = 3.70 cfs @ 12.55 hrs, Volume= 1.121 af, Atten= 76%, Lag= 28.8 min
Primary = 3.70 cfs @ 12.55 hrs, Volume= 1.121 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 564.74' @ 12.55 hrs Surf.Area= 11,168 sf Storage= 24,054 cf

Plug-Flow detention time= 341.7 min calculated for 1.120 af (90% of inflow)
Center-of-Mass det. time= 291.6 min (1,111.9 - 820.3)

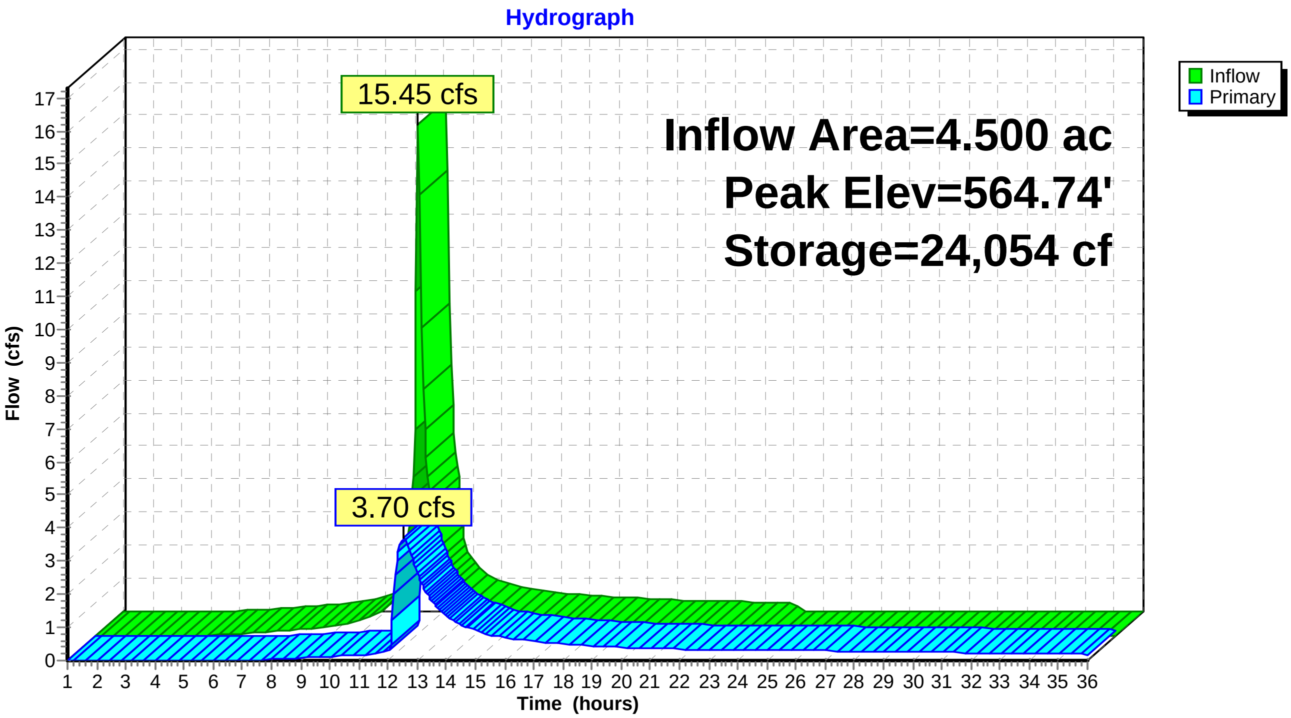
Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	39,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
562.00	6,500	0	0
564.00	9,800	16,300	16,300
566.00	13,500	23,300	39,600

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**30.0" Round Culvert** L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 562.00' / 558.00' S= 0.0533 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	562.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	564.00'	**1.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	565.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.70 cfs @ 12.55 hrs HW=564.74' TW=0.00' (Dynamic Tailwater)
└1=**Culvert** (Passes 3.70 cfs of 28.84 cfs potential flow)
  ├2=**Orifice/Grate** (Orifice Controls 0.38 cfs @ 7.79 fps)
  ├3=**Sharp-Crested Rectangular Weir** (Weir Controls 3.32 cfs @ 3.32 fps)
  └4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB5: (new Pond)



Summary for Pond PB6: PB7

Inflow Area = 8.900 ac, 36.74% Impervious, Inflow Depth = 3.51" for 10-yr event
Inflow = 28.78 cfs @ 12.12 hrs, Volume= 2.602 af
Outflow = 9.73 cfs @ 12.48 hrs, Volume= 2.483 af, Atten= 66%, Lag= 21.8 min
Primary = 9.73 cfs @ 12.48 hrs, Volume= 2.483 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 658.80' @ 12.48 hrs Surf.Area= 20,783 sf Storage= 47,451 cf

Plug-Flow detention time= 316.0 min calculated for 2.479 af (95% of inflow)
Center-of-Mass det. time= 290.2 min (1,105.3 - 815.2)

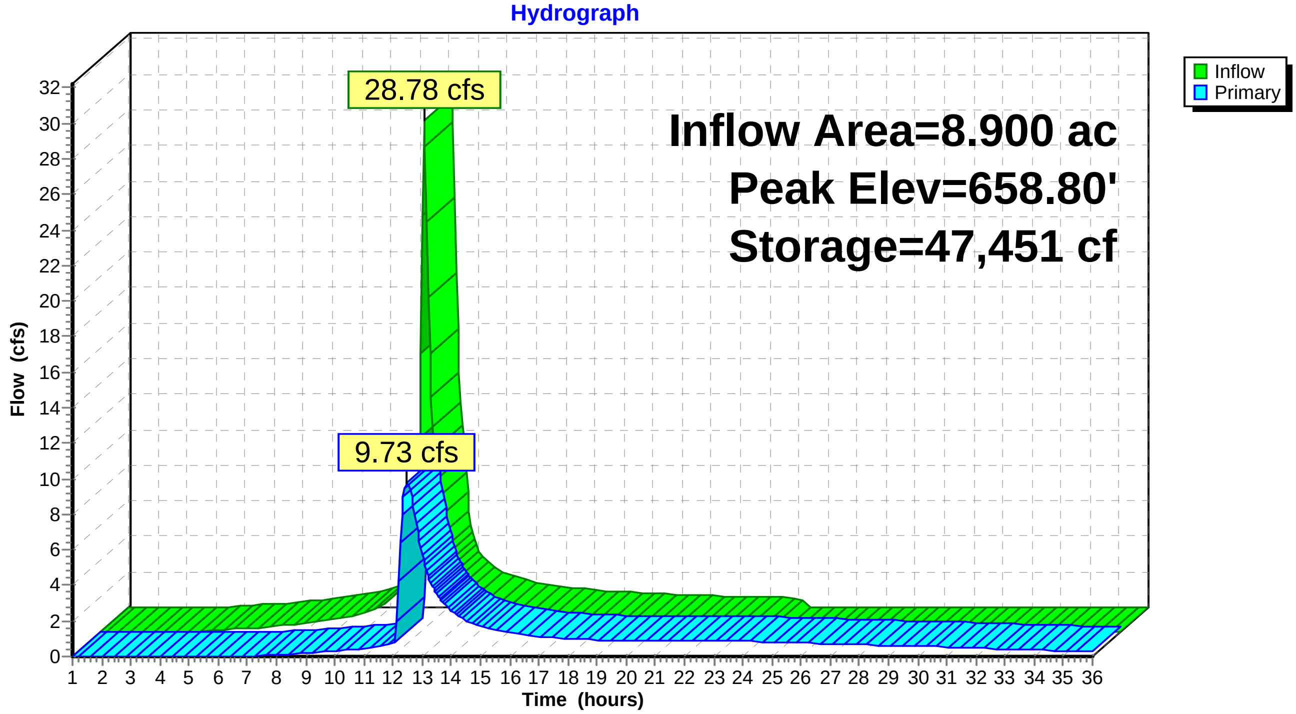
Volume	Invert	Avail.Storage	Storage Description
#1	656.00'	74,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
656.00	13,500	0	0
658.00	18,300	31,800	31,800
660.00	24,500	42,800	74,600

Device	Routing	Invert	Outlet Devices
#1	Primary	656.00'	**30.0" Round Culvert** L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 656.00' / 551.00' S= 0.8077 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	656.00'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	658.10'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	659.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.72 cfs @ 12.48 hrs HW=658.80' TW=551.95' (Dynamic Tailwater)
└1=**Culvert** (Passes 9.72 cfs of 29.43 cfs potential flow)
 ├2=**Orifice/Grate** (Orifice Controls 1.06 cfs @ 7.75 fps)
 ├3=**Sharp-Crested Rectangular Weir** (Weir Controls 8.66 cfs @ 3.20 fps)
 └4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB6: PB7


Hydrograph
28.78 cfs
9.73 cfs
Inflow Area=8.900 ac
Peak Elev=658.80'
Storage=47,451 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

Summary for Pond PB7: (new Pond)

Inflow Area = 13.650 ac, 28.57% Impervious, Inflow Depth = 2.75" for 10-yr event
Inflow = 35.64 cfs @ 12.11 hrs, Volume= 3.123 af
Outflow = 3.75 cfs @ 13.18 hrs, Volume= 2.149 af, Atten= 89%, Lag= 64.0 min
Primary = 3.75 cfs @ 13.18 hrs, Volume= 2.149 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 562.12' @ 13.18 hrs Surf.Area= 37,283 sf Storage= 72,099 cf

Plug-Flow detention time= 382.1 min calculated for 2.146 af (69% of inflow)
Center-of-Mass det. time= 268.5 min (1,112.6 - 844.1)

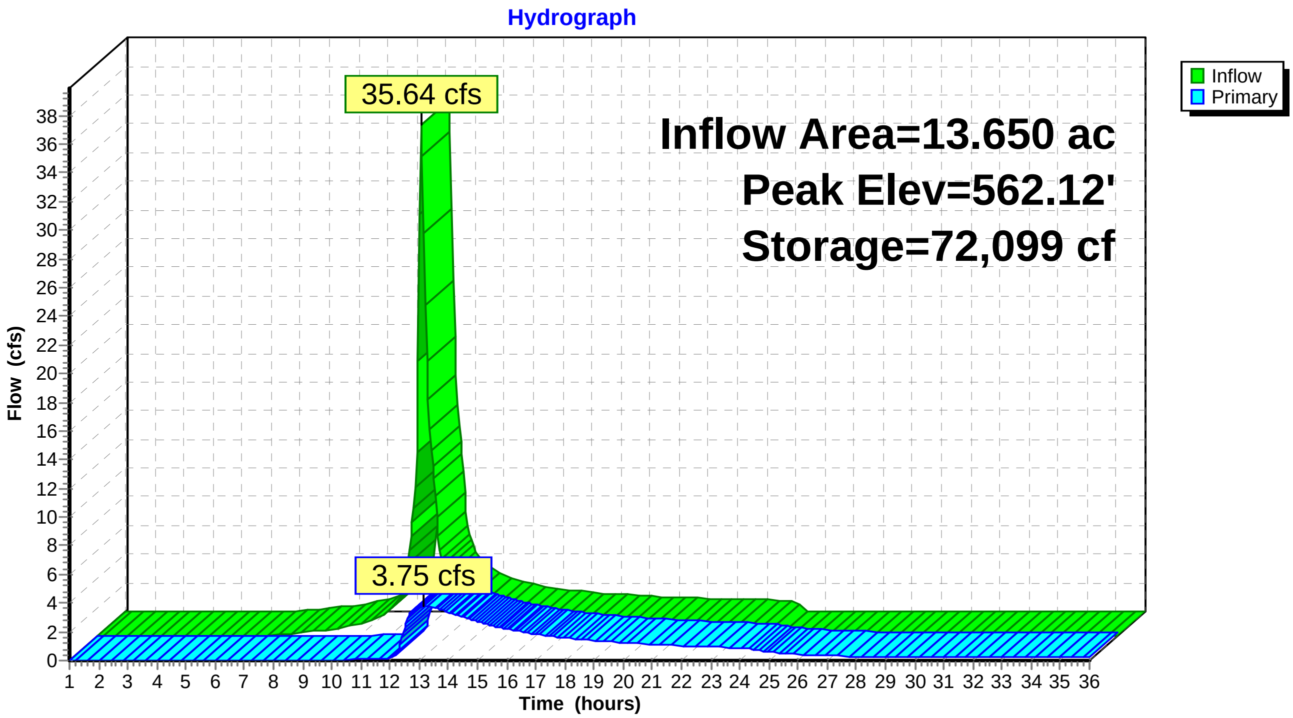
Volume	Invert	Avail.Storage	Storage Description
#1	560.00'	148,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
560.00	30,900	0	0
562.00	36,900	67,800	67,800
564.00	43,500	80,400	148,200

Device	Routing	Invert	Outlet Devices
#1	Primary	560.00'	**36.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 560.00' / 558.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	560.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	561.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	563.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.75 cfs @ 13.18 hrs HW=562.12' TW=555.11' (Dynamic Tailwater)
└─1=**Culvert** (Passes 3.75 cfs of 26.39 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.33 cfs @ 6.79 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 3.41 cfs @ 2.95 fps)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB7: (new Pond)



Summary for Pond PC10: POND C10

Inflow Area = 21.400 ac, 11.45% Impervious, Inflow Depth = 3.02" for 10-yr event
Inflow = 54.46 cfs @ 12.16 hrs, Volume= 5.387 af
Outflow = 14.54 cfs @ 12.70 hrs, Volume= 5.345 af, Atten= 73%, Lag= 32.1 min
Primary = 14.54 cfs @ 12.70 hrs, Volume= 5.345 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 674.24' @ 12.70 hrs Surf.Area= 44,892 sf Storage= 90,510 cf

Plug-Flow detention time= 132.5 min calculated for 5.337 af (99% of inflow)
Center-of-Mass det. time= 128.5 min (966.0 - 837.5)

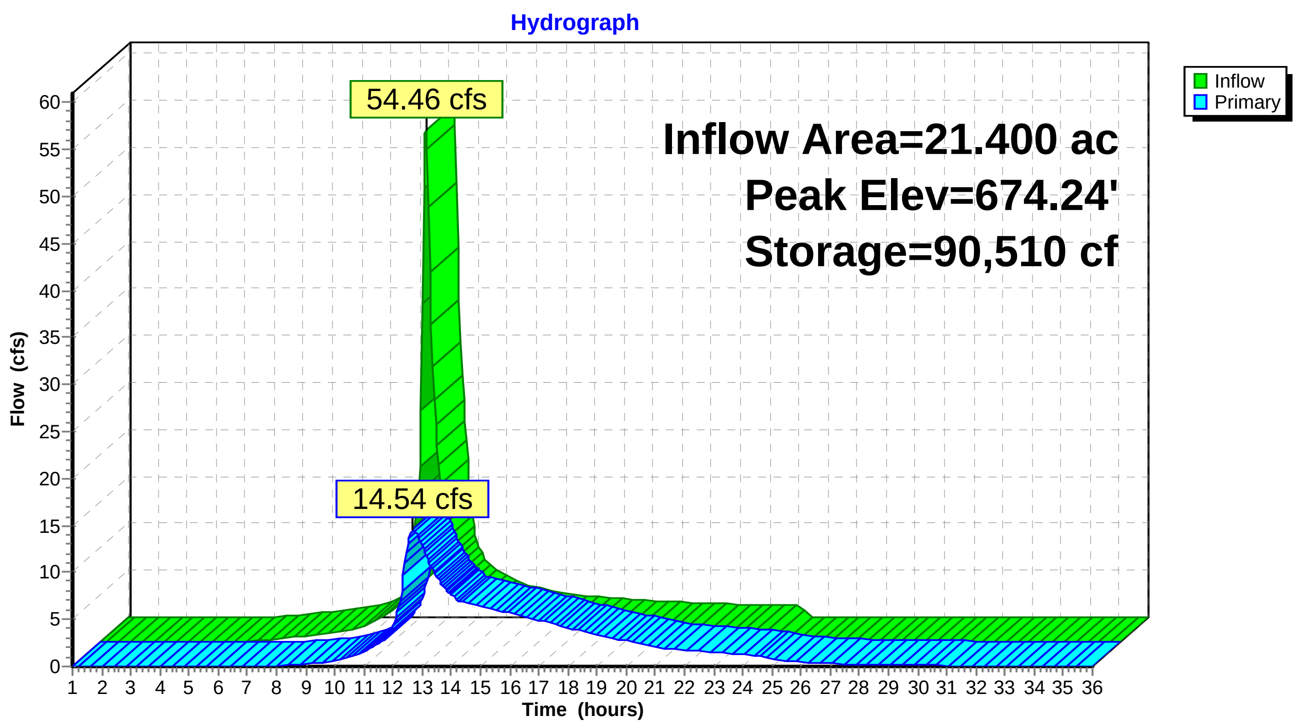
Volume	Invert	Avail.Storage	Storage Description
#1	672.00'	176,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	36,000	0	0
674.00	43,900	79,900	79,900
676.00	52,200	96,100	176,000

Device	Routing	Invert	Outlet Devices
#1	Primary	672.00'	**30.0" Round Culvert** X 2.00 L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 672.00' / 670.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	672.00'	**6.0" Vert. Orifice/Grate** X 6.00 C= 0.600
#3	Device 1	675.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	673.70'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height

Primary OutFlow Max=14.54 cfs @ 12.70 hrs HW=674.24' TW=660.75' (Dynamic Tailwater)
└─1=**Culvert** (Passes 14.54 cfs of 47.24 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 8.00 cfs @ 6.79 fps)
  ├─3=**Orifice/Grate** (Controls 0.00 cfs)
  └─4=**Sharp-Crested Rectangular Weir** (Weir Controls 6.54 cfs @ 2.48 fps)

Pond PC10: POND C10



Summary for Pond PC2: POND C2

Inflow Area = 6.200 ac, 32.26% Impervious, Inflow Depth = 3.31" for 10-yr event
Inflow = 17.95 cfs @ 12.14 hrs, Volume= 1.709 af
Outflow = 4.03 cfs @ 12.70 hrs, Volume= 1.499 af, Atten= 78%, Lag= 33.7 min
Primary = 4.03 cfs @ 12.70 hrs, Volume= 1.499 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 500.67' @ 12.70 hrs Surf.Area= 16,104 sf Storage= 35,461 cf

Plug-Flow detention time= 366.8 min calculated for 1.499 af (88% of inflow)
Center-of-Mass det. time= 304.6 min (1,129.3 - 824.7)

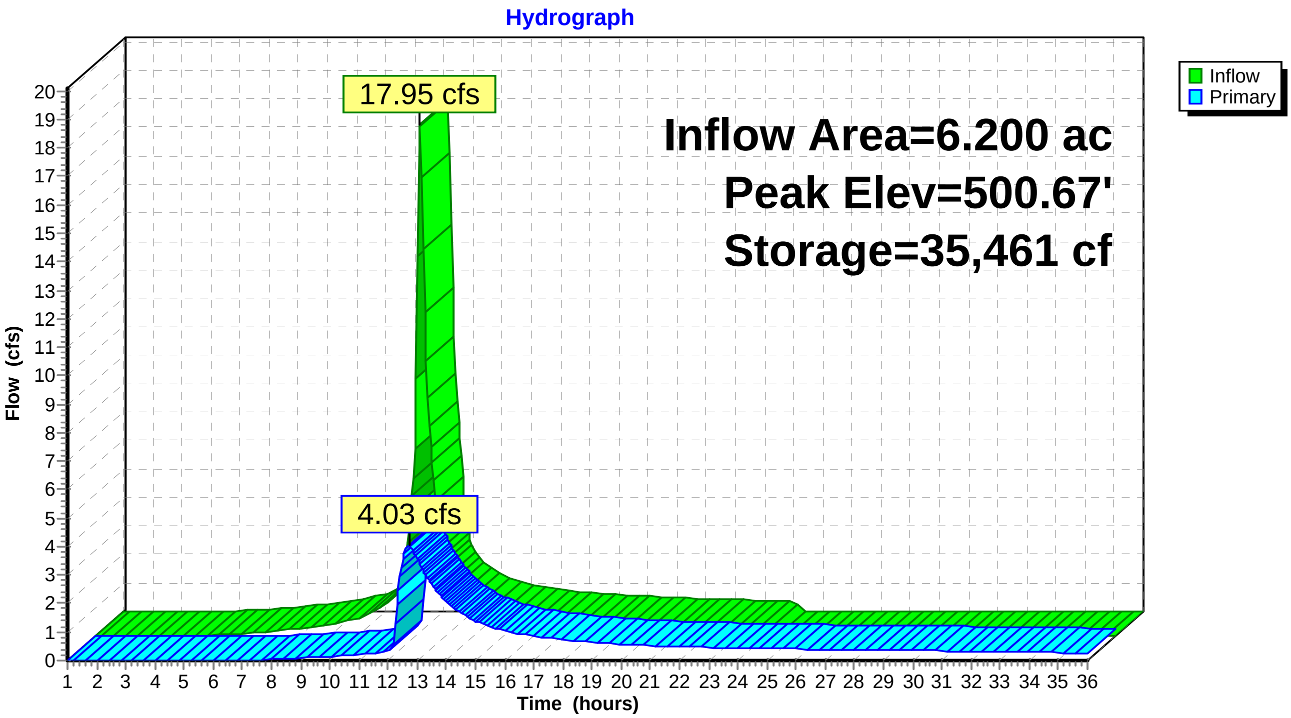
Volume	Invert	Avail.Storage	Storage Description
#1	498.00'	58,900 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
498.00	10,600	0	0
500.00	14,600	25,200	25,200
502.00	19,100	33,700	58,900

Device	Routing	Invert	Outlet Devices
#1	Primary	498.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 498.00' / 496.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	498.00'	**3.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	499.90'	**1.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	501.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.03 cfs @ 12.70 hrs HW=500.67' TW=490.31' (Dynamic Tailwater)
1=**Culvert** (Passes 4.03 cfs of 19.54 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.51 cfs @ 7.65 fps)
3=**Sharp-Crested Rectangular Weir** (Weir Controls 3.52 cfs @ 3.40 fps)
4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PC2: POND C2



Summary for Pond PC6: POND C6

Inflow Area = 18.900 ac, 12.65% Impervious, Inflow Depth = 2.84" for 10-yr event
Inflow = 48.28 cfs @ 12.13 hrs, Volume= 4.466 af
Outflow = 16.81 cfs @ 12.53 hrs, Volume= 4.365 af, Atten= 65%, Lag= 24.0 min
Primary = 16.81 cfs @ 12.53 hrs, Volume= 4.365 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 640.29' @ 12.53 hrs Surf.Area= 35,111 sf Storage= 72,619 cf

Plug-Flow detention time= 181.2 min calculated for 4.359 af (98% of inflow)
Center-of-Mass det. time= 168.9 min (1,010.8 - 842.0)

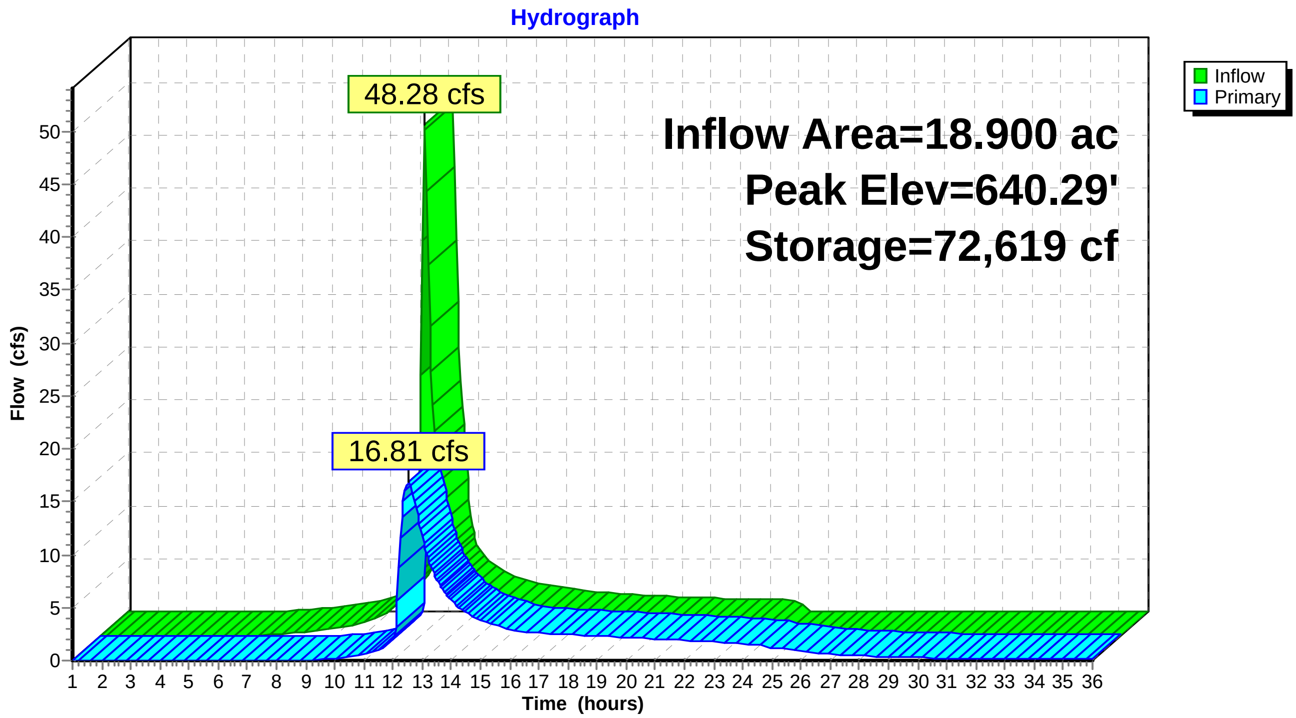
Volume	Invert	Avail.Storage	Storage Description
#1	638.00'	137,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
638.00	28,400	0	0
640.00	34,200	62,600	62,600
642.00	40,500	74,700	137,300

Device	Routing	Invert	Outlet Devices
#1	Primary	638.00'	**36.0" Round Culvert** X 2.00 L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 638.00' / 634.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	638.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	639.35'	**3.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	641.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.79 cfs @ 12.53 hrs HW=640.29' TW=625.80' (Dynamic Tailwater)
└─1=**Culvert** (Passes 16.79 cfs of 59.59 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 3.59 cfs @ 6.59 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 13.20 cfs @ 3.89 fps)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PC6: POND C6



Summary for Pond PC7: POND C7

Inflow Area = 21.300 ac, 20.75% Impervious, Inflow Depth = 3.12" for 10-yr event
Inflow = 62.72 cfs @ 12.11 hrs, Volume= 5.530 af
Outflow = 19.16 cfs @ 12.54 hrs, Volume= 5.283 af, Atten= 69%, Lag= 25.4 min
Primary = 19.16 cfs @ 12.54 hrs, Volume= 5.283 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 662.10' @ 12.54 hrs Surf.Area= 51,050 sf Storage= 99,376 cf

Plug-Flow detention time= 243.5 min calculated for 5.275 af (95% of inflow)
Center-of-Mass det. time= 218.7 min (1,049.0 - 830.3)

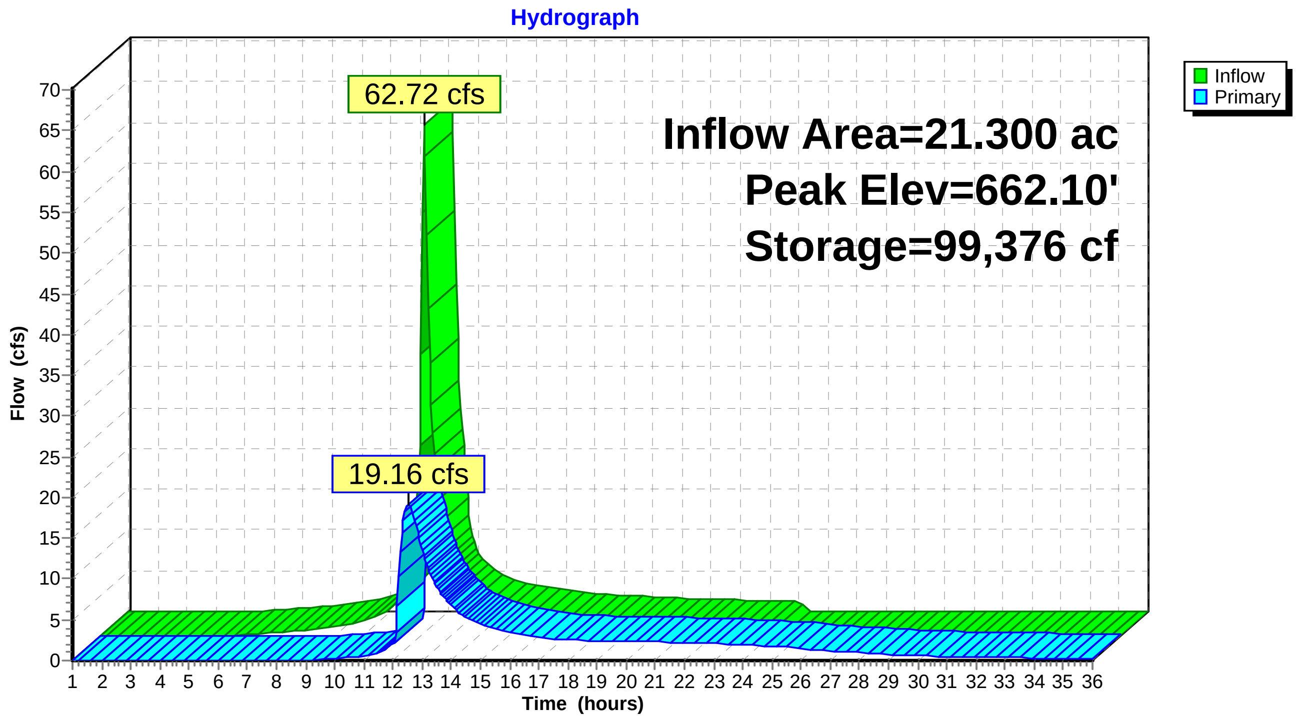
Volume	Invert	Avail.Storage	Storage Description
#1	660.00'	203,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
660.00	43,800	0	0
662.00	50,700	94,500	94,500
664.00	58,000	108,700	203,200

Device	Routing	Invert	Outlet Devices
#1	Primary	660.00'	**36.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 660.00' / 656.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	660.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	661.30'	**6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.6' Crest Height
#4	Device 1	663.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.14 cfs @ 12.54 hrs HW=662.10' TW=645.76' (Dynamic Tailwater)
└─1=**Culvert** (Passes 19.14 cfs of 25.98 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 3.40 cfs @ 6.24 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 15.74 cfs @ 3.39 fps)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PC7: POND C7



Summary for Pond PE2: POND E2

Inflow Area = 8.900 ac, 21.80% Impervious, Inflow Depth = 3.31" for 10-yr event
Inflow = 22.70 cfs @ 12.20 hrs, Volume= 2.454 af
Outflow = 6.02 cfs @ 12.77 hrs, Volume= 2.410 af, Atten= 73%, Lag= 34.0 min
Primary = 6.02 cfs @ 12.77 hrs, Volume= 2.410 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 590.24' @ 12.77 hrs Surf.Area= 23,146 sf Storage= 45,658 cf

Plug-Flow detention time= 196.9 min calculated for 2.410 af (98% of inflow)
Center-of-Mass det. time= 186.1 min (1,015.1 - 829.0)

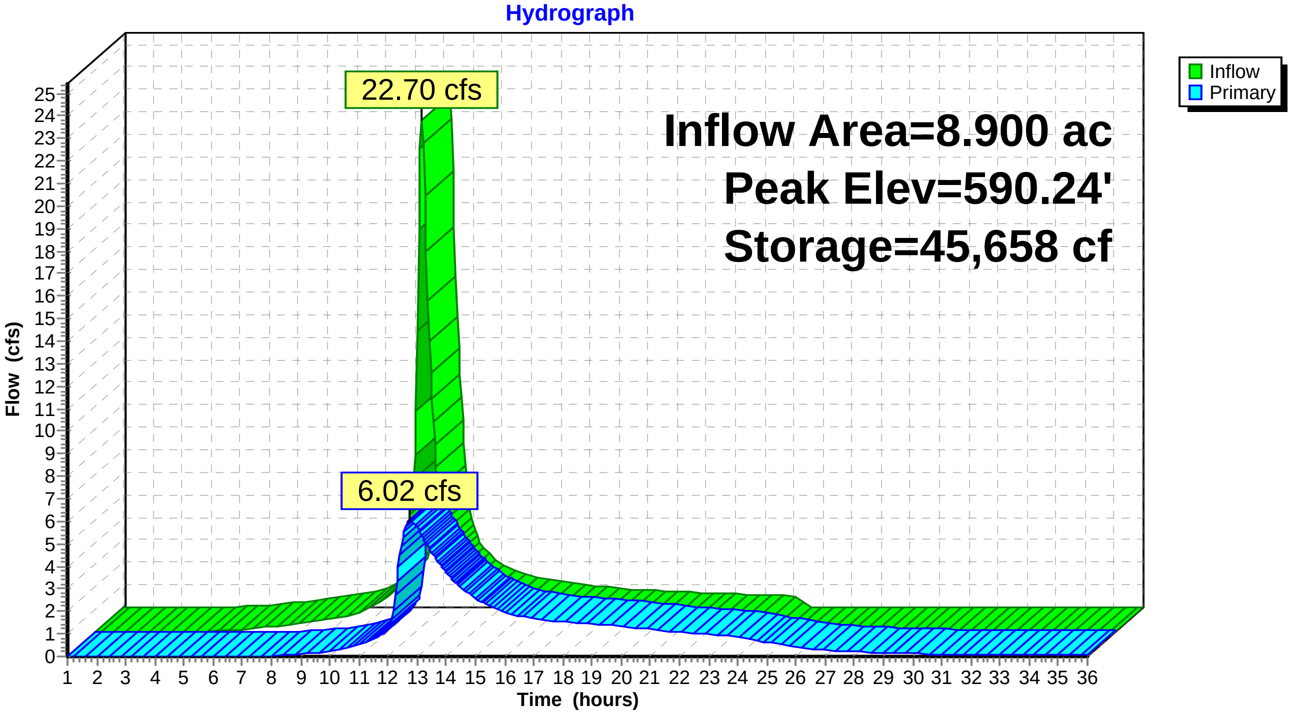
Volume	Invert	Avail.Storage	Storage Description
#1	588.00'	90,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
588.00	17,700	0	0
590.00	22,500	40,200	40,200
592.00	27,900	50,400	90,600

Device	Routing	Invert	Outlet Devices
#1	Primary	588.00'	**30.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 588.00' / 587.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	588.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	589.30'	**1.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	591.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.02 cfs @ 12.77 hrs HW=590.24' TW=0.00' (Dynamic Tailwater)
1=**Culvert** (Passes 6.02 cfs of 21.46 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 2.32 cfs @ 6.65 fps)
3=**Sharp-Crested Rectangular Weir** (Weir Controls 3.70 cfs @ 3.89 fps)
4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PE2: POND E2



Time span=1.00-36.00 hrs, dt=0.05 hrs, 701 points
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 A: Basin 1	Runoff Area=37.220 ac 2.79% Impervious Runoff Depth=5.17" Flow Length=2,020' Tc=29.1 min CN=71 Runoff=111.58 cfs 16.051 af
Subcatchment B1: BAIN 1	Runoff Area=60.690 ac 10.25% Impervious Runoff Depth=6.02" Flow Length=4,940' Tc=16.1 min CN=78 Runoff=273.13 cfs 30.460 af
Subcatchment B10: BASIN 10	Runoff Area=17.050 ac 14.37% Impervious Runoff Depth=6.14" Flow Length=1,250' Tc=21.1 min CN=79 Runoff=69.57 cfs 8.730 af
Subcatchment B11: BASIN B11	Runoff Area=12.800 ac 3.13% Impervious Runoff Depth=6.51" Flow Length=840' Tc=11.4 min CN=82 Runoff=70.83 cfs 6.941 af
Subcatchment B12: BASIN B12	Runoff Area=24.400 ac 19.67% Impervious Runoff Depth=6.02" Flow Length=2,130' Tc=13.2 min CN=78 Runoff=118.63 cfs 12.246 af
Subcatchment B13: BASIN B13	Runoff Area=24.300 ac 0.00% Impervious Runoff Depth=5.42" Flow Length=2,880' Tc=25.5 min CN=73 Runoff=81.05 cfs 10.969 af
Subcatchment B14: BASIN 14	Runoff Area=9.400 ac 14.89% Impervious Runoff Depth=6.87" Flow Length=1,060' Tc=18.5 min CN=85 Runoff=44.46 cfs 5.382 af
Subcatchment B15: BASIN B15	Runoff Area=6.100 ac 10.66% Impervious Runoff Depth=6.75" Flow Length=615' Tc=11.6 min CN=84 Runoff=34.47 cfs 3.431 af
Subcatchment B16: (new Subcat)	Runoff Area=3.650 ac 2.74% Impervious Runoff Depth=6.63" Flow Length=100' Slope=0.1200 '/' Tc=10.0 min CN=83 Runoff=21.40 cfs 2.016 af
Subcatchment B2: BASIN 2	Runoff Area=5.400 ac 9.26% Impervious Runoff Depth=6.87" Flow Length=770' Tc=13.4 min CN=85 Runoff=29.12 cfs 3.092 af
Subcatchment B3: BASIN B3	Runoff Area=24.350 ac 20.74% Impervious Runoff Depth=6.87" Flow Length=970' Tc=17.2 min CN=85 Runoff=118.68 cfs 13.942 af
Subcatchment B4: BASIN 4	Runoff Area=10.100 ac 43.56% Impervious Runoff Depth=7.23" Flow Length=760' Tc=10.8 min CN=88 Runoff=61.76 cfs 6.089 af
Subcatchment B5: BASIN 5	Runoff Area=4.500 ac 26.44% Impervious Runoff Depth=6.99" Flow Length=580' Tc=8.8 min CN=86 Runoff=28.73 cfs 2.622 af
Subcatchment B6: BASIN 7	Runoff Area=8.900 ac 36.74% Impervious Runoff Depth=7.23" Flow Length=560' Tc=12.0 min CN=88 Runoff=52.35 cfs 5.365 af
Subcatchment B7: BASIN 6	Runoff Area=13.650 ac 28.57% Impervious Runoff Depth=6.27" Flow Length=390' Tc=11.4 min CN=80 Runoff=73.19 cfs 7.127 af
Subcatchment B8: BASIN B8	Runoff Area=11.300 ac 3.10% Impervious Runoff Depth=6.14" Flow Length=2,065' Tc=22.3 min CN=79 Runoff=45.00 cfs 5.786 af

Subcatchment B9: BASIN 9
Runoff Area=5.900 ac 23.73% Impervious Runoff Depth=7.11"
Flow Length=1,500' Tc=21.0 min CN=87 Runoff=27.11 cfs 3.497 af

Subcatchment C1: C1
Runoff Area=9.150 ac 48.74% Impervious Runoff Depth=7.35"
Flow Length=950' Tc=9.4 min CN=89 Runoff=58.45 cfs 5.608 af

Subcatchment C10: BASIN 10
Runoff Area=21.400 ac 11.45% Impervious Runoff Depth=6.63"
Flow Length=2,180' Tc=15.3 min CN=83 Runoff=107.28 cfs 11.821 af

Subcatchment C11: BASIN C11
Runoff Area=11.150 ac 0.00% Impervious Runoff Depth=6.27"
Flow Length=1,060' Tc=21.6 min CN=80 Runoff=45.87 cfs 5.821 af

Subcatchment C12: (new Subcat)
Runoff Area=5.200 ac 0.00% Impervious Runoff Depth=4.21"
Flow Length=990' Tc=14.8 min CN=63 Runoff=16.97 cfs 1.825 af

Subcatchment C2: BASIN C2
Runoff Area=6.200 ac 32.26% Impervious Runoff Depth=6.99"
Flow Length=1,070' Tc=13.6 min CN=86 Runoff=33.69 cfs 3.613 af

Subcatchment C3: BASIN C3
Runoff Area=5.950 ac 0.00% Impervious Runoff Depth=6.27"
Flow Length=910' Tc=19.6 min CN=80 Runoff=25.51 cfs 3.106 af

Subcatchment C4: BASIN C4
Runoff Area=7.500 ac 22.27% Impervious Runoff Depth=6.63"
Flow Length=1,450' Tc=14.0 min CN=83 Runoff=38.70 cfs 4.143 af

Subcatchment C5N9: BASIN C5/9
Runoff Area=124.100 ac 0.00% Impervious Runoff Depth=5.66"
Flow Length=6,080' Tc=23.2 min CN=75 Runoff=450.36 cfs 58.526 af

Subcatchment C6: BASIN C6
Runoff Area=18.900 ac 12.65% Impervious Runoff Depth=6.39"
Flow Length=1,400' Tc=12.7 min CN=81 Runoff=97.84 cfs 10.059 af

Subcatchment C7: BASIN C7
Runoff Area=21.300 ac 20.75% Impervious Runoff Depth=6.75"
Flow Length=1,370' Tc=11.5 min CN=84 Runoff=120.78 cfs 11.981 af

Subcatchment C8: BASIN C8
Runoff Area=84.980 ac 0.55% Impervious Runoff Depth=5.78"
Flow Length=5,705' Tc=23.4 min CN=76 Runoff=313.44 cfs 40.935 af

Subcatchment D: (new Subcat)
Runoff Area=2.700 ac 0.00% Impervious Runoff Depth=6.02"
Flow Length=1,415' Tc=14.7 min CN=78 Runoff=12.62 cfs 1.355 af

Subcatchment E1: BASIN E1
Runoff Area=167.100 ac 0.00% Impervious Runoff Depth=5.90"
Flow Length=7,510' Tc=31.9 min CN=77 Runoff=542.16 cfs 82.180 af

Subcatchment E2: BASIN E2
Runoff Area=8.900 ac 21.80% Impervious Runoff Depth=6.99"
Flow Length=1,800' Tc=18.2 min CN=86 Runoff=42.95 cfs 5.186 af

Subcatchment F: BASIN F
Runoff Area=10.600 ac 0.00% Impervious Runoff Depth=5.90"
Flow Length=1,400' Tc=26.8 min CN=77 Runoff=37.41 cfs 5.213 af

Reach 11R: (new Reach)
Avg. Flow Depth=0.94' Max Vel=10.78 fps Inflow=25.06 cfs 3.973 af
n=0.025 L=230.0' S=0.0739 '/' Capacity=185.34 cfs Outflow=25.06 cfs 3.973 af

Reach AP1: ANALYSIS POINT
Inflow=949.29 cfs 141.287 af
Outflow=949.29 cfs 141.287 af

Reach AP2: ANALYSIS POINT
Inflow=1,063.19 cfs 156.561 af
Outflow=1,063.19 cfs 156.561 af

Reach AP3: (new Reach)
Inflow=12.62 cfs 1.355 af
Outflow=12.62 cfs 1.355 af

Reach AP4: ANALYSIS POINT
Inflow=557.41 cfs 87.312 af
Outflow=557.41 cfs 87.312 af

Reach RB1: (new Reach)
Avg. Flow Depth=3.55' Max Vel=18.26 fps Inflow=611.24 cfs 92.022 af
n=0.025 L=1,055.0' S=0.0360 '/' Capacity=783.31 cfs Outflow=610.42 cfs 92.008 af

Reach RB10: (new Reach)
Avg. Flow Depth=1.91' Max Vel=22.79 fps Inflow=139.12 cfs 22.716 af
n=0.020 L=180.0' S=0.1000 '/' Capacity=344.79 cfs Outflow=139.12 cfs 22.715 af

Reach RB11: (new Reach)
Avg. Flow Depth=1.02' Max Vel=15.20 fps Inflow=44.46 cfs 5.382 af
n=0.020 L=1,200.0' S=0.0833 '/' Capacity=179.58 cfs Outflow=44.34 cfs 5.382 af

Reach RB12: (new Reach)
Avg. Flow Depth=1.42' Max Vel=6.48 fps Inflow=34.47 cfs 3.431 af
n=0.020 L=600.0' S=0.0100 '/' Capacity=158.46 cfs Outflow=33.71 cfs 3.431 af

Reach RB2: (new Reach)
Avg. Flow Depth=0.54' Max Vel=7.62 fps Inflow=8.49 cfs 2.769 af
n=0.025 L=450.0' S=0.0711 '/' Capacity=132.71 cfs Outflow=8.49 cfs 2.768 af

Reach RB3: (new Reach)
Avg. Flow Depth=3.04' Max Vel=19.10 fps Inflow=505.16 cfs 78.271 af
n=0.025 L=885.0' S=0.0475 '/' Capacity=899.13 cfs Outflow=505.16 cfs 78.261 af

Reach RB4: (new Reach)
Avg. Flow Depth=1.47' Max Vel=5.72 fps Inflow=72.01 cfs 9.283 af
n=0.025 L=400.0' S=0.0100 '/' Capacity=139.80 cfs Outflow=71.91 cfs 9.283 af

Reach RB5: (new Reach)
Avg. Flow Depth=3.37' Max Vel=6.95 fps Inflow=359.39 cfs 57.050 af
n=0.025 L=800.0' S=0.0050 '/' Capacity=516.81 cfs Outflow=358.23 cfs 57.030 af

Reach RB6: (new Reach)
Avg. Flow Depth=2.95' Max Vel=10.20 fps Inflow=257.85 cfs 43.121 af
n=0.025 L=285.0' S=0.0140 '/' Capacity=488.96 cfs Outflow=257.89 cfs 43.118 af

Reach RB7: (new Reach)
Avg. Flow Depth=1.65' Max Vel=8.26 fps Inflow=87.87 cfs 12.266 af
n=0.025 L=960.0' S=0.0187 '/' Capacity=565.16 cfs Outflow=87.27 cfs 12.264 af

Reach RB8: (new Reach)
Avg. Flow Depth=2.20' Max Vel=14.83 fps Inflow=148.78 cfs 24.732 af
n=0.020 L=190.0' S=0.0316 '/' Capacity=281.59 cfs Outflow=148.81 cfs 24.731 af

Reach RC1: (new Reach)
Avg. Flow Depth=4.75' Max Vel=25.26 fps Inflow=1,036.07 cfs 150.955 af
n=0.020 L=390.0' S=0.0359 '/' Capacity=748.39 cfs Outflow=1,036.14 cfs 150.953 af

Reach RC10: (new Reach)
Avg. Flow Depth=1.37' Max Vel=7.05 fps Inflow=52.54 cfs 11.775 af
n=0.030 L=600.0' S=0.0250 '/' Capacity=272.18 cfs Outflow=52.52 cfs 11.775 af

Reach RC11: (new Reach)
Inflow=16.97 cfs 1.825 af
Outflow=16.97 cfs 1.825 af

Reach RC2: (new Reach) Avg. Flow Depth=3.72' Max Vel=33.73 fps Inflow=966.96 cfs 140.500 af
n=0.020 L=370.0' S=0.0811 '/' Capacity=1,124.76 cfs Outflow=967.02 cfs 140.499 af

Reach RC3: (new Reach) Avg. Flow Depth=3.90' Max Vel=29.91 fps Inflow=922.03 cfs 134.680 af
n=0.020 L=480.0' S=0.0604 '/' Capacity=970.91 cfs Outflow=922.08 cfs 134.679 af

Reach RC4: (new Reach) Avg. Flow Depth=2.68' Max Vel=26.60 fps Inflow=359.25 cfs 52.621 af
n=0.025 L=470.0' S=0.1277 '/' Capacity=452.93 cfs Outflow=359.24 cfs 52.620 af

Reach RC5: (new Reach) Avg. Flow Depth=1.17' Max Vel=9.40 fps Inflow=47.68 cfs 11.688 af
n=0.030 L=360.0' S=0.0556 '/' Capacity=620.69 cfs Outflow=47.69 cfs 11.687 af

Reach RC6: (new Reach) Avg. Flow Depth=1.79' Max Vel=16.05 fps Inflow=118.56 cfs 23.535 af
n=0.025 L=700.0' S=0.0729 '/' Capacity=342.17 cfs Outflow=118.56 cfs 23.534 af

Reach RC7: (new Reach) Avg. Flow Depth=1.46' Max Vel=13.18 fps Inflow=58.74 cfs 9.937 af
n=0.030 L=300.0' S=0.0967 '/' Capacity=176.63 cfs Outflow=58.75 cfs 9.936 af

Reach RC8: (new Reach) Avg. Flow Depth=1.06' Max Vel=12.57 fps Inflow=52.52 cfs 11.775 af
n=0.025 L=620.0' S=0.0790 '/' Capacity=468.67 cfs Outflow=52.51 cfs 11.774 af

Pond 1P: PIPE Peak Elev=559.48' Inflow=72.01 cfs 9.283 af
36.0" Round Culvert n=0.012 L=130.0' S=0.0115 '/' Outflow=72.01 cfs 9.283 af

Pond 2P: (new Pond) Peak Elev=505.60' Inflow=49.32 cfs 7.079 af
30.0" Round Culvert n=0.012 L=300.0' S=0.0133 '/' Outflow=49.32 cfs 7.079 af

Pond 3P: (new Pond) Peak Elev=553.75' Storage=53,089 cf Inflow=38.70 cfs 4.143 af
Outflow=25.06 cfs 3.973 af

Pond 7P: PIPE Peak Elev=521.61' Inflow=966.96 cfs 140.500 af
72.0" Round Culvert x 2.00 n=0.012 L=90.0' S=0.0111 '/' Outflow=966.96 cfs 140.500 af

Pond 9P: (new Pond) Peak Elev=621.94' Inflow=359.25 cfs 52.621 af
60.0" Round Culvert n=0.012 L=290.0' S=0.0345 '/' Outflow=359.25 cfs 52.621 af

Pond 10P: (new Pond) Peak Elev=556.36' Inflow=562.82 cfs 82.060 af
60.0" Round Culvert x 2.00 n=0.012 L=295.0' S=0.0339 '/' Outflow=562.82 cfs 82.060 af

Pond 11P: PIPE Peak Elev=578.05' Inflow=148.78 cfs 24.732 af
48.0" Round Culvert n=0.012 L=180.0' S=0.0417 '/' Outflow=148.78 cfs 24.732 af

Pond 16P: PIPE Peak Elev=597.68' Inflow=139.12 cfs 22.716 af
36.0" Round Culvert x 2.00 n=0.012 L=300.0' S=0.0100 '/' Outflow=139.12 cfs 22.716 af

Pond L: LAKE Inflow=505.16 cfs 78.271 af
Primary=505.16 cfs 78.271 af

Pond PB11: (new Pond) Peak Elev=581.57' Storage=79,508 cf Inflow=106.50 cfs 12.324 af
Outflow=87.87 cfs 12.266 af

Pond PB19: (new Pond) Peak Elev=599.43' Storage=180,933 cf Inflow=118.63 cfs 12.246 af
Outflow=59.27 cfs 11.747 af

Pond PB2: (new Pond) Peak Elev=507.61' Storage=61,979 cf Inflow=29.12 cfs 3.092 af
Outflow=8.49 cfs 2.769 af

Pond PB3: (new Pond) Peak Elev=524.24' Storage=139,251 cf Inflow=118.68 cfs 13.942 af
Outflow=106.19 cfs 13.762 af

Pond PB4: POND Peak Elev=561.80' Storage=71,134 cf Inflow=61.76 cfs 6.089 af
Outflow=46.86 cfs 6.039 af

Pond PB5: (new Pond) Peak Elev=565.75' Storage=36,329 cf Inflow=28.73 cfs 2.622 af
Outflow=18.35 cfs 2.487 af

Pond PB6: PB7 Peak Elev=659.67' Storage=66,733 cf Inflow=52.35 cfs 5.365 af
Outflow=36.82 cfs 5.203 af

Pond PB7: (new Pond) Peak Elev=563.60' Storage=131,151 cf Inflow=73.19 cfs 7.127 af
Outflow=24.28 cfs 6.127 af

Pond PC10: POND C10 Peak Elev=675.55' Storage=152,689 cf Inflow=107.28 cfs 11.821 af
Outflow=52.54 cfs 11.775 af

Pond PC2: POND C2 Peak Elev=501.78' Storage=54,751 cf Inflow=33.69 cfs 3.613 af
Outflow=20.73 cfs 3.377 af

Pond PC6: POND C6 Peak Elev=641.53' Storage=118,449 cf Inflow=97.84 cfs 10.059 af
Outflow=58.74 cfs 9.937 af

Pond PC7: POND C7 Peak Elev=663.46' Storage=172,566 cf Inflow=120.78 cfs 11.981 af
Outflow=47.68 cfs 11.688 af

Pond PE2: POND E2 Peak Elev=591.66' Storage=81,267 cf Inflow=42.95 cfs 5.186 af
Outflow=16.68 cfs 5.132 af

Total Runoff Area = 784.840 ac Runoff Volume = 395.119 af Average Runoff Depth = 6.04"
92.75% Pervious = 727.920 ac 7.25% Impervious = 56.920 ac

Summary for Subcatchment A: Basin 1

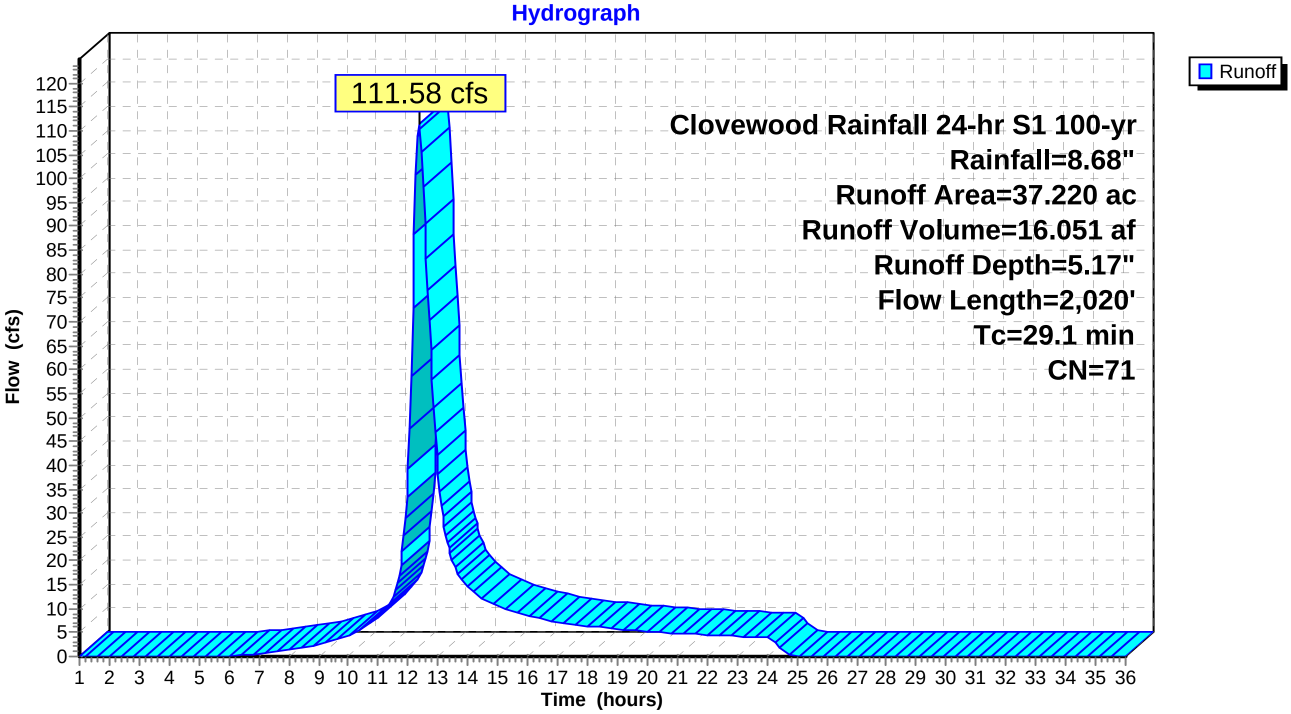
Runoff = 111.58 cfs @ 12.36 hrs, Volume= 16.051 af, Depth= 5.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	7.350	89	Wetlands
*	1.040	98	Impervious Surfaces
	1.000	80	>75% Grass cover, Good, HSG D
	0.310	30	Woods, Good, HSG A
	1.240	55	Woods, Good, HSG B
	0.480	70	Woods, Good, HSG C
	5.970	77	Woods, Good, HSG D
	2.310	30	Brush, Good, HSG A
	3.810	48	Brush, Good, HSG B
	4.810	65	Brush, Good, HSG C
	8.040	73	Brush, Good, HSG D
*	0.040	75	Dirt roads, HSG A
*	0.100	84	Dirt roads, HSG B
*	0.030	88	Dirt roads, HSG C
*	0.690	90	Dirt roads, HSG D
	37.220	71	Weighted Average
	36.180		97.21% Pervious Area
	1.040		2.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	690	0.0200	2.28		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
2.7	690	0.0700	4.26		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
0.8	540	0.0400	10.91	152.70	Parabolic Channel,
					W=7.00' D=3.00' Area=14.0 sf Perim=9.6' n= 0.035
29.1	2,020	Total			

Subcatchment A: Basin 1



Summary for Subcatchment B1: BAIN 1

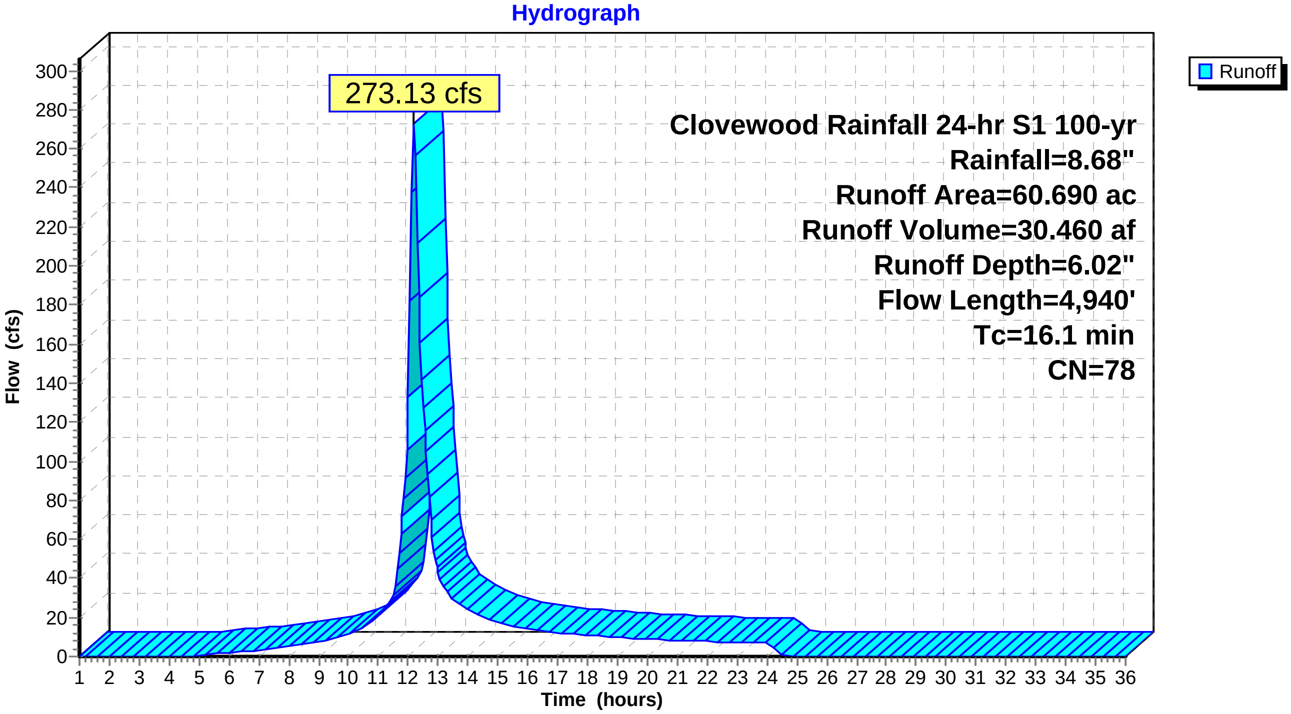
Runoff = 273.13 cfs @ 12.17 hrs, Volume= 30.460 af, Depth= 6.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	3.820	98	WATER SURFACE
*	11.670	89	WETLANDS
*	1.550	35	OLD COURSE, A
*	0.500	90	DIRT ROAD
	20.000	77	Woods, Good, HSG D
*	3.000	85	LOTS, D
*	2.400	98	SHOPPING CENTER
	2.300	80	>75% Grass cover, Good, HSG D
	11.650	78	Meadow, non-grazed, HSG D
	2.000	30	Meadow, non-grazed, HSG A
	1.800	30	Woods, Good, HSG A
	60.690	78	Weighted Average
	54.470		89.75% Pervious Area
	6.220		10.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.7	2,900	0.0300	17.87	714.87	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
1.6	1,940	0.0400	20.64	825.46	Parabolic Channel, W=15.00' D=4.00' Area=40.0 sf Perim=17.5' n= 0.025
16.1	4,940	Total			

Subcatchment B1: BAIN 1



Summary for Subcatchment B10: BASIN 10

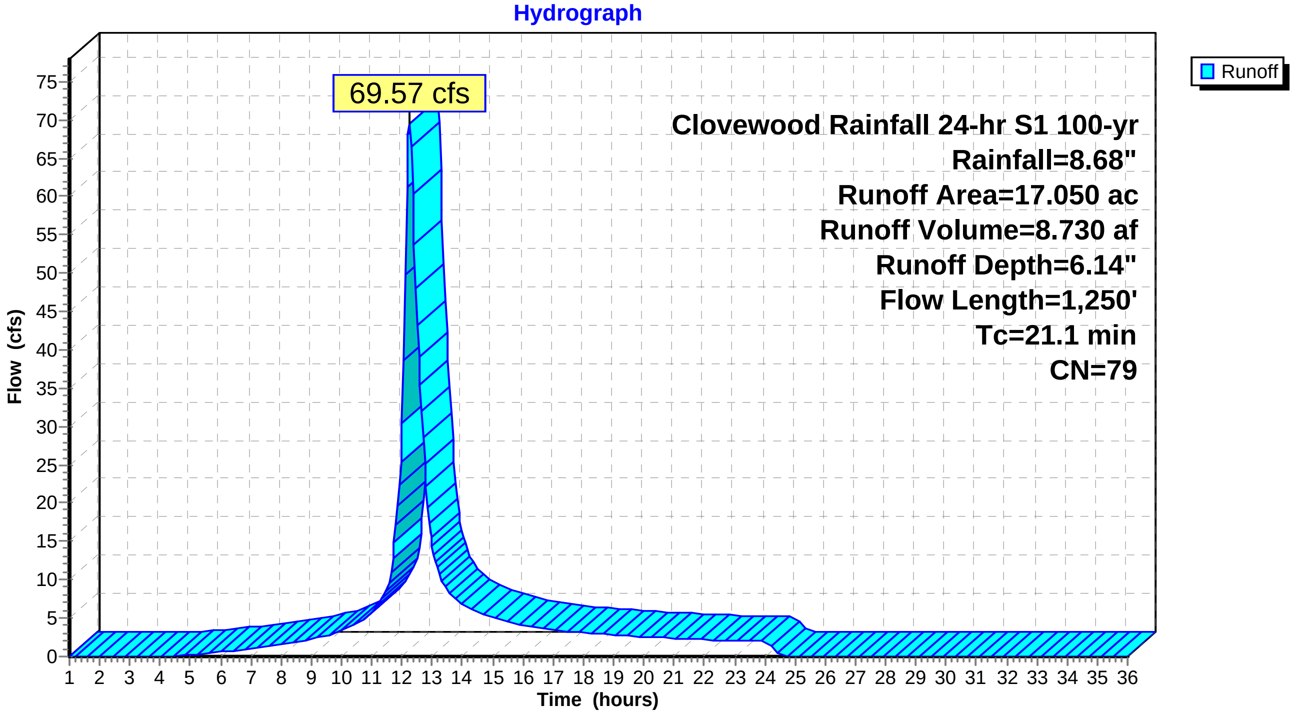
Runoff = 69.57 cfs @ 12.24 hrs, Volume= 8.730 af, Depth= 6.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	5.350	85	LOTS, D
*	1.900	98	ROADS, WALKS
*	0.550	98	BUILDING, PARKING
	2.200	77	Woods, Good, HSG D
	1.300	39	>75% Grass cover, Good, HSG A
	2.500	78	Meadow, non-grazed, HSG D
	2.500	80	>75% Grass cover, Good, HSG D
*	0.450	60	LOTS, A
	0.300	30	Woods, Good, HSG A
	17.050	79	Weighted Average
	14.600		85.63% Pervious Area
	2.450		14.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.8	100	0.0250	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	250	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	700	0.0350	12.05	21.29	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.1	200	0.1000	23.49	156.61	Parabolic Channel, W=5.00' D=2.00' Area=6.7 sf Perim=6.7' n= 0.020
21.1	1,250	Total			

Subcatchment B10: BASIN 10



Summary for Subcatchment B11: BASIN B11

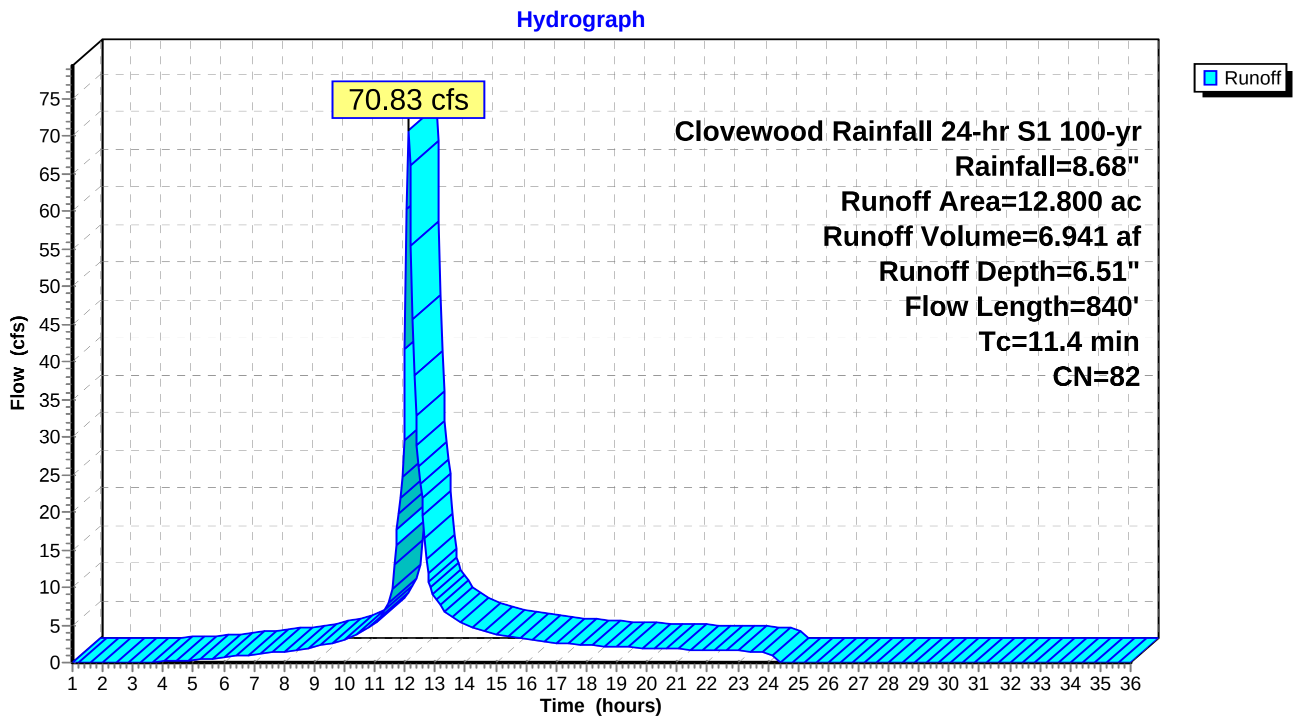
Runoff = 70.83 cfs @ 12.11 hrs, Volume= 6.941 af, Depth= 6.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.400	98	POND
*	5.600	85	LOTS, D
	2.300	80	>75% Grass cover, Good, HSG D
	4.500	77	Woods, Good, HSG D
	12.800	82	Weighted Average
	12.400		96.88% Pervious Area
	0.400		3.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	120	0.1500	6.24		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.3	620	0.1000	40.98	327.87	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.012
11.4	840	Total			

Subcatchment B11: BASIN B11



Summary for Subcatchment B12: BASIN B12

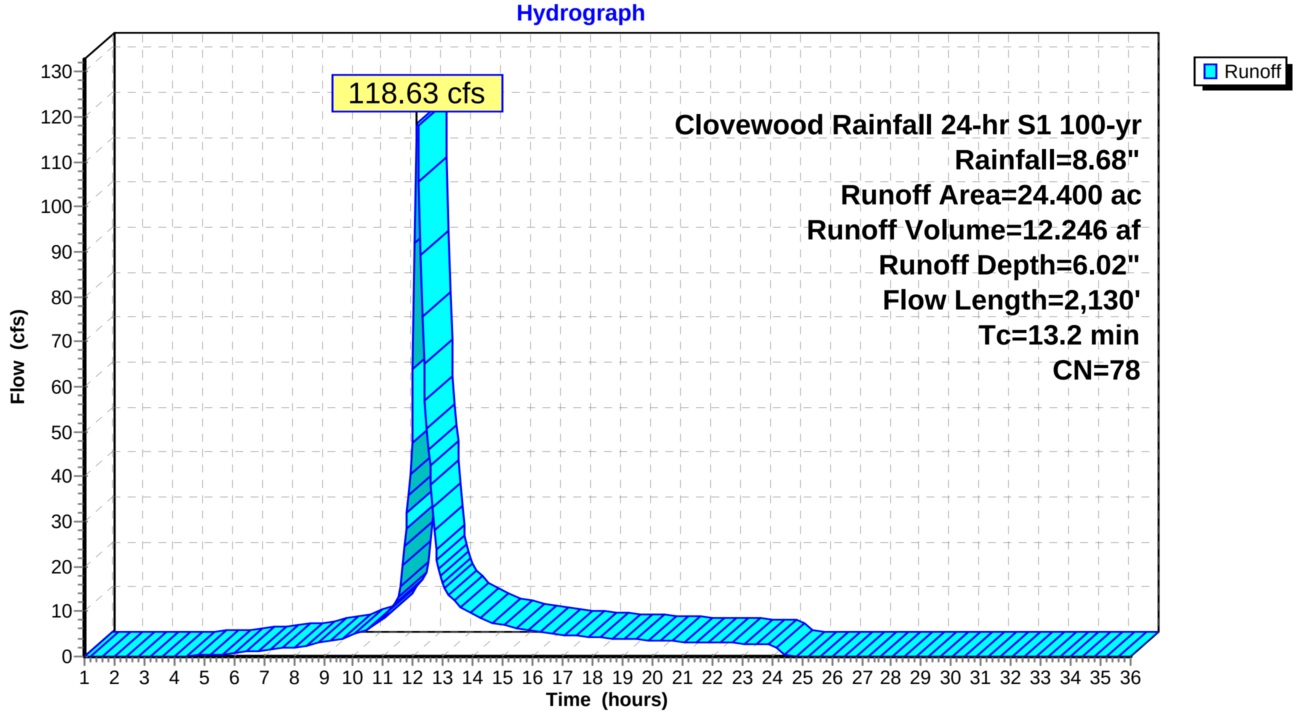
Runoff = 118.63 cfs @ 12.13 hrs, Volume= 12.246 af, Depth= 6.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.750	98	POND
*	3.050	98	ROADS, WALKS
*	4.200	60	LOTS, A
	0.750	30	Woods, Good, HSG A
	0.550	39	>75% Grass cover, Good, HSG A
*	5.600	85	LOTS, D
*	1.000	98	BUILDING, PARKING
	2.000	80	>75% Grass cover, Good, HSG D
	6.500	77	Woods, Good, HSG D
	24.400	78	Weighted Average
	19.600		80.33% Pervious Area
	4.800		19.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	120	0.1500	6.24		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	120	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	930	0.0300	11.15	19.71	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.2	360	0.1600	27.74	147.92	**Parabolic Channel,** W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.020
0.4	200	0.0200	9.29	99.08	**Parabolic Channel,** W=8.00' D=2.00' Area=10.7 sf Perim=9.2' n= 0.025
0.2	300	0.1000	32.33	228.50	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
13.2	2,130	Total			

Subcatchment B12: BASIN B12



Summary for Subcatchment B13: BASIN B13

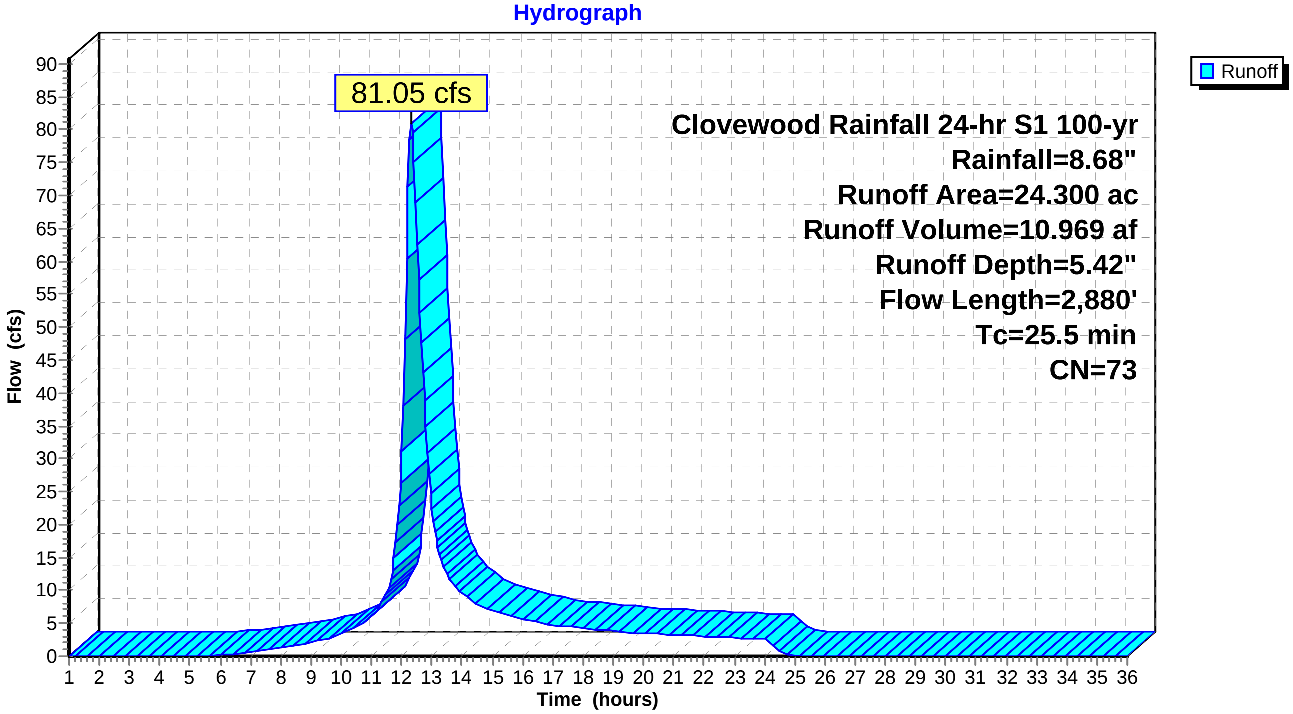
Runoff = 81.05 cfs @ 12.31 hrs, Volume= 10.969 af, Depth= 5.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	2.400	60	LOTS, A
*	6.200	85	LOTS, D
*	1.420	89	WETLANDS
	0.900	39	>75% Grass cover, Good, HSG A
	2.000	30	Woods, Good, HSG A
	2.000	80	>75% Grass cover, Good, HSG D
	9.380	77	Woods, Good, HSG D
	24.300	73	Weighted Average
	24.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0700	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
12.7	2,480	0.0410	3.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	300	0.0100	12.38	155.61	Pipe Channel, 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.012
25.5	2,880	Total			

Subcatchment B13: BASIN B13



Summary for Subcatchment B14: BASIN 14

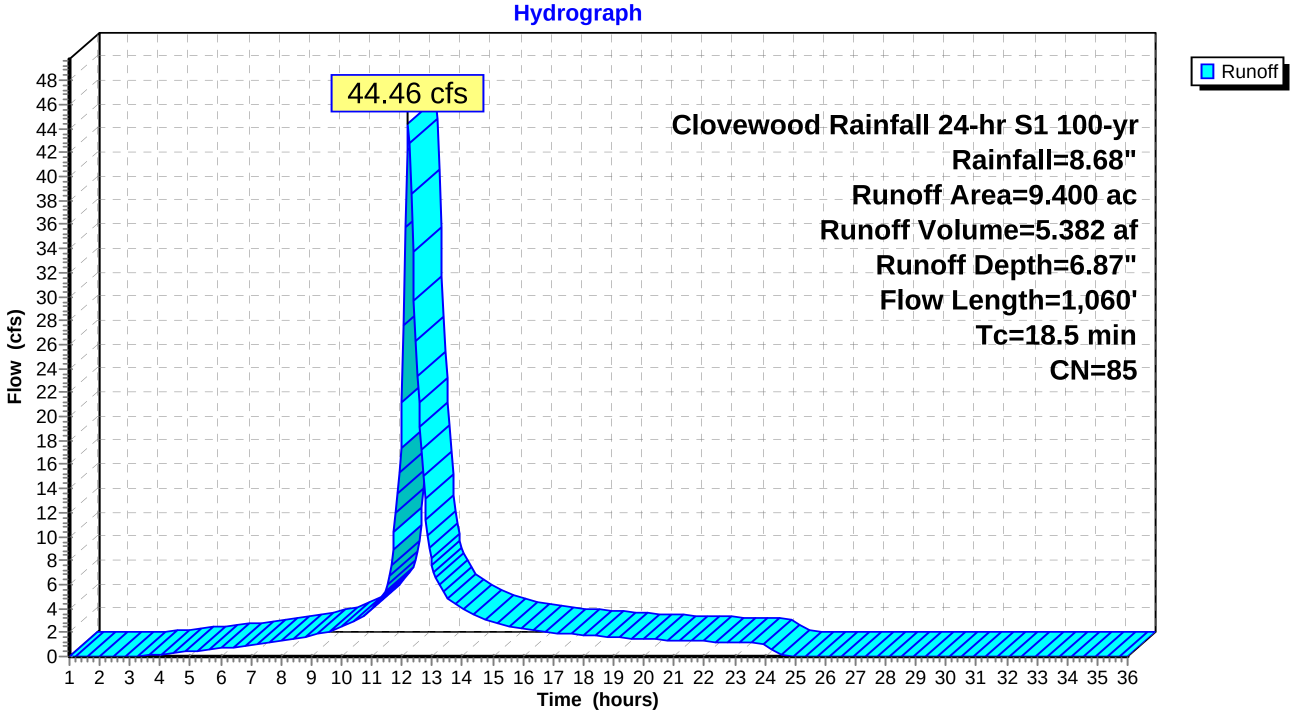
Runoff = 44.46 cfs @ 12.20 hrs, Volume= 5.382 af, Depth= 6.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	5.400	85	LOTS, D
*	1.400	98	ROADS, WALKS
	0.500	80	>75% Grass cover, Good, HSG D
	2.100	77	Woods, Good, HSG D
	9.400	85	Weighted Average
	8.000		85.11% Pervious Area
	1.400		14.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	700	0.0900	4.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	80	0.0300	3.52		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	180	0.1000	24.67	77.50	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
18.5	1,060	Total			

Subcatchment B14: BASIN 14



Summary for Subcatchment B15: BASIN B15

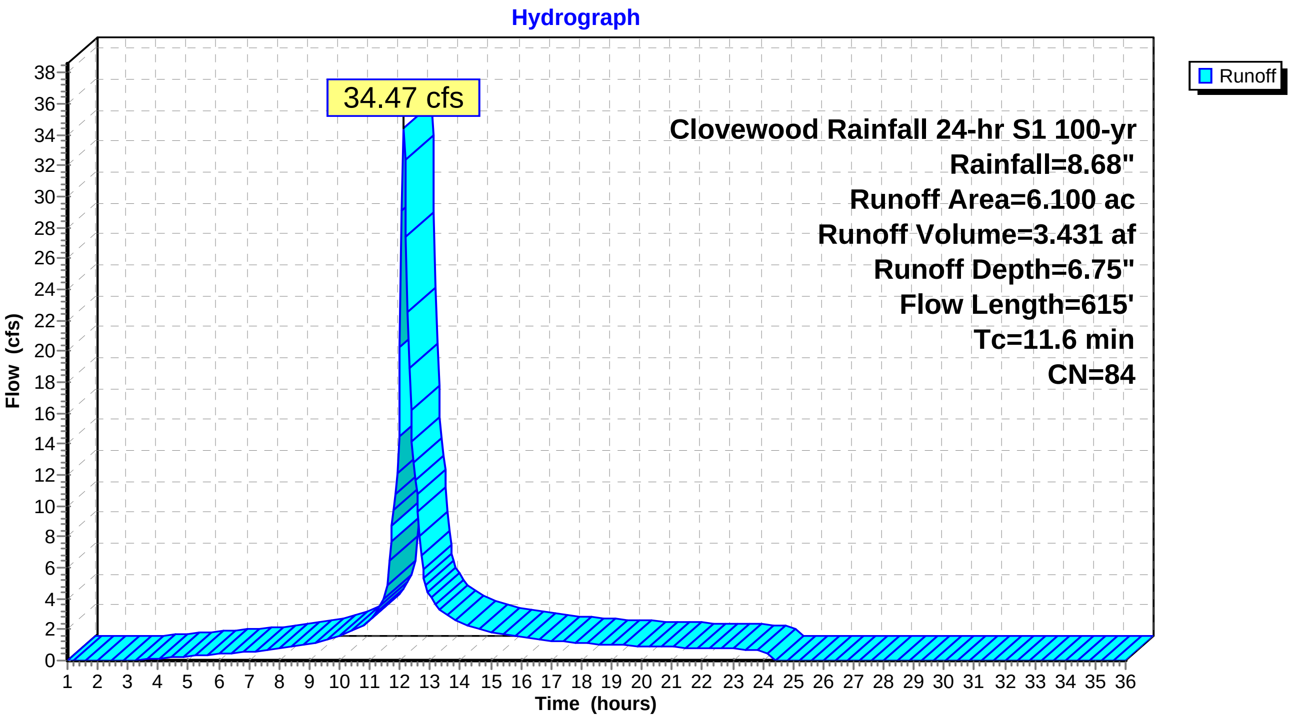
Runoff = 34.47 cfs @ 12.11 hrs, Volume= 3.431 af, Depth= 6.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	3.050	85	LOTS, D
*	0.400	98	ROADS, WALKS
*	0.250	98	BUILDING
	1.900	80	>75% Grass cover, Good, HSG D
	0.500	77	Woods, Good, HSG D
	6.100	84	Weighted Average
	5.450		89.34% Pervious Area
	0.650		10.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	215	0.1600	6.44		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.2	300	0.0500	22.86	161.57	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.6	615	Total			

Subcatchment B15: BASIN B15



Summary for Subcatchment B16: (new Subcat)

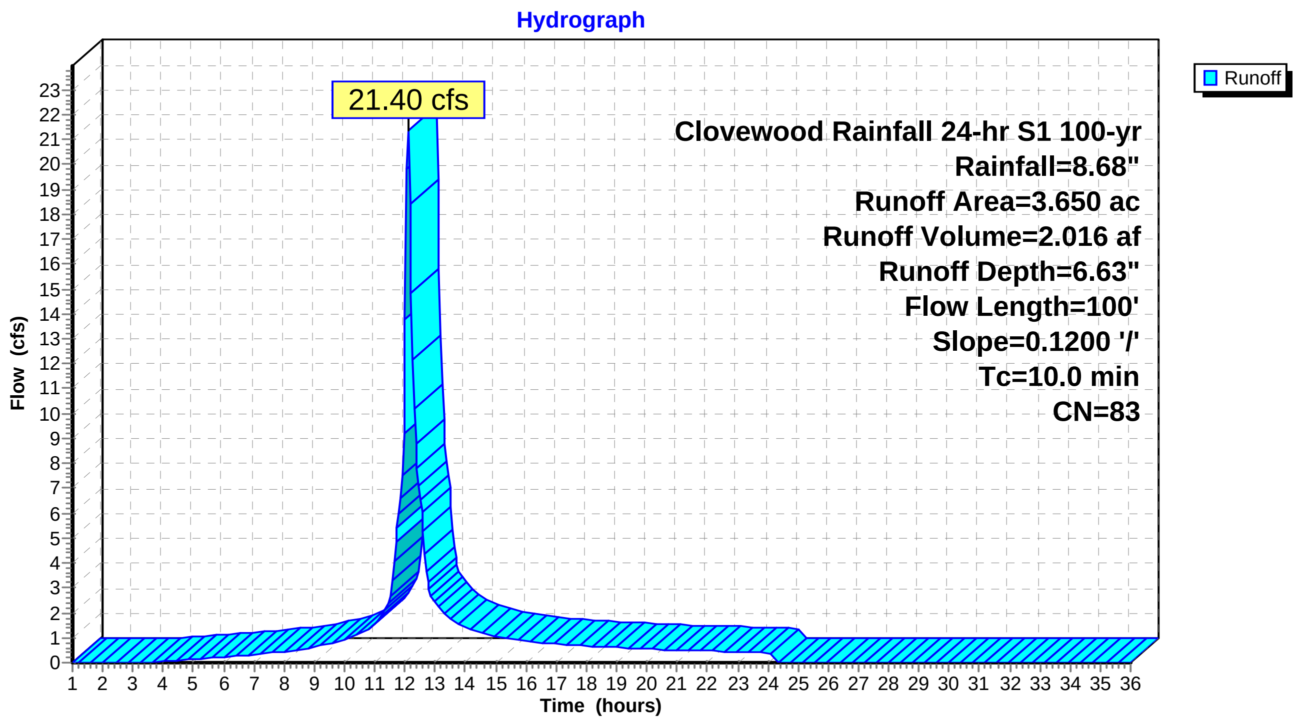
Runoff = 21.40 cfs @ 12.09 hrs, Volume= 2.016 af, Depth= 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	2.100	85	LOTS, D
*	0.100	98	PARKING
	0.500	80	>75% Grass cover, Good, HSG D
	0.950	77	Woods, Good, HSG D
	3.650	83	Weighted Average
	3.550		97.26% Pervious Area
	0.100		2.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"

Subcatchment B16: (new Subcat)



Summary for Subcatchment B2: BASIN 2

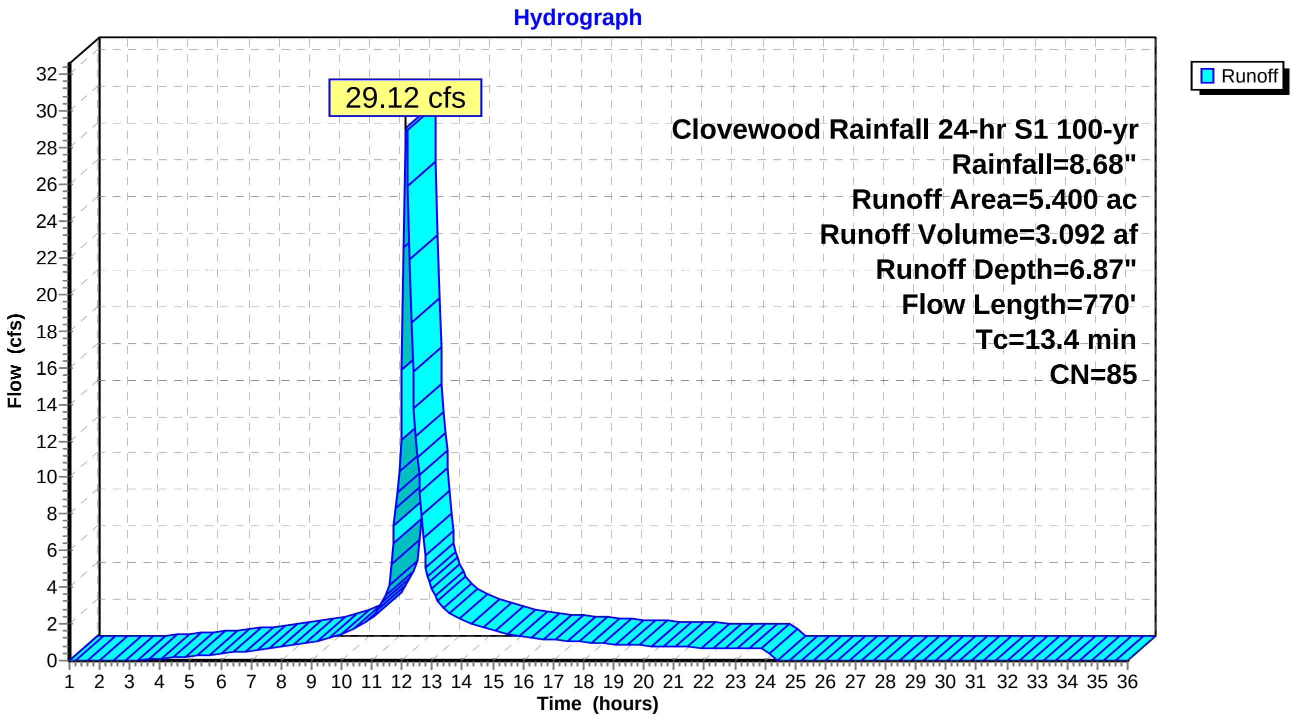
Runoff = 29.12 cfs @ 12.14 hrs, Volume= 3.092 af, Depth= 6.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.500	98	ROADS, WALKS
	0.900	77	Woods, Good, HSG D
	0.400	80	>75% Grass cover, Good, HSG D
*	3.600	85	LOTS, D
	5.400	85	Weighted Average
	4.900		90.74% Pervious Area
	0.500		9.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	350	0.1500	6.24		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.5	150	0.0600	4.97		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	170	0.0600	15.77	27.87	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
13.4	770	Total			

Subcatchment B2: BASIN 2



Summary for Subcatchment B3: BASIN B3

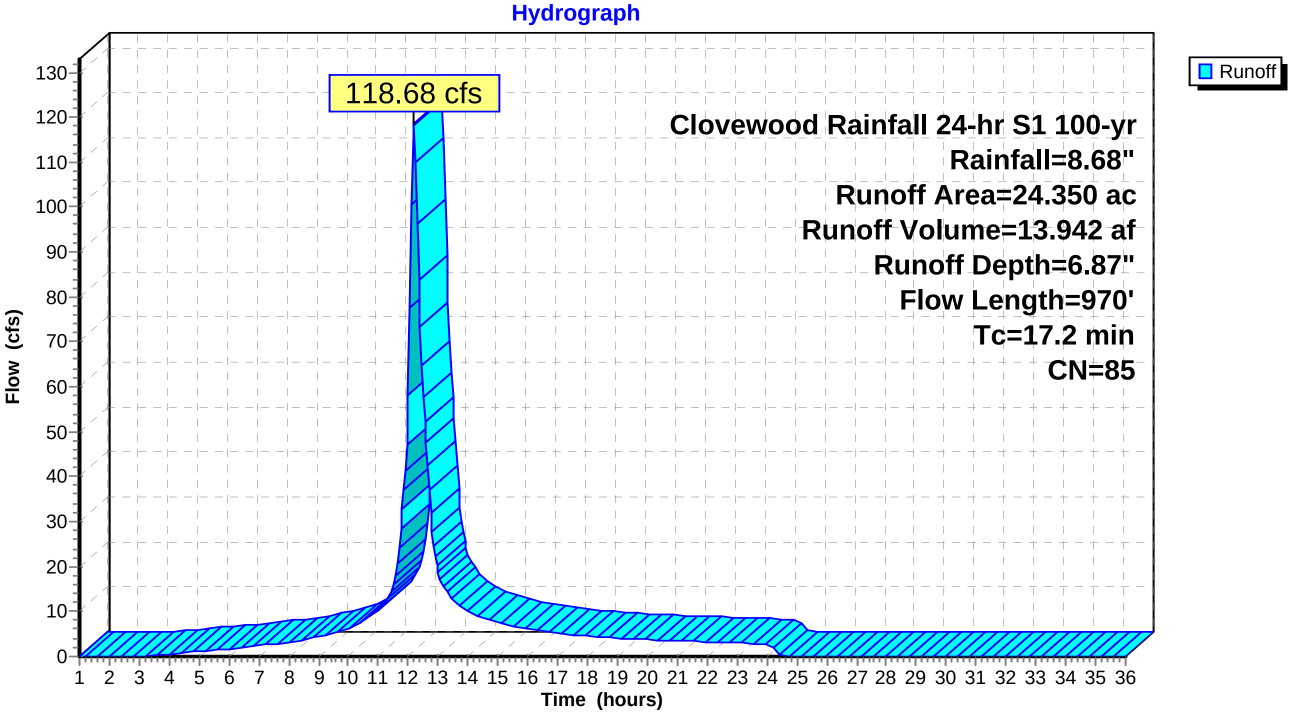
Runoff = 118.68 cfs @ 12.19 hrs, Volume= 13.942 af, Depth= 6.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.600	98	POND
*	0.300	30	Meadow, non-grazed, HSG A
*	4.450	98	ROADS, WALKS
	1.500	80	>75% Grass cover, Good, HSG D
	4.500	77	Woods, Good, HSG D
*	13.000	85	LOTS, D
	24.350	85	Weighted Average
	19.300		79.26% Pervious Area
	5.050		20.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	220	0.0800	4.55		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.8	650	0.0500	14.40	25.45	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.2	970	Total			

Subcatchment B3: BASIN B3



Summary for Subcatchment B4: BASIN 4

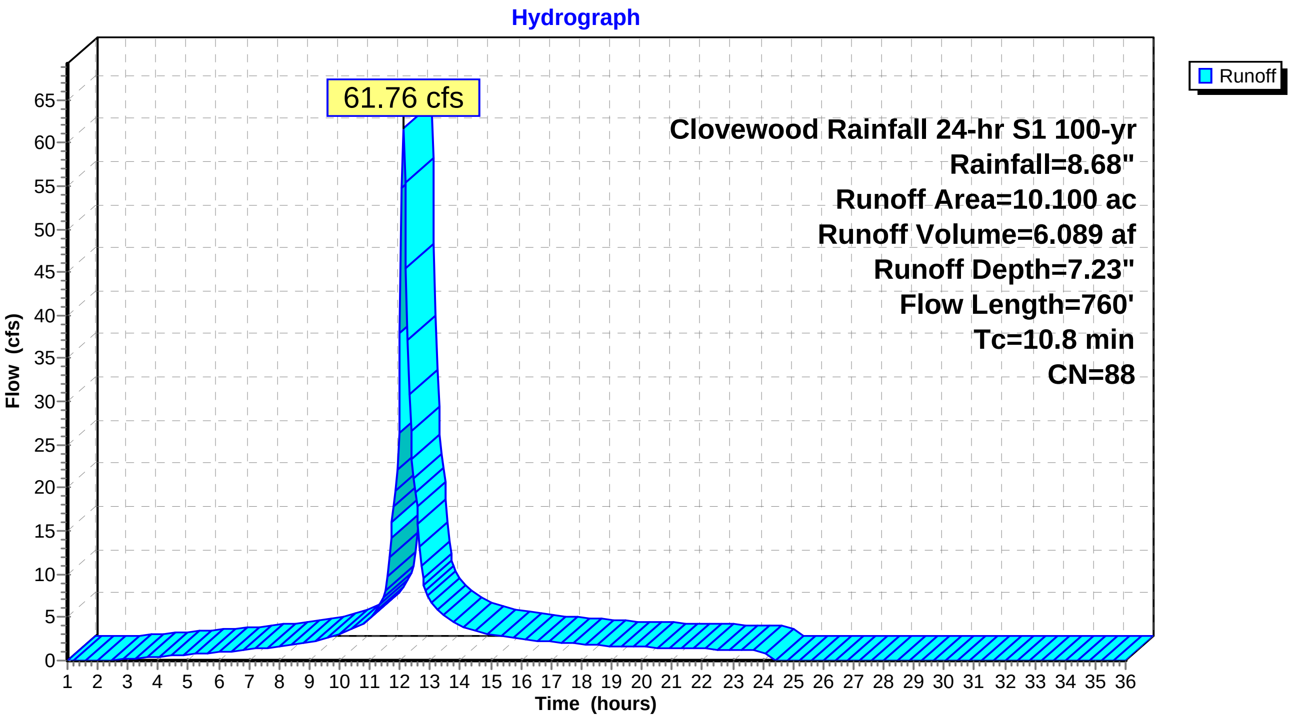
Runoff = 61.76 cfs @ 12.10 hrs, Volume= 6.089 af, Depth= 7.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.350	98	POND
*	0.350	98	ROADS, WALKS
*	2.000	85	LOTS, D
*	0.500	98	BUILDINGS
*	0.200	98	PARKING
*	3.000	98	FUTURE DEV
	1.700	80	>75% Grass cover, Good, HSG D
	2.000	77	Woods, Good, HSG D
	10.100	88	Weighted Average
	5.700		56.44% Pervious Area
	4.400		43.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1300	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	360	0.0150	7.62	60.95	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
0.3	300	0.0700	17.04	30.11	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
10.8	760	Total			

Subcatchment B4: BASIN 4



Summary for Subcatchment B5: BASIN 5

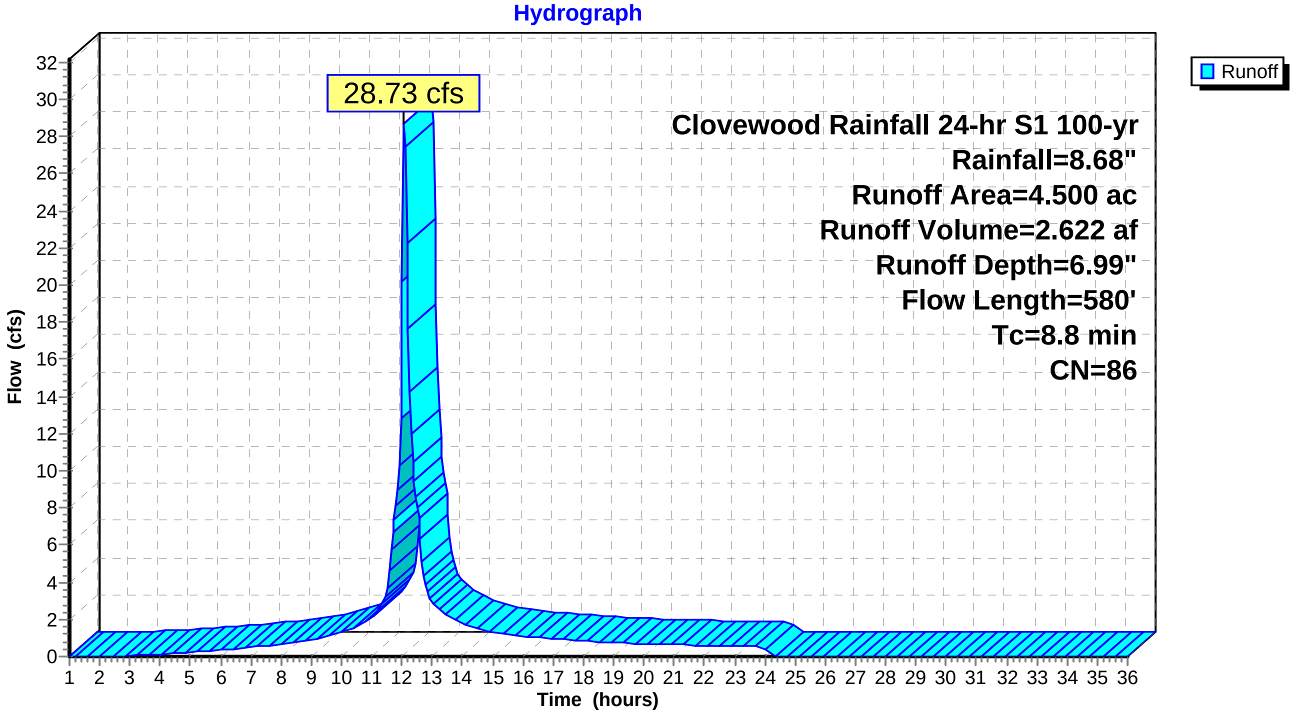
Runoff = 28.73 cfs @ 12.07 hrs, Volume= 2.622 af, Depth= 6.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.340	98	ROADS, WALKS
*	0.150	98	POND
*	0.700	98	PARKING
*	1.800	85	LOTS, D
	0.700	80	>75% Grass cover, Good, HSG D
	0.810	77	Woods, Good, HSG D
	4.500	86	Weighted Average
	3.310		73.56% Pervious Area
	1.190		26.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.2000	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	130	0.1800	6.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.3	350	0.0700	17.04	30.11	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
8.8	580	Total			

Subcatchment B5: BASIN 5



Summary for Subcatchment B6: BASIN 7

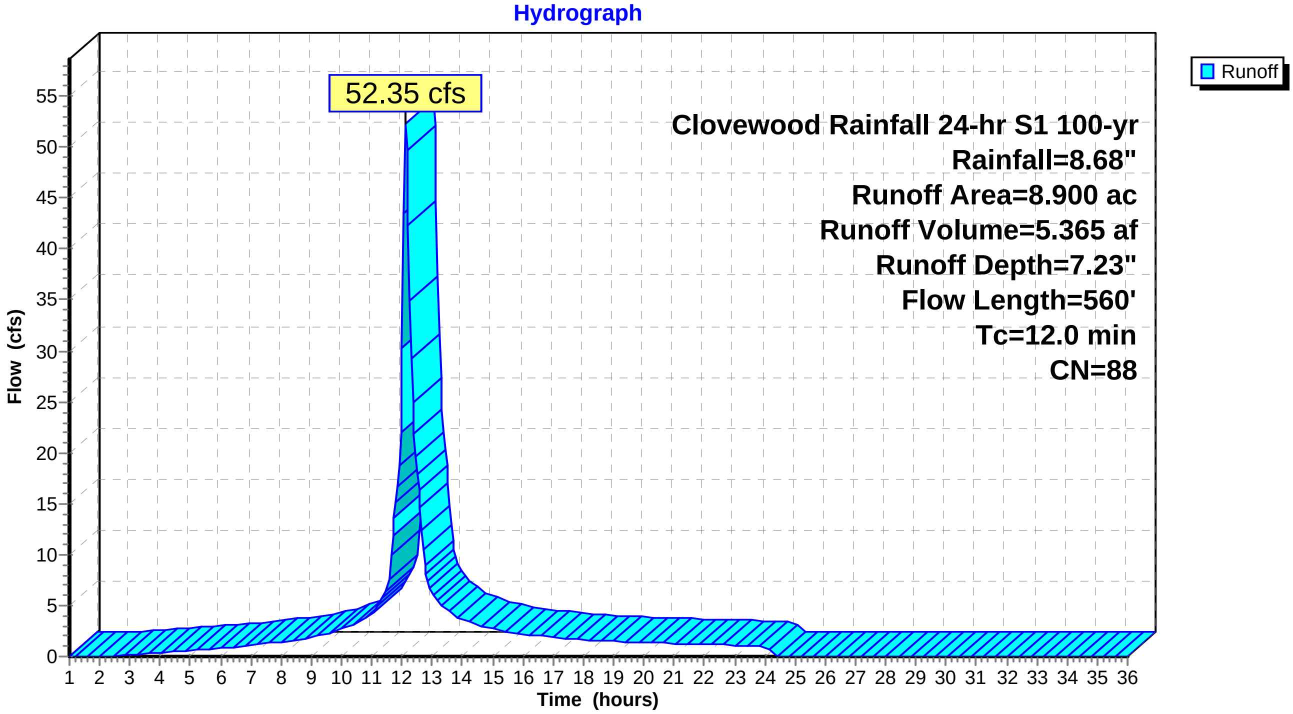
Runoff = 52.35 cfs @ 12.11 hrs, Volume= 5.365 af, Depth= 7.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.850	98	ROADS, WLAKS
*	0.420	98	POND
*	2.800	85	LOTS, D
*	2.000	98	PARKING
	0.800	80	>75% Grass cover, Good, HSG D
	2.030	77	Woods, Good, HSG D
	8.900	88	Weighted Average
	5.630		63.26% Pervious Area
	3.270		36.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.1	290	0.0700	4.26		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	170	0.1000	24.67	77.50	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
12.0	560	Total			

Subcatchment B6: BASIN 7



Summary for Subcatchment B7: BASIN 6

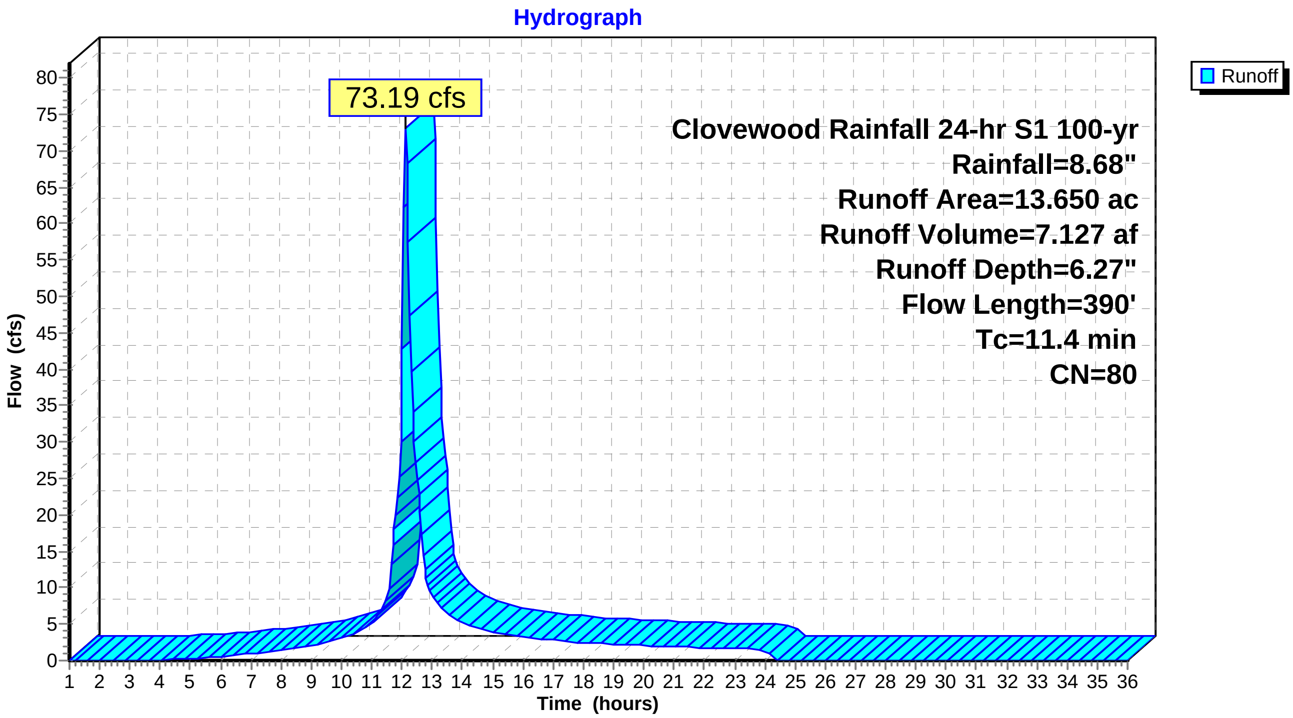
Runoff = 73.19 cfs @ 12.11 hrs, Volume= 7.127 af, Depth= 6.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	3.200	98	ROADS, WALK
*	3.850	85	LOTS, D
*	0.700	98	POND
*	2.150	60	LOTS, A
	1.000	39	>75% Grass cover, Good, HSG A
	1.250	80	>75% Grass cover, Good, HSG D
	1.500	77	Woods, Good, HSG D
	13.650	80	Weighted Average
	9.750		71.43% Pervious Area
	3.900		28.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.0900	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.1	290	0.1000	32.33	228.50	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.4	390	Total			

Subcatchment B7: BASIN 6



Summary for Subcatchment B8: BASIN B8

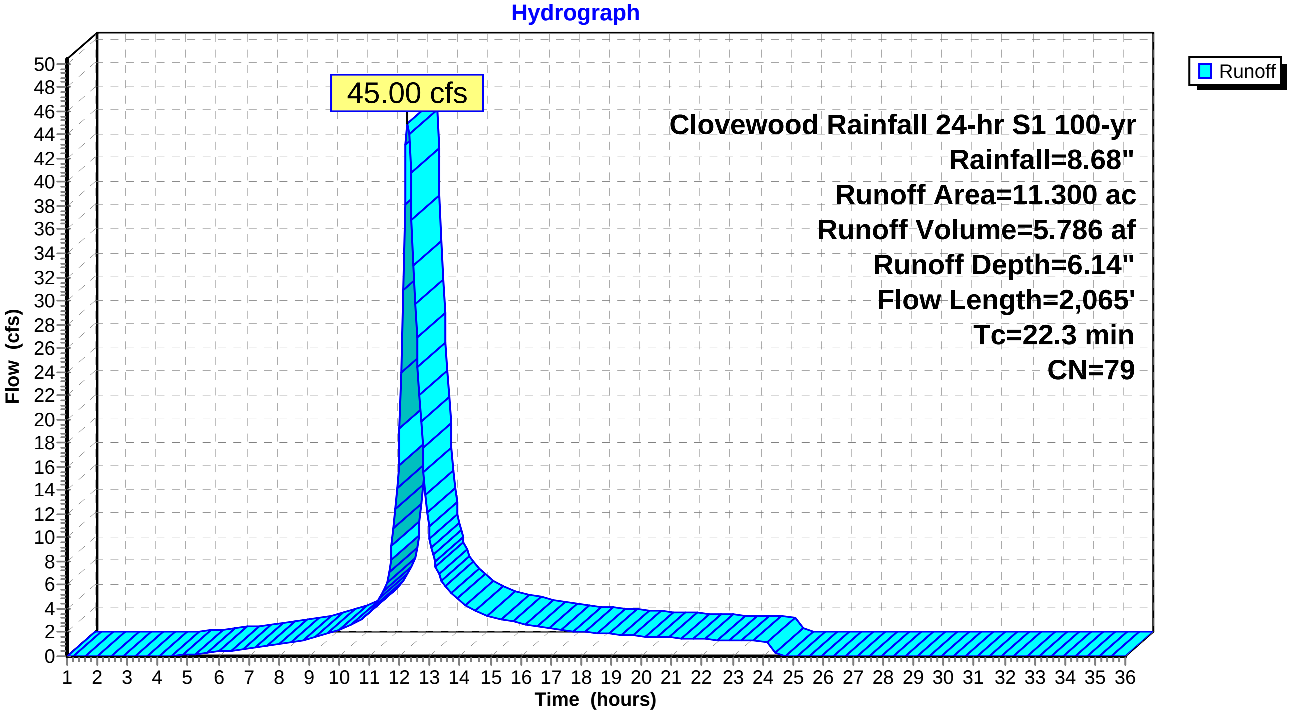
Runoff = 45.00 cfs @ 12.26 hrs, Volume= 5.786 af, Depth= 6.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.200	90	DIRT ROAD, HSG D
*	0.350	98	ROAD
	3.500	77	Woods, Good, HSG D
	2.500	80	>75% Grass cover, Good, HSG D
	4.750	78	Meadow, non-grazed, HSG D
	11.300	79	Weighted Average
	10.950		96.90% Pervious Area
	0.350		3.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	915	0.0350	3.01		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.5	950	0.0300	10.77	86.20	**Parabolic Channel,** W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
0.1	100	0.0300	17.71	125.15	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
22.3	2,065	Total			

Subcatchment B8: BASIN B8



Summary for Subcatchment B9: BASIN 9

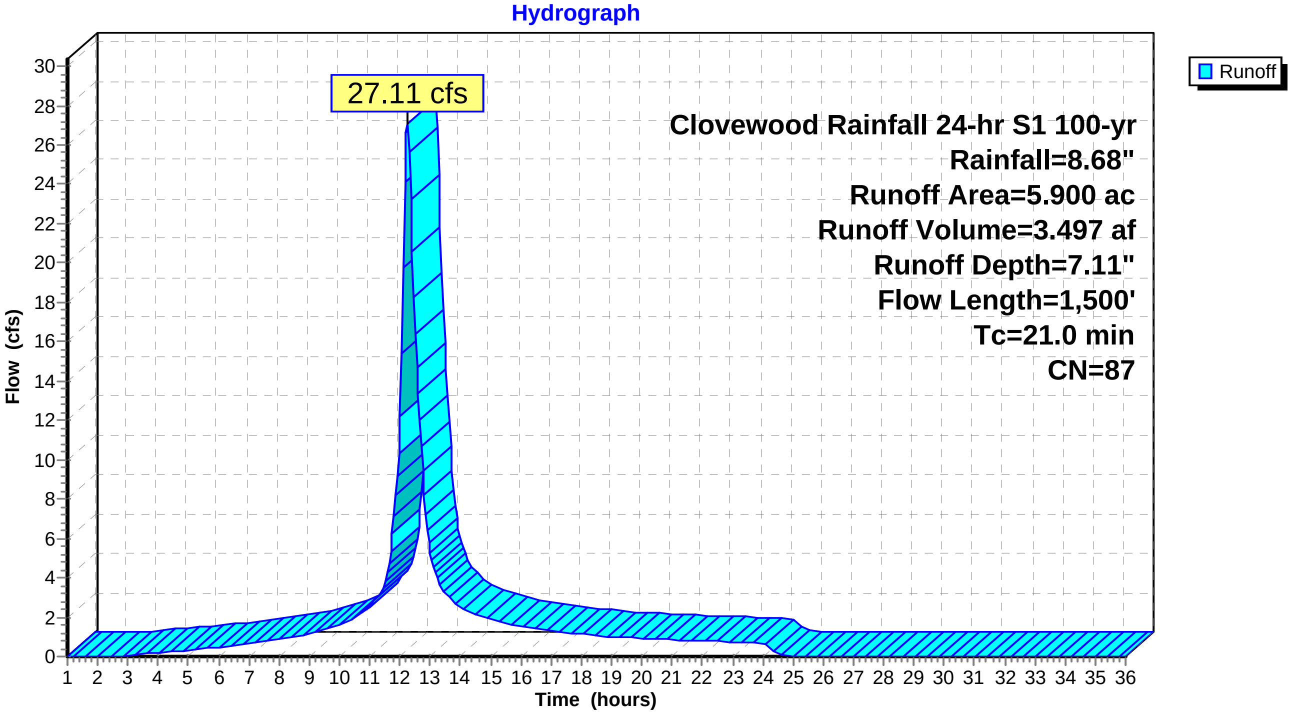
Runoff = 27.11 cfs @ 12.24 hrs, Volume= 3.497 af, Depth= 7.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	3.000	85	LOTS, D
*	1.400	98	ROADS, WALKS
	0.750	80	>75% Grass cover, Good, HSG D
	0.750	79	Woods/grass comb., Good, HSG D
	5.900	87	Weighted Average
	4.500		76.27% Pervious Area
	1.400		23.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
4.5	1,150	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	120	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	130	0.0300	11.15	19.71	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
21.0	1,500	Total			

Subcatchment B9: BASIN 9



Summary for Subcatchment C1: C1

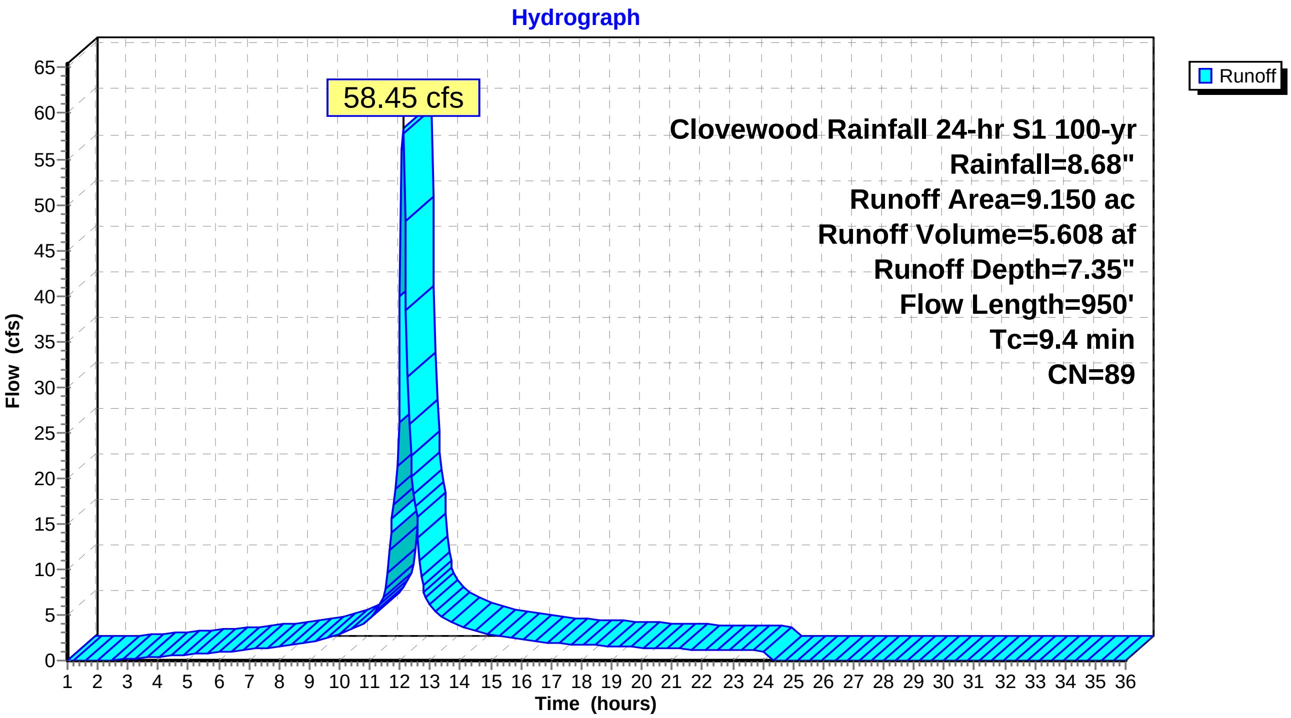
Runoff = 58.45 cfs @ 12.08 hrs, Volume= 5.608 af, Depth= 7.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	4.460	98	ROADS, WALKS, PARKING
	4.090	80	>75% Grass cover, Good, HSG D
	0.600	77	Woods, Good, HSG D
	9.150	89	Weighted Average
	4.690		51.26% Pervious Area
	4.460		48.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0800	0.31		Sheet Flow,
					Grass: Short n= 0.150 P2= 3.50"
0.7	150	0.0500	3.60		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
1.2	250	0.0500	3.60		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
1.8	250	0.0100	2.38	15.86	Parabolic Channel,
					W=20.00' D=0.50' Area=6.7 sf Perim=20.0' n= 0.030
0.3	200	0.0200	11.03	34.66	Pipe Channel,
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.012
9.4	950	Total			

Subcatchment C1: C1



Summary for Subcatchment C10: BASIN 10

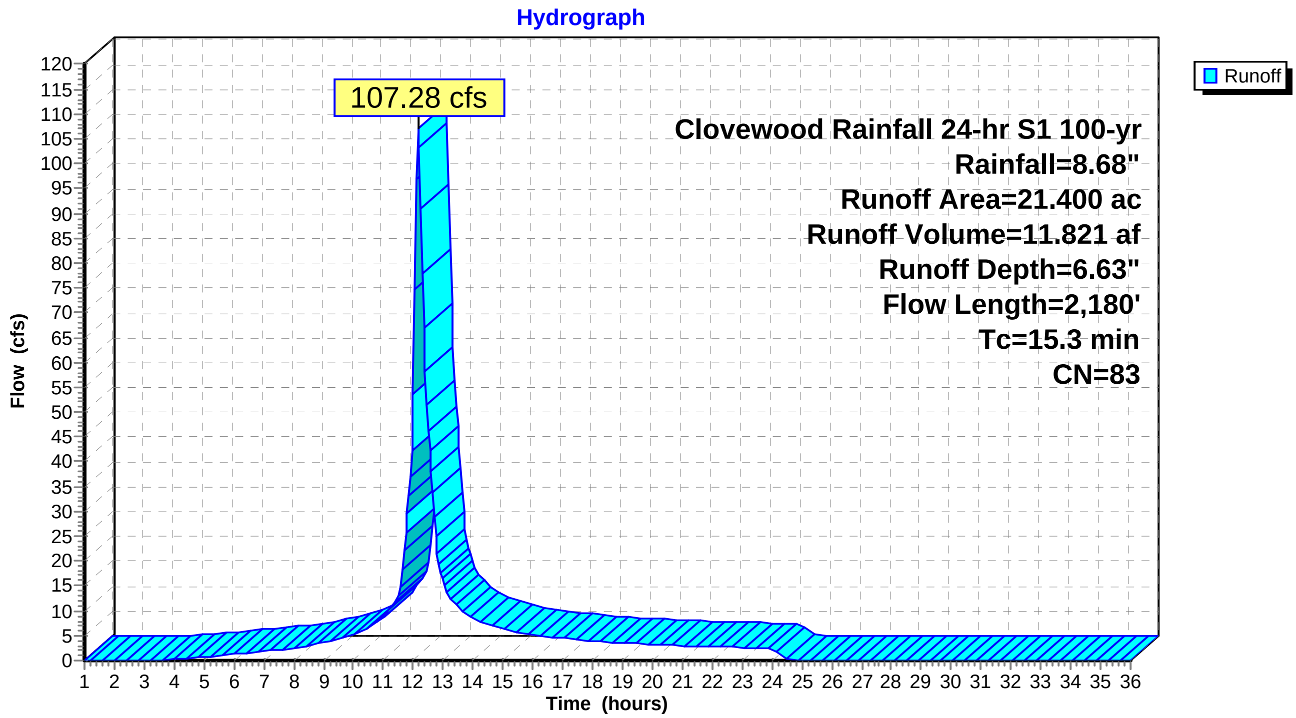
Runoff = 107.28 cfs @ 12.16 hrs, Volume= 11.821 af, Depth= 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	10.000	85	LOTS, D
*	1.850	98	ROADS, WALKS
	1.500	80	>75% Grass cover, Good, HSG D
*	0.600	98	POND
	7.450	77	Woods, Good, HSG D
	21.400	83	Weighted Average
	18.950		88.55% Pervious Area
	2.450		11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	880	0.1500	6.24		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.1	1,200	0.0850	18.77	33.18	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
15.3	2,180	Total			

Subcatchment C10: BASIN 10



Summary for Subcatchment C11: BASIN C11

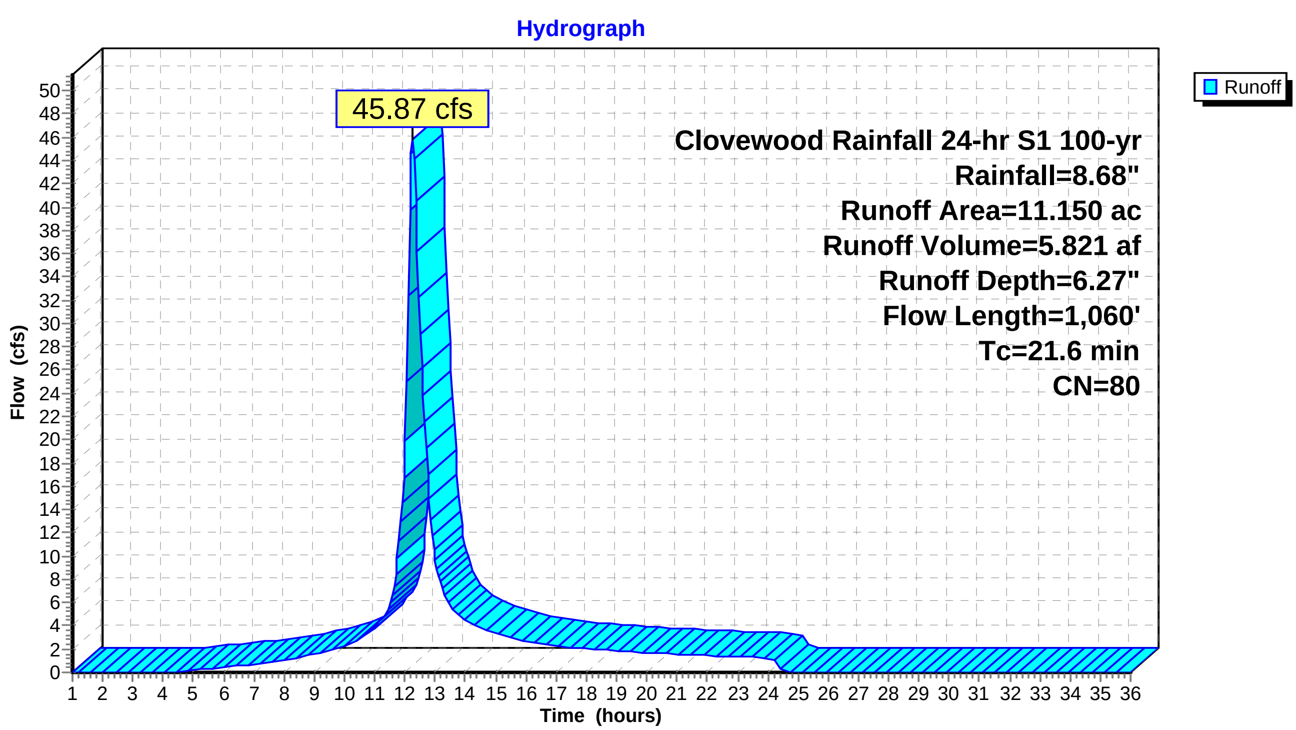
Runoff = 45.87 cfs @ 12.25 hrs, Volume= 5.821 af, Depth= 6.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	4.150	85	LOTS, D
	1.000	80	>75% Grass cover, Good, HSG D
	6.000	77	Woods, Good, HSG D
	11.150	80	Weighted Average
	11.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	300	0.2500	8.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.5	660	0.0800	22.41	358.55	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
21.6	1,060	Total			

Subcatchment C11: BASIN C11



Summary for Subcatchment C12: (new Subcat)

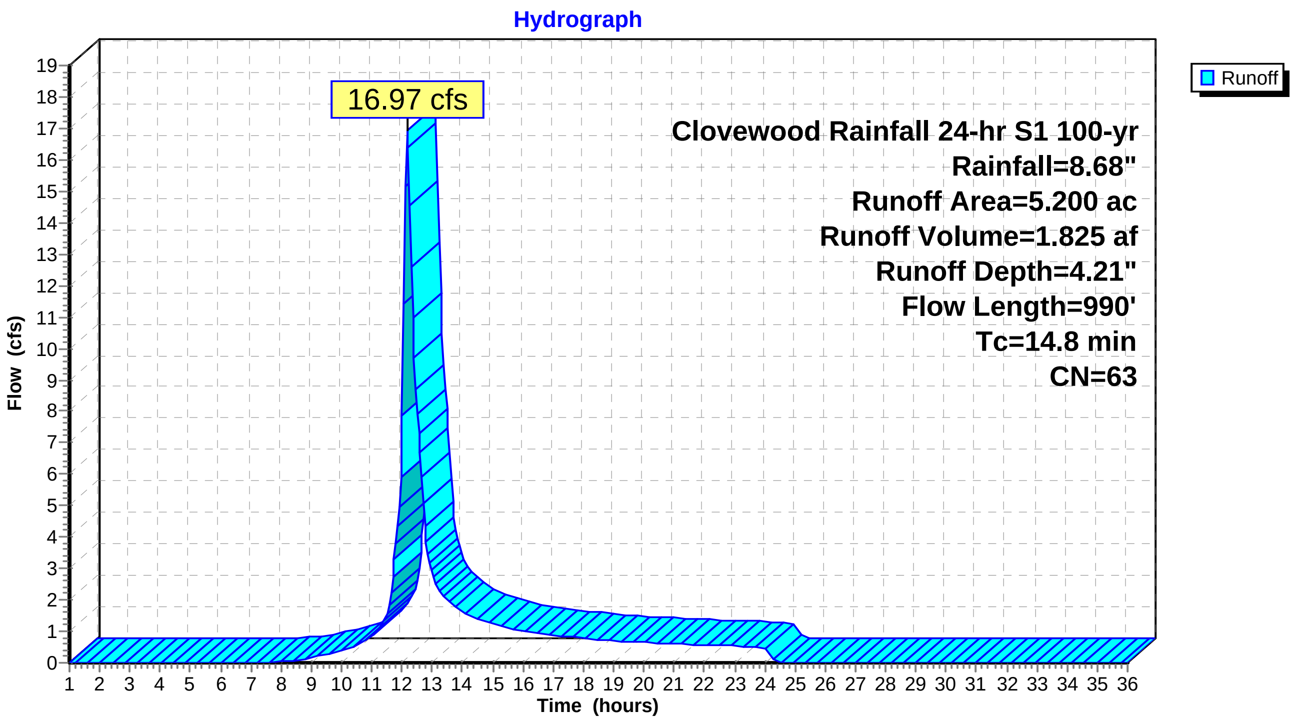
Runoff = 16.97 cfs @ 12.16 hrs, Volume= 1.825 af, Depth= 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.860	85	LOTS, D
	1.300	30	Woods, Good, HSG A
*	1.150	60	LOTS, A
	0.500	78	Meadow, non-grazed, HSG D
	1.390	77	Woods, Good, HSG D
	5.200	63	Weighted Average
	5.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0700	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.6	450	0.0900	4.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.8	440	0.0150	9.55	30.02	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.8	990	Total			

Subcatchment C12: (new Subcat)



Summary for Subcatchment C2: BASIN C2

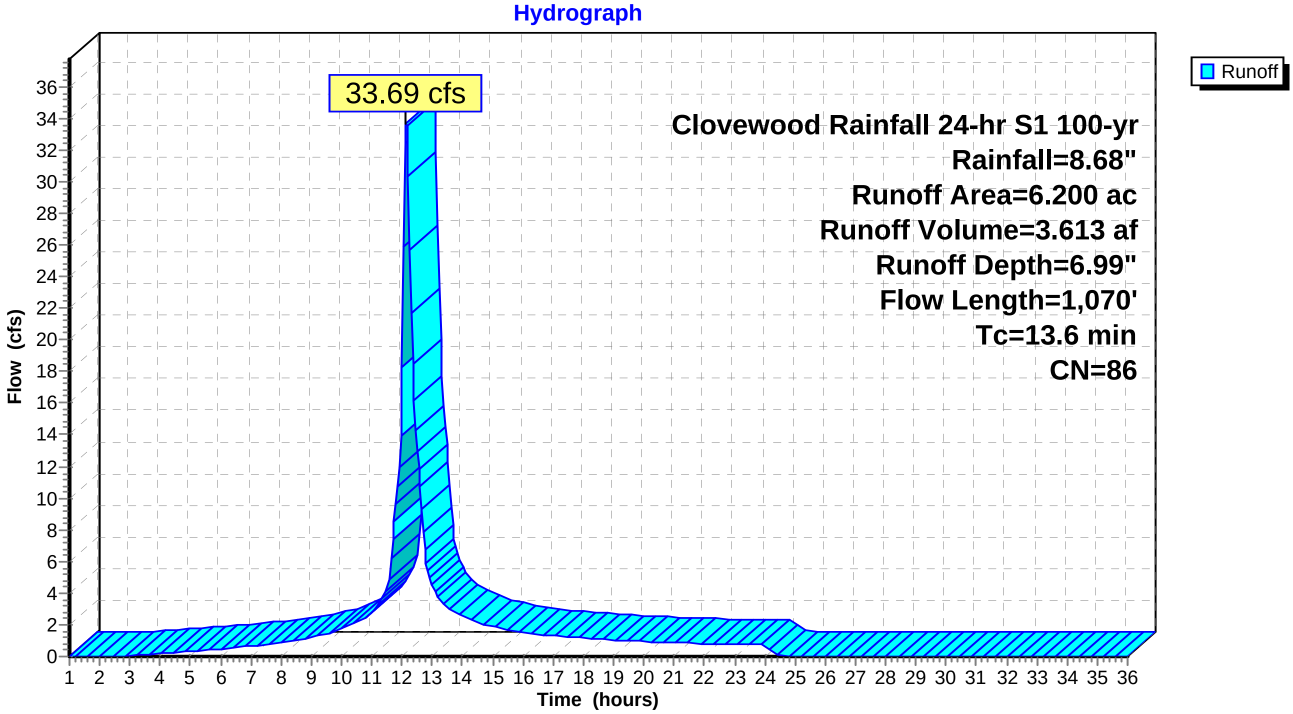
Runoff = 33.69 cfs @ 12.14 hrs, Volume= 3.613 af, Depth= 6.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.250	98	POND
*	1.750	98	ROADS, WALKS
*	1.850	85	LOTS, D
	0.600	80	>75% Grass cover, Good, HSG D
	1.750	77	Woods, Good, HSG D
	6.200	86	Weighted Average
	4.200		67.74% Pervious Area
	2.000		32.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0800	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.0	390	0.1800	6.83		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.8	580	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
13.6	1,070	Total			

Subcatchment C2: BASIN C2



Summary for Subcatchment C3: BASIN C3

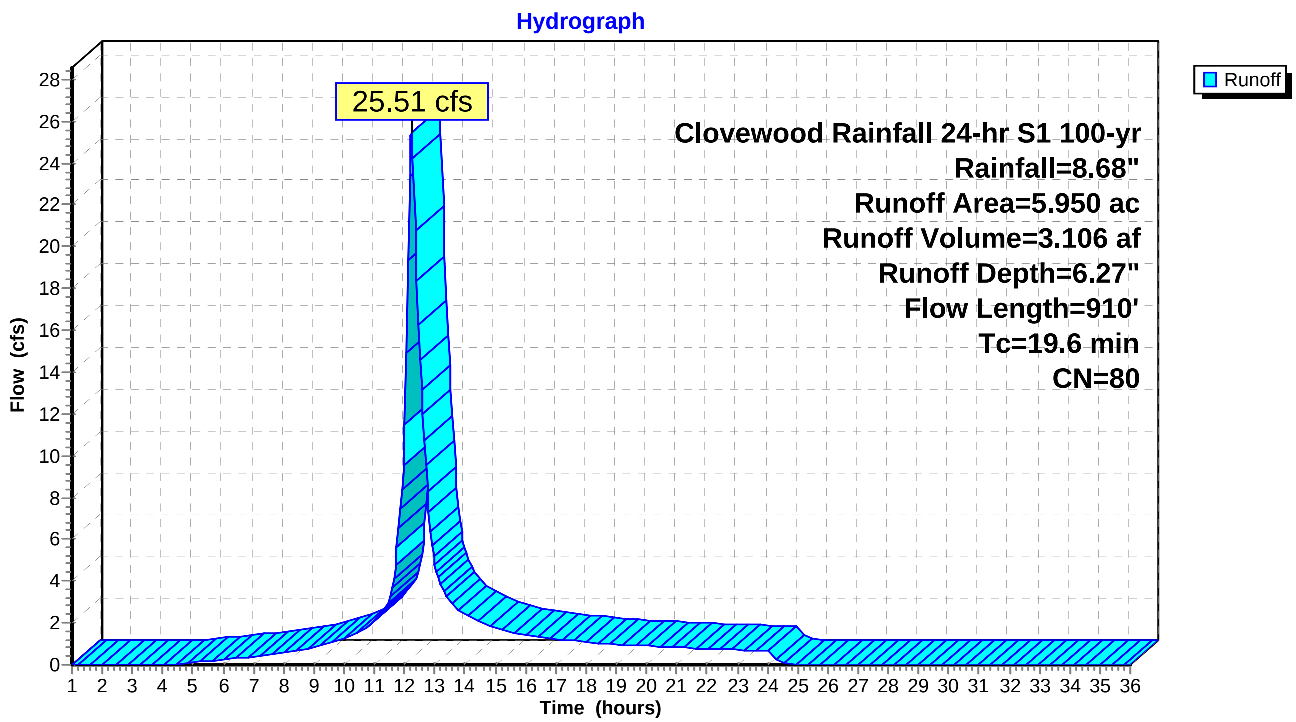
Runoff = 25.51 cfs @ 12.22 hrs, Volume= 3.106 af, Depth= 6.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.380	89	WETLANDS
*	1.400	85	LOTS, D
	0.150	78	Meadow, non-grazed, HSG D
	4.020	77	Woods, Good, HSG D
	5.950	80	Weighted Average
	5.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0300	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.9	660	0.1300	5.80		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	150	0.0500	15.24	152.43	**Parabolic Channel,** W=6.00' D=2.50' Area=10.0 sf Perim=8.1' n= 0.025
19.6	910	Total			

Subcatchment C3: BASIN C3



Summary for Subcatchment C4: BASIN C4

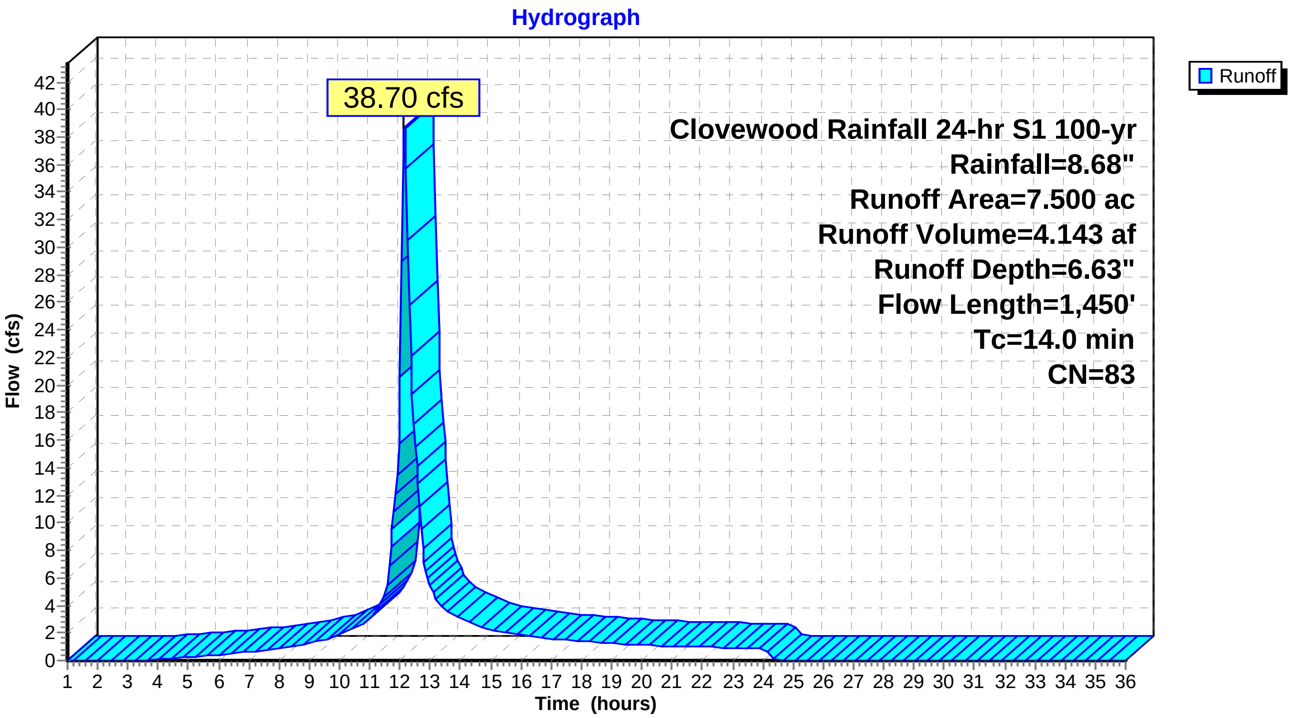
Runoff = 38.70 cfs @ 12.15 hrs, Volume= 4.143 af, Depth= 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	1.420	98	ROADS/ WALKS
*	3.300	85	LOTS, D
*	0.250	98	POND
	0.400	78	Meadow, non-grazed, HSG D
*	0.240	60	LOTS, A
	0.230	30	Woods, Good, HSG A
	1.660	77	Woods, Good, HSG D
	7.500	83	Weighted Average
	5.830		77.73% Pervious Area
	1.670		22.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0850	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	370	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	790	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.1	190	0.2000	24.81	132.31	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
14.0	1,450	Total			

Subcatchment C4: BASIN C4



Summary for Subcatchment C5N9: BASIN C5/9

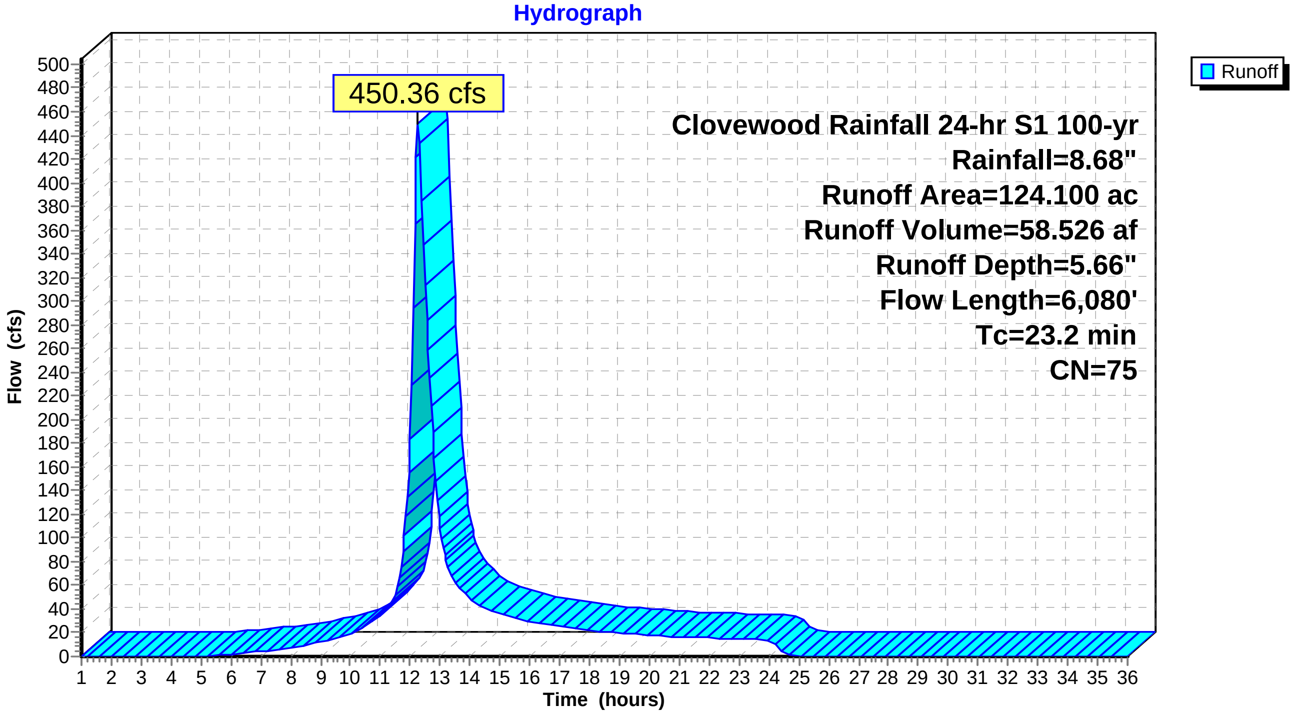
Runoff = 450.36 cfs @ 12.27 hrs, Volume= 58.526 af, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	4.780	89	WETLANDS
	105.670	77	Woods, Good, HSG D
*	5.100	85	
	1.100	80	>75% Grass cover, Good, HSG D
	0.400	39	>75% Grass cover, Good, HSG A
*	0.850	60	
	6.200	30	Woods, Good, HSG A
	124.100	75	Weighted Average
	124.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0300	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.7	965	0.3500	9.52		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	610	0.0200	9.74	155.77	Parabolic Channel, W=12.00' D=2.00' Area=16.0 sf Perim=12.8' n= 0.025
1.4	2,190	0.1400	25.51	255.07	Parabolic Channel, W=6.00' D=2.50' Area=10.0 sf Perim=8.1' n= 0.025
0.2	350	0.1000	32.33	228.50	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
1.4	1,865	0.0800	22.41	358.55	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
23.2	6,080	Total			

Subcatchment C5N9: BASIN C5/9



Summary for Subcatchment C6: BASIN C6

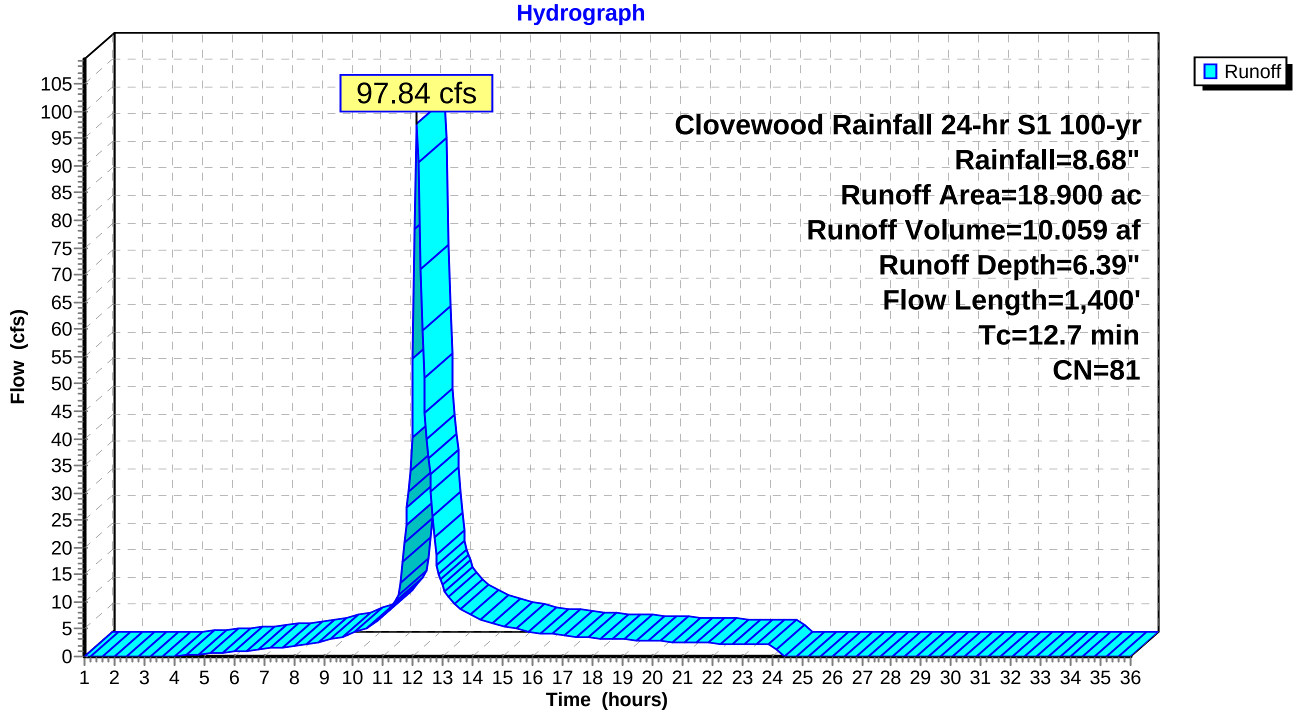
Runoff = 97.84 cfs @ 12.13 hrs, Volume= 10.059 af, Depth= 6.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.600	98	POND
*	1.110	60	LOTS, A
*	1.790	98	ROADS, WALKS
*	10.700	85	LOTS, D
	1.170	39	>75% Grass cover, Good, HSG A
	1.530	80	>75% Grass cover, Good, HSG D
	2.000	77	Woods, Good, HSG D
	18.900	81	Weighted Average
	16.510		87.35% Pervious Area
	2.390		12.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	150	0.0700	4.26		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.1	860	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.2	290	0.1400	23.28	186.21	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
12.7	1,400	Total			

Subcatchment C6: BASIN C6



Summary for Subcatchment C7: BASIN C7

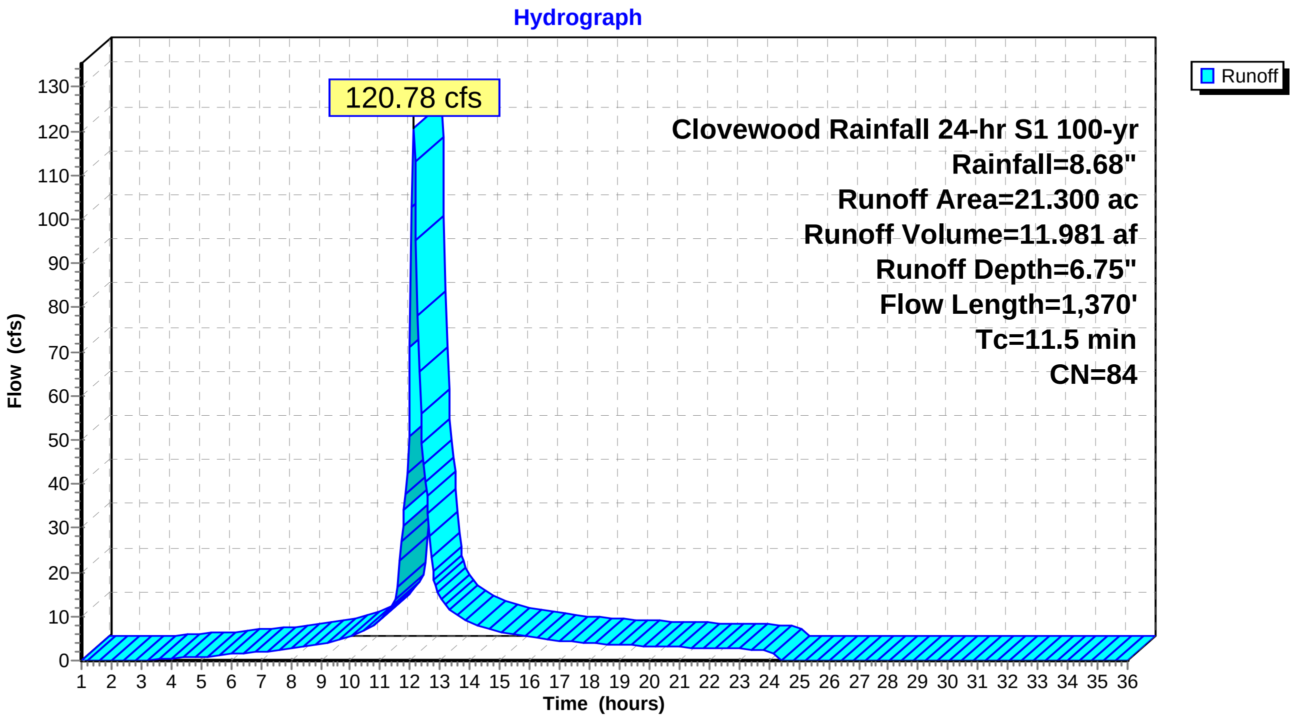
Runoff = 120.78 cfs @ 12.11 hrs, Volume= 11.981 af, Depth= 6.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	2.920	98	ROADS / WALKS
*	0.500	98	BLDG
*	9.900	85	LOTS, D
*	1.000	98	POND
	0.480	30	Woods, Good, HSG A
	0.200	39	>75% Grass cover, Good, HSG A
	2.500	80	>75% Grass cover, Good, HSG D
	3.800	77	Woods, Good, HSG D
	21.300	84	Weighted Average
	16.880		79.25% Pervious Area
	4.420		20.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.4	440	0.1200	19.22	102.48	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
1.0	750	0.0400	12.88	22.76	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.1	80	0.2000	24.81	132.31	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
11.5	1,370	Total			

Subcatchment C7: BASIN C7



Summary for Subcatchment C8: BASIN C8

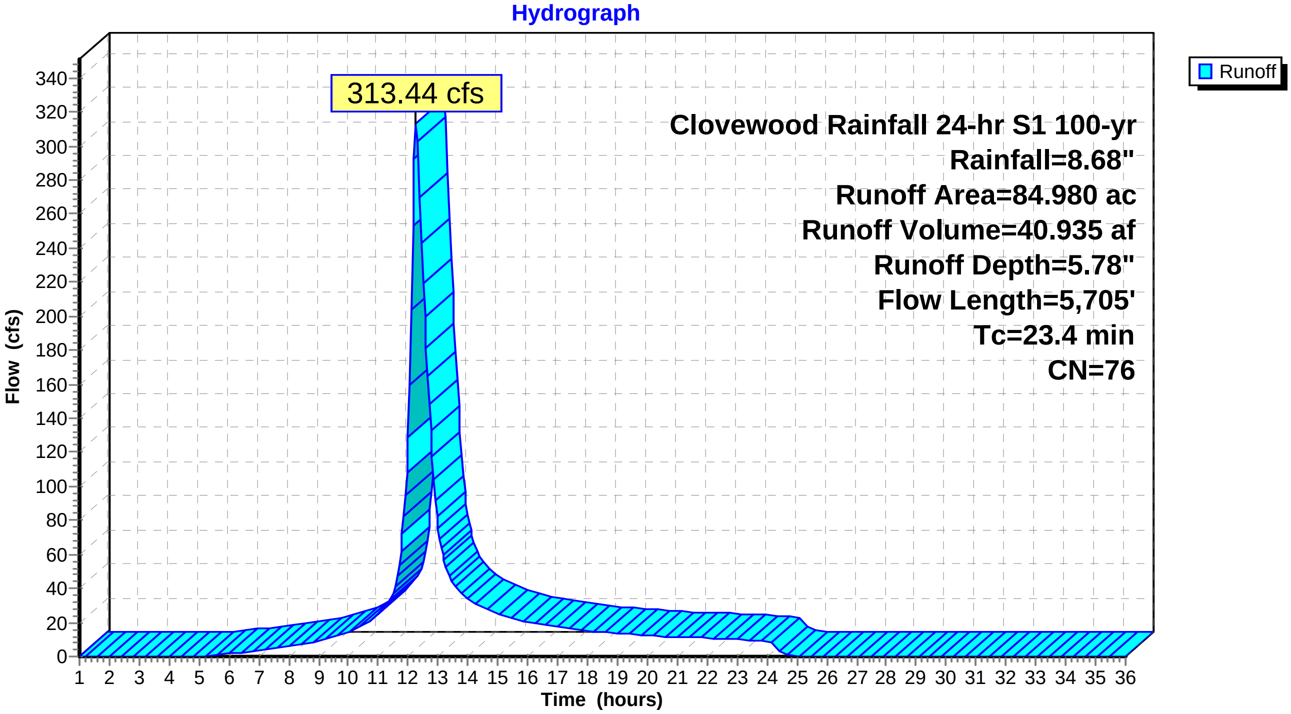
Runoff = 313.44 cfs @ 12.27 hrs, Volume= 40.935 af, Depth= 5.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	0.710	89	Wetlands
*	0.470	98	Impervious Surfaces
	80.150	77	Woods, Good, HSG D
*	0.620	80	Lawn, Good, HSG D
*	1.030	79	Old Golf Course, HSG D
*	1.900	35	Old Golf Course, HSG A
	0.100	78	Meadow, non-grazed, HSG D
	84.980	76	Weighted Average
	84.510		99.45% Pervious Area
	0.470		0.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.5	360	0.5900	12.37		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
10.4	3,630	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.3	310	0.1000	17.54	93.56	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
0.1	175	0.0600	25.04	176.99	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.9	720	0.0600	13.59	72.47	Parabolic Channel, W=4.00' D=2.00' Area=5.3 sf Perim=5.9' n= 0.025
0.4	410	0.0450	16.81	268.91	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
23.4	5,705	Total			

Subcatchment C8: BASIN C8



Summary for Subcatchment D: (new Subcat)

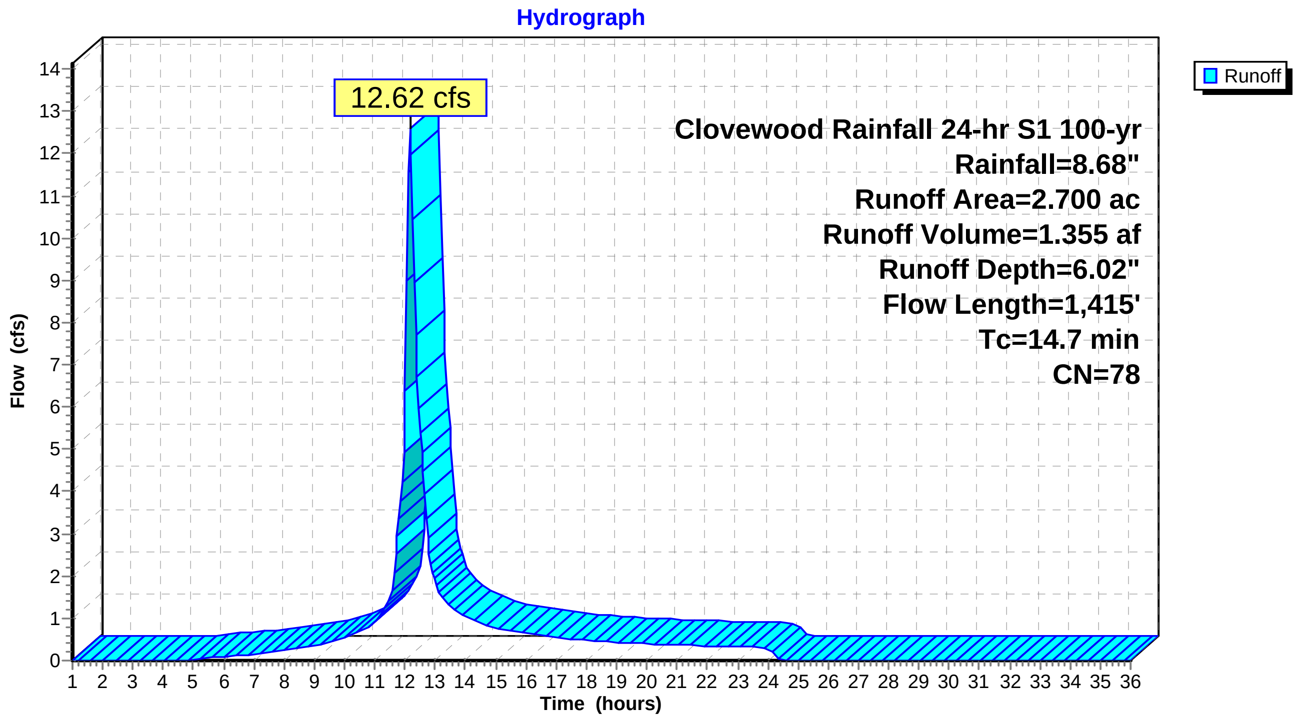
Runoff = 12.62 cfs @ 12.16 hrs, Volume= 1.355 af, Depth= 6.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
	0.800	78	Meadow, non-grazed, HSG D
	1.500	77	Woods, Good, HSG D
*	0.400	85	LOTS, D
	2.700	78	Weighted Average
	2.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
0.3	130	0.2500	8.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.2	135	0.1100	13.72	36.60	Parabolic Channel, W=4.00' D=1.00' Area=2.7 sf Perim=4.6' n= 0.025
0.1	110	0.1000	24.67	77.50	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
0.5	610	0.1000	19.67	157.38	Parabolic Channel, W=6.00' D=2.00' Area=8.0 sf Perim=7.5' n= 0.025
0.1	90	0.0500	20.24	99.36	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012
0.3	240	0.0600	14.56	97.05	Parabolic Channel, W=5.00' D=2.00' Area=6.7 sf Perim=6.7' n= 0.025
14.7	1,415	Total			

Subcatchment D: (new Subcat)



Summary for Subcatchment E1: BASIN E1

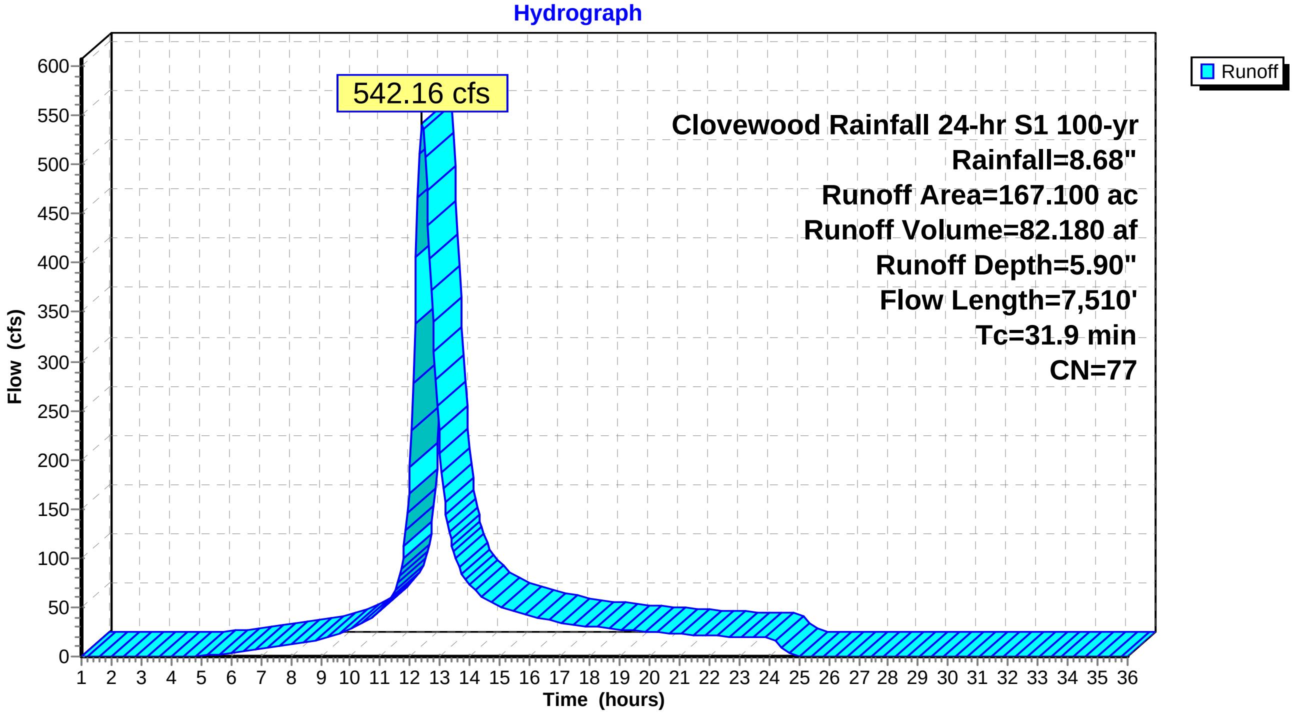
Runoff = 542.16 cfs @ 12.39 hrs, Volume= 82.180 af, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
	161.200	77	Woods, Good, HSG D
	0.400	30	Meadow, non-grazed, HSG A
*	3.300	89	Wetlands
*	2.200	85	Res Lot, HSG D
	167.100	77	Weighted Average
	167.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	630	0.2800	8.52		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.6	2,300	0.1300	5.80		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	720	0.0700	17.47	279.49	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.030
0.3	460	0.0900	30.67	216.77	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
2.6	3,300	0.0700	20.96	335.39	Parabolic Channel, W=8.00' D=3.00' Area=16.0 sf Perim=10.4' n= 0.025
31.9	7,510	Total			

Subcatchment E1: BASIN E1



Summary for Subcatchment E2: BASIN E2

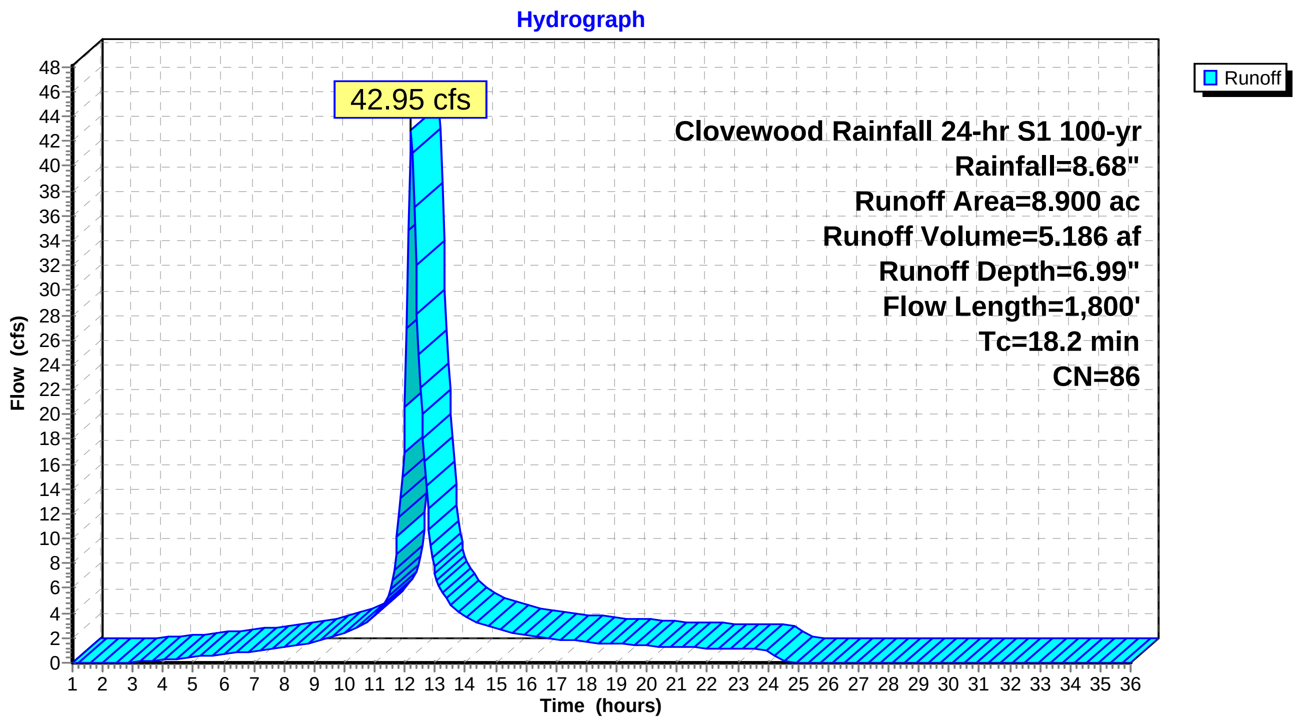
Runoff = 42.95 cfs @ 12.20 hrs, Volume= 5.186 af, Depth= 6.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

	Area (ac)	CN	Description
*	1.540	98	ROAD, WALKS
	2.200	77	Woods, Good, HSG D
*	0.400	98	POND
*	4.760	85	LOTS, D
	8.900	86	Weighted Average
	6.960		78.20% Pervious Area
	1.940		21.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.50"
1.6	500	0.1000	5.09		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.0	1,200	0.1000	20.36	35.99	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.2	1,800	Total			

Subcatchment E2: BASIN E2



Summary for Subcatchment F: BASIN F

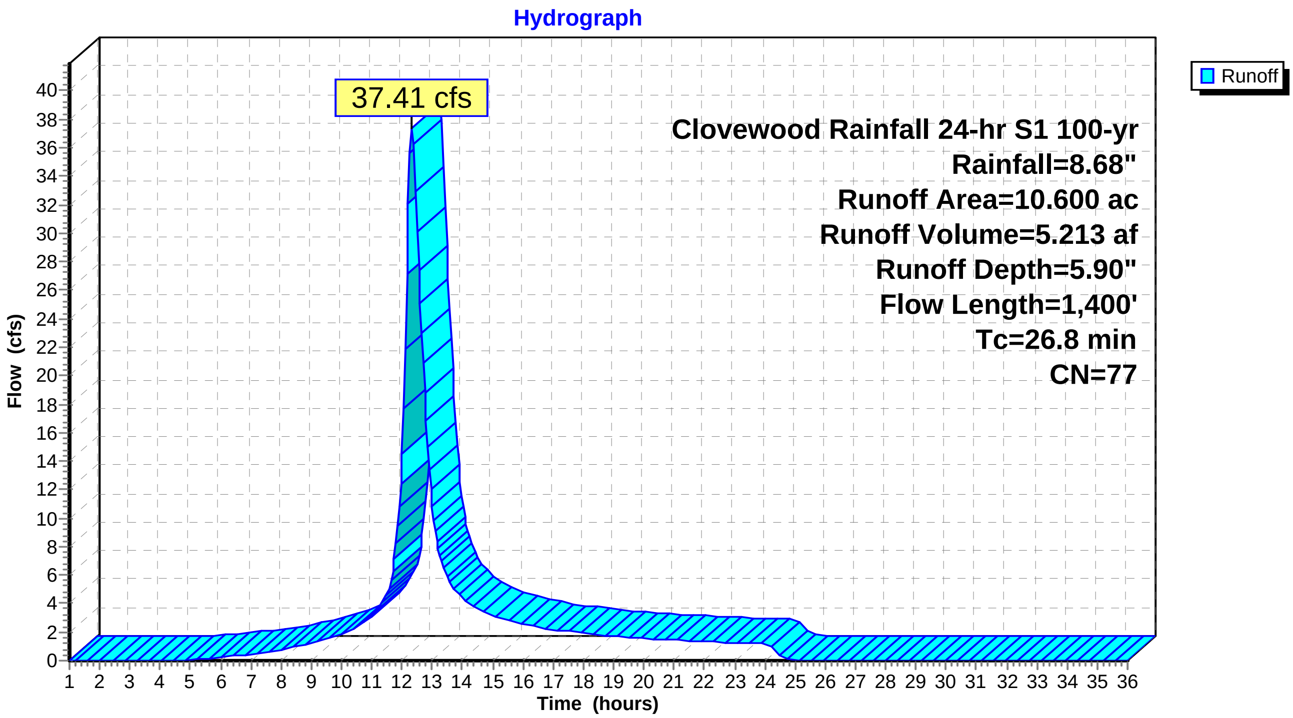
Runoff = 37.41 cfs @ 12.32 hrs, Volume= 5.213 af, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Clovewood Rainfall 24-hr S1 100-yr Rainfall=8.68"

Area (ac)	CN	Description
10.600	77	Woods, Good, HSG D
10.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0600	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.50"
3.8	1,300	0.1250	5.69		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
26.8	1,400	Total			

Subcatchment F: BASIN F



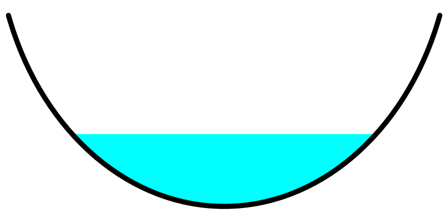
Summary for Reach 11R: (new Reach)

Inflow Area = 7.500 ac, 22.27% Impervious, Inflow Depth > 6.36" for 100-yr event
Inflow = 25.06 cfs @ 12.31 hrs, Volume= 3.973 af
Outflow = 25.06 cfs @ 12.32 hrs, Volume= 3.973 af, Atten= 0%, Lag= 0.2 min

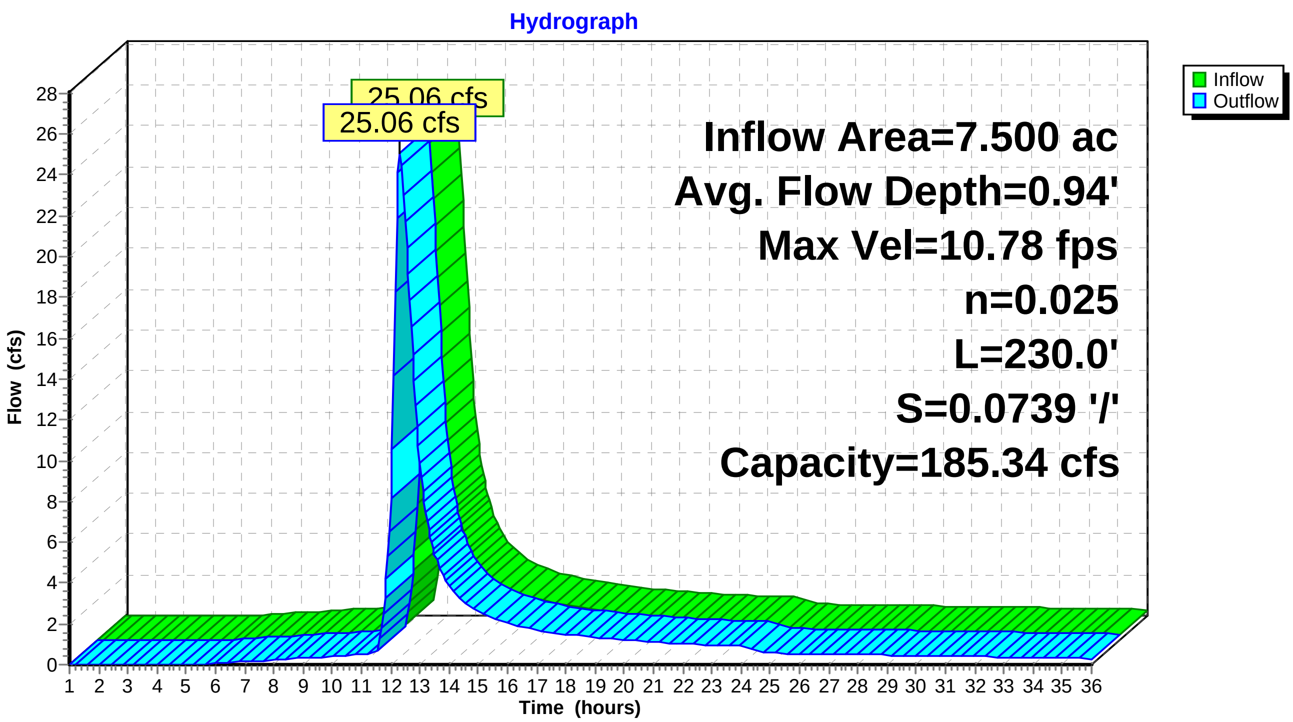
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.78 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.89 fps, Avg. Travel Time= 1.0 min

Peak Storage= 534 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.94'
Bank-Full Depth= 2.50' Flow Area= 10.0 sf, Capacity= 185.34 cfs

6.00' x 2.50' deep Parabolic Channel, n= 0.025
Length= 230.0' Slope= 0.0739 '/'
Inlet Invert= 517.00', Outlet Invert= 500.00'



Reach 11R: (new Reach)

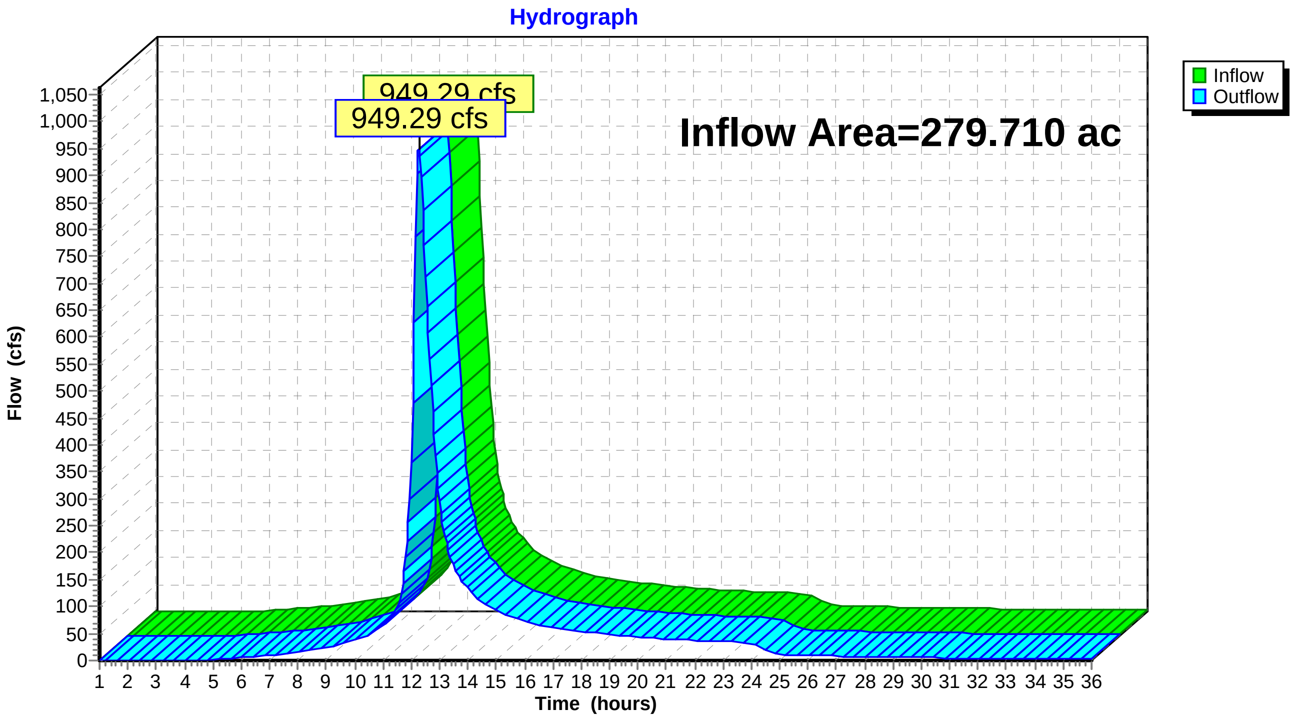


Summary for Reach AP1: ANALYSIS POINT

Inflow Area = 279.710 ac, 13.27% Impervious, Inflow Depth > 6.06" for 100-yr event
Inflow = 949.29 cfs @ 12.27 hrs, Volume= 141.287 af
Outflow = 949.29 cfs @ 12.27 hrs, Volume= 141.287 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP1: ANALYSIS POINT

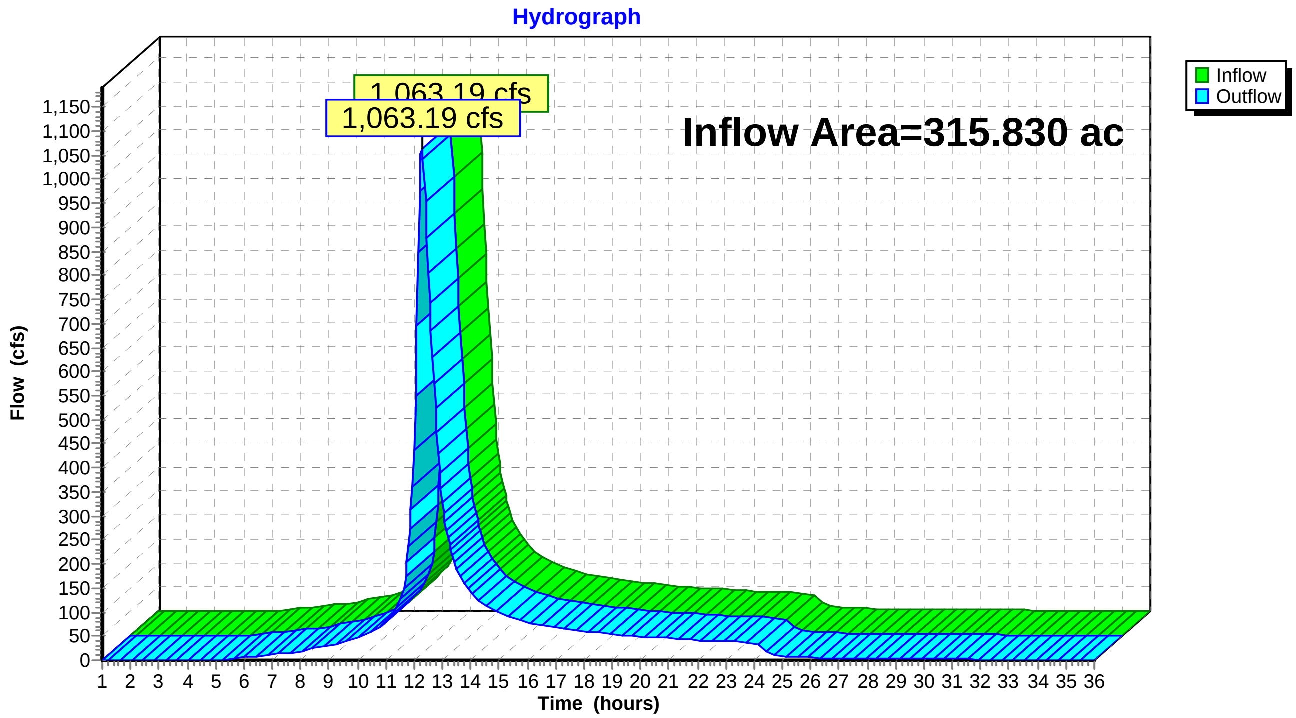


Summary for Reach AP2: ANALYSIS POINT

Inflow Area = 315.830 ac, 5.65% Impervious, Inflow Depth > 5.95" for 100-yr event
Inflow = 1,063.19 cfs @ 12.29 hrs, Volume= 156.561 af
Outflow = 1,063.19 cfs @ 12.29 hrs, Volume= 156.561 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP2: ANALYSIS POINT

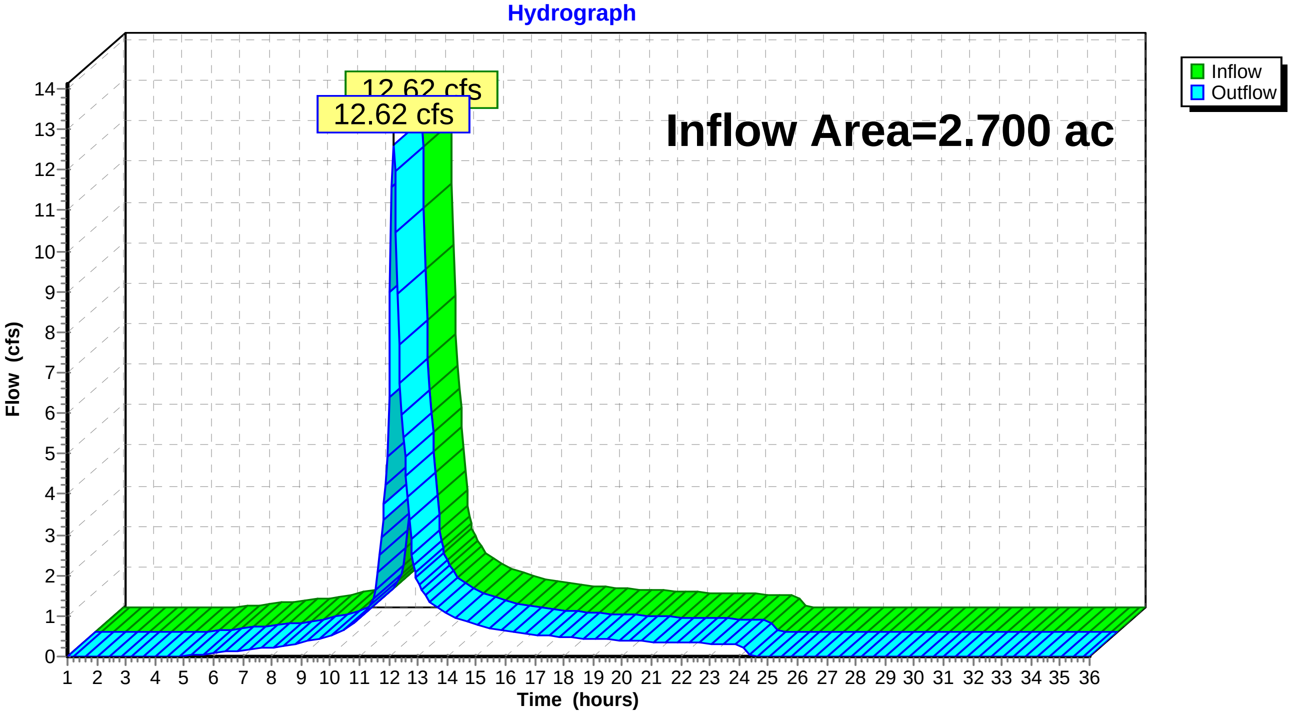


Summary for Reach AP3: (new Reach)

Inflow Area = 2.700 ac, 0.00% Impervious, Inflow Depth = 6.02" for 100-yr event
Inflow = 12.62 cfs @ 12.16 hrs, Volume= 1.355 af
Outflow = 12.62 cfs @ 12.16 hrs, Volume= 1.355 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP3: (new Reach)

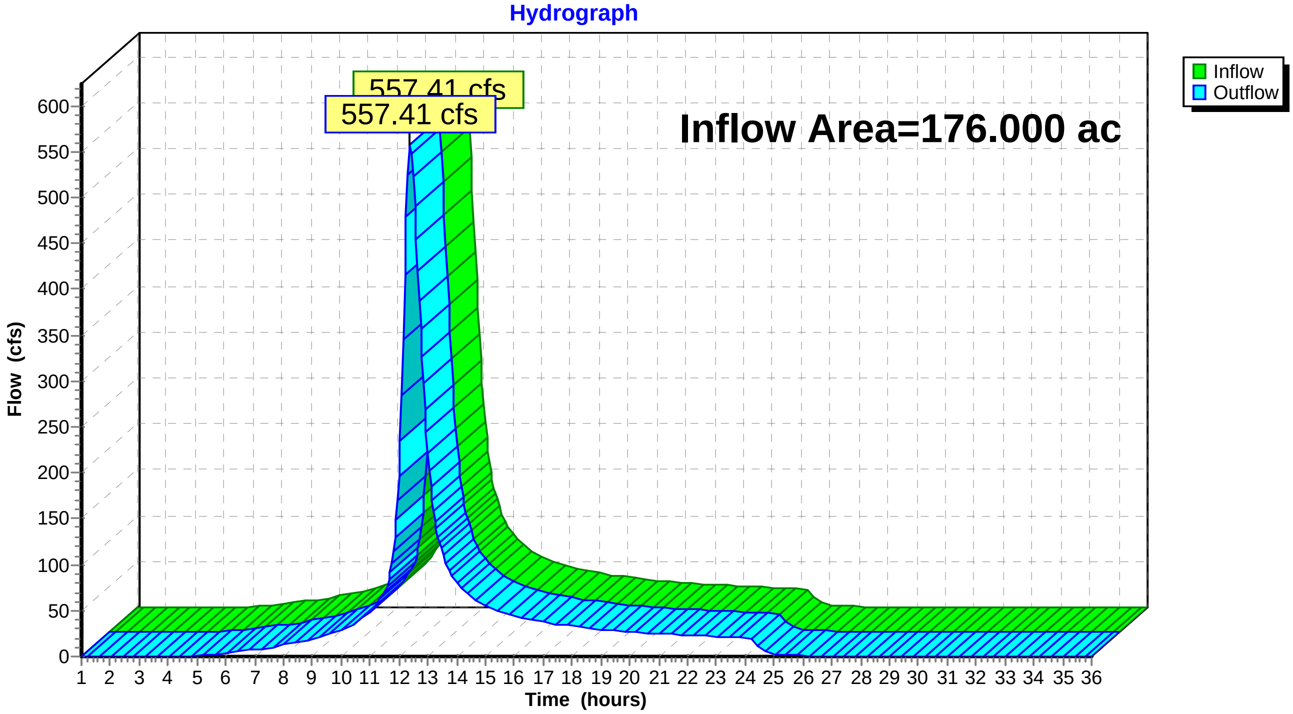


Summary for Reach AP4: ANALYSIS POINT

Inflow Area = 176.000 ac, 1.10% Impervious, Inflow Depth > 5.95" for 100-yr event
Inflow = 557.41 cfs @ 12.39 hrs, Volume= 87.312 af
Outflow = 557.41 cfs @ 12.39 hrs, Volume= 87.312 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach AP4: ANALYSIS POINT



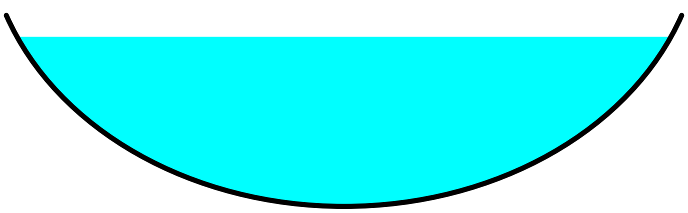
Summary for Reach RB1: (new Reach)

Inflow Area = 176.400 ac, 16.64% Impervious, Inflow Depth > 6.26" for 100-yr event
Inflow = 611.24 cfs @ 12.29 hrs, Volume= 92.022 af
Outflow = 610.42 cfs @ 12.30 hrs, Volume= 92.008 af, Atten= 0%, Lag= 0.7 min

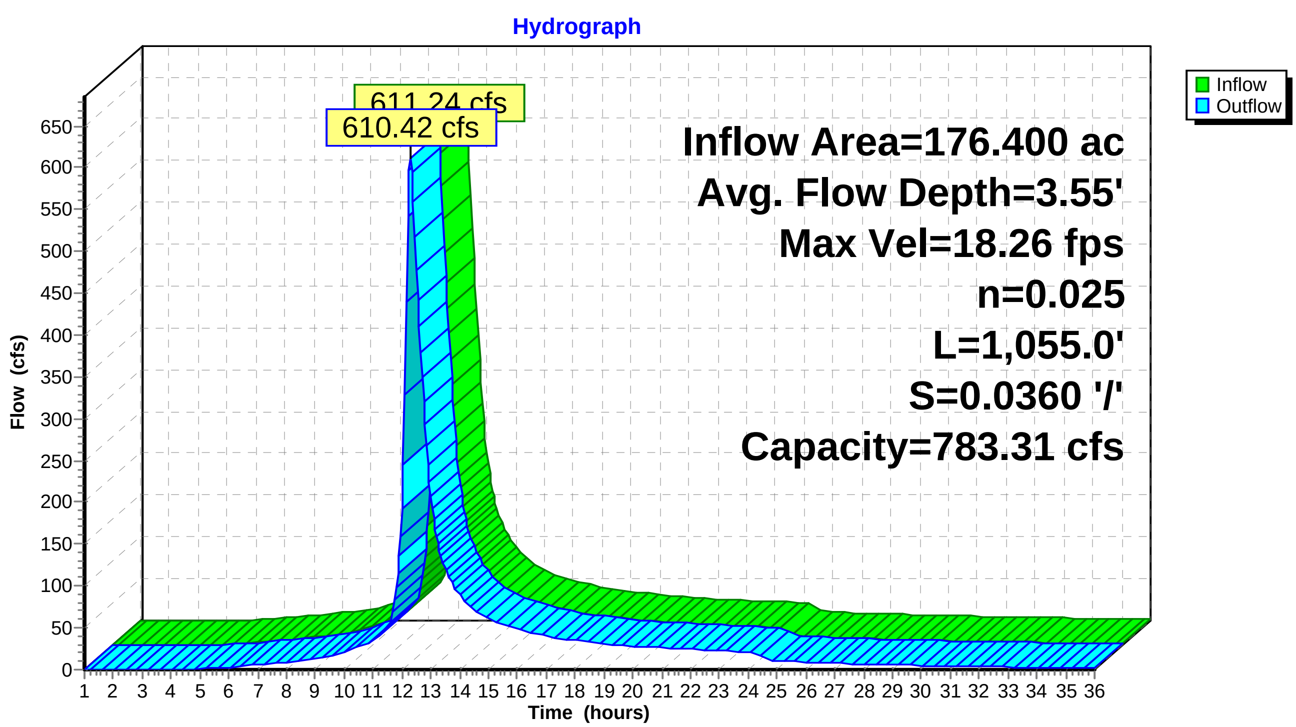
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.26 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 6.20 fps, Avg. Travel Time= 2.8 min

Peak Storage= 35,270 cf @ 12.30 hrs
Average Depth at Peak Storage= 3.55'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 783.31 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 1,055.0' Slope= 0.0360 '/'
Inlet Invert= 504.00', Outlet Invert= 466.00'



Reach RB1: (new Reach)



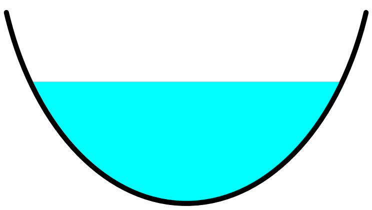
Summary for Reach RB10: (new Reach)

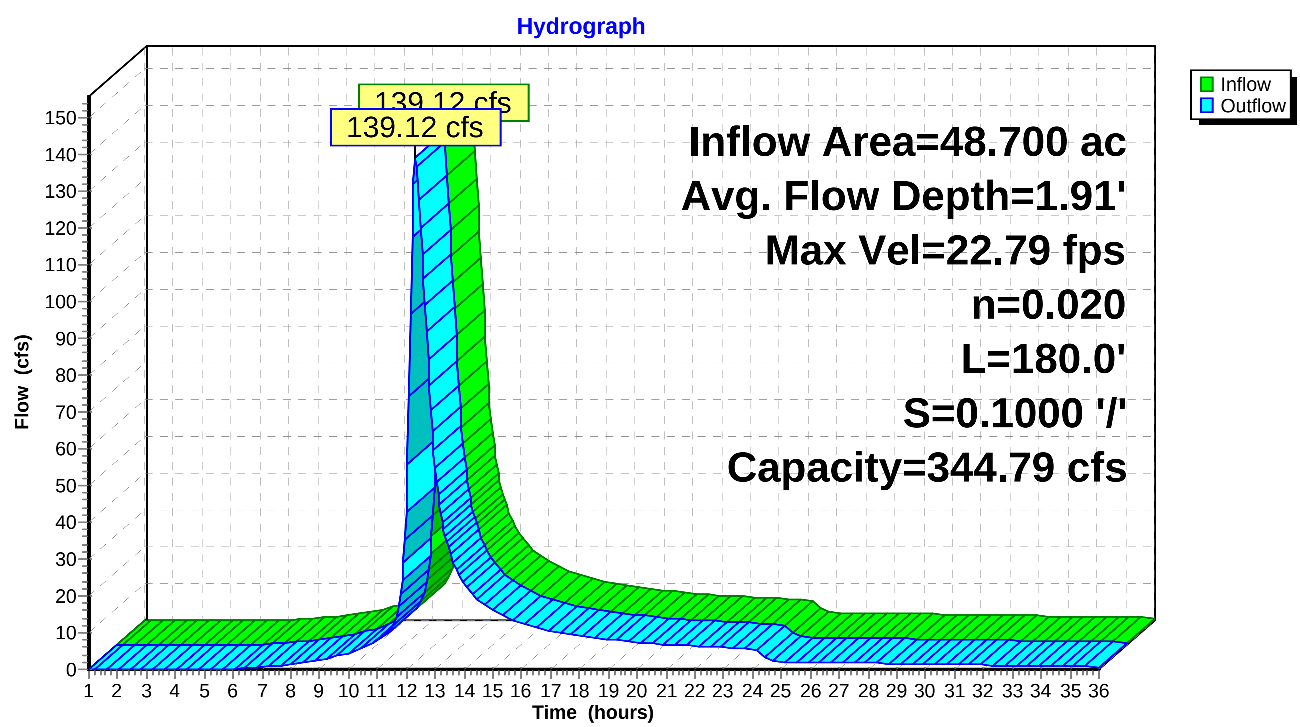
Inflow Area = 48.700 ac, 9.86% Impervious, Inflow Depth > 5.60" for 100-yr event
Inflow = 139.12 cfs @ 12.33 hrs, Volume= 22.716 af
Outflow = 139.12 cfs @ 12.33 hrs, Volume= 22.715 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 22.79 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 8.63 fps, Avg. Travel Time= 0.3 min

Peak Storage= 1,098 cf @ 12.33 hrs
Average Depth at Peak Storage= 1.91'
Bank-Full Depth= 3.00' Flow Area= 12.0 sf, Capacity= 344.79 cfs

6.00' x 3.00' deep Parabolic Channel, n= 0.020
Length= 180.0' Slope= 0.1000 '/'
Inlet Invert= 588.00', Outlet Invert= 570.00'





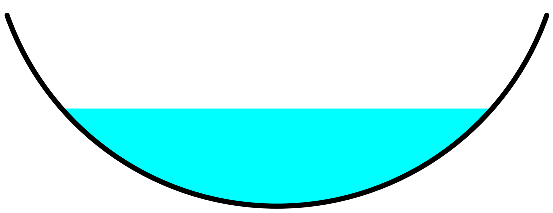
Summary for Reach RB11: (new Reach)

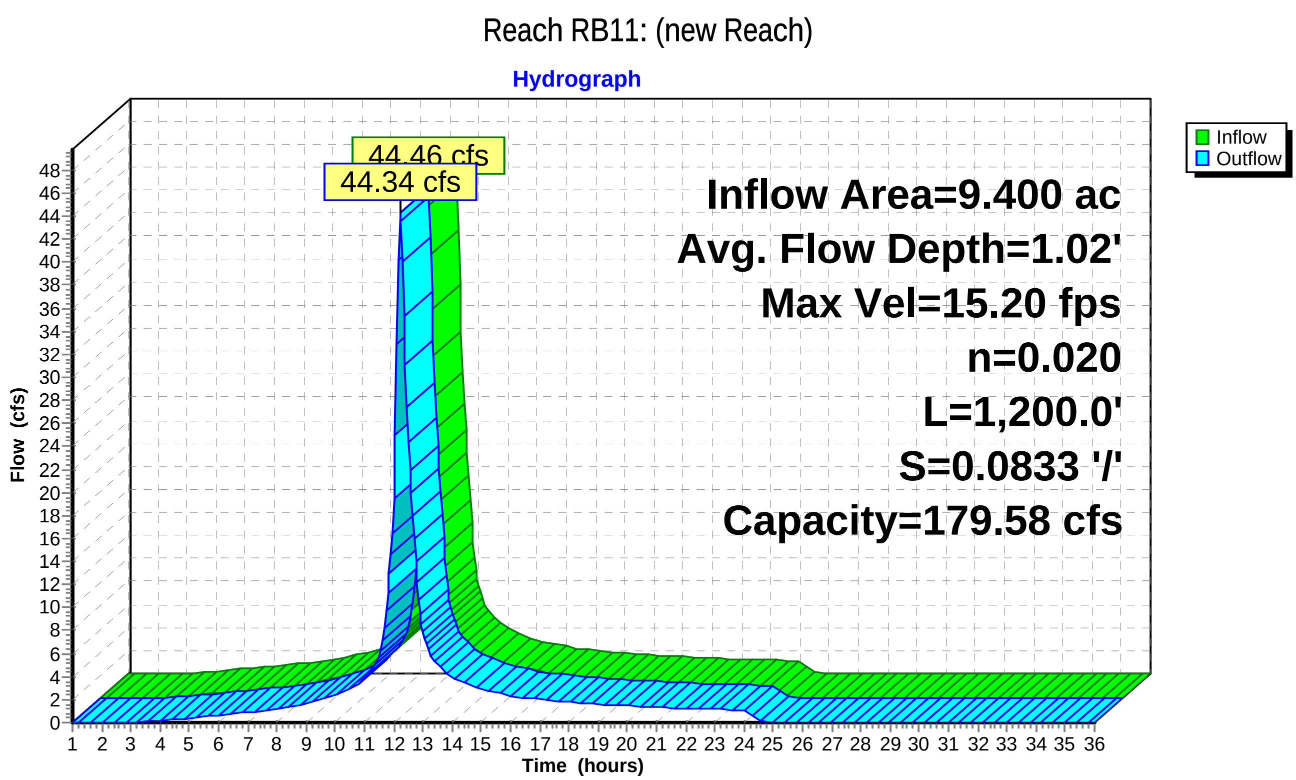
Inflow Area = 9.400 ac, 14.89% Impervious, Inflow Depth = 6.87" for 100-yr event
Inflow = 44.46 cfs @ 12.20 hrs, Volume= 5.382 af
Outflow = 44.34 cfs @ 12.22 hrs, Volume= 5.382 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.20 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 5.64 fps, Avg. Travel Time= 3.5 min

Peak Storage= 3,493 cf @ 12.22 hrs
Average Depth at Peak Storage= 1.02'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 179.58 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.020
Length= 1,200.0' Slope= 0.0833 '/'
Inlet Invert= 690.00', Outlet Invert= 590.00'





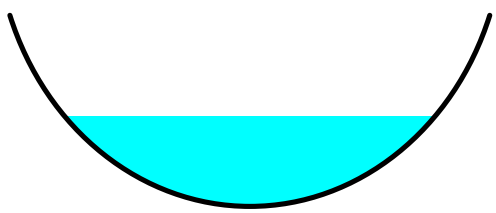
Summary for Reach RB12: (new Reach)

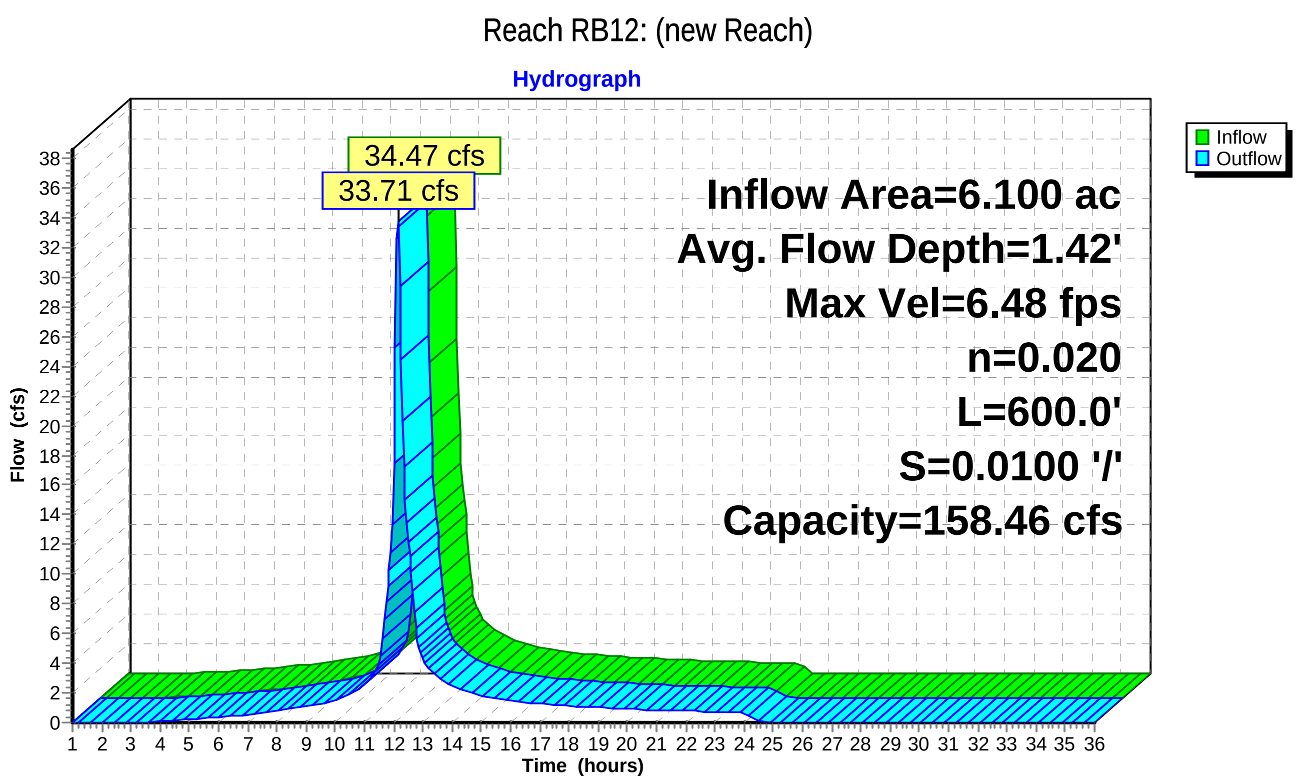
Inflow Area = 6.100 ac, 10.66% Impervious, Inflow Depth = 6.75" for 100-yr event
Inflow = 34.47 cfs @ 12.11 hrs, Volume= 3.431 af
Outflow = 33.71 cfs @ 12.13 hrs, Volume= 3.431 af, Atten= 2%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.48 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 4.4 min

Peak Storage= 3,116 cf @ 12.13 hrs
Average Depth at Peak Storage= 1.42'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 158.46 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.020
Length= 600.0' Slope= 0.0100 '/'
Inlet Invert= 552.00', Outlet Invert= 546.00'





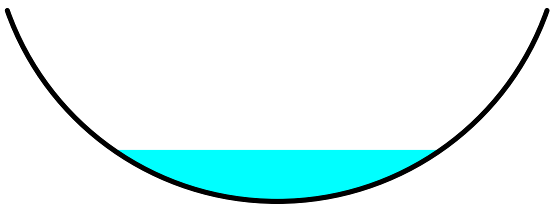
Summary for Reach RB2: (new Reach)

Inflow Area = 5.400 ac, 9.26% Impervious, Inflow Depth > 6.15" for 100-yr event
Inflow = 8.49 cfs @ 12.63 hrs, Volume= 2.769 af
Outflow = 8.49 cfs @ 12.64 hrs, Volume= 2.768 af, Atten= 0%, Lag= 0.8 min

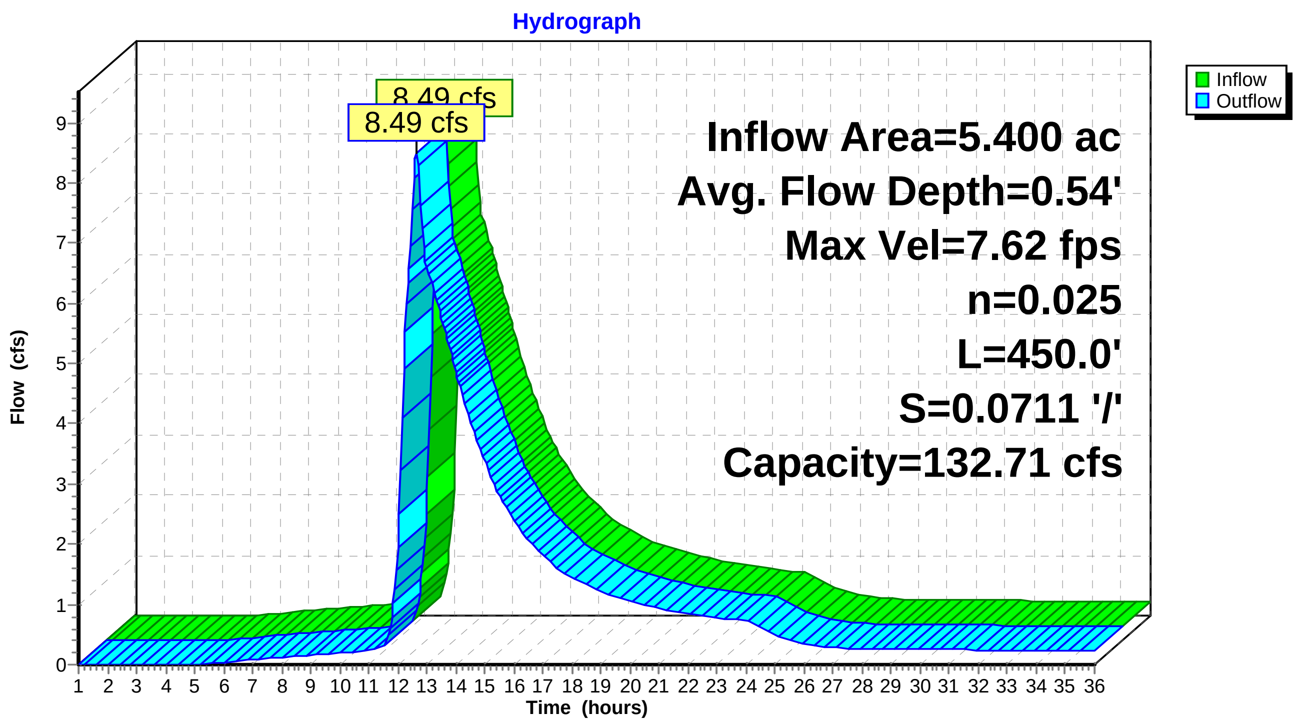
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.62 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 3.36 fps, Avg. Travel Time= 2.2 min

Peak Storage= 501 cf @ 12.64 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 132.71 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.025
Length= 450.0' Slope= 0.0711 '/'
Inlet Invert= 500.00', Outlet Invert= 468.00'



Reach RB2: (new Reach)



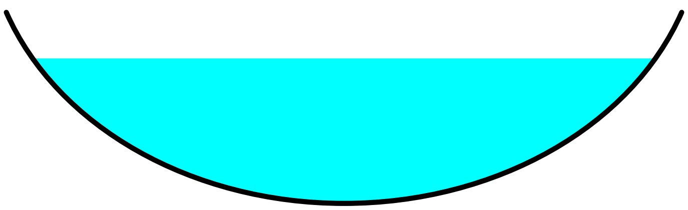
Summary for Reach RB3: (new Reach)

Inflow Area = 152.050 ac, 15.99% Impervious, Inflow Depth > 6.18" for 100-yr event
Inflow = 505.16 cfs @ 12.28 hrs, Volume= 78.271 af
Outflow = 505.16 cfs @ 12.29 hrs, Volume= 78.261 af, Atten= 0%, Lag= 0.7 min

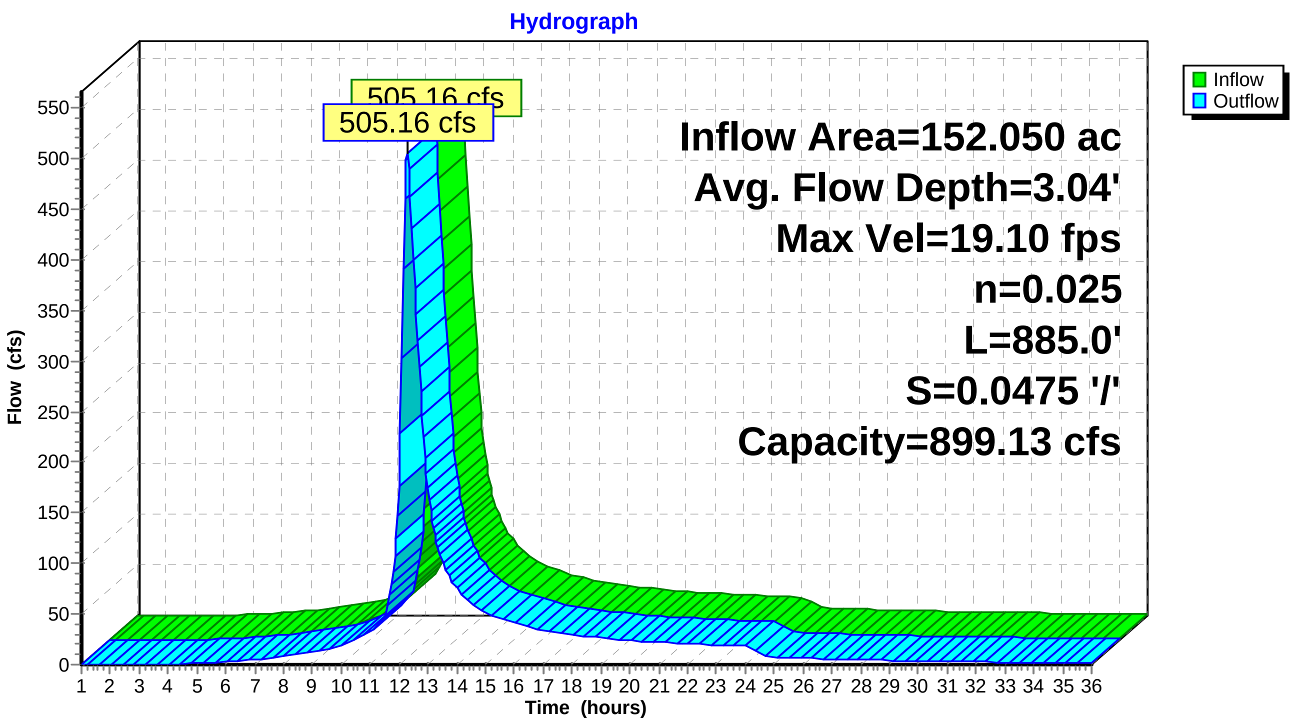
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 19.10 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 6.46 fps, Avg. Travel Time= 2.3 min

Peak Storage= 23,403 cf @ 12.29 hrs
Average Depth at Peak Storage= 3.04'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 899.13 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 885.0' Slope= 0.0475 '/'
Inlet Invert= 546.00', Outlet Invert= 504.00'



Reach RB3: (new Reach)



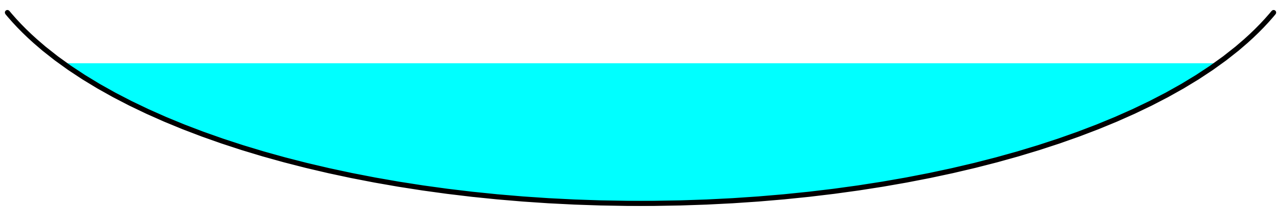
Summary for Reach RB4: (new Reach)

Inflow Area = 17.200 ac, 10.17% Impervious, Inflow Depth = 6.48" for 100-yr event
Inflow = 72.01 cfs @ 12.25 hrs, Volume= 9.283 af
Outflow = 71.91 cfs @ 12.26 hrs, Volume= 9.283 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.72 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 3.4 min

Peak Storage= 5,023 cf @ 12.26 hrs
Average Depth at Peak Storage= 1.47'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 139.80 cfs

15.00' x 2.00' deep Parabolic Channel, n= 0.025
Length= 400.0' Slope= 0.0100 '/'
Inlet Invert= 550.00', Outlet Invert= 546.00'



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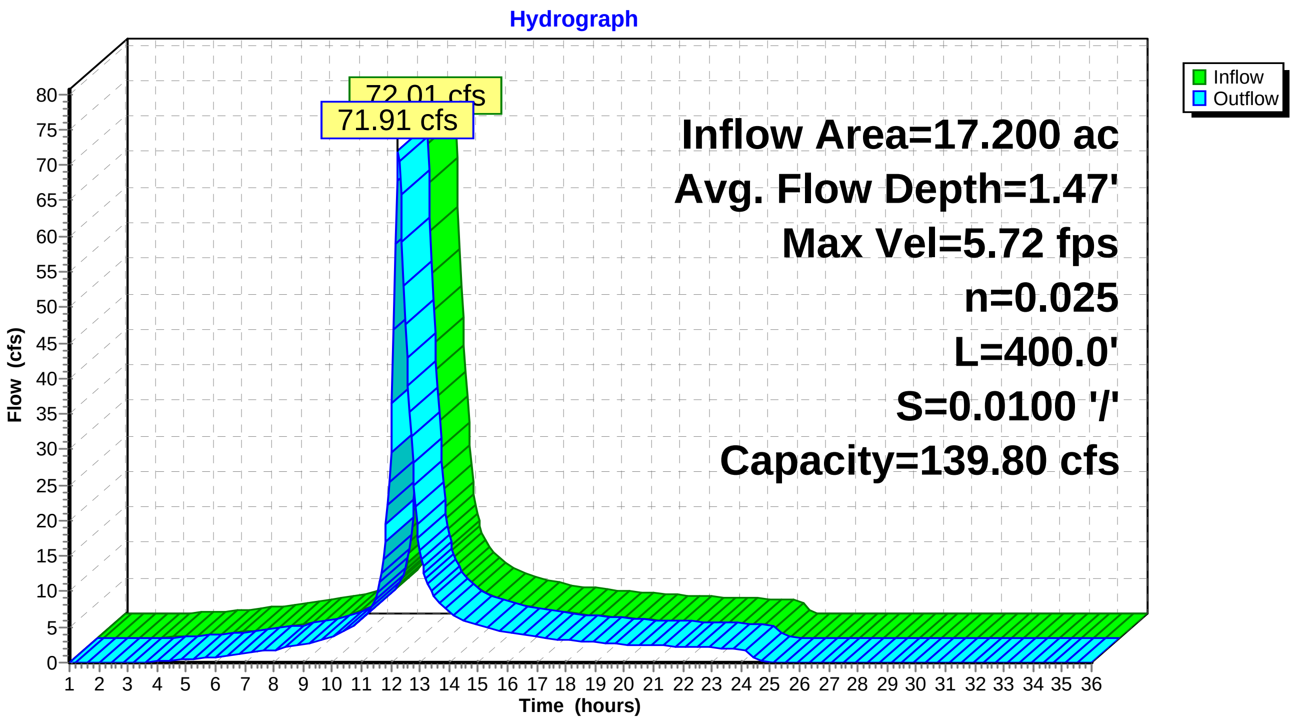
Reach RB4: (new Reach)



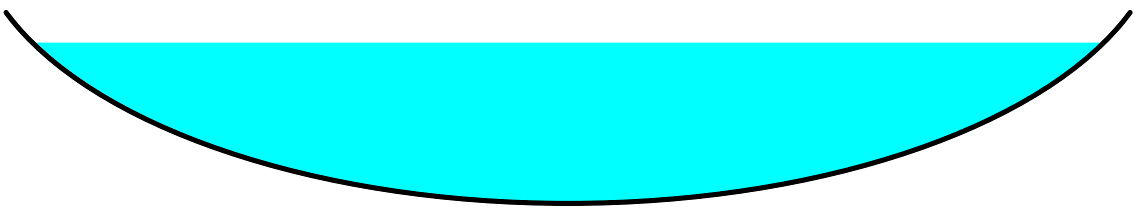
Summary for Reach RB5: (new Reach)

Inflow Area = 114.150 ac, 14.30% Impervious, Inflow Depth > 6.00" for 100-yr event
Inflow = 359.39 cfs @ 12.29 hrs, Volume= 57.050 af
Outflow = 358.23 cfs @ 12.31 hrs, Volume= 57.030 af, Atten= 0%, Lag= 1.5 min

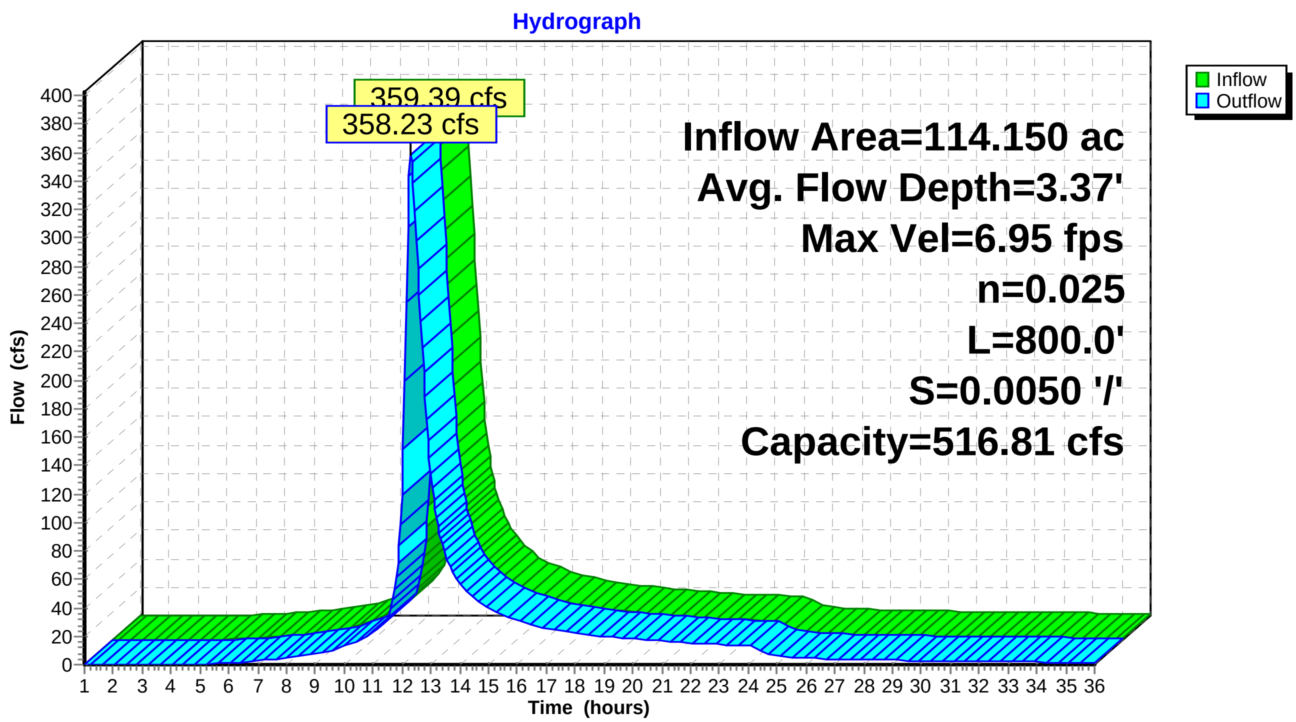
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.95 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 2.31 fps, Avg. Travel Time= 5.8 min

Peak Storage= 41,206 cf @ 12.31 hrs
Average Depth at Peak Storage= 3.37'
Bank-Full Depth= 4.00' Flow Area= 66.7 sf, Capacity= 516.81 cfs

25.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 800.0' Slope= 0.0050 '/'
Inlet Invert= 550.00', Outlet Invert= 546.00'



Reach RB5: (new Reach)



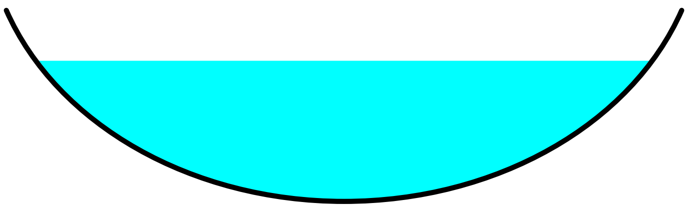
Summary for Reach RB6: (new Reach)

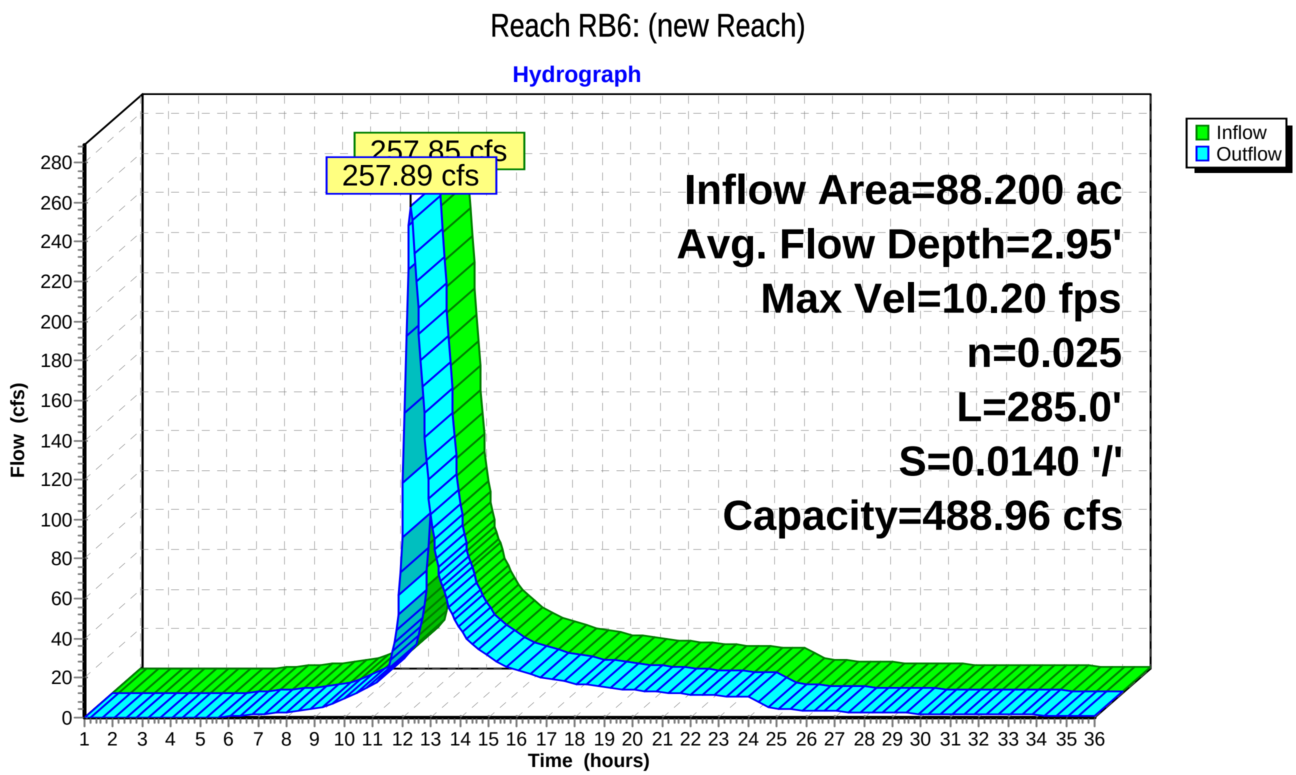
Inflow Area = 88.200 ac, 12.02% Impervious, Inflow Depth > 5.87" for 100-yr event
Inflow = 257.85 cfs @ 12.31 hrs, Volume= 43.121 af
Outflow = 257.89 cfs @ 12.32 hrs, Volume= 43.118 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.20 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 3.54 fps, Avg. Travel Time= 1.3 min

Peak Storage= 7,203 cf @ 12.32 hrs
Average Depth at Peak Storage= 2.95'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 488.96 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 285.0' Slope= 0.0140 '/'
Inlet Invert= 554.00', Outlet Invert= 550.00'





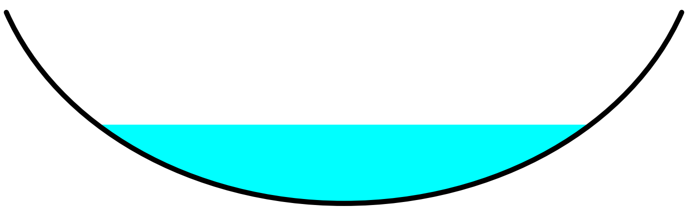
Summary for Reach RB7: (new Reach)

Inflow Area = 22.200 ac, 8.11% Impervious, Inflow Depth > 6.63" for 100-yr event
Inflow = 87.87 cfs @ 12.26 hrs, Volume= 12.266 af
Outflow = 87.27 cfs @ 12.29 hrs, Volume= 12.264 af, Atten= 1%, Lag= 1.5 min

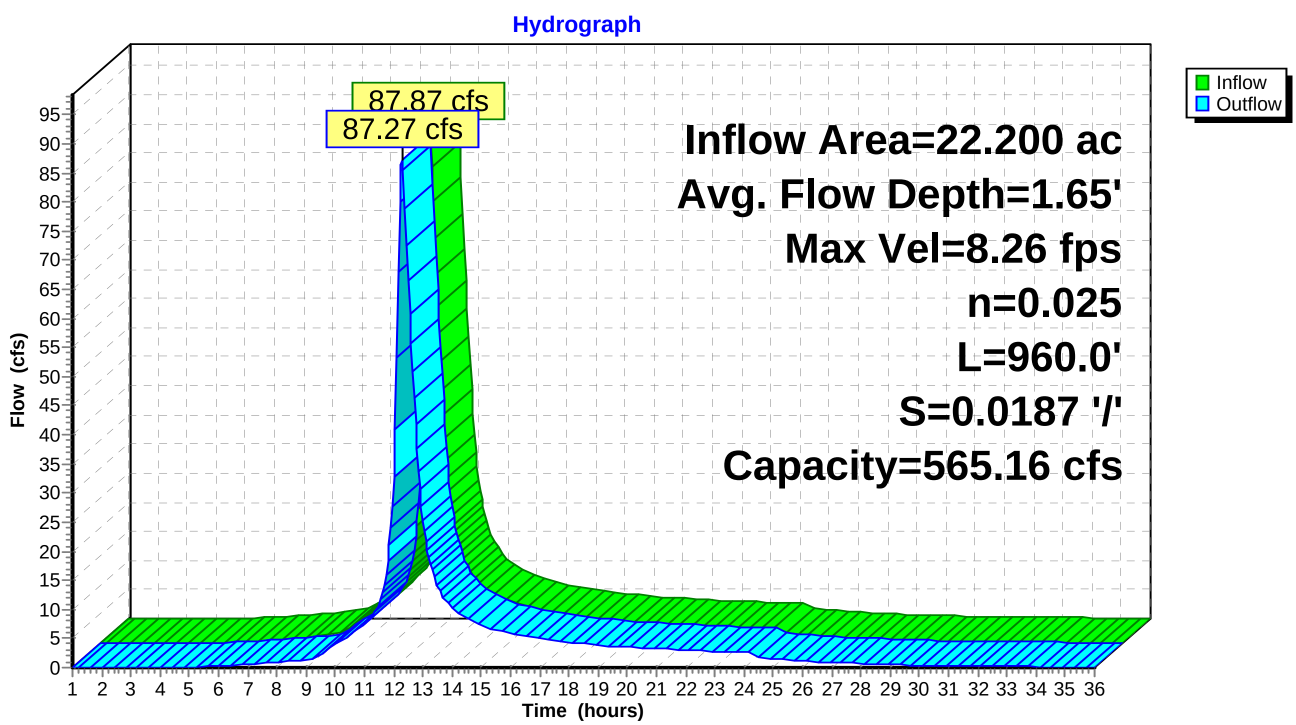
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.26 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 2.63 fps, Avg. Travel Time= 6.1 min

Peak Storage= 10,141 cf @ 12.29 hrs
Average Depth at Peak Storage= 1.65'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 565.16 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.025
Length= 960.0' Slope= 0.0187 '/'
Inlet Invert= 572.00', Outlet Invert= 554.00'



Reach RB7: (new Reach)



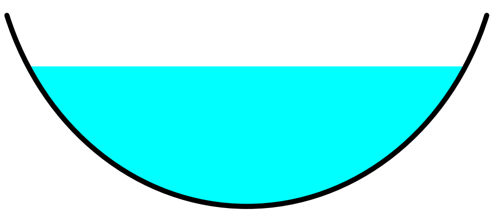
Summary for Reach RB8: (new Reach)

Inflow Area = 52.350 ac, 9.36% Impervious, Inflow Depth > 5.67" for 100-yr event
Inflow = 148.78 cfs @ 12.32 hrs, Volume= 24.732 af
Outflow = 148.81 cfs @ 12.32 hrs, Volume= 24.731 af, Atten= 0%, Lag= 0.1 min

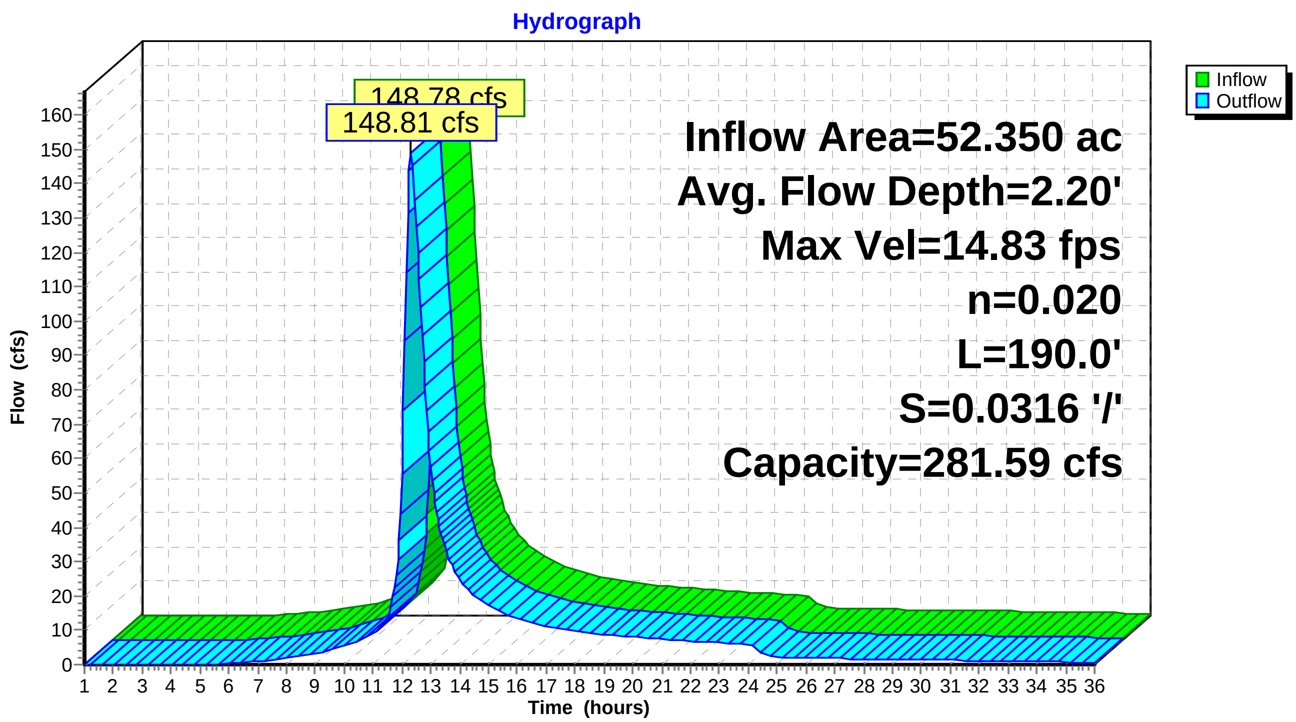
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.83 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.31 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1,906 cf @ 12.32 hrs
Average Depth at Peak Storage= 2.20'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 281.59 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.020
Length= 190.0' Slope= 0.0316 '/'
Inlet Invert= 560.00', Outlet Invert= 554.00'



Reach RB8: (new Reach)



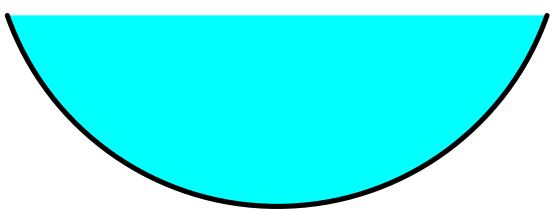
Summary for Reach RC1: (new Reach)

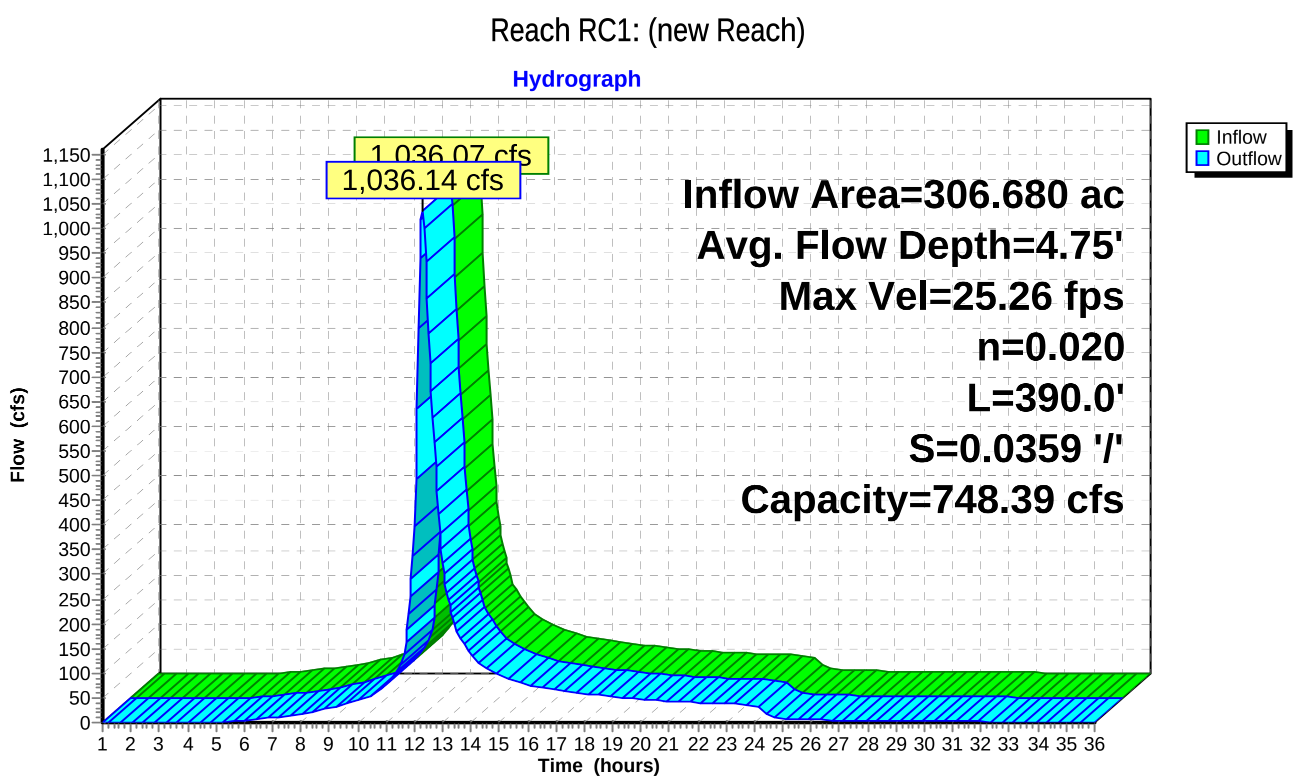
Inflow Area = 306.680 ac, 4.37% Impervious, Inflow Depth > 5.91" for 100-yr event
Inflow = 1,036.07 cfs @ 12.29 hrs, Volume= 150.955 af
Outflow = 1,036.14 cfs @ 12.29 hrs, Volume= 150.953 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 25.26 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 8.39 fps, Avg. Travel Time= 0.8 min

Peak Storage= 15,993 cf @ 12.29 hrs
Average Depth at Peak Storage= 4.75'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 748.39 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.020
Length= 390.0' Slope= 0.0359 '/'
Inlet Invert= 488.00', Outlet Invert= 474.00'





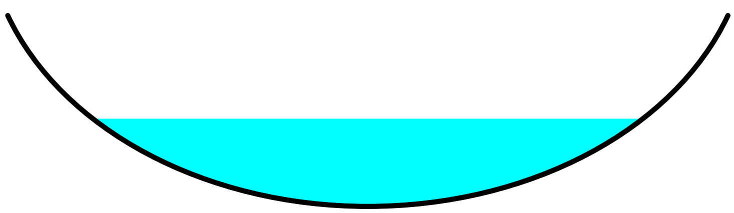
Summary for Reach RC10: (new Reach)

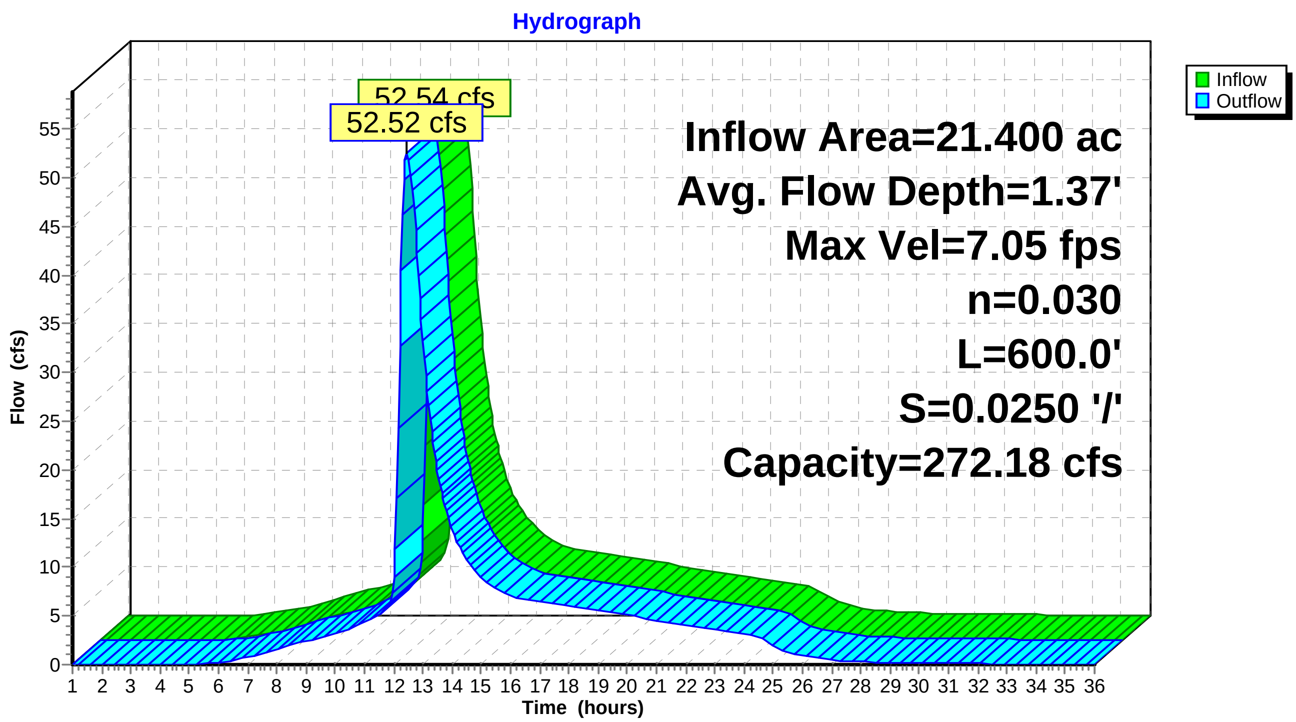
Inflow Area = 21.400 ac, 11.45% Impervious, Inflow Depth > 6.60" for 100-yr event
Inflow = 52.54 cfs @ 12.45 hrs, Volume= 11.775 af
Outflow = 52.52 cfs @ 12.46 hrs, Volume= 11.775 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.05 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 2.60 fps, Avg. Travel Time= 3.8 min

Peak Storage= 4,466 cf @ 12.46 hrs
Average Depth at Peak Storage= 1.37'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 272.18 cfs

12.00' x 3.00' deep Parabolic Channel, n= 0.030
Length= 600.0' Slope= 0.0250 '/'
Inlet Invert= 660.00', Outlet Invert= 645.00'



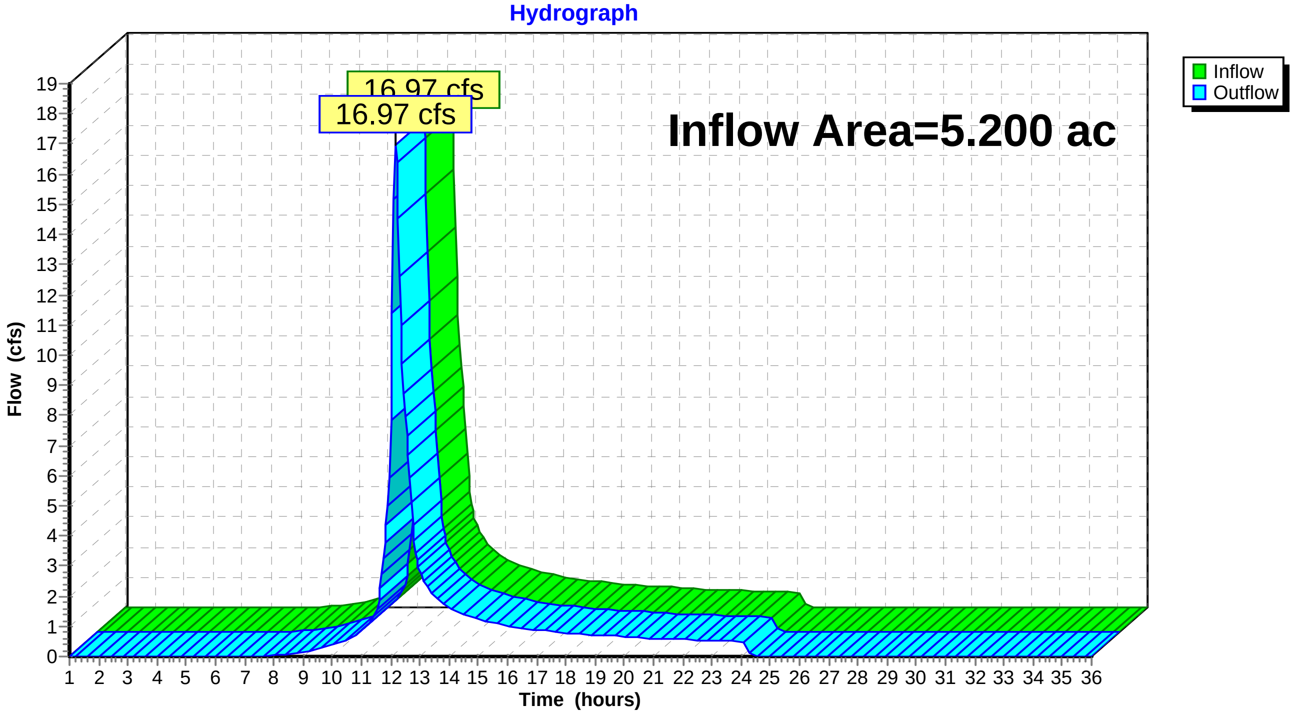


Summary for Reach RC11: (new Reach)

Inflow Area = 5.200 ac, 0.00% Impervious, Inflow Depth = 4.21" for 100-yr event
Inflow = 16.97 cfs @ 12.16 hrs, Volume= 1.825 af
Outflow = 16.97 cfs @ 12.16 hrs, Volume= 1.825 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Reach RC11: (new Reach)



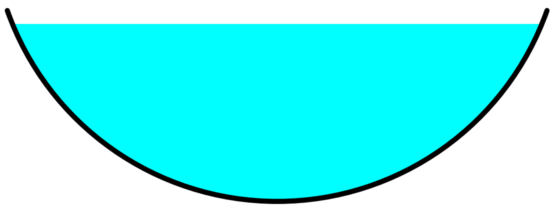
Summary for Reach RC2: (new Reach)

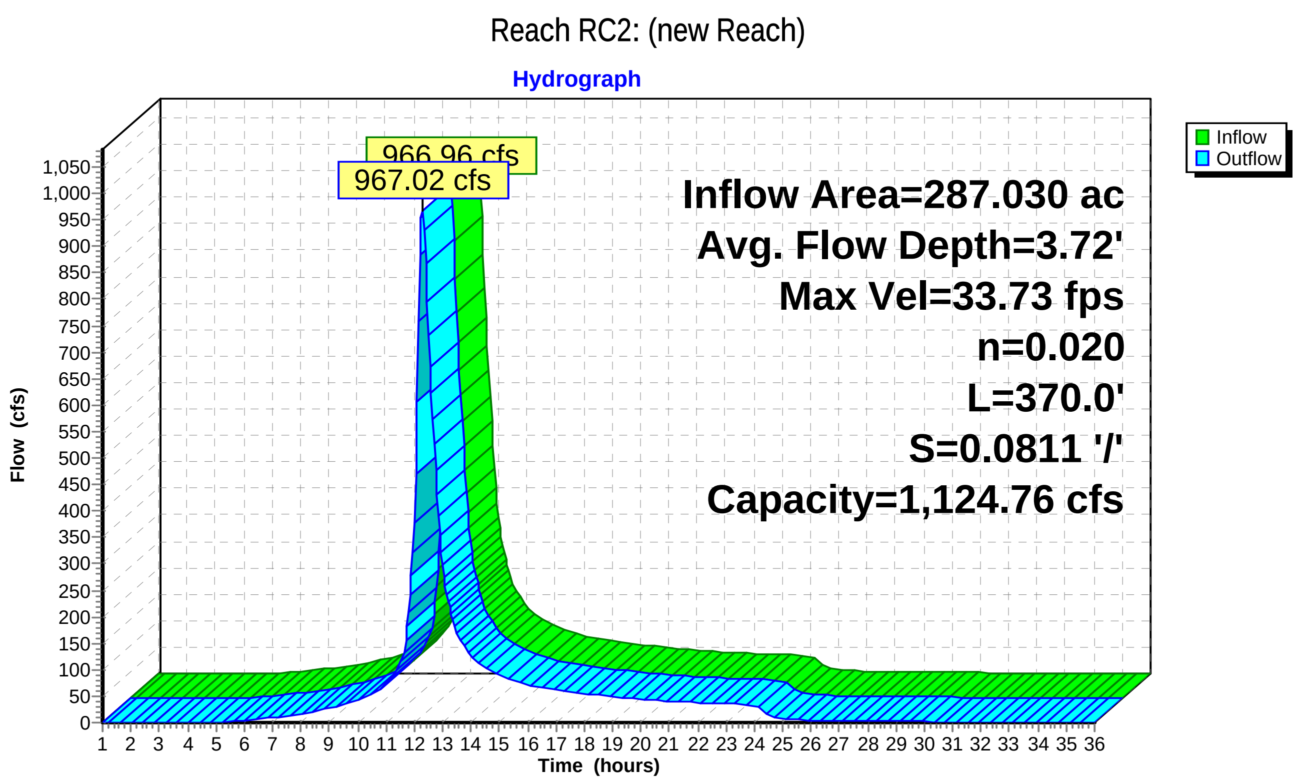
Inflow Area = 287.030 ac, 3.39% Impervious, Inflow Depth > 5.87" for 100-yr event
Inflow = 966.96 cfs @ 12.28 hrs, Volume= 140.500 af
Outflow = 967.02 cfs @ 12.29 hrs, Volume= 140.499 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 33.73 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 10.93 fps, Avg. Travel Time= 0.6 min

Peak Storage= 10,604 cf @ 12.29 hrs
Average Depth at Peak Storage= 3.72'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 1,124.76 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.020
Length= 370.0' Slope= 0.0811 '/'
Inlet Invert= 504.00', Outlet Invert= 474.00'





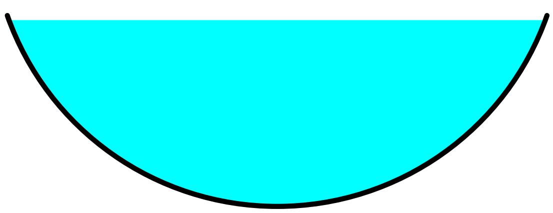
Summary for Reach RC3: (new Reach)

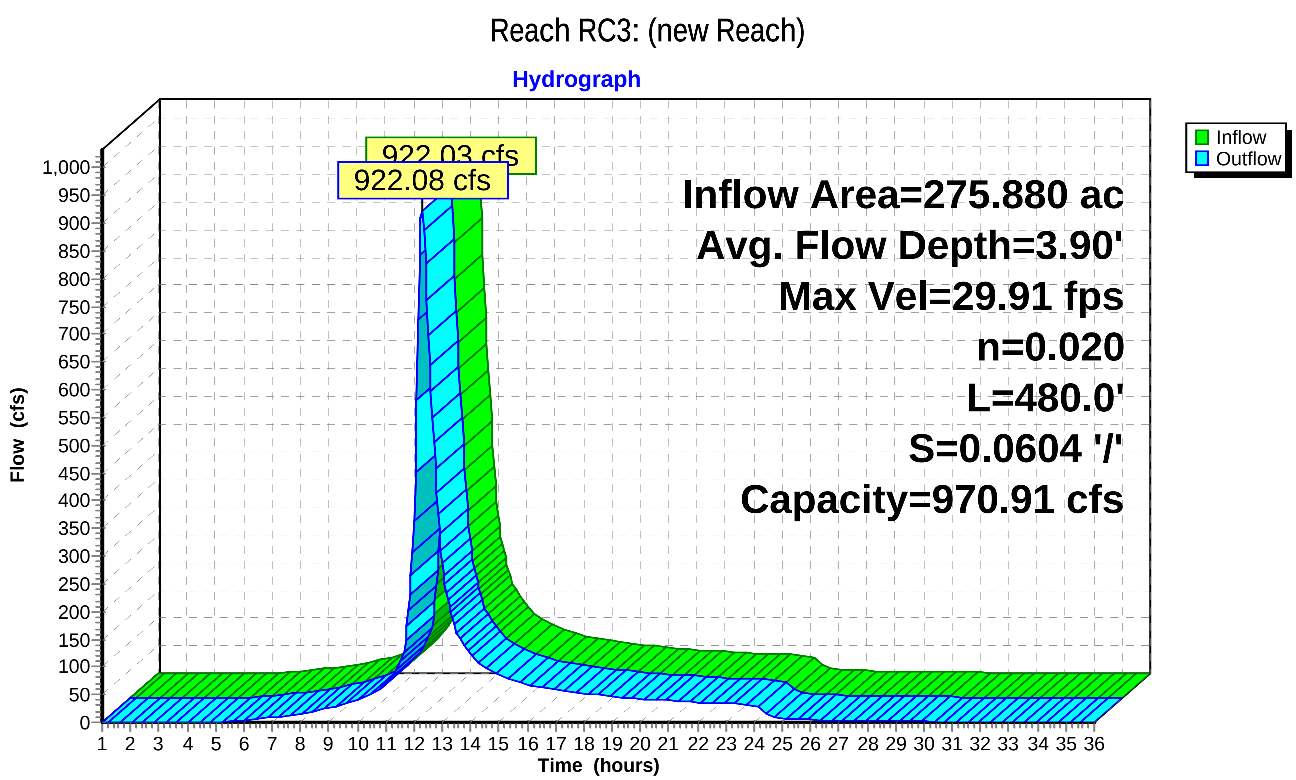
Inflow Area = 275.880 ac, 3.53% Impervious, Inflow Depth > 5.86" for 100-yr event
Inflow = 922.03 cfs @ 12.28 hrs, Volume= 134.680 af
Outflow = 922.08 cfs @ 12.29 hrs, Volume= 134.679 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 29.91 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 9.74 fps, Avg. Travel Time= 0.8 min

Peak Storage= 14,792 cf @ 12.29 hrs
Average Depth at Peak Storage= 3.90'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 970.91 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.020
Length= 480.0' Slope= 0.0604 '/'
Inlet Invert= 535.00', Outlet Invert= 506.00'





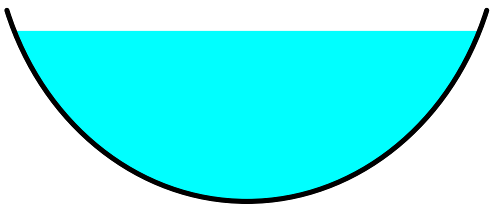
Summary for Reach RC4: (new Reach)

Inflow Area = 106.280 ac, 4.60% Impervious, Inflow Depth > 5.94" for 100-yr event
Inflow = 359.25 cfs @ 12.28 hrs, Volume= 52.621 af
Outflow = 359.24 cfs @ 12.28 hrs, Volume= 52.620 af, Atten= 0%, Lag= 0.2 min

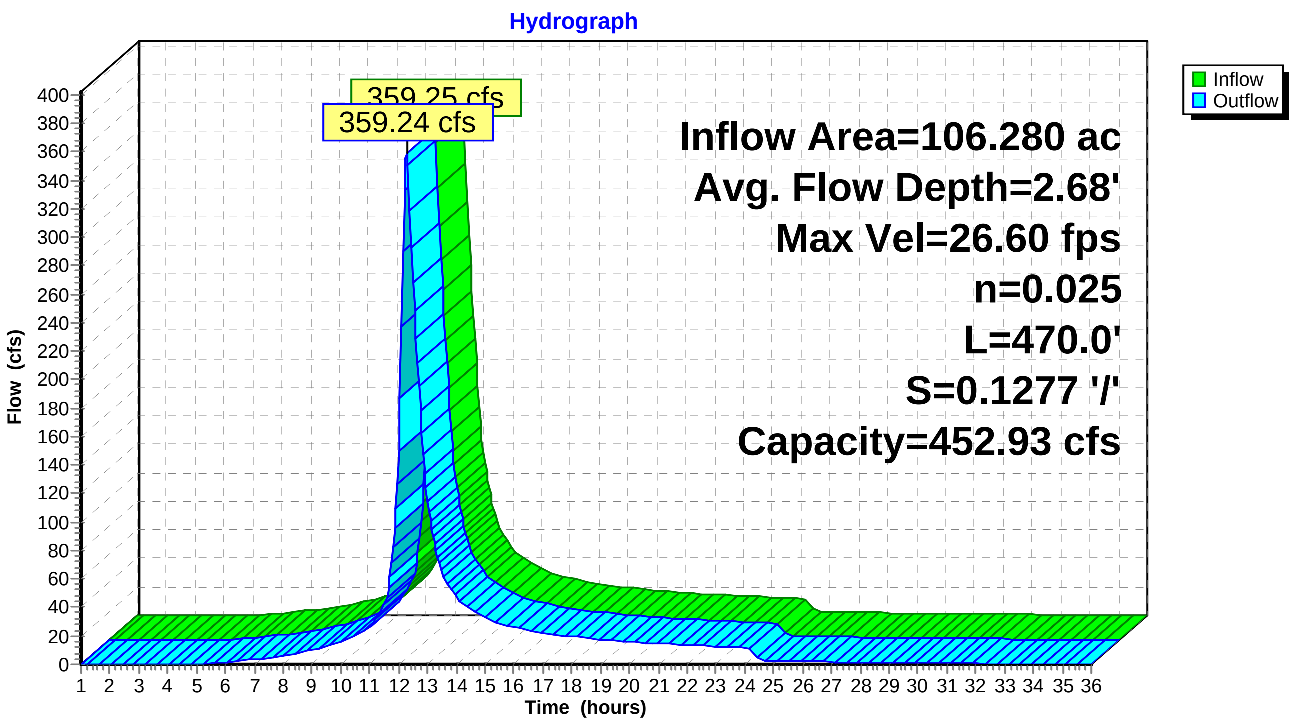
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 26.60 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 8.86 fps, Avg. Travel Time= 0.9 min

Peak Storage= 6,343 cf @ 12.28 hrs
Average Depth at Peak Storage= 2.68'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 452.93 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.025
Length= 470.0' Slope= 0.1277 '/'
Inlet Invert= 595.00', Outlet Invert= 535.00'



Reach RC4: (new Reach)



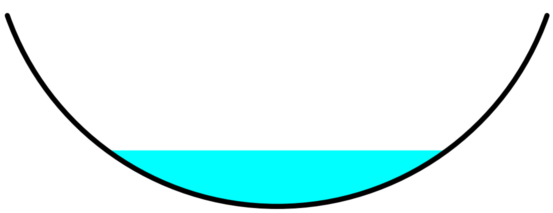
Summary for Reach RC5: (new Reach)

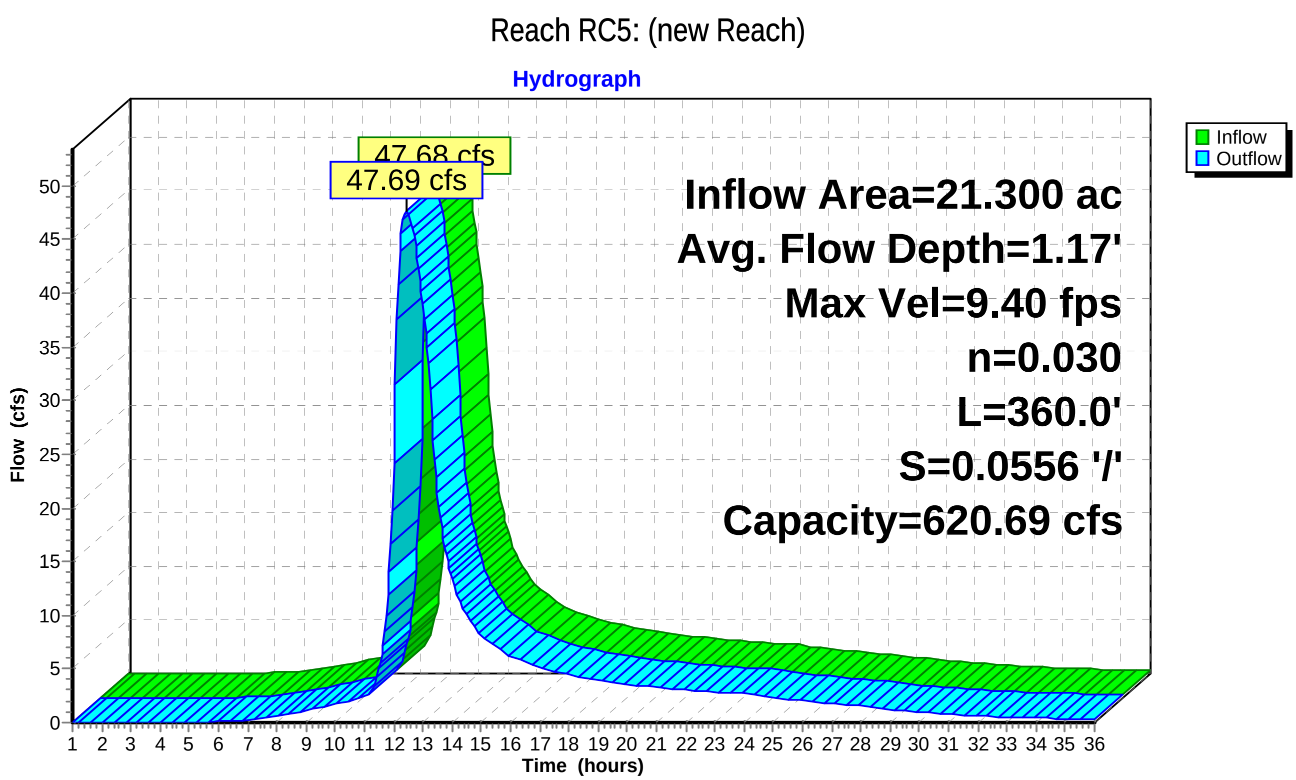
Inflow Area = 21.300 ac, 20.75% Impervious, Inflow Depth > 6.58" for 100-yr event
Inflow = 47.68 cfs @ 12.42 hrs, Volume= 11.688 af
Outflow = 47.69 cfs @ 12.42 hrs, Volume= 11.687 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.40 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.73 fps, Avg. Travel Time= 1.6 min

Peak Storage= 1,826 cf @ 12.42 hrs
Average Depth at Peak Storage= 1.17'
Bank-Full Depth= 4.00' Flow Area= 32.0 sf, Capacity= 620.69 cfs

12.00' x 4.00' deep Parabolic Channel, n= 0.030
Length= 360.0' Slope= 0.0556 '/'
Inlet Invert= 645.00', Outlet Invert= 625.00'





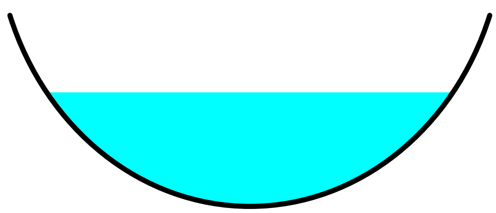
Summary for Reach RC6: (new Reach)

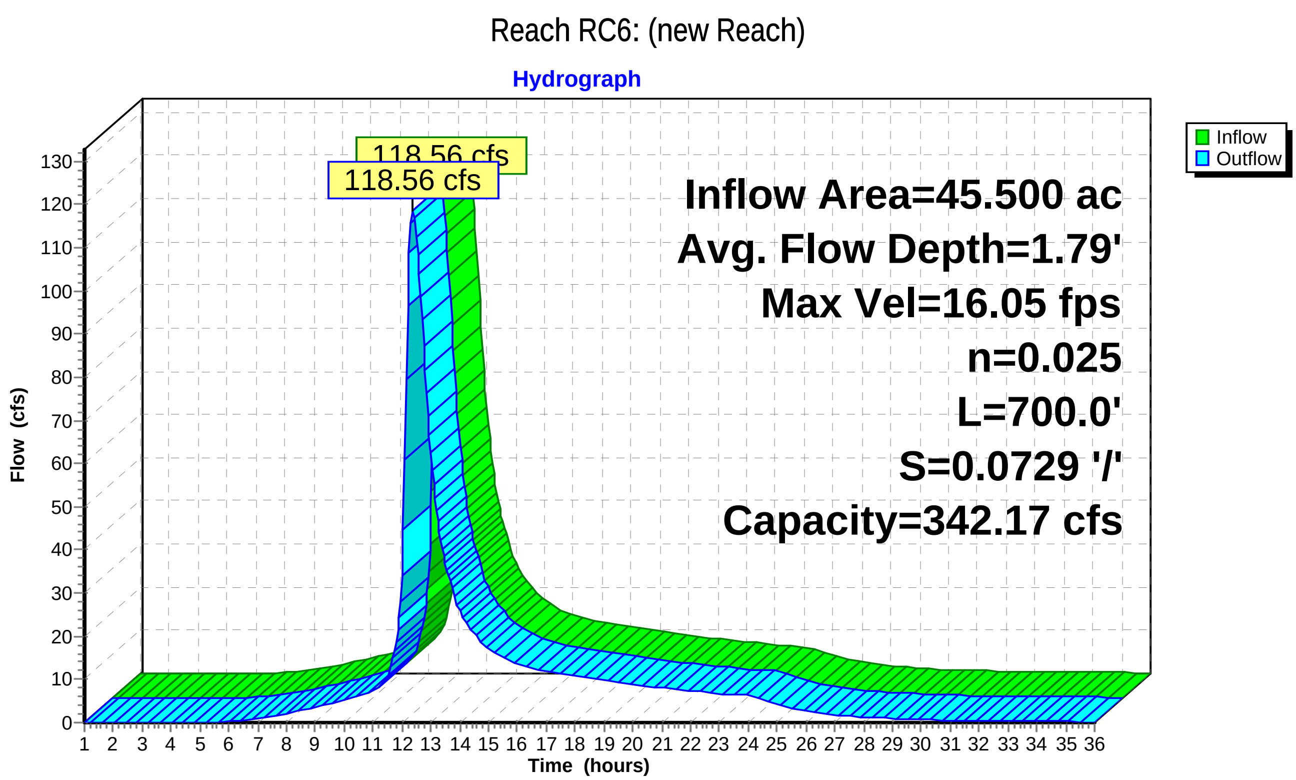
Inflow Area = 45.500 ac, 10.64% Impervious, Inflow Depth > 6.21" for 100-yr event
Inflow = 118.56 cfs @ 12.36 hrs, Volume= 23.535 af
Outflow = 118.56 cfs @ 12.37 hrs, Volume= 23.534 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.05 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 5.98 fps, Avg. Travel Time= 1.9 min

Peak Storage= 5,167 cf @ 12.37 hrs
Average Depth at Peak Storage= 1.79'
Bank-Full Depth= 3.00' Flow Area= 16.0 sf, Capacity= 342.17 cfs

8.00' x 3.00' deep Parabolic Channel, n= 0.025
Length= 700.0' Slope= 0.0729 '/'
Inlet Invert= 596.00', Outlet Invert= 545.00'





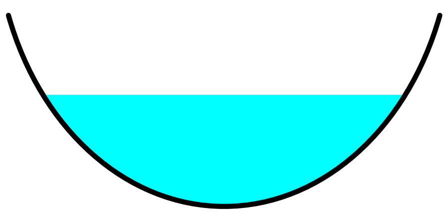
Summary for Reach RC7: (new Reach)

Inflow Area = 18.900 ac, 12.65% Impervious, Inflow Depth > 6.31" for 100-yr event
Inflow = 58.74 cfs @ 12.31 hrs, Volume= 9.937 af
Outflow = 58.75 cfs @ 12.31 hrs, Volume= 9.936 af, Atten= 0%, Lag= 0.3 min

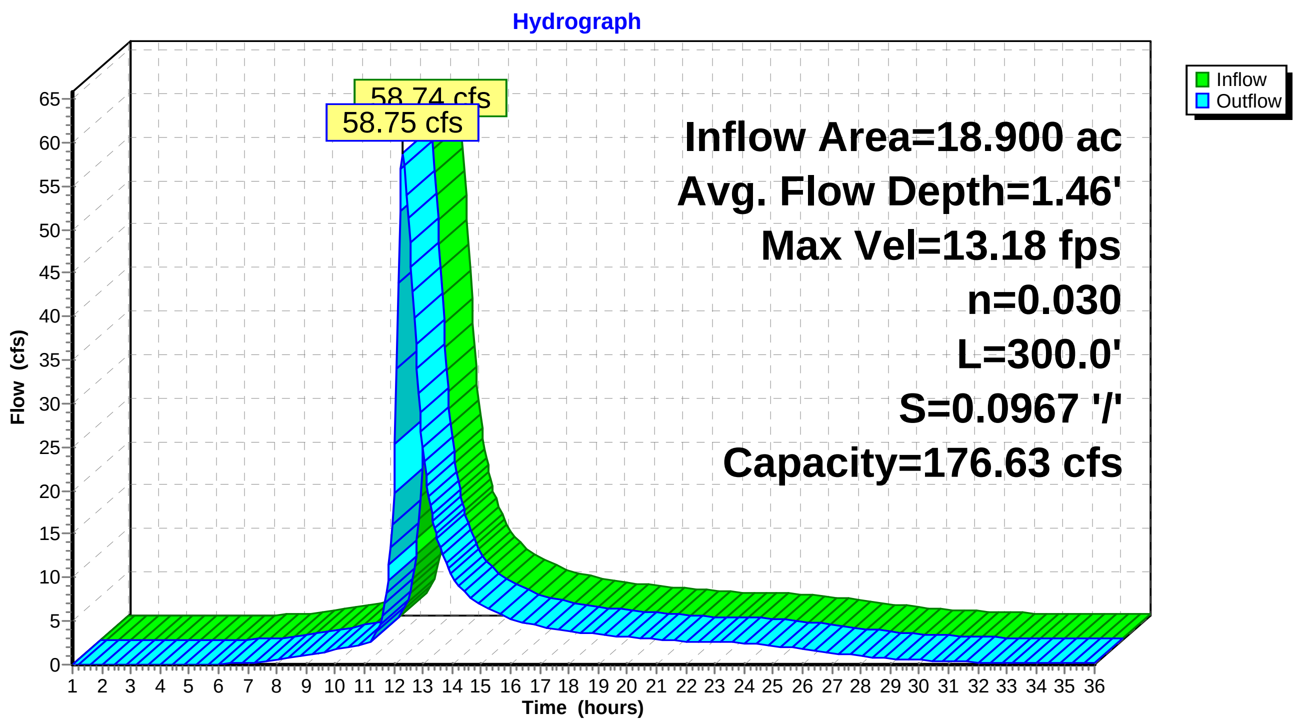
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.18 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 4.79 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,336 cf @ 12.31 hrs
Average Depth at Peak Storage= 1.46'
Bank-Full Depth= 2.50' Flow Area= 10.0 sf, Capacity= 176.63 cfs

6.00' x 2.50' deep Parabolic Channel, n= 0.030
Length= 300.0' Slope= 0.0967 '/'
Inlet Invert= 625.00', Outlet Invert= 596.00'



Reach RC7: (new Reach)



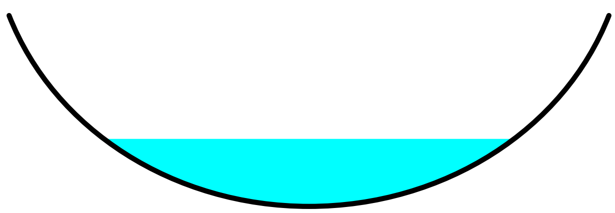
Summary for Reach RC8: (new Reach)

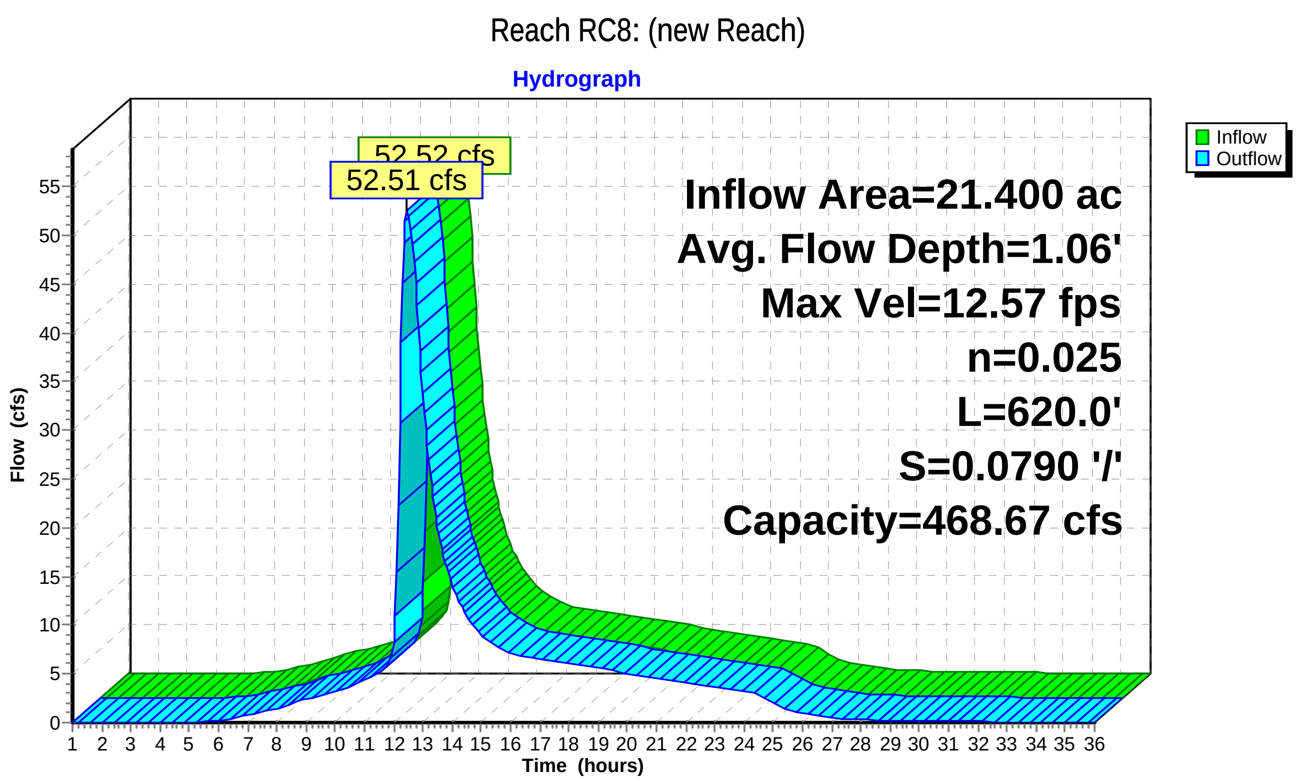
Inflow Area = 21.400 ac, 11.45% Impervious, Inflow Depth > 6.60" for 100-yr event
Inflow = 52.52 cfs @ 12.46 hrs, Volume= 11.775 af
Outflow = 52.51 cfs @ 12.47 hrs, Volume= 11.774 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.57 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.67 fps, Avg. Travel Time= 2.2 min

Peak Storage= 2,590 cf @ 12.47 hrs
Average Depth at Peak Storage= 1.06'
Bank-Full Depth= 3.00' Flow Area= 20.0 sf, Capacity= 468.67 cfs

10.00' x 3.00' deep Parabolic Channel, n= 0.025
Length= 620.0' Slope= 0.0790 '/'
Inlet Invert= 645.00', Outlet Invert= 596.00'





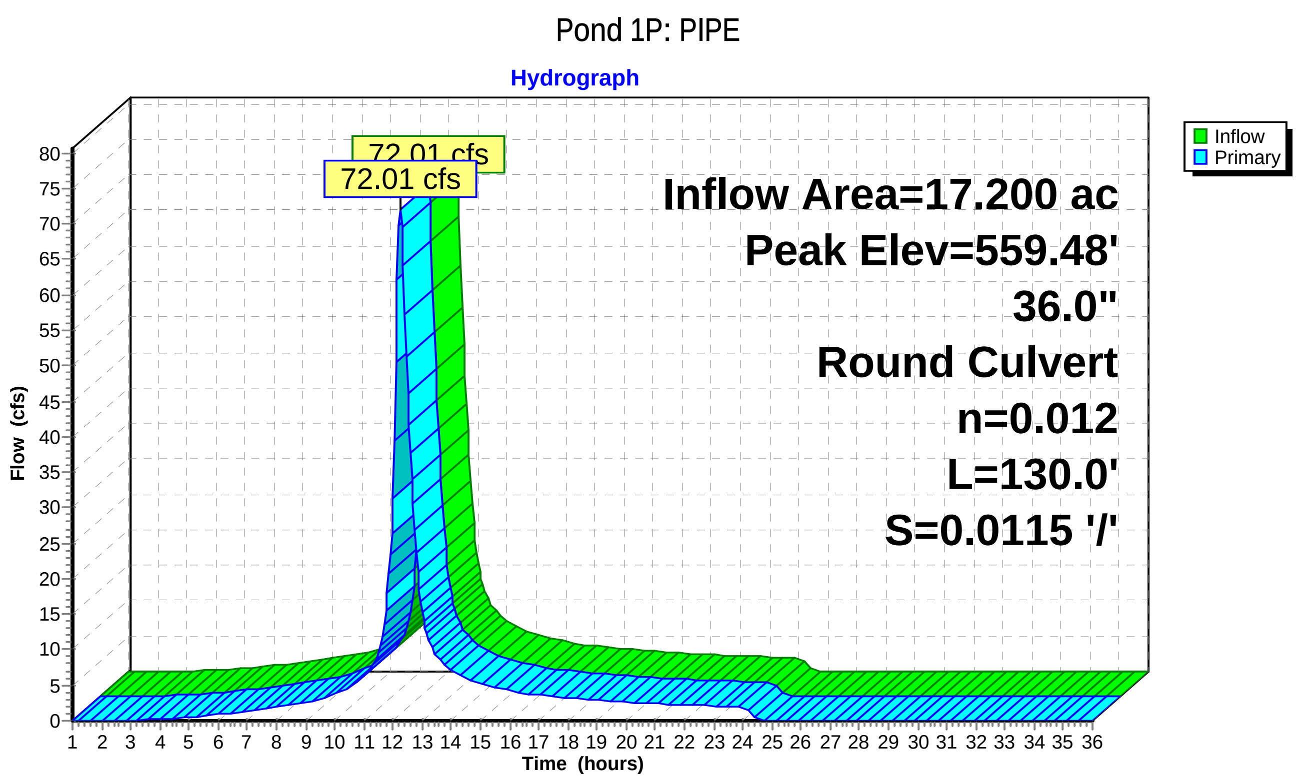
Summary for Pond 1P: PIPE

Inflow Area = 17.200 ac, 10.17% Impervious, Inflow Depth = 6.48" for 100-yr event
Inflow = 72.01 cfs @ 12.25 hrs, Volume= 9.283 af
Outflow = 72.01 cfs @ 12.25 hrs, Volume= 9.283 af, Atten= 0%, Lag= 0.0 min
Primary = 72.01 cfs @ 12.25 hrs, Volume= 9.283 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 559.48' @ 12.25 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	553.50'	**36.0" Round Culvert** L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 553.50' / 552.00' S= 0.0115 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=71.99 cfs @ 12.25 hrs HW=559.47' TW=551.46' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 71.99 cfs @ 10.18 fps)



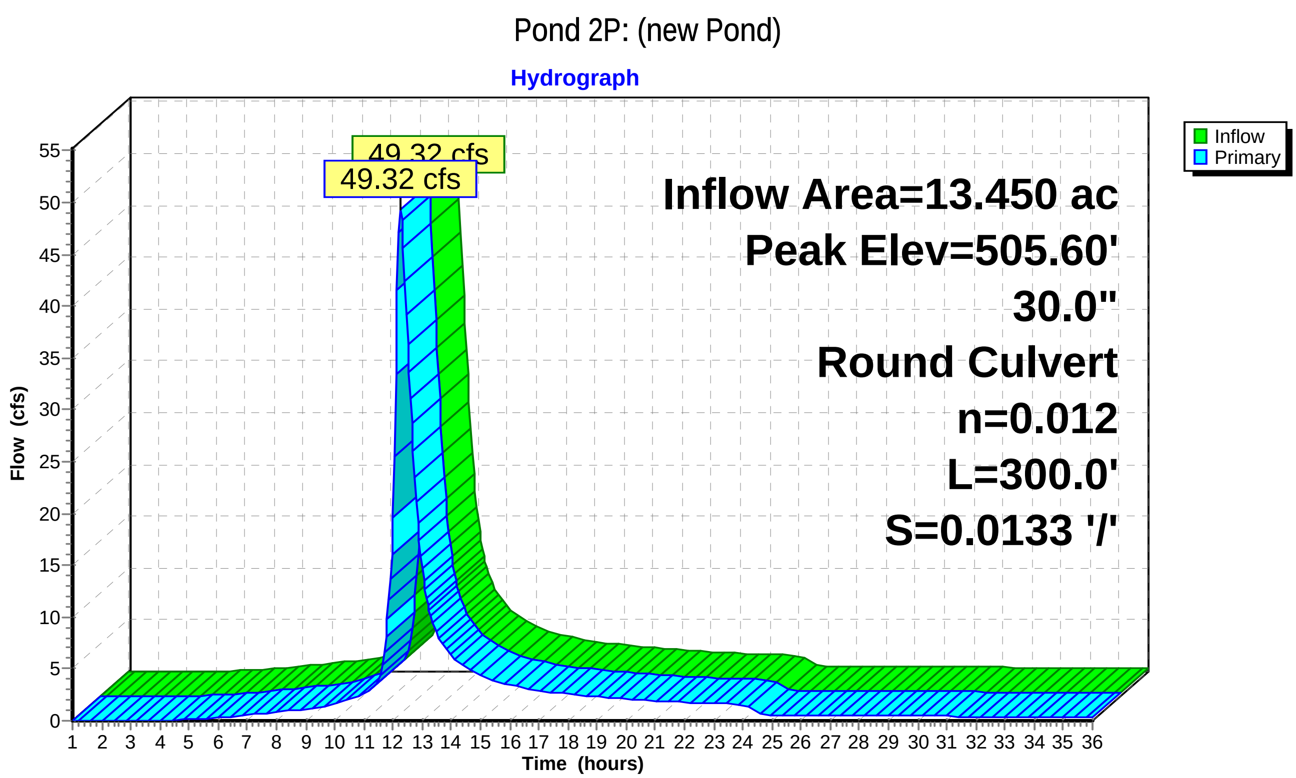
Summary for Pond 2P: (new Pond)

Inflow Area = 13.450 ac, 12.42% Impervious, Inflow Depth > 6.32" for 100-yr event
Inflow = 49.32 cfs @ 12.26 hrs, Volume= 7.079 af
Outflow = 49.32 cfs @ 12.26 hrs, Volume= 7.079 af, Atten= 0%, Lag= 0.0 min
Primary = 49.32 cfs @ 12.26 hrs, Volume= 7.079 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 505.60' @ 12.26 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	500.00'	**30.0" Round Culvert** L= 300.0' Ke= 0.500 Inlet / Outlet Invert= 500.00' / 496.00' S= 0.0133 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=49.10 cfs @ 12.26 hrs HW=505.56' TW=492.72' (Dynamic Tailwater)
└1=Culvert (Inlet Controls 49.10 cfs @ 10.00 fps)



Summary for Pond 3P: (new Pond)

Inflow Area = 7.500 ac, 22.27% Impervious, Inflow Depth = 6.63" for 100-yr event
Inflow = 38.70 cfs @ 12.15 hrs, Volume= 4.143 af
Outflow = 25.06 cfs @ 12.31 hrs, Volume= 3.973 af, Atten= 35%, Lag= 10.1 min
Primary = 25.06 cfs @ 12.31 hrs, Volume= 3.973 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 553.75' @ 12.31 hrs Surf.Area= 17,879 sf Storage= 53,089 cf

Plug-Flow detention time= 180.8 min calculated for 3.967 af (96% of inflow)
Center-of-Mass det. time= 157.3 min (968.3 - 811.0)

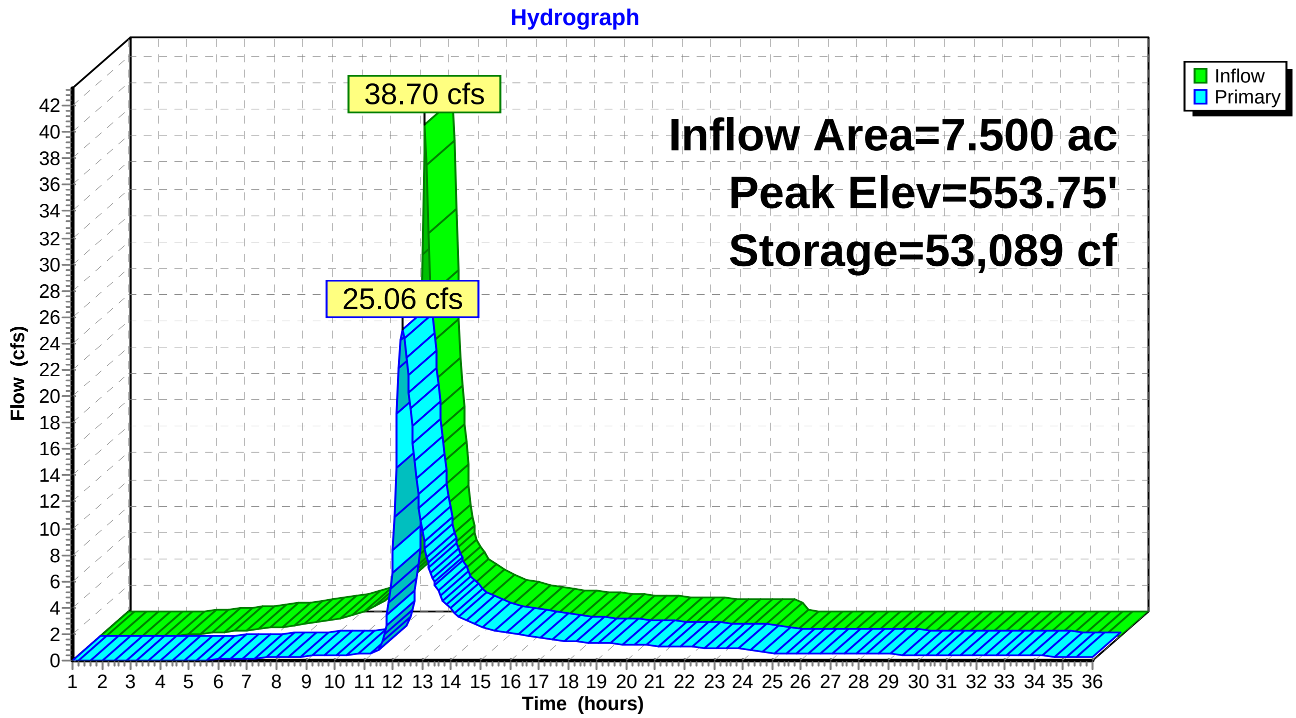
Volume	Invert	Avail.Storage	Storage Description
#1	550.00'	57,700 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
550.00	10,700	0	0
552.00	14,300	25,000	25,000
554.00	18,400	32,700	57,700

Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	**30.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 550.00' / 546.00' S= 0.1000 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	550.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	552.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height
#4	Device 1	553.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=24.96 cfs @ 12.31 hrs HW=553.74' TW=517.94' (Dynamic Tailwater)
└1=**Culvert** (Passes 24.96 cfs of 37.30 cfs potential flow)
 ├2=**Orifice/Grate** (Orifice Controls 0.79 cfs @ 9.10 fps)
 ├3=**Sharp-Crested Rectangular Weir** (Weir Controls 24.17 cfs @ 5.23 fps)
 └4=**Orifice/Grate** (Controls 0.00 cfs)

Pond 3P: (new Pond)



Summary for Pond 7P: PIPE

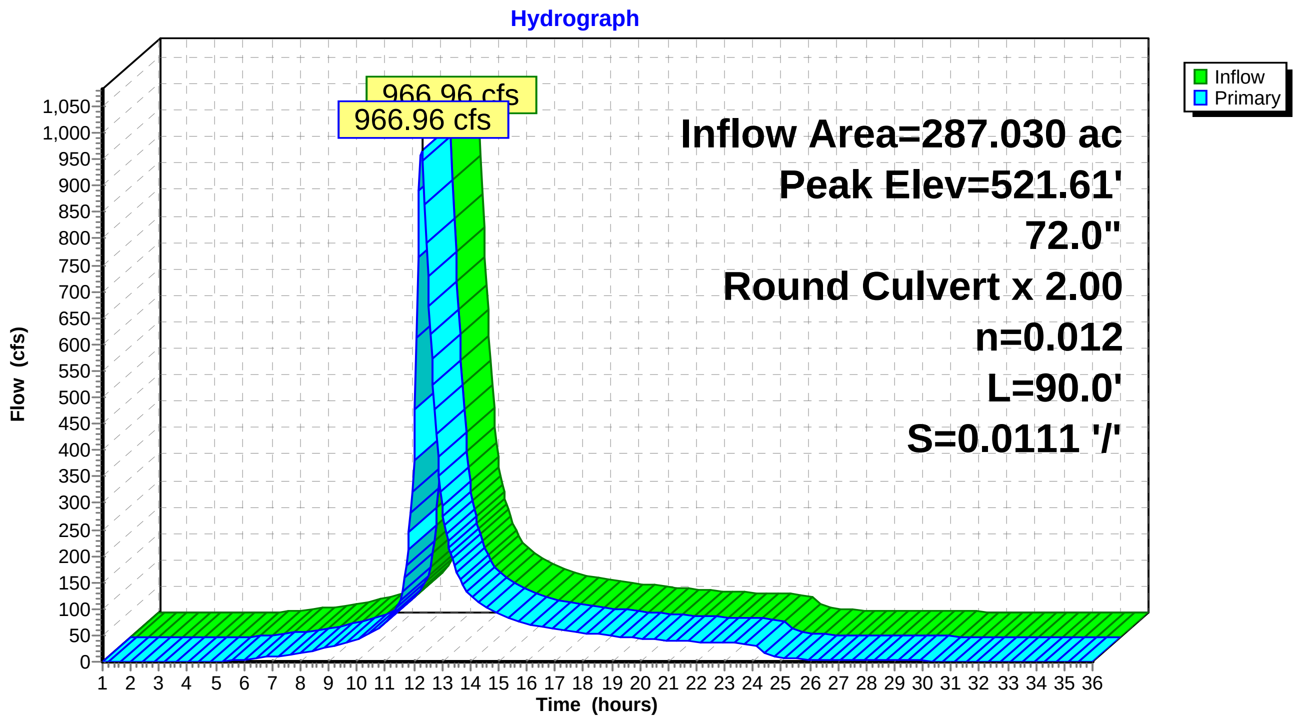
Inflow Area = 287.030 ac, 3.39% Impervious, Inflow Depth > 5.87" for 100-yr event
Inflow = 966.96 cfs @ 12.28 hrs, Volume= 140.500 af
Outflow = 966.96 cfs @ 12.28 hrs, Volume= 140.500 af, Atten= 0%, Lag= 0.0 min
Primary = 966.96 cfs @ 12.28 hrs, Volume= 140.500 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 521.61' @ 12.28 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	506.00'	**72.0" Round Culvert** X 2.00 L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 506.00' / 505.00' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 28.27 sf

Primary OutFlow Max=962.14 cfs @ 12.28 hrs HW=521.49' TW=507.71' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 962.14 cfs @ 17.01 fps)

Pond 7P: PIPE



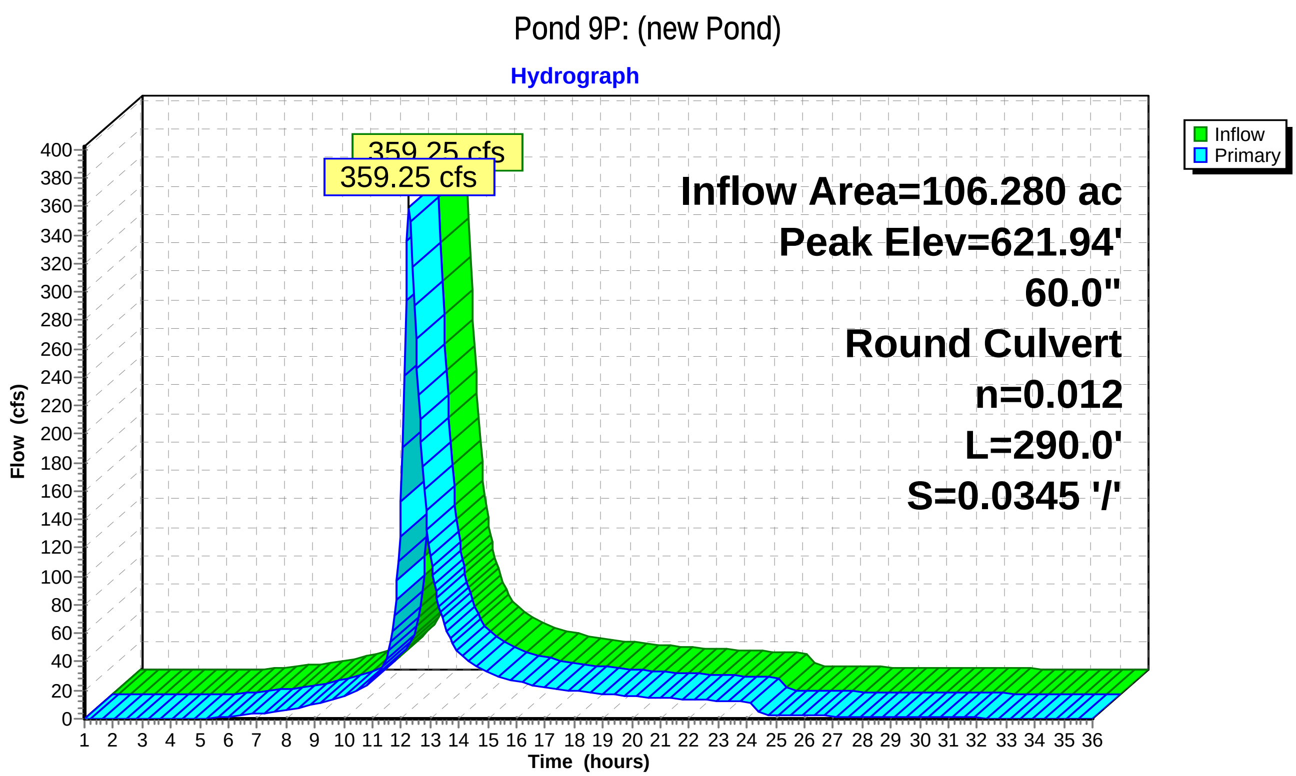
Summary for Pond 9P: (new Pond)

Inflow Area = 106.280 ac, 4.60% Impervious, Inflow Depth > 5.94" for 100-yr event
Inflow = 359.25 cfs @ 12.28 hrs, Volume= 52.621 af
Outflow = 359.25 cfs @ 12.28 hrs, Volume= 52.621 af, Atten= 0%, Lag= 0.0 min
Primary = 359.25 cfs @ 12.28 hrs, Volume= 52.621 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 621.94' @ 12.28 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	605.00'	**60.0" Round Culvert** L= 290.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 605.00' / 595.00' S= 0.0345 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=357.27 cfs @ 12.28 hrs HW=621.78' TW=597.67' (Dynamic Tailwater)
└1=Culvert (Inlet Controls 357.27 cfs @ 18.20 fps)



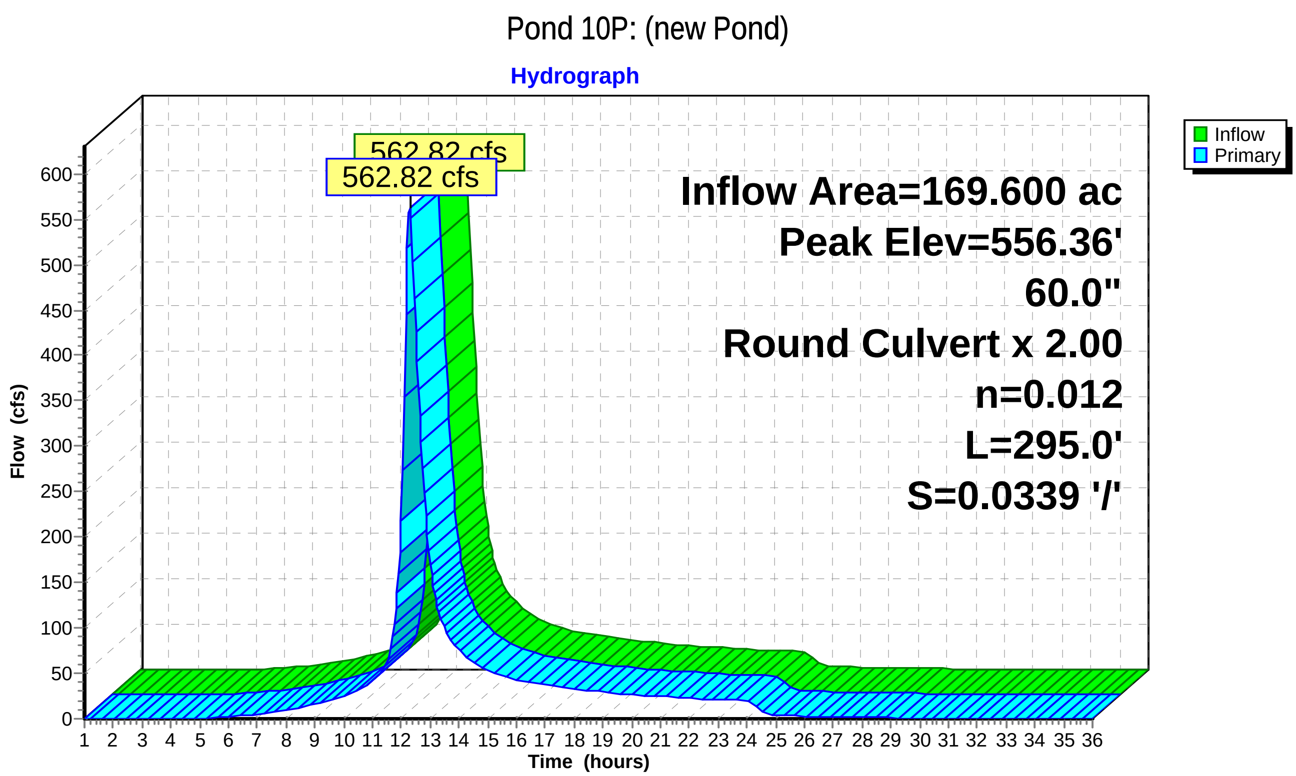
Summary for Pond 10P: (new Pond)

Inflow Area = 169.600 ac, 2.85% Impervious, Inflow Depth > 5.81" for 100-yr event
Inflow = 562.82 cfs @ 12.28 hrs, Volume= 82.060 af
Outflow = 562.82 cfs @ 12.28 hrs, Volume= 82.060 af, Atten= 0%, Lag= 0.0 min
Primary = 562.82 cfs @ 12.28 hrs, Volume= 82.060 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 556.36' @ 12.29 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	545.00'	**60.0" Round Culvert** X 2.00 L= 295.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 545.00' / 535.00' S= 0.0339 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=560.04 cfs @ 12.28 hrs HW=556.27' TW=538.89' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 560.04 cfs @ 14.26 fps)



Summary for Pond 11P: PIPE

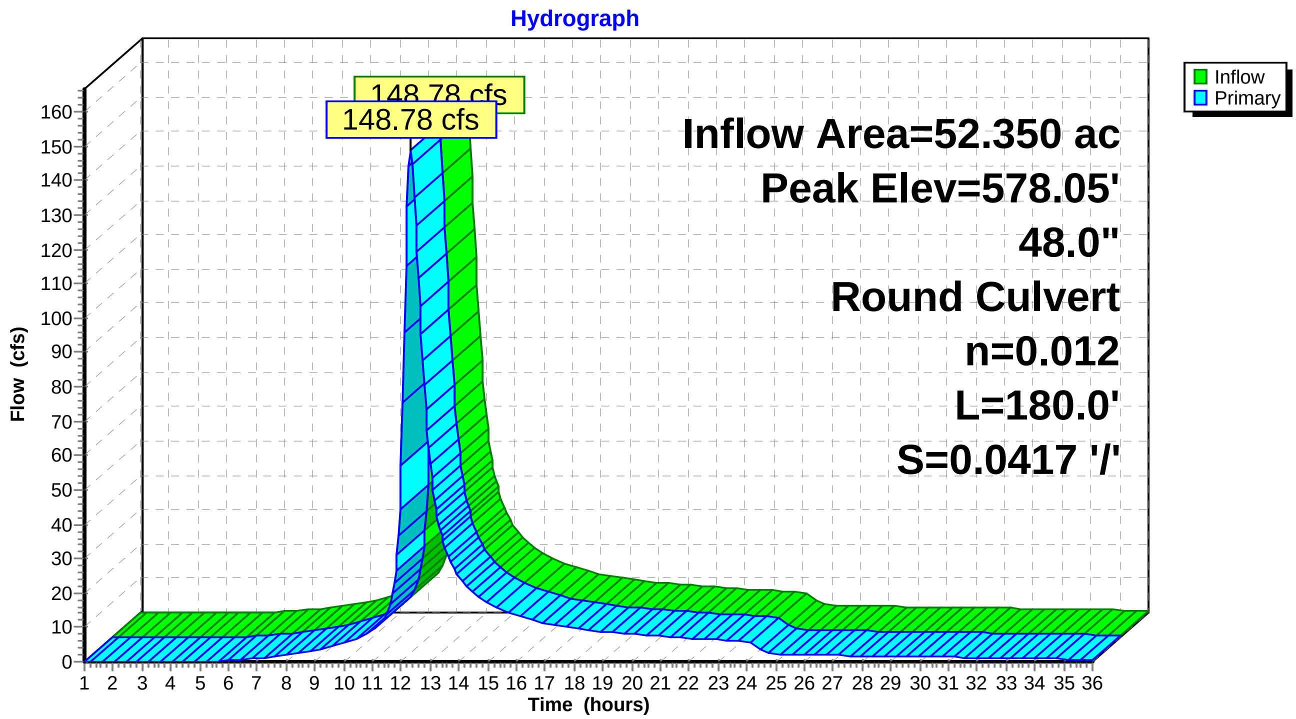
Inflow Area = 52.350 ac, 9.36% Impervious, Inflow Depth > 5.67" for 100-yr event
Inflow = 148.78 cfs @ 12.32 hrs, Volume= 24.732 af
Outflow = 148.78 cfs @ 12.32 hrs, Volume= 24.732 af, Atten= 0%, Lag= 0.0 min
Primary = 148.78 cfs @ 12.32 hrs, Volume= 24.732 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 578.05' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	570.00'	**48.0" Round Culvert** L= 180.0' Ke= 0.500 Inlet / Outlet Invert= 570.00' / 562.50' S= 0.0417 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=148.19 cfs @ 12.32 hrs HW=578.00' TW=562.19' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 148.19 cfs @ 11.79 fps)

Pond 11P: PIPE



Summary for Pond 16P: PIPE

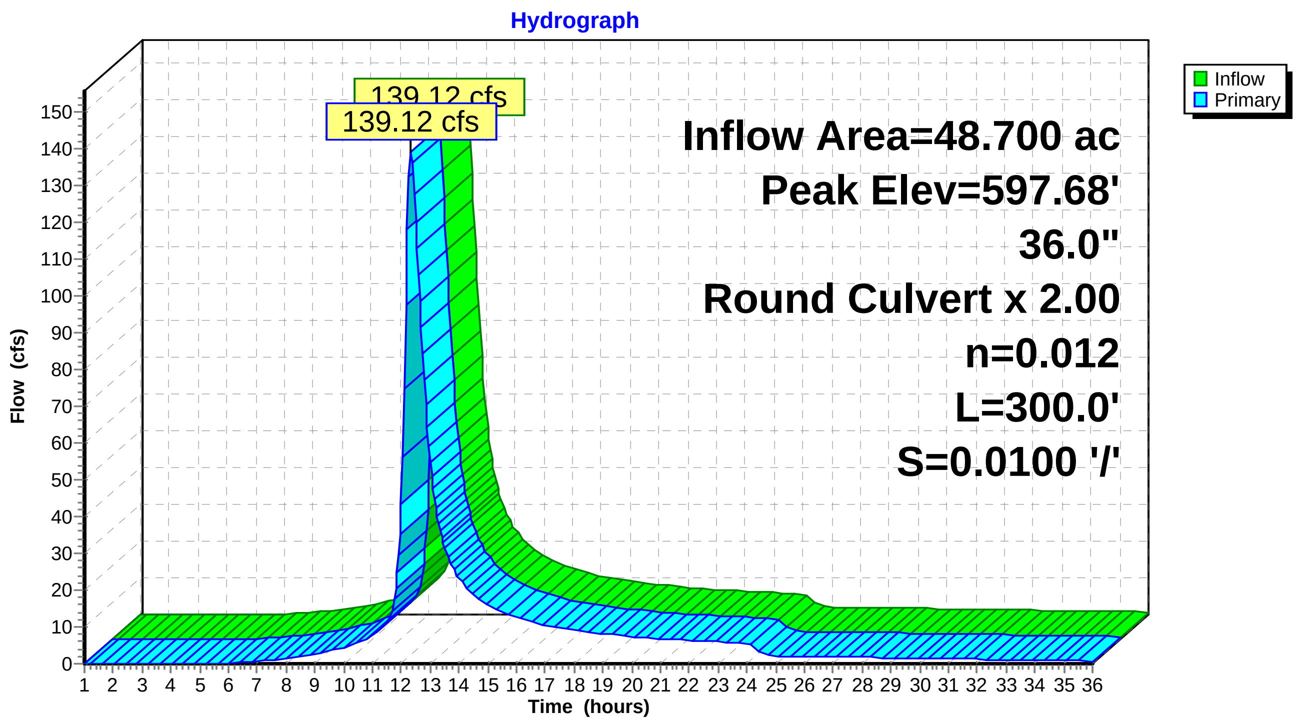
Inflow Area = 48.700 ac, 9.86% Impervious, Inflow Depth > 5.60" for 100-yr event
Inflow = 139.12 cfs @ 12.33 hrs, Volume= 22.716 af
Outflow = 139.12 cfs @ 12.33 hrs, Volume= 22.716 af, Atten= 0%, Lag= 0.0 min
Primary = 139.12 cfs @ 12.33 hrs, Volume= 22.716 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 597.68' @ 12.33 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	592.00'	**36.0" Round Culvert** X 2.00 L= 300.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 592.00' / 589.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=138.56 cfs @ 12.33 hrs HW=597.64' TW=589.91' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 138.56 cfs @ 9.80 fps)

Pond 16P: PIPE

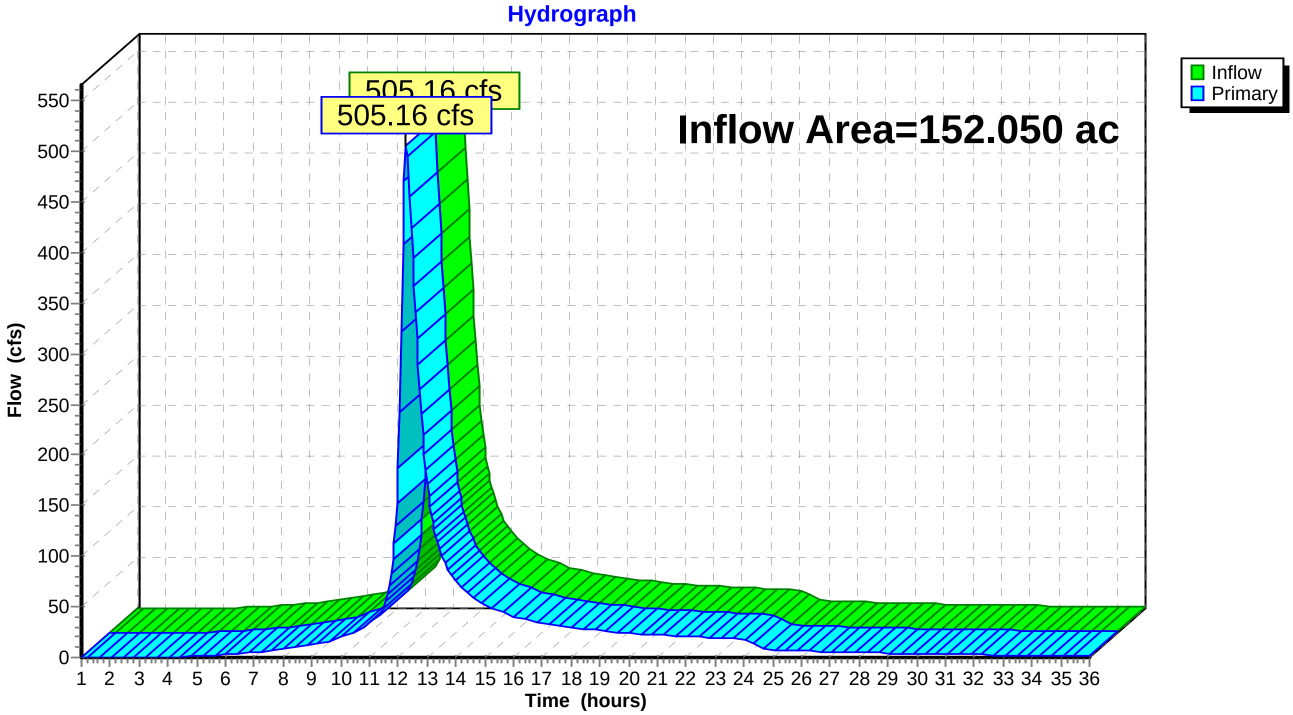


Summary for Pond L: LAKE

Inflow Area = 152.050 ac, 15.99% Impervious, Inflow Depth > 6.18" for 100-yr event
Inflow = 505.16 cfs @ 12.28 hrs, Volume= 78.271 af
Primary = 505.16 cfs @ 12.28 hrs, Volume= 78.271 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Pond L: LAKE



Summary for Pond PB11: (new Pond)

Inflow Area = 22.200 ac, 8.11% Impervious, Inflow Depth = 6.66" for 100-yr event
Inflow = 106.50 cfs @ 12.14 hrs, Volume= 12.324 af
Outflow = 87.87 cfs @ 12.26 hrs, Volume= 12.266 af, Atten= 17%, Lag= 7.2 min
Primary = 87.87 cfs @ 12.26 hrs, Volume= 12.266 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 581.57' @ 12.26 hrs Surf.Area= 28,474 sf Storage= 79,508 cf

Plug-Flow detention time= 69.5 min calculated for 12.266 af (100% of inflow)
Center-of-Mass det. time= 66.5 min (878.0 - 811.5)

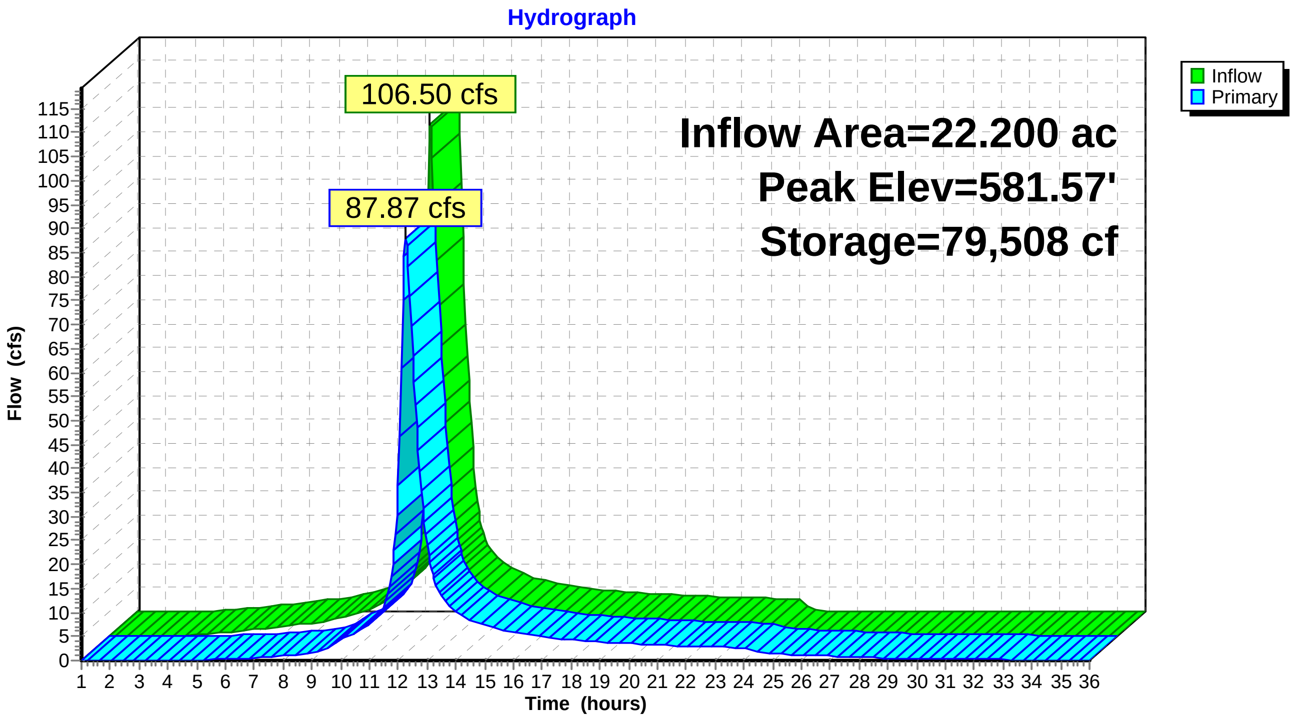
Volume	Invert	Avail.Storage	Storage Description
#1	578.00'	91,990 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.00	16,290	0	0
580.00	22,850	39,140	39,140
582.00	30,000	52,850	91,990

Device	Routing	Invert	Outlet Devices
#1	Primary	576.00'	**36.0" Round Culvert** X 2.00 L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 576.00' / 572.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	581.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	579.30'	**4.9' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	578.00'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=87.47 cfs @ 12.26 hrs HW=581.57' TW=573.64' (Dynamic Tailwater)
1=**Culvert** (Passes 87.47 cfs of 137.27 cfs potential flow)
2=**Orifice/Grate** (Controls 0.00 cfs)
3=**Sharp-Crested Rectangular Weir** (Weir Controls 77.15 cfs @ 7.65 fps)
4=**Sharp-Crested Rectangular Weir** (Weir Controls 10.31 cfs @ 11.57 fps)

Pond PB11: (new Pond)



Summary for Pond PB19: (new Pond)

Inflow Area = 24.400 ac, 19.67% Impervious, Inflow Depth = 6.02" for 100-yr event
Inflow = 118.63 cfs @ 12.13 hrs, Volume= 12.246 af
Outflow = 59.27 cfs @ 12.39 hrs, Volume= 11.747 af, Atten= 50%, Lag= 15.3 min
Primary = 59.27 cfs @ 12.39 hrs, Volume= 11.747 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 599.43' @ 12.39 hrs Surf.Area= 60,803 sf Storage= 180,933 cf

Plug-Flow detention time= 195.1 min calculated for 11.747 af (96% of inflow)
Center-of-Mass det. time= 171.2 min (996.2 - 825.0)

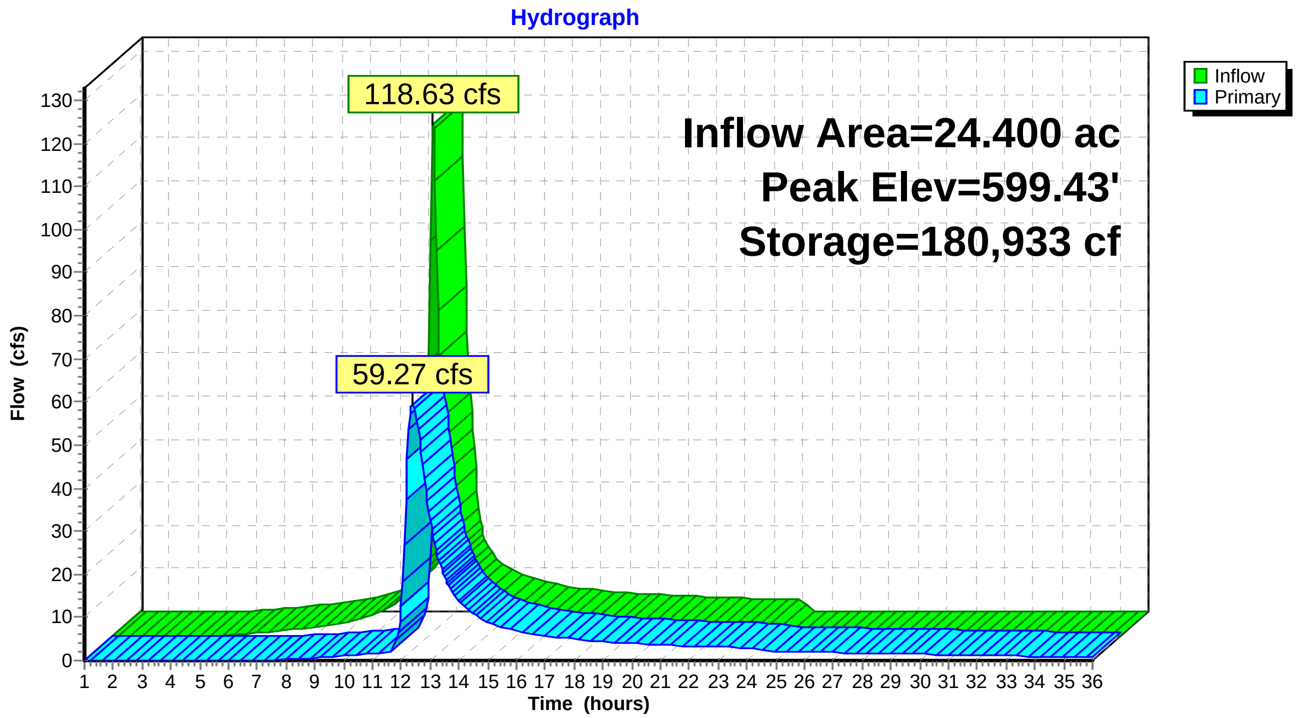
Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	216,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
596.00	44,900	0	0
598.00	54,100	99,000	99,000
600.00	63,500	117,600	216,600

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**36.0" Round Culvert X 2.00** L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 596.00' / 594.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	596.00'	**8.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	597.60'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.6' Crest Height
#4	Device 1	599.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=59.44 cfs @ 12.39 hrs HW=599.42' TW=597.45' (Dynamic Tailwater)
└─1=**Culvert** (Passes 59.44 cfs of 94.43 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 2.67 cfs @ 6.77 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 56.77 cfs @ 6.06 fps)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB19: (new Pond)



Summary for Pond PB2: (new Pond)

Inflow Area = 5.400 ac, 9.26% Impervious, Inflow Depth = 6.87" for 100-yr event
Inflow = 29.12 cfs @ 12.14 hrs, Volume= 3.092 af
Outflow = 8.49 cfs @ 12.63 hrs, Volume= 2.769 af, Atten= 71%, Lag= 29.6 min
Primary = 8.49 cfs @ 12.63 hrs, Volume= 2.769 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 507.61' @ 12.63 hrs Surf.Area= 21,521 sf Storage= 61,979 cf

Plug-Flow detention time= 257.7 min calculated for 2.769 af (90% of inflow)
Center-of-Mass det. time= 201.7 min (1,005.9 - 804.1)

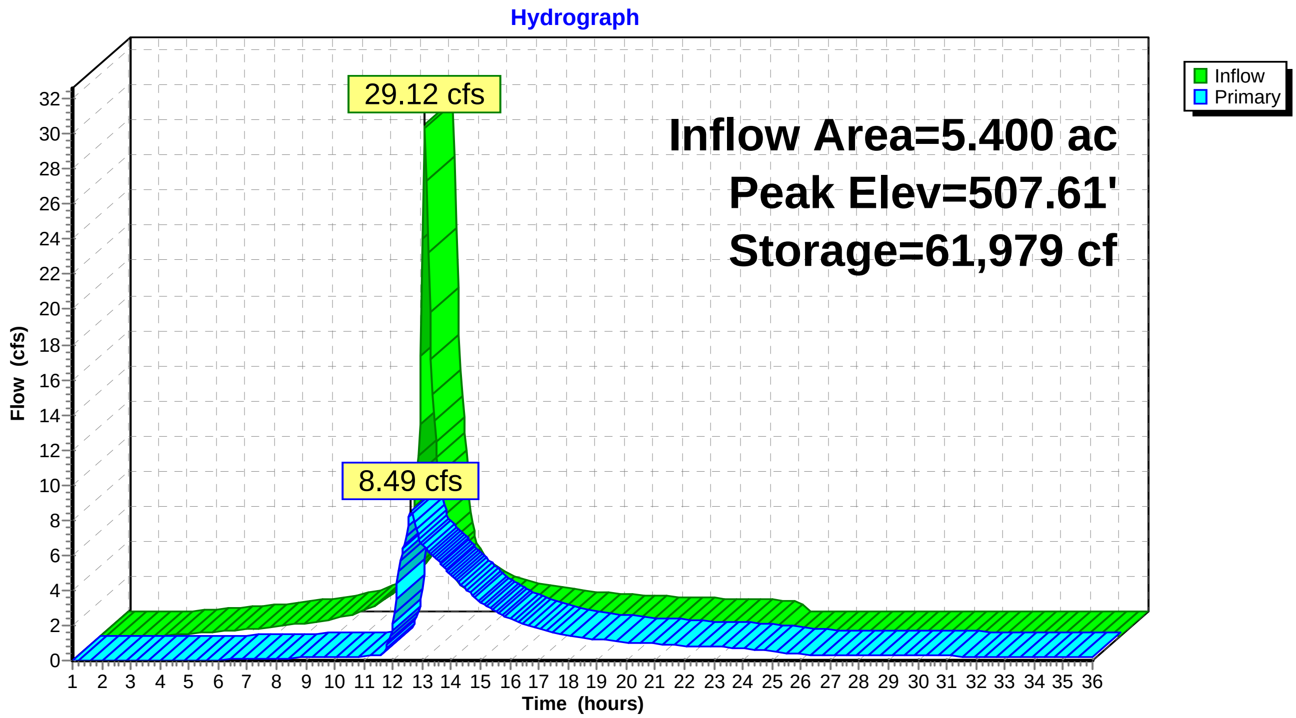
Volume	Invert	Avail.Storage	Storage Description
#1	504.00'	70,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
504.00	13,100	0	0
506.00	17,500	30,600	30,600
508.00	22,500	40,000	70,600

Device	Routing	Invert	Outlet Devices
#1	Primary	502.00'	**30.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 502.00' / 500.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	504.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	505.50'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height
#4	Device 1	507.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.47 cfs @ 12.63 hrs HW=507.61' TW=500.54' (Dynamic Tailwater)
└─1=**Culvert** (Passes 8.47 cfs of 49.34 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.44 cfs @ 8.99 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 6.53 cfs @ 5.36 fps)
  └─4=**Orifice/Grate** (Weir Controls 1.49 cfs @ 1.07 fps)

Pond PB2: (new Pond)



Summary for Pond PB3: (new Pond)

Inflow Area = 24.350 ac, 20.74% Impervious, Inflow Depth = 6.87" for 100-yr event
Inflow = 118.68 cfs @ 12.19 hrs, Volume= 13.942 af
Outflow = 106.19 cfs @ 12.27 hrs, Volume= 13.762 af, Atten= 11%, Lag= 5.3 min
Primary = 106.19 cfs @ 12.27 hrs, Volume= 13.762 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 524.24' @ 12.27 hrs Surf.Area= 39,700 sf Storage= 139,251 cf

Plug-Flow detention time= 151.8 min calculated for 13.762 af (99% of inflow)
Center-of-Mass det. time= 143.6 min (951.3 - 807.7)

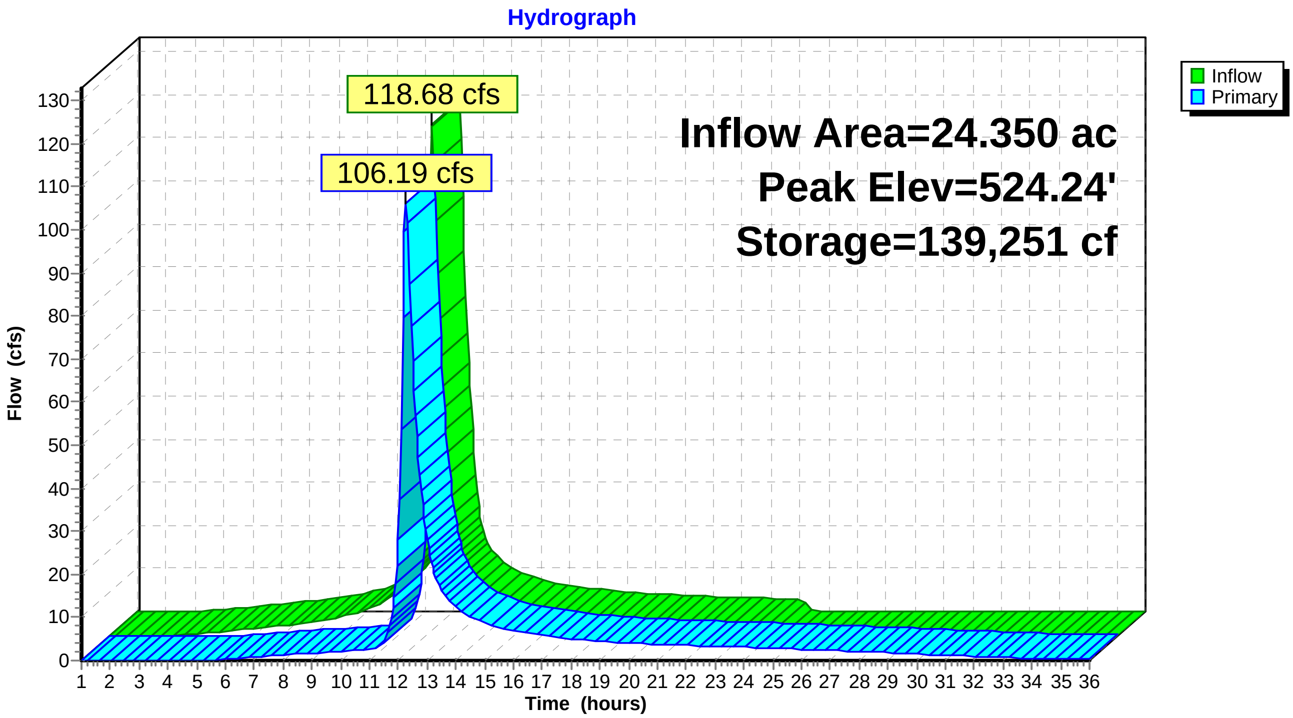
Volume	Invert	Avail.Storage	Storage Description
#1	520.00'	170,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
520.00	26,300	0	0
522.00	32,400	58,700	58,700
524.00	38,900	71,300	130,000
525.00	42,300	40,600	170,600

Device	Routing	Invert	Outlet Devices
#1	Primary	518.00'	**30.0" Round Culvert X 2.00** L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 518.00' / 514.00' S= 0.0571 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	520.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	522.40'	**4.9' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	523.75'	**30.0" x 48.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#5	Device 1	523.25'	**6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=105.46 cfs @ 12.27 hrs HW=524.23' TW=507.53' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 105.46 cfs @ 10.74 fps)
  ├─**2=Orifice/Grate** (Passes < 4.17 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Passes < 52.98 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 28.00 cfs potential flow)
  └─**5=Sharp-Crested Rectangular Weir** (Passes < 22.71 cfs potential flow)

Pond PB3: (new Pond)



Summary for Pond PB4: POND

Inflow Area = 10.100 ac, 43.56% Impervious, Inflow Depth = 7.23" for 100-yr event
Inflow = 61.76 cfs @ 12.10 hrs, Volume= 6.089 af
Outflow = 46.86 cfs @ 12.20 hrs, Volume= 6.039 af, Atten= 24%, Lag= 6.1 min
Primary = 46.86 cfs @ 12.20 hrs, Volume= 6.039 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 561.80' @ 12.20 hrs Surf.Area= 23,488 sf Storage= 71,134 cf

Plug-Flow detention time= 151.6 min calculated for 6.039 af (99% of inflow)
Center-of-Mass det. time= 146.4 min (937.9 - 791.5)

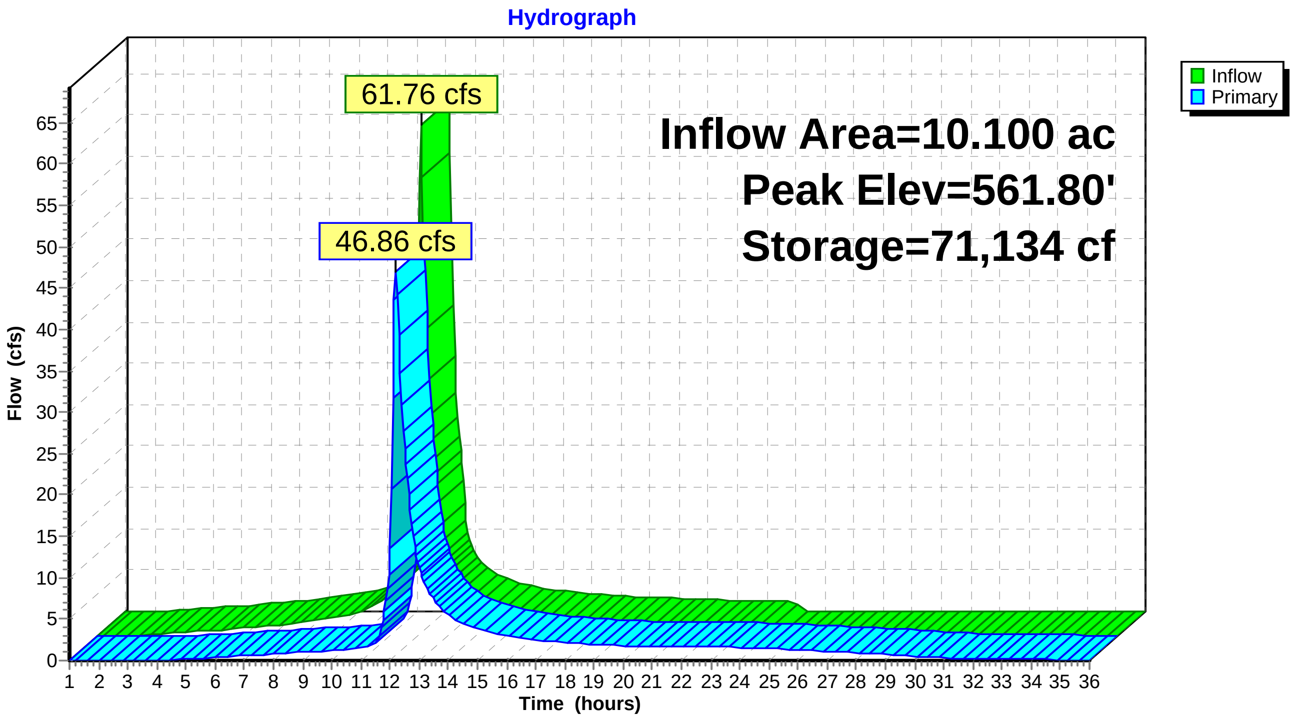
Volume	Invert	Avail.Storage	Storage Description
#1	558.00'	76,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
558.00	14,000	0	0
560.00	19,000	33,000	33,000
562.00	24,000	43,000	76,000

Device	Routing	Invert	Outlet Devices
#1	Primary	558.00'	**36.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 558.00' / 554.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	558.00'	**7.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	560.00'	**2.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	561.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	561.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=46.71 cfs @ 12.20 hrs HW=561.79' TW=0.00' (Dynamic Tailwater)
1=**Culvert** (Passes 46.71 cfs of 51.54 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 2.41 cfs @ 9.01 fps)
3=**Sharp-Crested Rectangular Weir** (Weir Controls 24.19 cfs @ 6.30 fps)
4=**Orifice/Grate** (Weir Controls 6.75 cfs @ 1.77 fps)
5=**Sharp-Crested Rectangular Weir** (Weir Controls 13.36 cfs @ 3.48 fps)

Pond PB4: POND



Summary for Pond PB5: (new Pond)

Inflow Area = 4.500 ac, 26.44% Impervious, Inflow Depth = 6.99" for 100-yr event
Inflow = 28.73 cfs @ 12.07 hrs, Volume= 2.622 af
Outflow = 18.35 cfs @ 12.20 hrs, Volume= 2.487 af, Atten= 36%, Lag= 7.8 min
Primary = 18.35 cfs @ 12.20 hrs, Volume= 2.487 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 565.75' @ 12.20 hrs Surf.Area= 13,044 sf Storage= 36,329 cf

Plug-Flow detention time= 193.7 min calculated for 2.484 af (95% of inflow)
Center-of-Mass det. time= 164.3 min (960.9 - 796.6)

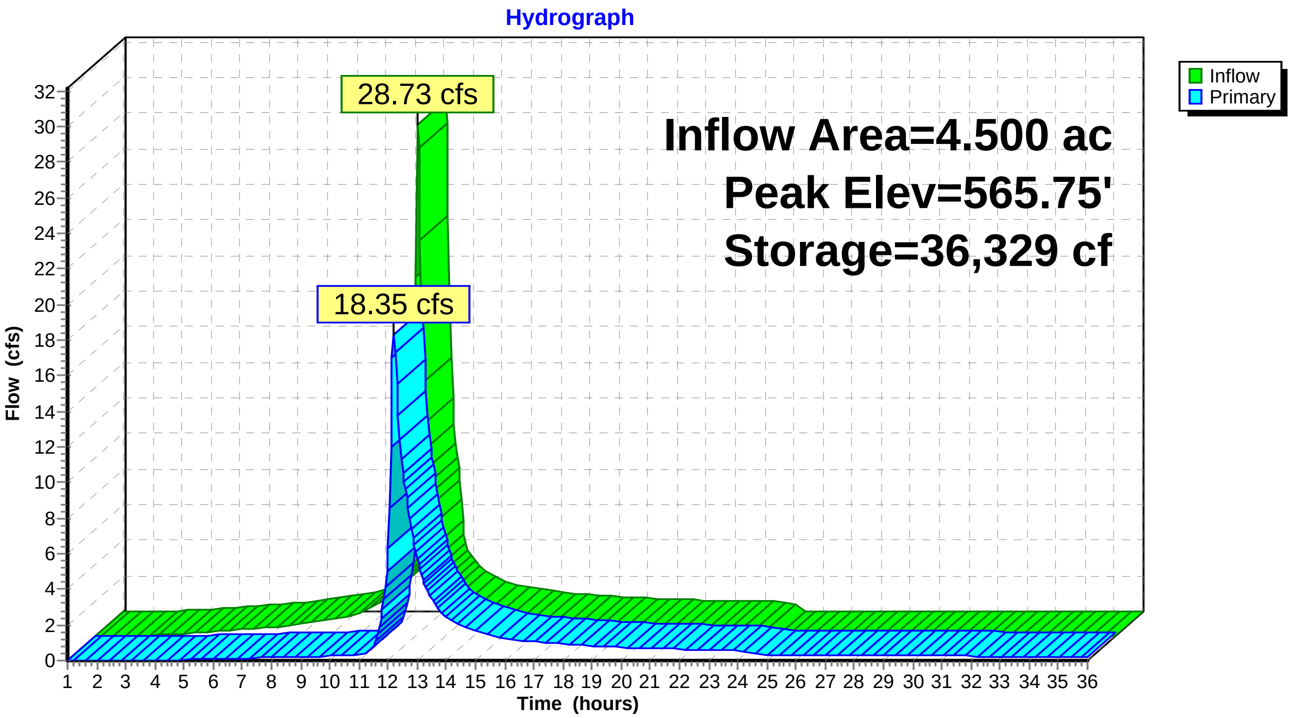
Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	39,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
562.00	6,500	0	0
564.00	9,800	16,300	16,300
566.00	13,500	23,300	39,600

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**30.0" Round Culvert** L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 562.00' / 558.00' S= 0.0533 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	562.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	564.00'	**1.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	565.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=18.29 cfs @ 12.20 hrs HW=565.75' TW=0.00' (Dynamic Tailwater)
└─1=**Culvert** (Passes 18.29 cfs of 37.39 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.45 cfs @ 9.17 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 12.46 cfs @ 6.18 fps)
  └─4=**Orifice/Grate** (Weir Controls 5.38 cfs @ 1.64 fps)

Pond PB5: (new Pond)



Summary for Pond PB6: PB7

Inflow Area = 8.900 ac, 36.74% Impervious, Inflow Depth = 7.23" for 100-yr event
Inflow = 52.35 cfs @ 12.11 hrs, Volume= 5.365 af
Outflow = 36.82 cfs @ 12.24 hrs, Volume= 5.203 af, Atten= 30%, Lag= 7.5 min
Primary = 36.82 cfs @ 12.24 hrs, Volume= 5.203 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 659.67' @ 12.24 hrs Surf.Area= 23,483 sf Storage= 66,733 cf

Plug-Flow detention time= 190.5 min calculated for 5.203 af (97% of inflow)
Center-of-Mass det. time= 171.7 min (964.4 - 792.6)

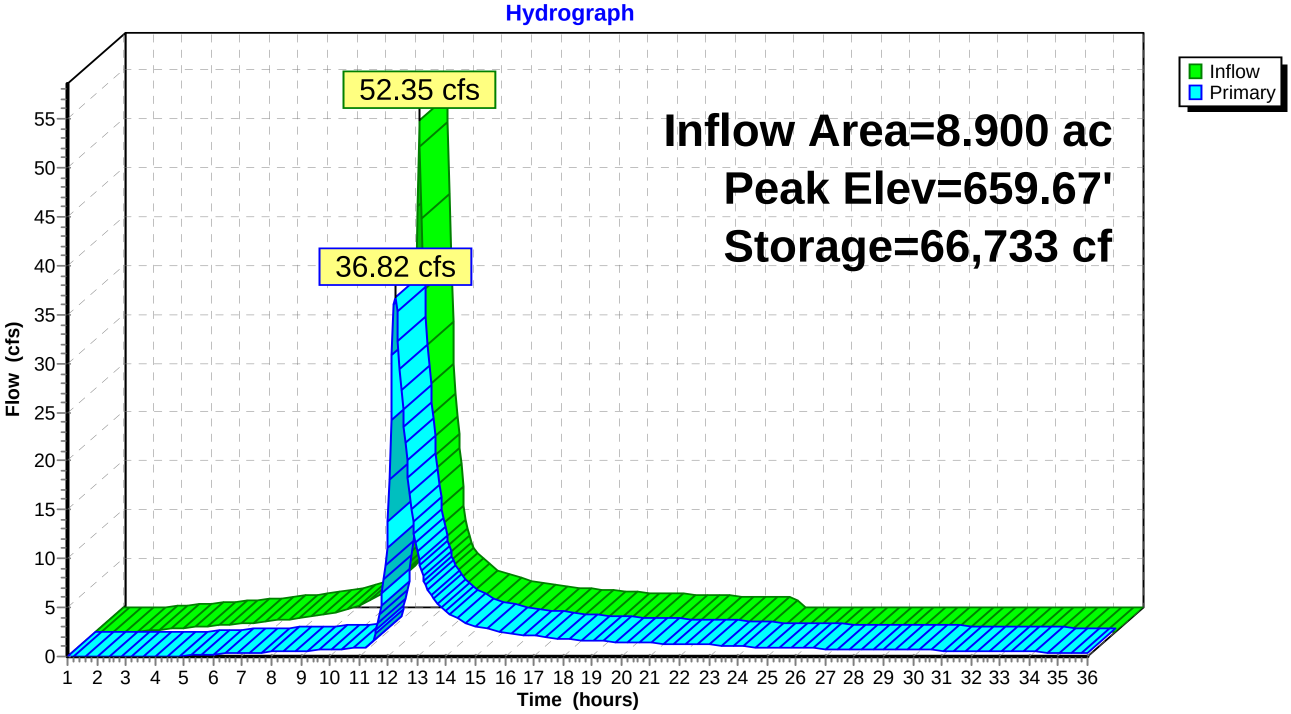
Volume	Invert	Avail.Storage	Storage Description
#1	656.00'	74,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
656.00	13,500	0	0
658.00	18,300	31,800	31,800
660.00	24,500	42,800	74,600

Device	Routing	Invert	Outlet Devices
#1	Primary	656.00'	**30.0" Round Culvert** L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 656.00' / 551.00' S= 0.8077 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	656.00'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	658.10'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	659.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=36.76 cfs @ 12.24 hrs HW=659.67' TW=553.27' (Dynamic Tailwater)
└─1=**Culvert** (Inlet Controls 36.76 cfs @ 7.49 fps)
  ├─2=**Orifice/Grate** (Passes < 1.22 cfs potential flow)
  ├─3=**Sharp-Crested Rectangular Weir** (Passes < 32.76 cfs potential flow)
  └─4=**Orifice/Grate** (Passes < 2.94 cfs potential flow)

Pond PB6: PB7


Hydrograph
52.35 cfs
36.82 cfs
Inflow Area=8.900 ac
Peak Elev=659.67'
Storage=66,733 cf
Inflow
Primary
Flow (cfs)
0
5
10
15
20
25
30
35
40
45
50
55
Time (hours)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

Summary for Pond PB7: (new Pond)

Inflow Area = 13.650 ac, 28.57% Impervious, Inflow Depth = 6.27" for 100-yr event
Inflow = 73.19 cfs @ 12.11 hrs, Volume= 7.127 af
Outflow = 24.28 cfs @ 12.52 hrs, Volume= 6.127 af, Atten= 67%, Lag= 24.4 min
Primary = 24.28 cfs @ 12.52 hrs, Volume= 6.127 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 563.60' @ 12.52 hrs Surf.Area= 42,187 sf Storage= 131,151 cf

Plug-Flow detention time= 220.1 min calculated for 6.127 af (86% of inflow)
Center-of-Mass det. time= 150.3 min (967.9 - 817.6)

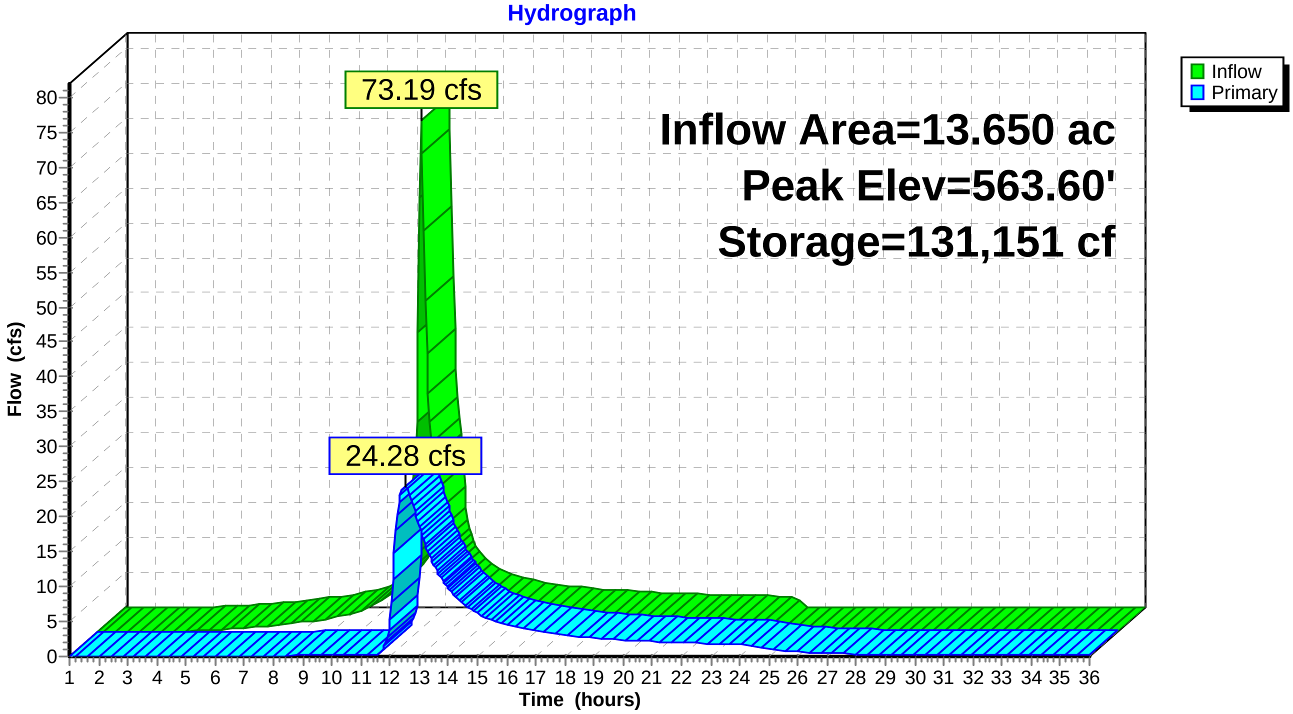
Volume	Invert	Avail.Storage	Storage Description
#1	560.00'	148,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
560.00	30,900	0	0
562.00	36,900	67,800	67,800
564.00	43,500	80,400	148,200

Device	Routing	Invert	Outlet Devices
#1	Primary	560.00'	**36.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 560.00' / 558.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	560.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	561.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	563.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=24.26 cfs @ 12.52 hrs HW=563.60' TW=556.70' (Dynamic Tailwater)
1=**Culvert** (Passes 24.26 cfs of 49.33 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.44 cfs @ 8.98 fps)
3=**Sharp-Crested Rectangular Weir** (Weir Controls 23.82 cfs @ 7.18 fps)
4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PB7: (new Pond)



Summary for Pond PC10: POND C10

Inflow Area = 21.400 ac, 11.45% Impervious, Inflow Depth = 6.63" for 100-yr event
Inflow = 107.28 cfs @ 12.16 hrs, Volume= 11.821 af
Outflow = 52.54 cfs @ 12.45 hrs, Volume= 11.775 af, Atten= 51%, Lag= 17.1 min
Primary = 52.54 cfs @ 12.45 hrs, Volume= 11.775 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 675.55' @ 12.45 hrs Surf.Area= 50,313 sf Storage= 152,689 cf

Plug-Flow detention time= 104.7 min calculated for 11.775 af (100% of inflow)
Center-of-Mass det. time= 102.3 min (914.5 - 812.2)

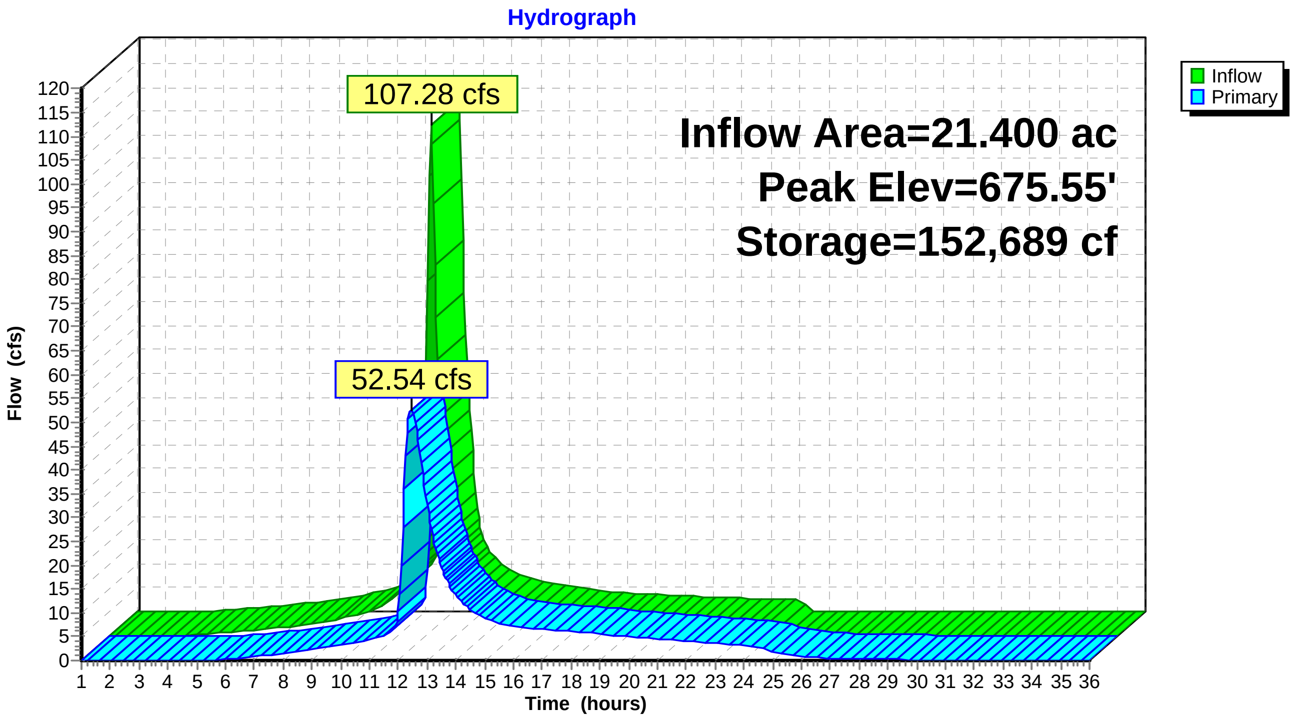
Volume	Invert	Avail.Storage	Storage Description
#1	672.00'	176,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	36,000	0	0
674.00	43,900	79,900	79,900
676.00	52,200	96,100	176,000

Device	Routing	Invert	Outlet Devices
#1	Primary	672.00'	**30.0" Round Culvert X 2.00** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 672.00' / 670.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	672.00'	**6.0" Vert. Orifice/Grate X 6.00** C= 0.600
#3	Device 1	675.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	673.70'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height

Primary OutFlow Max=52.51 cfs @ 12.45 hrs HW=675.54' TW=661.37' (Dynamic Tailwater)
└─1=**Culvert** (Passes 52.51 cfs of 71.60 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 10.30 cfs @ 8.74 fps)
  ├─3=**Orifice/Grate** (Controls 0.00 cfs)
  └─4=**Sharp-Crested Rectangular Weir** (Weir Controls 42.22 cfs @ 4.94 fps)

Pond PC10: POND C10



Summary for Pond PC2: POND C2

Inflow Area = 6.200 ac, 32.26% Impervious, Inflow Depth = 6.99" for 100-yr event
Inflow = 33.69 cfs @ 12.14 hrs, Volume= 3.613 af
Outflow = 20.73 cfs @ 12.32 hrs, Volume= 3.377 af, Atten= 38%, Lag= 10.9 min
Primary = 20.73 cfs @ 12.32 hrs, Volume= 3.377 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 501.78' @ 12.32 hrs Surf.Area= 18,605 sf Storage= 54,751 cf

Plug-Flow detention time= 210.7 min calculated for 3.377 af (93% of inflow)
Center-of-Mass det. time= 173.2 min (974.2 - 801.0)

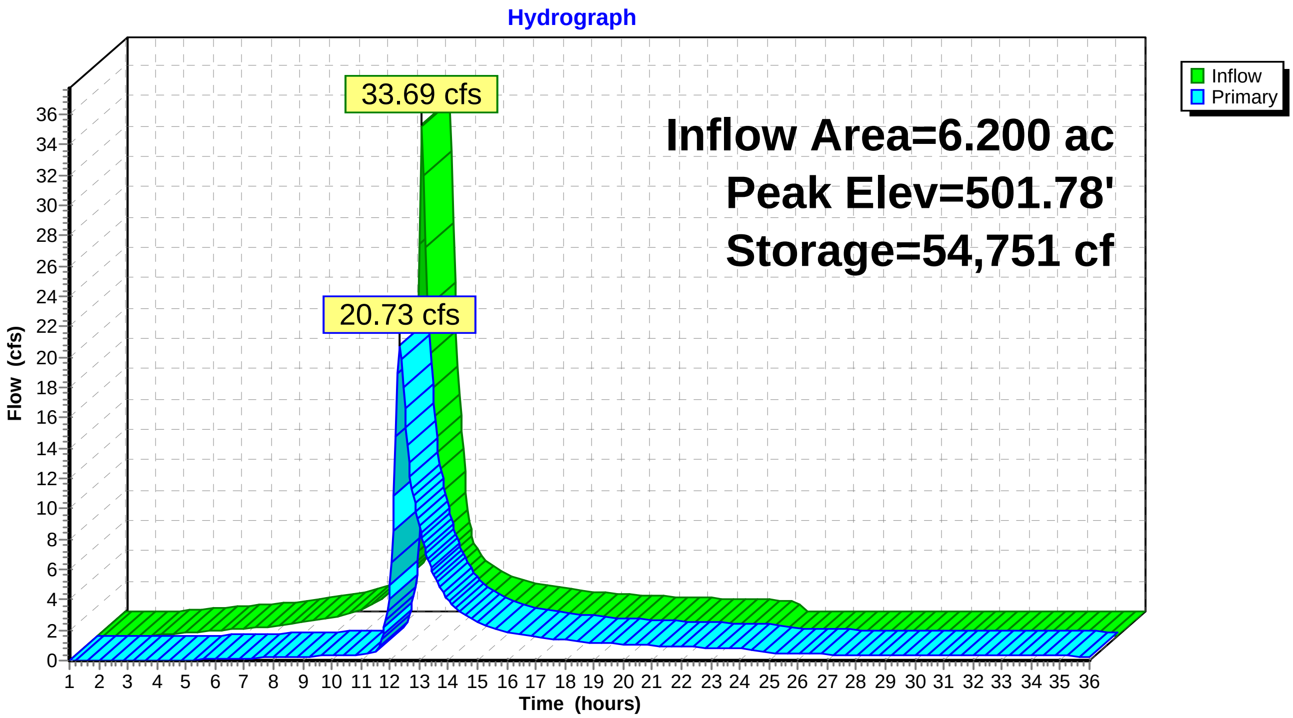
Volume	Invert	Avail.Storage	Storage Description
#1	498.00'	58,900 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
498.00	10,600	0	0
500.00	14,600	25,200	25,200
502.00	19,100	33,700	58,900

Device	Routing	Invert	Outlet Devices
#1	Primary	498.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 498.00' / 496.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	498.00'	**3.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	499.90'	**1.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	501.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=20.52 cfs @ 12.32 hrs HW=501.77' TW=492.71' (Dynamic Tailwater)
└─1=**Culvert** (Passes 20.52 cfs of 25.20 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 0.61 cfs @ 9.17 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 13.78 cfs @ 6.53 fps)
  └─4=**Orifice/Grate** (Weir Controls 6.13 cfs @ 1.71 fps)

Pond PC2: POND C2



Summary for Pond PC6: POND C6

Inflow Area = 18.900 ac, 12.65% Impervious, Inflow Depth = 6.39" for 100-yr event
Inflow = 97.84 cfs @ 12.13 hrs, Volume= 10.059 af
Outflow = 58.74 cfs @ 12.31 hrs, Volume= 9.937 af, Atten= 40%, Lag= 11.1 min
Primary = 58.74 cfs @ 12.31 hrs, Volume= 9.937 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 641.53' @ 12.31 hrs Surf.Area= 39,006 sf Storage= 118,449 cf

Plug-Flow detention time= 123.8 min calculated for 9.937 af (99% of inflow)
Center-of-Mass det. time= 116.3 min (932.1 - 815.9)

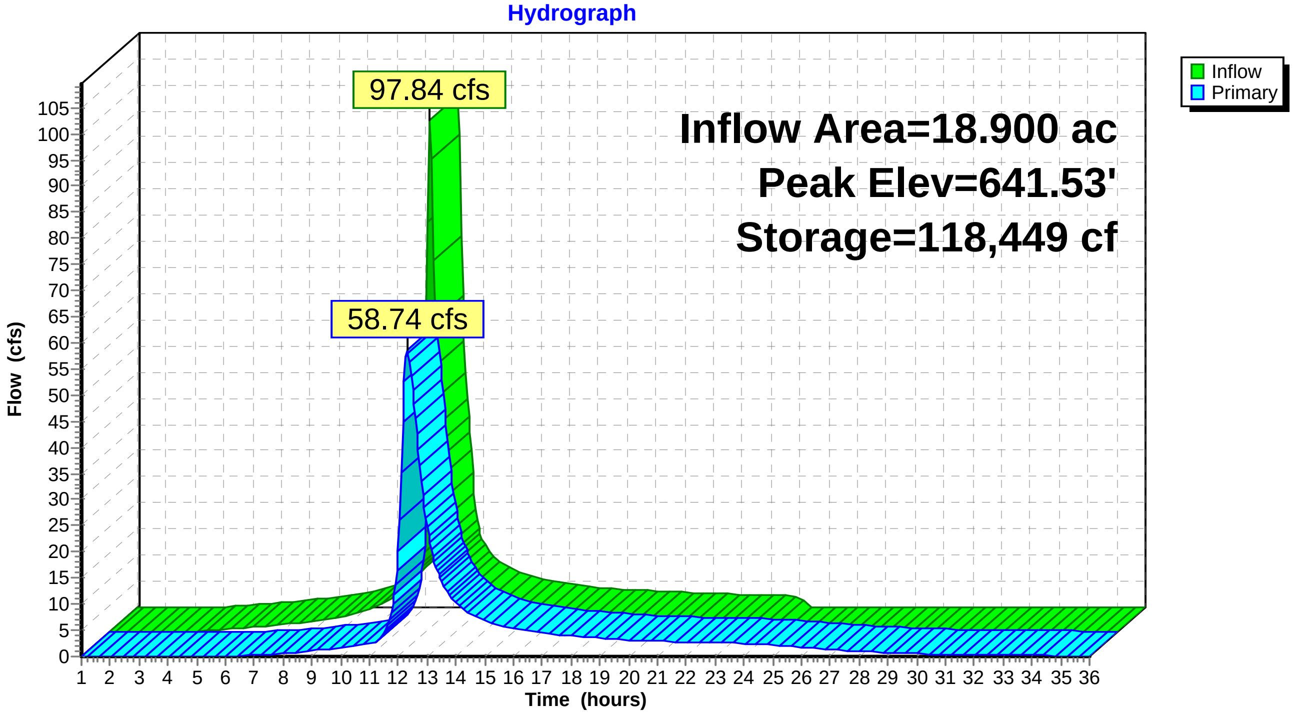
Volume	Invert	Avail.Storage	Storage Description
#1	638.00'	137,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
638.00	28,400	0	0
640.00	34,200	62,600	62,600
642.00	40,500	74,700	137,300

Device	Routing	Invert	Outlet Devices
#1	Primary	638.00'	**36.0" Round Culvert X 2.00** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 638.00' / 634.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	638.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	639.35'	**3.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	641.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=58.57 cfs @ 12.31 hrs HW=641.52' TW=626.46' (Dynamic Tailwater)
└1=**Culvert** (Passes 58.57 cfs of 96.79 cfs potential flow)
├2=**Orifice/Grate** (Orifice Controls 4.63 cfs @ 8.48 fps)
├3=**Sharp-Crested Rectangular Weir** (Weir Controls 53.94 cfs @ 7.38 fps)
└4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PC6: POND C6



Summary for Pond PC7: POND C7

Inflow Area = 21.300 ac, 20.75% Impervious, Inflow Depth = 6.75" for 100-yr event
Inflow = 120.78 cfs @ 12.11 hrs, Volume= 11.981 af
Outflow = 47.68 cfs @ 12.42 hrs, Volume= 11.688 af, Atten= 61%, Lag= 18.4 min
Primary = 47.68 cfs @ 12.42 hrs, Volume= 11.688 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 663.46' @ 12.42 hrs Surf.Area= 56,039 sf Storage= 172,566 cf

Plug-Flow detention time= 159.1 min calculated for 11.671 af (97% of inflow)
Center-of-Mass det. time= 145.0 min (950.6 - 805.6)

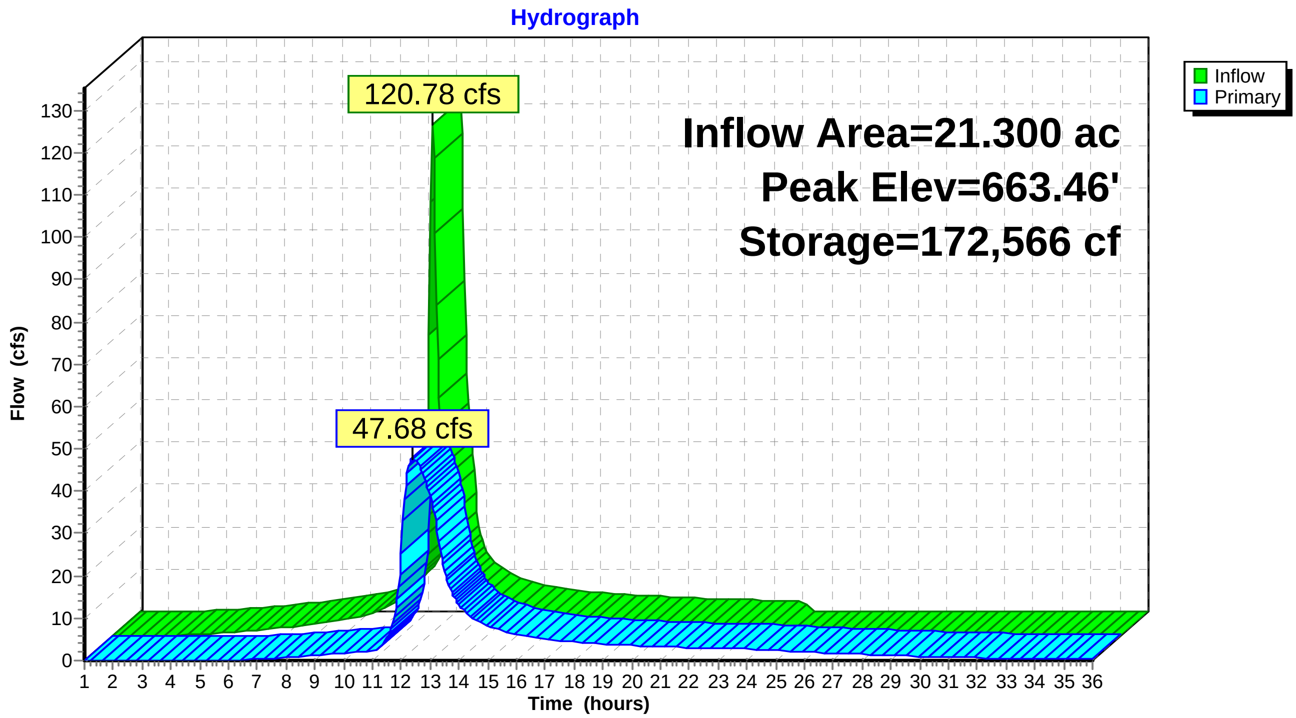
Volume	Invert	Avail.Storage	Storage Description
#1	660.00'	203,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
660.00	43,800	0	0
662.00	50,700	94,500	94,500
664.00	58,000	108,700	203,200

Device	Routing	Invert	Outlet Devices
#1	Primary	660.00'	**36.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 660.00' / 656.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	660.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	661.30'	**6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.6' Crest Height
#4	Device 1	663.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=47.66 cfs @ 12.42 hrs HW=663.46' TW=646.17' (Dynamic Tailwater)
└─1=**Culvert** (Inlet Controls 47.66 cfs @ 6.74 fps)
  ├─2=**Orifice/Grate** (Passes < 4.58 cfs potential flow)
  ├─3=**Sharp-Crested Rectangular Weir** (Passes < 83.29 cfs potential flow)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PC7: POND C7



Summary for Pond PE2: POND E2

Inflow Area = 8.900 ac, 21.80% Impervious, Inflow Depth = 6.99" for 100-yr event
Inflow = 42.95 cfs @ 12.20 hrs, Volume= 5.186 af
Outflow = 16.68 cfs @ 12.64 hrs, Volume= 5.132 af, Atten= 61%, Lag= 26.3 min
Primary = 16.68 cfs @ 12.64 hrs, Volume= 5.132 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 591.66' @ 12.64 hrs Surf.Area= 26,982 sf Storage= 81,267 cf

Plug-Flow detention time= 153.4 min calculated for 5.132 af (99% of inflow)
Center-of-Mass det. time= 146.9 min (952.1 - 805.3)

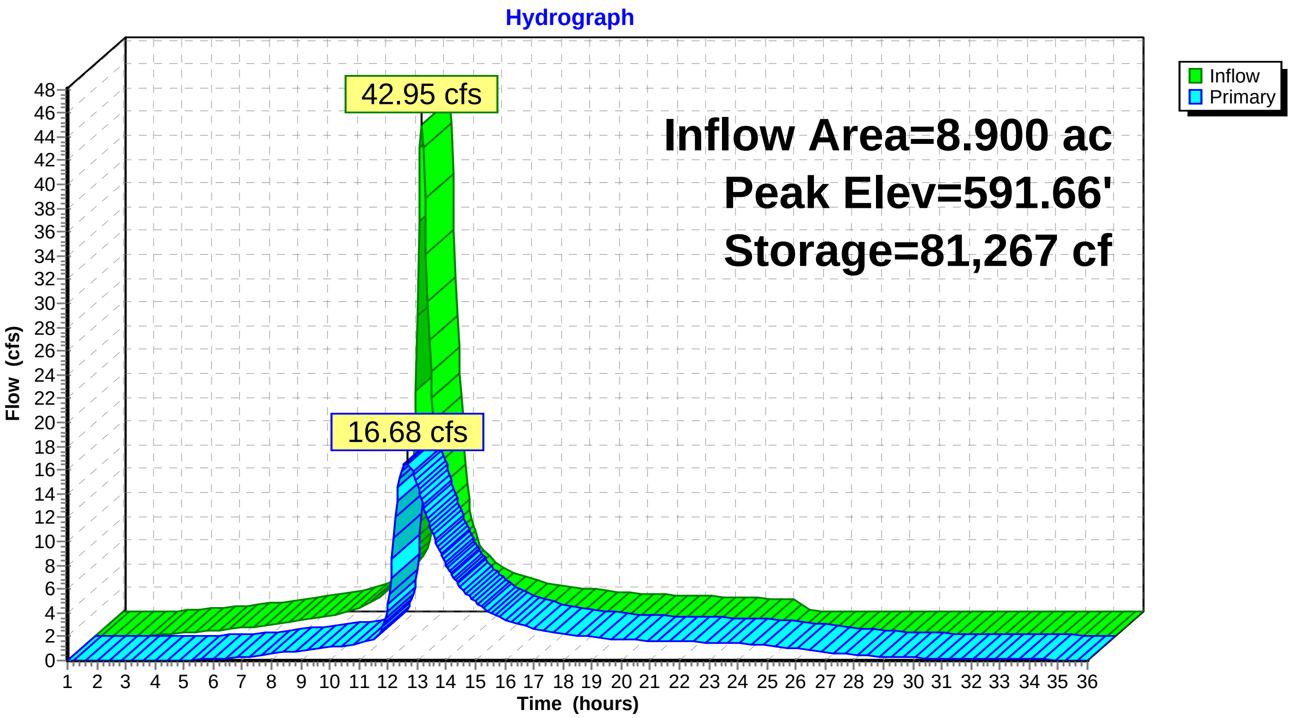
Volume	Invert	Avail.Storage	Storage Description
#1	588.00'	90,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
588.00	17,700	0	0
590.00	22,500	40,200	40,200
592.00	27,900	50,400	90,600

Device	Routing	Invert	Outlet Devices
#1	Primary	588.00'	**30.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 588.00' / 587.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	588.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	589.30'	**1.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	591.75'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.67 cfs @ 12.64 hrs HW=591.66' TW=0.00' (Dynamic Tailwater)
└─1=**Culvert** (Passes 16.67 cfs of 36.68 cfs potential flow)
  ├─2=**Orifice/Grate** (Orifice Controls 3.06 cfs @ 8.78 fps)
  ├─3=**Sharp-Crested Rectangular Weir** (Weir Controls 13.60 cfs @ 7.92 fps)
  └─4=**Orifice/Grate** (Controls 0.00 cfs)

Pond PE2: POND E2



Appendix E

Construction and Maintenance Inspection Checklists;

Sample Construction Site Inspection and Maintenance Log Book

Stormwater/Wetland Pond Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Pre-Construction/Materials and Equipment		
Pre-construction meeting		
Pipe and appurtenances on-site prior to construction and dimensions checked		
1. Material (including protective coating, if specified)		
2. Diameter		
3. Dimensions of metal riser or pre-cast concrete outlet structure		
4. Required dimensions between water control structures (orifices, weirs, etc.) are in accordance with approved plans		
5. Barrel stub for prefabricated pipe structures at proper angle for design barrel slope		
6. Number and dimensions of prefabricated anti-seep collars		
7. Watertight connectors and gaskets		
8. Outlet drain valve		
Project benchmark near pond site		
Equipment for temporary de-watering		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
2. Subgrade Preparation		
Area beneath embankment stripped of all vegetation, topsoil, and organic matter		
3. Pipe Spillway Installation		
Method of installation detailed on plans		
A. Bed preparation		
Installation trench excavated with specified side slopes		
Stable, uniform, dry subgrade of relatively impervious material (If subgrade is wet, contractor shall have defined steps before proceeding with installation)		
Invert at proper elevation and grade		
B. Pipe placement		
Metal / plastic pipe		
1. Watertight connectors and gaskets properly installed		
2. Anti-seep collars properly spaced and having watertight connections to pipe		
3. Backfill placed and tamped by hand under “haunches” of pipe		
4. Remaining backfill placed in max. 8 inch lifts using small power tamping equipment until 2 feet cover over pipe is reached		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
3. Pipe Spillway Installation		
Concrete pipe		
1. Pipe set on blocks or concrete slab for pouring of low cradle		
2. Pipe installed with rubber gasket joints with no spalling in gasket interface area		
3. Excavation for lower half of anti-seep collar(s) with reinforcing steel set		
4. Entire area where anti-seep collar(s) will come in contact with pipe coated with mastic or other approved waterproof sealant		
5. Low cradle and bottom half of anti-seep collar installed as monolithic pour and of an approved mix		
6. Upper half of anti-seep collar(s) formed with reinforcing steel set		
7. Concrete for collar of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
8. Forms stripped and collar inspected for honeycomb prior to backfilling. Parge if necessary.		
C. Backfilling		
Fill placed in maximum 8 inch lifts		
Backfill taken minimum 2 feet above top of anti-seep collar elevation before traversing with heavy equipment		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Riser / Outlet Structure Installation		
Riser located within embankment		
A. Metal riser		
Riser base excavated or formed on stable subgrade to design dimensions		
Set on blocks to design elevations and plumbed		
Reinforcing bars placed at right angles and projecting into sides of riser		
Concrete poured so as to fill inside of riser to invert of barrel		
B. Pre-cast concrete structure		
Dry and stable subgrade		
Riser base set to design elevation		
If more than one section, no spalling in gasket interface area; gasket or approved caulking material placed securely		
Watertight and structurally sound collar or gasket joint where structure connects to pipe spillway		
C. Poured concrete structure		
Footing excavated or formed on stable subgrade, to design dimensions with reinforcing steel set		
Structure formed to design dimensions, with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
Forms stripped & inspected for “honeycomb” prior to backfilling; parge if necessary		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Embankment Construction		
Fill material		
Compaction		
Embankment		
1. Fill placed in specified lifts and compacted with appropriate equipment		
2. Constructed to design cross-section, side slopes and top width		
3. Constructed to design elevation plus allowance for settlement		
6. Impounded Area Construction		
Excavated / graded to design contours and side slopes		
Inlet pipes have adequate outfall protection		
Forebay(s)		
Pond benches		
7. Earth Emergency Spillway Construction		
Spillway located in cut or structurally stabilized with riprap, gabions, concrete, etc.		
Excavated to proper cross-section, side slopes and bottom width		
Entrance channel, crest, and exit channel constructed to design grades and elevations		

Construction Sequence	Satisfactory / Unsatisfactory	Comments
8. Outlet Protection		
A. End section		
Securely in place and properly backfilled		
B. Endwall		
Footing excavated or formed on stable subgrade, to design dimensions and reinforcing steel set, if specified		
Endwall formed to design dimensions with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing, if necessary)		
Forms stripped and structure inspected for “honeycomb” prior to backfilling; parge if necessary		
C. Riprap apron / channel		
Apron / channel excavated to design cross-section with proper transition to existing ground		
Filter fabric in place		
Stone sized as per plan and uniformly place at the thickness specified		
9. Vegetative Stabilization		
Approved seed mixture or sod		
Proper surface preparation and required soil amendments		
Excelsior mat or other stabilization, as per plan		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
10. Miscellaneous		
Drain for ponds having a permanent pool		
Trash rack / anti-vortex device secured to outlet structure		
Trash protection for low flow pipes, orifices, etc.		
Fencing (when required)		
Access road		
Set aside for clean-out maintenance		
11. Stormwater Wetlands		
Adequate water balance		
Variety of depth zones present		
Approved pondscaping plan in place Reinforcement budget for additional plantings		
Plants and materials ordered 6 months prior to construction		
Construction planned to allow for adequate planting and establishment of plant community (April-June planting window)		
Wetland buffer area preserved to maximum extent possible		

Comments:

Actions to be Taken:

Bioretention Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility area cleared		
If designed as exfilter, soil testing for permeability		
Facility location staked out		
2. Excavation		
Size and location		
Lateral slopes completely level		
If designed as exfilter, ensure that excavation does not compact susoils.		
Longitudinal slopes within design range		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
3. Structural Components		
Stone diaphragm installed correctly		
Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. Vegetation		
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. Final Inspection		
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/ filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Comments:

Actions to be Taken:

Open Channel System Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility location staked out		
2. Excavation		
Size and location		
Side slope stable		
Soil permeability		
Groundwater / bedrock		
Lateral slopes completely level		
Longitudinal slopes within design range		
Excavation does not compact subsoils		
3. Check dams		
Dimensions		
Spacing		
Materials		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
4. Structural Components		
Underdrain installed correctly		
Inflow installed correctly		
Pretreatment devices installed		
5. Vegetation		
Complies with planting specifications		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
6. Final inspection		
Dimensions		
Check dams		
Proper outlet		
Effective stand of vegetation and stabilization		
Contributing watershed stabilized before flow is routed to the factility		

Comments:

Actions to be Taken:

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project ______________________________
Location: ______________________________
Site Status: ______________________________

Date: ______________________________
Time: ______________________________

Inspector: ______________________________

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam “As-Built”		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _______ Corrugated pipe ________ Masonry ________ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants "choked" with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

Maintenance Item	Satisfactory / Unsatisfactory	Comments
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Comments:

Actions to be Taken:

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

CONSTRUCTION SITE INSPECTION AND MAINTENANCE LOG BOOK

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

SAMPLE CONSTRUCTION SITE LOG BOOK

Table of Contents

I. **PRE-CONSTRUCTION MEETING DOCUMENTS**

Project Name ____

Permit No. ____________________________________ **Date of Authorization** ______________

Name of Operator ____

Prime Contractor ____

a. **Preamble to Site Assessment and Inspections**

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified inspector[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements. A preconstruction meeting should be held to review all of the SWPPP requirements with construction personnel.

When construction starts, site inspections shall be conducted by the qualified inspector at least every 7 calendar days. The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified inspector perform a final site inspection. The qualified inspector shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 Refer to "Qualified Inspector" inspection requirements in the current SPDES General Permit for Stormwater Discharges from Construction Activity for complete list of inspection requirements.
2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.
3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA
[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?________________________________
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_______________
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_______________
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA
[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA
[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Access

Yes No NA
[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Sediment Controls

Yes No NA
[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA
[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page ______
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? ___________________

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:

Inspection Forms will be filled out during the entire construction phase of the project.

Required Elements:

1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____________________________________ _________________________________

Inspector (print name) **Date of Inspection**

_____________________________________ _________________________________

Qualified Inspector (print name) **Qualified Inspector Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions at the outfalls?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease at the outfalls?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA
[ ] [ ] [ ] Is construction site litter, debris and spoils appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

3. Stabilized Construction Access

Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

Runoff Control Practices

1. Excavation Dewatering

Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

Runoff Control Practices (continued)

2. Flow Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Silt Fence and Linear Barriers

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

2. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated; Filter Sock or Manufactured practices)

Yes No NA
[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2” x 4” frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ] [ ] [ ] Manufactured insert fabric is free of tears and punctures.
[ ] [ ] [ ] Filter Sock is not torn or flattened and fill material is contained within the mesh sock.
Sediment accumulation ___% of design capacity.

3. Temporary Sediment Trap

Yes No NA
[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
[ ] [ ] [ ] Sediment trap slopes and disturbed areas are stabilized.
Sediment accumulation is ___% of design capacity.

4. Temporary Sediment Basin

Yes No NA
[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
[ ] [ ] [ ] Sediment basin dewatering pool is dewatering at appropriate rate.
Sediment accumulation is ___% of design capacity.

<u>Note</u>: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. All practices shall be maintained in accordance with their respective standards.

Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

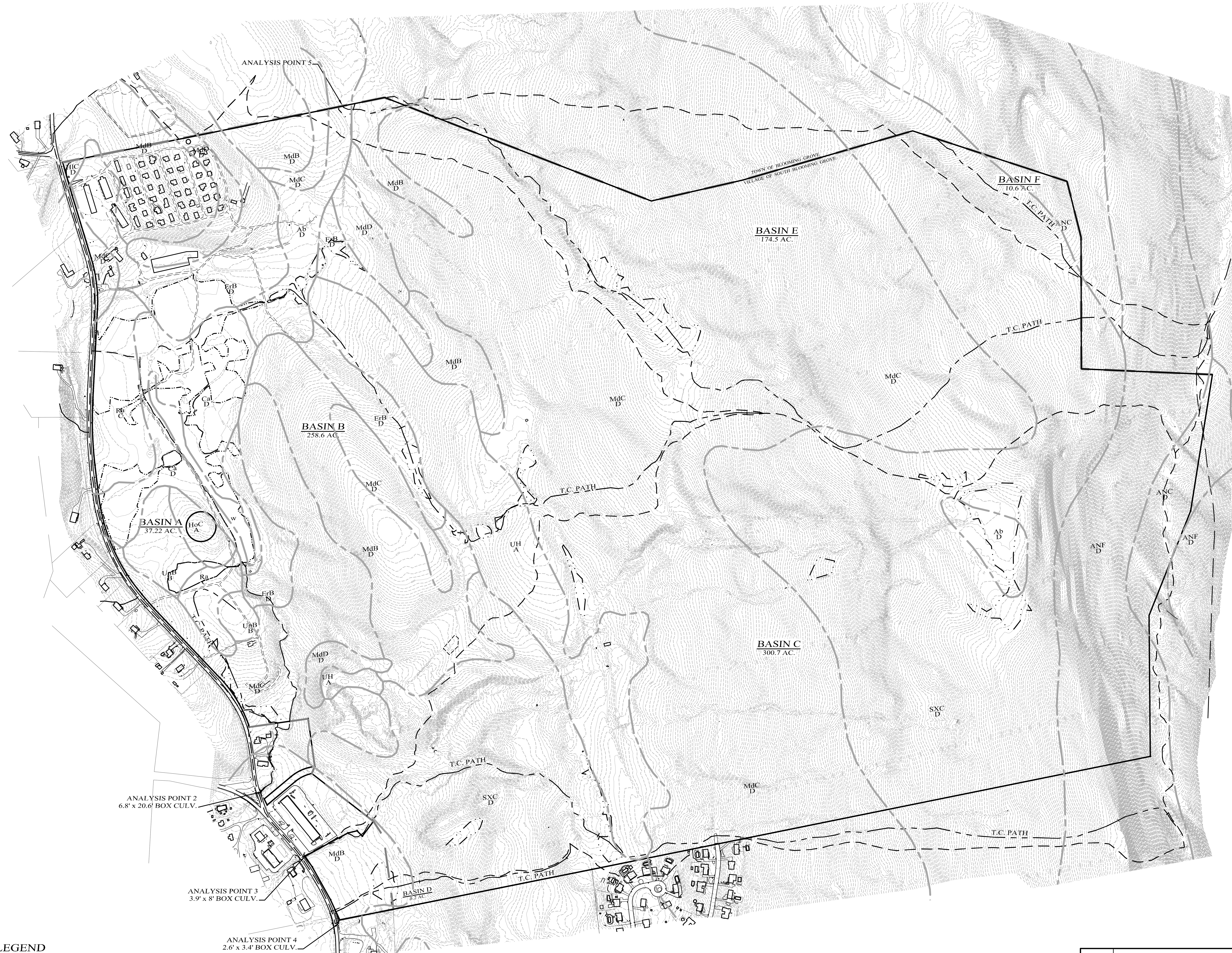
The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

Appendix F

Pre and Post Developed Drainage Basin Maps; Freshwater Wetlands Map



LEGEND

EXISTING PROPERTY LINE	
PROPOSED PROPERTY LINE	
PROPOSED SETBACK LINE	
EXISTING 10' CONTOUR LINE	
EXISTING 2' CONTOUR LINE	
PROPOSED EDGE OF PAVEMENT	
EXISTING EDGE OF PAVEMENT	
EXISTING EDGE OF PAVEMENT	

SCALE 1" = 300 FT.

01-15-18	INITIAL PREPARATION
DATE	

Lands of

CLOVEWOOD

VILLAGE OF SOUTH BLOOMING GROVE,
ORANGE COUNTY, NEW YORK

PROJECT TITLE

PRE DEVELOPED DRAINAGE MAP

DRAWING TITLE

LEGEND

EXISTING PROPERTY LINE	
PROPOSED PROPERTY LINE	
PROPOSED SETBACK LINE	
EXISTING 10' CONTOUR LINE	
EXISTING 2' CONTOUR LINE	
PROPOSED EDGE OF PAVEMENT	
EXISTING EDGE OF PAVEMENT	
EXISTING EDGE OF PAVEMENT	

SCALE 1" = 300 FT.

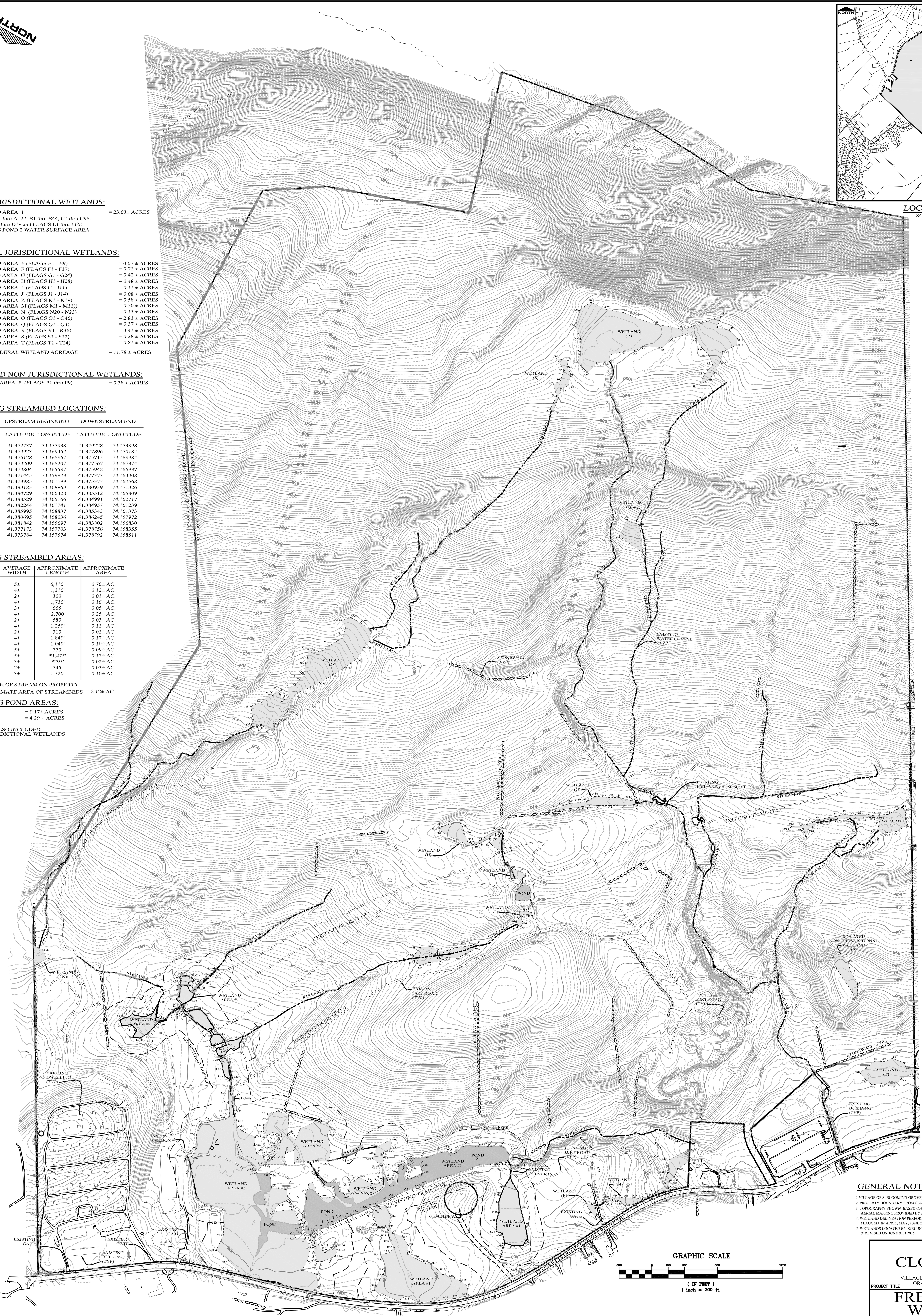
01-15-18	INITIAL PREPARATION
DATE	

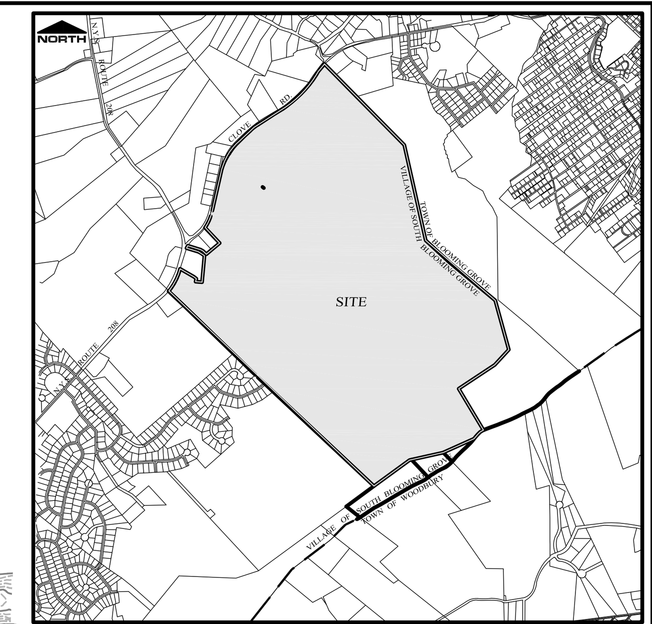
Lands of
CLOVEWOOD
VILLAGE OF SOUTH BLOOMING GROVE,
ORANGE COUNTY, NEW YORK

PROJECT TITLE

POST DEVELOPED
DRAINAGE MAP

DRAWING TITLE





LOCATION MAP
SCALE : 1" = 2,000'

N.Y.S. JURISDICTIONAL WETLANDS:

WETLAND AREA 1 = 23.03± ACRES
(FLAGS A1 thru A122, B1 thru B44, C1 thru C98,
FLAGS D1 thru D19 and FLAGS L1 thru L65)
INCLUDES POND 2 WATER SURFACE AREA

FEDERAL JURISDICTIONAL WETLANDS:

WETLAND AREA E (FLAGS E1 - E9)	= 0.07 ± ACRES
WETLAND AREA F (FLAGS F1 - F37)	= 0.71 ± ACRES
WETLAND AREA G (FLAGS G1 - G24)	= 0.42 ± ACRES
WETLAND AREA H (FLAGS H1 - H28)	= 0.48 ± ACRES
WETLAND AREA I (FLAGS I1 - I11)	= 0.11 ± ACRES
WETLAND AREA J (FLAGS J1 - J14)	= 0.08 ± ACRES
WETLAND AREA K (FLAGS K1 - K19)	= 0.58 ± ACRES
WETLAND AREA M (FLAGS M1 - M11))	= 0.50 ± ACRES
WETLAND AREA N (FLAGS N20 - N23)	= 0.13 ± ACRES
WETLAND AREA O (FLAGS O1 - O46)	= 2.83 ± ACRES
WETLAND AREA Q (FLAGS Q1 - Q4)	= 0.37 ± ACRES
WETLAND AREA R (FLAGS R1 - R36)	= 4.41 ± ACRES
WETLAND AREA S (FLAGS S1 - S12)	= 0.28 ± ACRES
WETLAND AREA T (FLAGS T1 - T14)	= 0.81 ± ACRES
TOTAL FEDERAL WETLAND ACREAGE	= 11.78 ± ACRES

ISOLATED NON-JURISDICTIONAL WETLANDS:

WETLAND AREA P (FLAGS P1 thru P9) = 0.38 ± ACRES

EXISTING STREAMBED LOCATIONS:

STREAM	UPSTREAM BEGINNING		DOWNSTREAM END	
	LATITUDE	LONGITUDE	LATITUDE	LONGITUDE
1	41.372737	74.157938	41.379228	74.173898
1A	41.374923	74.169452	41.377896	74.170184
1AA	41.375128	74.168867	41.375715	74.168984
1B	41.374209	74.168207	41.377567	74.167374
1BB	41.374804	74.165587	41.375942	74.166937
1C	41.371445	74.159923	41.377373	74.164408
1CC	41.373985	74.161199	41.375377	74.162568
2	41.383183	74.168963	41.380939	74.171326
3	41.384729	74.166428	41.385512	74.165809
4	41.388529	74.165166	41.384991	74.162717
5	41.382244	74.161741	41.384957	74.161239
6	41.385995	74.158837	41.385343	74.161373
7	41.380695	74.158036	41.386245	74.157972
7A	41.381842	74.155697	41.383802	74.156830
8	41.377173	74.157703	41.378756	74.158355
9	41.373784	74.157574	41.378792	74.158511

EXISTING STREAMBED AREAS:

STREAM	AVERAGE WIDTH	APPROXIMATE LENGTH	APPROXIMATE AREA
1	5±	6,110'	0.70± AC.
1A	4±	1,310'	0.12± AC.
1AA	2±	300'	0.01± AC.
1B	4±	1,730'	0.16± AC.
1BB	3±	665'	0.05± AC.
1C	4±	2,700	0.25± AC.
1CC	2±	580'	0.03± AC.
2	4±	1,250'	0.11± AC.
3	2±	310'	0.01± AC.
4	4±	1,840'	0.17± AC.
5	4±	1,040'	0.10± AC.
6	5±	770'	0.09± AC.
7	5±	*1,475'	0.17± AC.
7A	3±	*295'	0.02± AC.
8	2±	745'	0.03± AC.
9	3±	1,520'	0.10± AC.

* LENGTH OF STREAM ON PROPERTY
TOTAL APPROXIMATE AREA OF STREAMBEDS = 2.12± AC.

EXISTING POND AREAS:

POND 1 = 0.17± ACRES
POND 2** = 4.29 ± ACRES

**ACREAGE ALSO INCLUDED
IN N.Y.S. JURISDICTIONAL WETLANDS

GENERAL NOTES:

1. VILLAGE OF S. BLOOMING GROVE, TAX MAP DESIGNATION: SEC. 208, BLK. 1, LOT 2 & 3.
2. PROPERTY BOUNDARY FROM SURVEY BY LANC & TULLY PC. CONTAINING 708.17± AC.
3. TOPOGRAPHY SHOWN BASED ON A MAP BY LANC & TULLY PC. AND SUPPLIMENTED WITH AERIAL MAPPING PROVIDED BY PROMAPS INC., MOORESTOWN, N.J. FLOWN ON DEC. 26, 2014.
4. WETLAND DELINEATION PERFORMED BY ROBERT G TORGERSON, L.A., CPESC AND FLAGGED IN APRIL, MAY, JUNE 2014 & REVISED ON JUNE 9TH 2015.
5. WETLANDS LOCATED BY KIRK ROTHER, P.E. IN OCTOBER, NOVEMBER, DECEMBER 2014. & REVISED ON JUNE 9TH 2015.

GRAPHIC SCALE
300 0 150 300 600 1200
(IN FEET)
1 inch = 300 ft.

LEGEND

EXISTING PROPERTY LINE
EXISTING 10' CONTOUR LINE
EXISTING 2' CONTOUR LINE
EXISTING EDGE OF PAVEMENT
EXISTING STONEWALL
EXISTING DIRT ROAD / TRAIL
EXISTING WATER COURSE
EXISTING WETLAND BOUNDARY
100' DEC WETLAND BUFFER
EXISTING WETLAND AREA
EXISTING POND AREA — POND

I, ROBERT G TORGERSON, HEREBY CERTIFY THAT THE WETLANDS SHOWN ARE BASED ON AN ACTUAL FIELD SURVEY COMPLETED IN
____

ROBERT G TORGERSEN, L.A., CPESC
THREE MAIN DRIVE
NANUET, N.Y. 10954
NYS L.A. LICENSE #451

DATE	REVISIONS
05-25-18	REV. TABLE
10-09-16	REV. WETLANDS PER A.C.O.E. COMMENTS
04-21-16	REV. WETLANDS PER A.C.O.E. COMMENTS
03-03-16	REV. WETLANDS PER A.C.O.E. COMMENTS
11-16-15	REV. WETLANDS PER A.C.O.E. COMMENTS
07-02-15	ADD WELLS AND TRAILS
06-30-15	REV. PER PETER TORGERSEN REVIEW
06-22-15	REV-WETLANDS
03-02-15	WETLANDS

Lands of

CLOVEWOOD

VILLAGE OF SOUTH BLOOMING GROVE,
ORANGE COUNTY, NEW YORK

PROJECT TITLE

FRESHWATER WETLAND MAP

DRAWING TITLE

KIRK ROTHER, P.E.
CONSULTING ENGINEER, PLLC
5 Saint Stephens Lane, Warwick NY 10990
(845) 988-0620

KIRK ROTHER, P.E. N.Y.S. LIC. NO. 079053 DATE

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D.O.T. SHEET #	D.E.C. SHEET #	O.C.H.D. SHEET #	SHEET #
N.A.	N.A.	N.A.	WL1
CAD #	PROJECT #	SCALE	
14107 BASE	14107.0	AS NOTED	